

Comparison Between Scaffolding and Worked Example in ASSISTment Tutoring System

An Interactive Qualifying Project Report
submitted to the Faculty
of the
WORCESTER POLYTECHNIC INSTITUTE
in partial fulfillment of the requirements for the
Degree of Bachelor of Science
by

Ashish Maharjan

Prawal Shrestha

Xing Wei

Date: May 14, 2008

Project number: NTH-0773

Professor Neil Heffernan, Advisor

Abstract

A study on the effectiveness of the scaffolding and worked solution approaches in developing learning and problem solving skills among middle school students was performed. The ASSISTment System was used to create scaffolding and worked solution version of each of the questions in the MCAS tests. The experiment concluded that while both approaches assisted in the skill development scaffolding approach was more effective.

Acknowledgement

We would like to express our sincere thanks and gratitude to our advisor Professor Neil Heffernan and our co-advisor Cristina Heffernan for their immense support and guidance throughout the progression of the project in making sure that the project was moving in the right direction and everything was completed in time. We are also thankful to other ASSISTment Managers who helped in the building and the execution of the experiment. Last but not the least we are grateful to the [School Names], their teachers and the students who directly participated in our studies.

1 Table of Contents

Abstract	ii
Acknowledgement	iii
1 Introduction	1
1.1 Purpose	1
1.2 Hypothesis.....	1
2 Background	3
2.1 Massachusetts Comprehensive Assessment System (MCAS).....	3
2.2 ASSISTment System.....	3
2.2.1 Content Builder	4
2.2.2 Scaffold Questions	6
2.2.3 Worked Examples	6
2.2.4 Problem Set.....	6
3 Comparison between ASSISTment and other online tutoring systems.....	7
3.1 MCAS Mentor™	7
3.2 MCAS-Pass.....	11
4 Building Goals	14
5 Content	15
5.1 Organization.....	15
5.2 Design Process	15
5.2.1 Drafts.....	15
5.2.2 Building the ASSISTments	17
5.3 Workflow.....	19
5.4 Refinements	20
5.4.1 Peer Review.....	20
5.4.2 Drafts.....	21
5.5 Content Walkthrough	21
5.5.1 Scaffolding Questions	21
5.5.2 Worked Example Questions.....	31
5.5.3 Experiments	35
6 Study	40
6.1 Hypotheses	40

6.2	Method	40
6.2.1	Experiment Design	40
6.2.2	Experiment Participants	41
6.2.3	Data Collection	42
6.3	Data Analysis	43
6.3.1	Overall Gain	43
6.3.2	Scaffolding Gain	45
6.3.3	Worked Example Gain	46
6.3.4	Comparison between Scaffolding and Worked Example Gain	47
6.3.5	Comparison based on IRT	48
6.3.6	Comparison in a particular problem set	50
6.3.7	Comparison between low IRT student and high IRT student in a problem set	52
7	Suggestions	54
8	Conclusions	55
9	References	57
10	Appendix A: Data Tables	58
10.1	A.1 Data Table for Overall Gain	58
10.2	A.2 Data Table for Scaffolding Gain.	61
10.3	A.3 Data Table for Worked Example Gain.	64
10.4	A.4 Data Table for Comparison between Scaffolding and Worked Example Gain.	66
10.5	A.5 Data Table for Comparison based on IRT.	68
10.6	A.6 Data Table for Comparison in a particular problem set.	70
11	Appendix B: Problem Set Details	71
12	Appendix C: Scaffold Assistments	73
13	Appendix D: Worked Example Assistments	465

Table of Figures

Figure 2-1: Snippet of the content builder	5
Figure 3-1: Main Screen of MCAS Mentor	8
Figure 3-2: Interface of MCAS Mentor.....	9
Figure 3-3: "Draw It!" on MCAS Mentor	10
Figure 3-4: Calculator on MCAS Mentor	10
Figure 3-5: Testing Mode in MCAS-Pass	11
Figure 3-6: Tutorial & Review Mode in MCAS-Pass	12
Figure 5-1: Sample Drafted Content of Scaffolding Questions.....	16
Figure 5-2: Sample Drafted Content of Worked example Questions	17
Figure 5-3: The ASSISTment Building Screen	18
Figure 5-4: A Screenshot of the Builder after Drafted Content is filled in.....	19
Figure 5-5: ASSISTment #27366.....	22
Figure 5-6: First Scaffolding Question of ASSISTment #27366	23
Figure 5-7: First Scaffolding Question of ASSISTment #27366	24
Figure 5-8: First Scaffolding Question of ASSISTment #27366	25
Figure 5-9: Second Scaffolding Question of ASSISTment #27366.....	26
Figure 5-10: Second Scaffolding Question of ASSISTment #27366.....	27
Figure 5-11: Third Scaffolding Question of ASSISTment #27366	28
Figure 5-12: Third Scaffolding Question of ASSISTment #27366	29
Figure 5-13: Fourth Scaffolding Question of ASSISTment #27366	30
Figure 5-14: Fourth Scaffolding Question of ASSISTment #27366	31
Figure 5-15: ASSISTment ID# 26147.....	32
Figure 5-16: Worked Example of ASSISTment ID# 26147	33
Figure 5-17: ASSISTment ID# 26147.....	34
Figure 5-18: ASSISTment ID# 26147.....	35
Figure 5-19: Problem Set Interface	36
Figure 5-20: Top Level of Problem Set # 5163	37
Figure 5-21: Pre-Test of Problem Set # 5163	37
Figure 5-22: Experiment of Problem Set # 5163	38
Figure 5-23: Scaffolding Question of Problem Set # 5163	38
Figure 5-24: Worked Example Questions of Problem Set # 5163.....	39
Figure 5-25: Post-Test of Problem Set # 5163	39

Table of Tables

Table 6-1: List of schools that participated in our study.....	41
Table 6-2: t-Test, Two-Sample Assuming Unequal variances, for overall gain.....	44
Table 6-3: t-Test, Two-Sample Assuming Unequal variances, for scaffold gain	45
Table 6-4: t-Test, Two-Sample Assuming Unequal Variances, for worked example gain	46
Table 6-5: t-Test, Two-Sample Assuming Unequal Variances, for comparison between scaffold questions and worked examples	47
Table 6-6: t-Test: Two-Sample Assuming Unequal Variances, for comparing scaffold and worked examples in the group with low IRT.....	49
Table 6-7: t-Test: Two-Sample Assuming Unequal Variances, for comparing scaffold and worked examples in the group with high IRT	49
Table 6-8: t-Test: Two-Sample Assuming Unequal Variances, for analyzing the overall gain of problem set 5191	51
Table 6-9: t-Test: Two-Sample Assuming Unequal Variances, for comparing scaffold and worked examples for a problem set in the group with low IRT.....	52
Table 6-10: : t-Test: Two-Sample Assuming Unequal Variances, for comparing scaffold and worked examples for a problem set in the group with high IRT.....	53

1 Introduction

Founded in 2003, the ASSISTment System has been progressing at an appreciable rate. With each passing year, the ASSISTment System has been modifying and improving both its appearance and its contents. As part of the development process it is essential for the people at the ASSISTment to know if their project is effective or not. For our Interdisciplinary Qualifying Project we aim to aid the ASSISTment team to assess the effectiveness of their online learning tool.

1.1 Purpose

With the primary objective of helping the middle schools students develop problem solving skills with the aid of comprehensive tutorial contents the project was carried out in two phases – content construction and experimental study.

The goals of the content construction phase were to extract all the problems related to Patterns, Relations and Algebra from the MCAS in Mathematics and prepare solutions for each problem using scaffolding and worked solution approach.

The goal of the experimental study was to conduct the actual experiment on middle school students and analyze their performance to determine and compare the effectiveness of two approaches.

1.2 Hypothesis

It was expected that the scaffolding approach would be more effective than the worked example approach. In the scaffolding approach students are asked different intermediate questions that will lead them to solutions. For every intermediate question there are further hints on how to use the information in the original question or the answer of the previous intermediate question to get to next

step. Thus it suggests them, in the step-by-step method, how to extract, interpret and relate the information in the question to methodically reach the solution.

On the other hand, the comprehensive step-by-step method used in the scaffolding approach might appear confusing to the students. They might be approaching each intermediate question as different question without relating them to previous and following questions. Also, sometimes the lengthy process might confuse them more. In such situation worked solution approach might be more appropriate. It gives the solution of a question very similar to the asked question at one click. By looking at the given solution and how it used and interpreted the information in the question to proceed towards the solution student will learn how to solve similar problems.

While it is expected that both methods would help students develop problem solving skill it would only be concluded after the experimental study that either one of them is better than the other.

There are different concerns regarding the validity of the data that would be collected from the experiment. Different students who used scaffolding and worked example approaches might have different intelligence and prior knowledge of the subject matter. To eliminate this condition when comparing the relative effectiveness of two approaches it would be made sure that the same student would try different problem sets using two different approaches.

2 Background

2.1 Massachusetts Comprehensive Assessment System (MCAS)

The MCAS is an education assessment system designed to test all students in the state of Massachusetts and measure their performance. The tests are based on the learning standards defined in the Massachusetts Curriculum Frameworks. One of the criteria for being eligible to go to high school is passing the 10th grade MCAS tests. The MCAS tests are taken on the following subjects:

- English Language Arts (grades 3-8 and 10)
- Mathematics (grades 3-8 and 10)
- Science and Technology/Engineering (grades 5, 8, 9/10)
- History and Social Science (grades 5, 7, and 10/11)

Grade 6 Mathematics was divided into five subcategories – Number sense and operations; Patterns, relations and algebra; Geometry; Measurement and Data analysis, statistics and probability. For our project we particularly focused on the Patterns, relations and algebra which usually covered 25% of the questions in each test. They basically deal with understanding patterns, relations, and functions, representing and analyzing mathematical situations and structures using algebraic symbols, using mathematical models to represent and understand quantitative relationships and analyzing change in various contexts.

2.2 ASSISTment System

The mission statement of the ASSISTment is “To provide cognitively based continuous assessment of students”. The ASSISTment System is a web based learning tool that is designed to teach students how

to approach and solve a problem. Moreover, it helps teachers to keep track of their students' performance. At present, the ASSISTment team is building contents for the system using the questions asked in the MCAS tests. In simple words, the past questions from the MCAS are taken and put into the application with the simplest and most logical solutions to the questions. The ASSISTment team aims to have teachers building their own contents for the ASSISTment System according to their curriculum and need. In this way teachers will have a tool to test what they have taught and point out any weakness that may exist in their students.

2.2.1 Content Builder

The content builder is the backbone of the ASSISTment System. It is used to create the ASSISTment questions as well as the problem sets. The builder of the ASSISTment System is fairly simple with clearly visible menus and buttons. In order to build a new ASSISTment you need to log in as a builder and under the build tab you have the option to build a new ASSISTment problem or a problem set. Figure 2.1 shows a snippet of the ASSISTment question builder:

2.2.2 Scaffold Questions

Scaffold question is one of the approaches that can be adopted to guide a student in solving a problem. In scaffold, the students are asked to answer a set of questions related to the main problem. The goal of these questions is to develop the students' understanding of the problem and helping him find the solution of the problem. Once the students answer the questions they will have information that is handy for solving the problem.

2.2.3 Worked Examples

Worked example is another approach that can be implemented to tutor students. Here the students are given an example that will give them an idea of how to solve the main problem. For the example, a question similar to the main question is taken and solved step by step and shown to the students. As such the students will have a pattern to follow in order to solve the problem.

2.2.4 Problem Set

A problem set is simply a collection of ASSISTment questions. A student has to go through all the questions in order to complete a set. For our Interdisciplinary Qualifying Project we have decided to have a pre-test, 2-4 ASSISTments and a post-test. Problem sets help to tell whether a student has learned anything.

First the student is given a pre-test. We do not tell the student if his/her answer is correct. Next the student walks through a set of ASSISTments similar to the pre-test. Finally, the pre-test question is repeated in the post-test. Learning can be assessed by comparing the result of the post-test and the pre-test.

The pre-test consist only of the main question with no hint, example or any form of help. The ASSISTments that come after maybe of type scaffold or of type worked examples, only one type in one problem set. The post-test is of type worked example. Varying the type of the ASSISTments between the pre and post test among problem sets we can compare the effectiveness of scaffold against effectiveness of worked examples.

3 Comparison between ASSISTment and other online tutoring systems

Online tutoring systems have become very popular in nowadays. More and more schools are interested in online tutoring systems because of their advantages. Firstly, they can save much of teachers' time by grading assignments automatically. Secondly, online tutoring systems can organize different kinds of problems efficiently and accurately, allowing teachers to realize which topics are difficult for students and which ones are not, from which teachers know what to emphasize during lectures. Thirdly, online tutoring systems can be personalized for each student. For instance, ASSISTment can provide students who cannot solve certain problems with hints and worked examples.

Because of the advantages introduced above, many online tutoring systems have emerged during the past several years. For this paper, we are going to compare ASSISTment with other two popular online tutoring systems carrying MCAS, MCAS Mentor and MCAS-Pass.

3.1 MCAS Mentor™

This website is carried and maintained by publishers of books and classroom materials for students taking MCAS Tests.

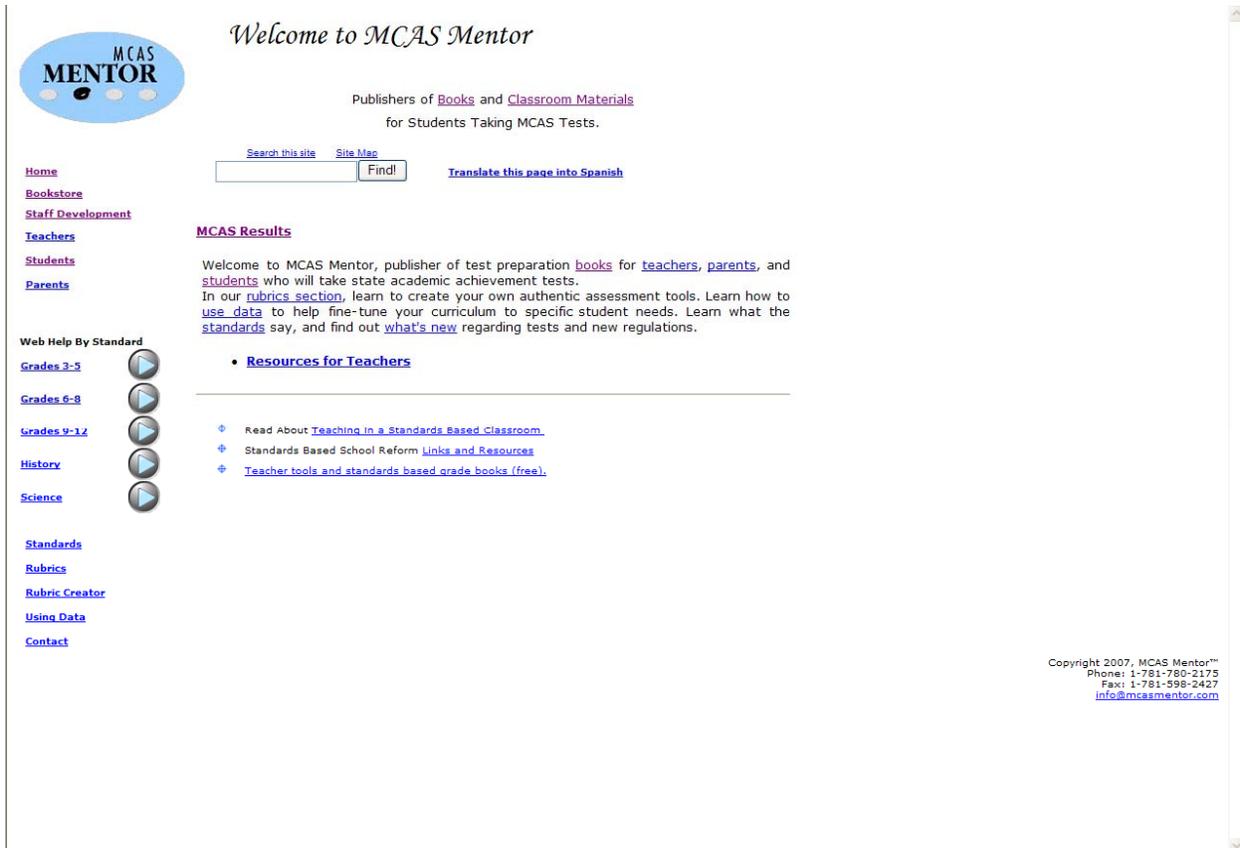


Figure 3-1: Main Screen of MCAS Mentor

This website provides resources for teachers, students and parents. Most of the materials online are free and available to everyone. However, after browsing this system for a while, we find out that this online system is poorly organized. Although resources provided by them are valuable, it is really difficult for someone to find the resource he wants.

Moreover, compared with ASSISTment, the interface of the online problems is very boring and monotonous. Plus, this online tutoring system only tells a student whether his answer is right or not. A hint is displayed automatically when a student chooses an incorrect answer. However, there is only one hint for each problem. So the students really are not obtaining a lot of feedbacks from this system.



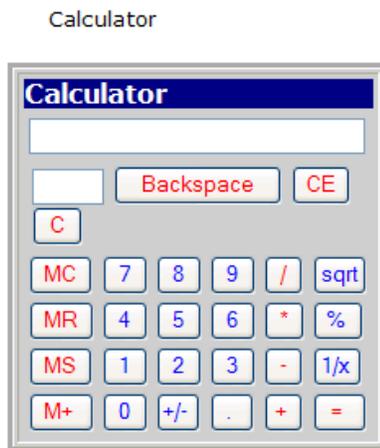
Figure 3-2: Interface of MCAS Mentor

However, compared to ASSISTment, MCAS Mentor has two neat features that can be very helpful to students. When the students are doing problems online, they can click on “Draw It!” to bring up a small window that functions like a drawing board, on which students can draw whatever they need to help solve problems.



Figure 3-3: "Draw It!" on MCAS Mentor

Another good feature is its calculator, which is a small online calculator a student can bring up by clicking on a button. This calculator can do operations needed for MCAS Test, such as addition, subtraction, multiplication and division.



Free JavaScripts provided
by [The JavaScript Source](#)

Figure 3-4: Calculator on MCAS Mentor

In a nutshell, compared to MCAS Mentor, ASSISTment is much more user-friendly and comprehensible to students. However, two features offered by MCAS Mentor, drawing board and calculator, are very useful to students solving online problems. It would be best if we can implement similar features to ASSISTment.

3.2 MCAS-Pass

MCAS-Pass is a very comprehensive commercial online tutoring system for students taking MCAS Tests. A user needs to purchase a service plan before using their system. From their free demonstration, we realize this is an extremely built system. Their system consists of two modes, test simulation mode and tutorial & review mode. Tutorial & review mode contains detailed explanations, hints, and examples to users, while test simulation mode simulates a testing environment, in which a student receives the results at the end.

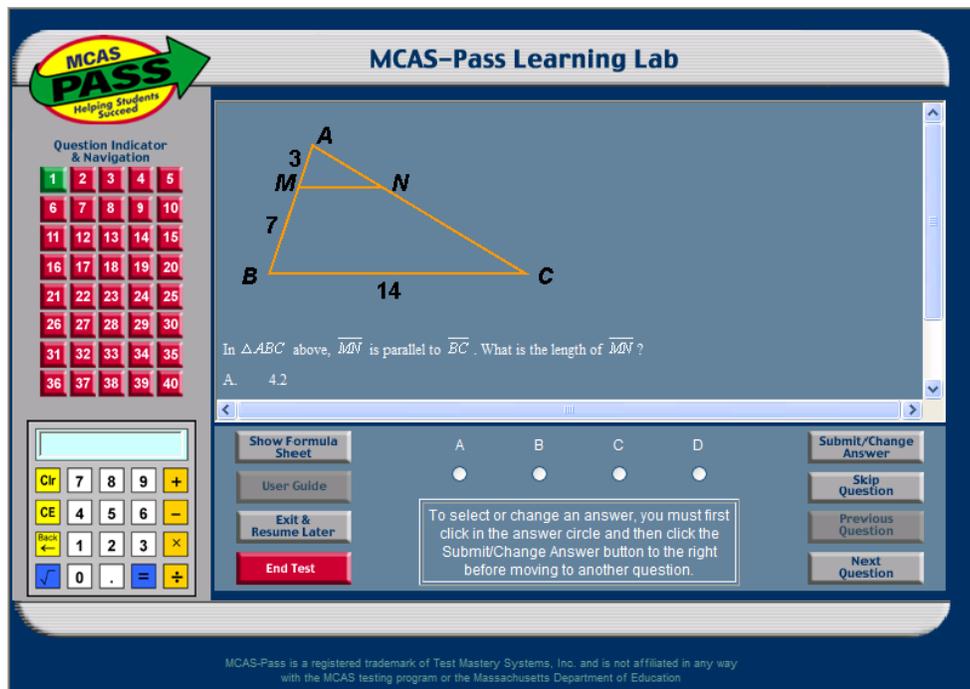


Figure 3-5: Testing Mode in MCAS-Pass

Figure above shows a screenshot of MCAS-Pass system under testing mode, we can see many options on the screen that are designed for real-time test simulation, such as “show formula sheet”, “skip question” and “submit/change answer”. Notice that on the left-hand side of the screen, the system provides a small useful calculator and “question indicator & navigation”.

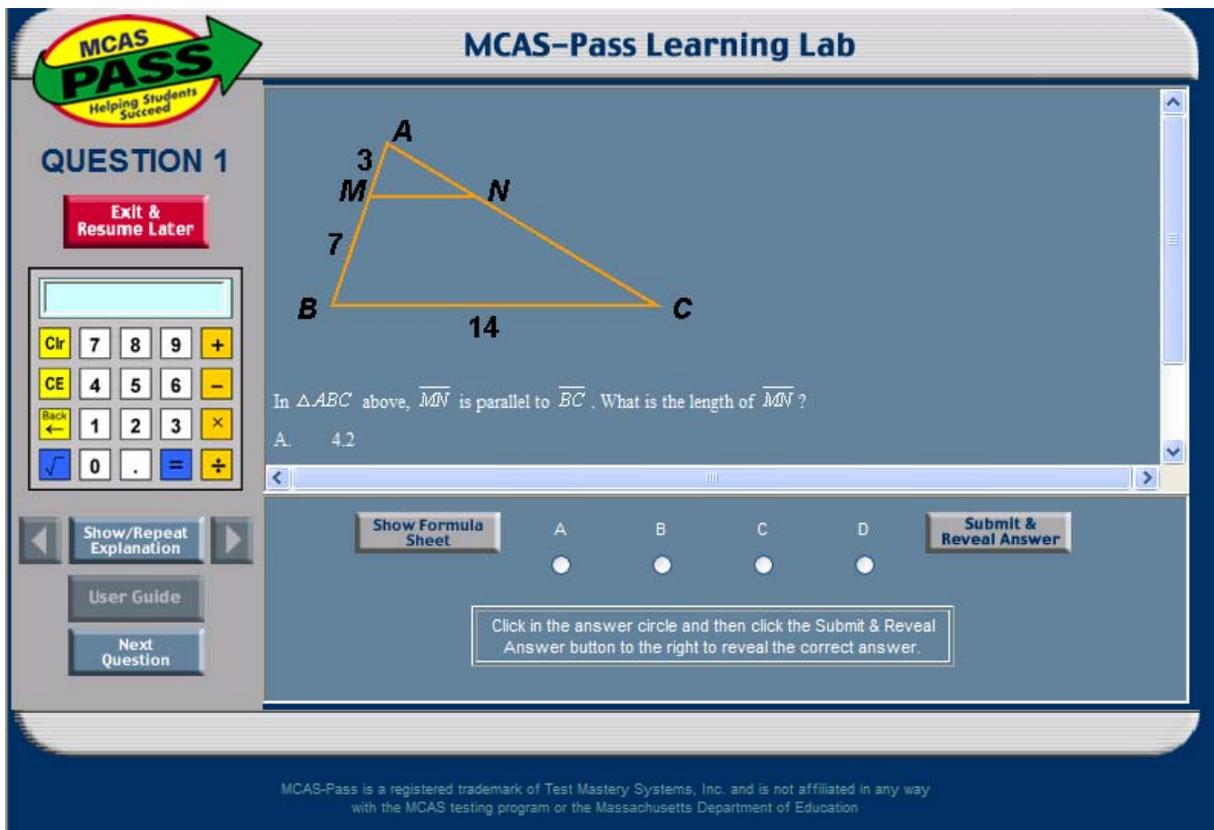


Figure 3-6: Tutorial & Review Mode in MCAS-Pass

Figure above shows a typical screen of MCAS-Pass system under tutorial & review mode, in which a student can look at hints, explanations and examples by clicking on “show/repeat explanation”. Again, this interface is not only appealing to students, but also efficient with a number of useful options, such as calculator and formula sheet.

In a nutshell, MCAS-Pass is a very good online tutoring system for students taking MCAS test. It has many features and advantages bypassing ASSISTment. However, the major drawback of this system is

that users must pay for the service, which is also the reason why this system is well built. Although our ASSISTment group might not be able to match up with MCAS-Pass for now, with more and more efforts devoted by the developers on our group, MCAS-Pass is a road model for the ultimate version for ASSISTment.

4 Building Goals

The MCAS tests in Mathematics from the year 2001 to the year 2007 were used in the project. Problems were extracted verbatim from those tests unless there were difficulties in presentation or input methods. Only few problems were eliminated due to their general incompatibility with the ASSISTment builder. The procedure used to build the ASSISTment is described in the subsequent sections. Our initial goal was to prepare 10 new ASSISTments every week over the course of two seven-week terms. At first scaffolding solutions were prepared for the questions and then worked example solutions. In the third seven-week term an experiment was conducted.

5 Content

5.1 Organization

As mentioned earlier our team worked on the Patterns, Relations, and Algebra section of the MCAS. To make solid progress and stay organized, we each maintain detailed documents, such as Excel and Word. For each problem, we need to go through three steps to ensure the quality of our work: drafted content, built content, and approved content. The approved content is the one ready to be put online for experiment.

5.2 Design Process

5.2.1 Drafts

As introduced previously, the first step of building an ASSISTment problem is to compile a drafted content. At the beginning of the project, our advisor provided sources and instructions on the structure of an ASSISTment problem, because the format of our problem needs to fit into the software program online.

We built our drafts in Microsoft Word, which includes a large number of features we can take advantage of, such as spell-check and page layout. In these drafts, we planned out both our scaffolding questions and worked example questions, which are the two kinds of questions we are comparing. We include pictures, tables and diagrams in the drafts so that they look exactly like the problem we want in the ASSISTment builder.

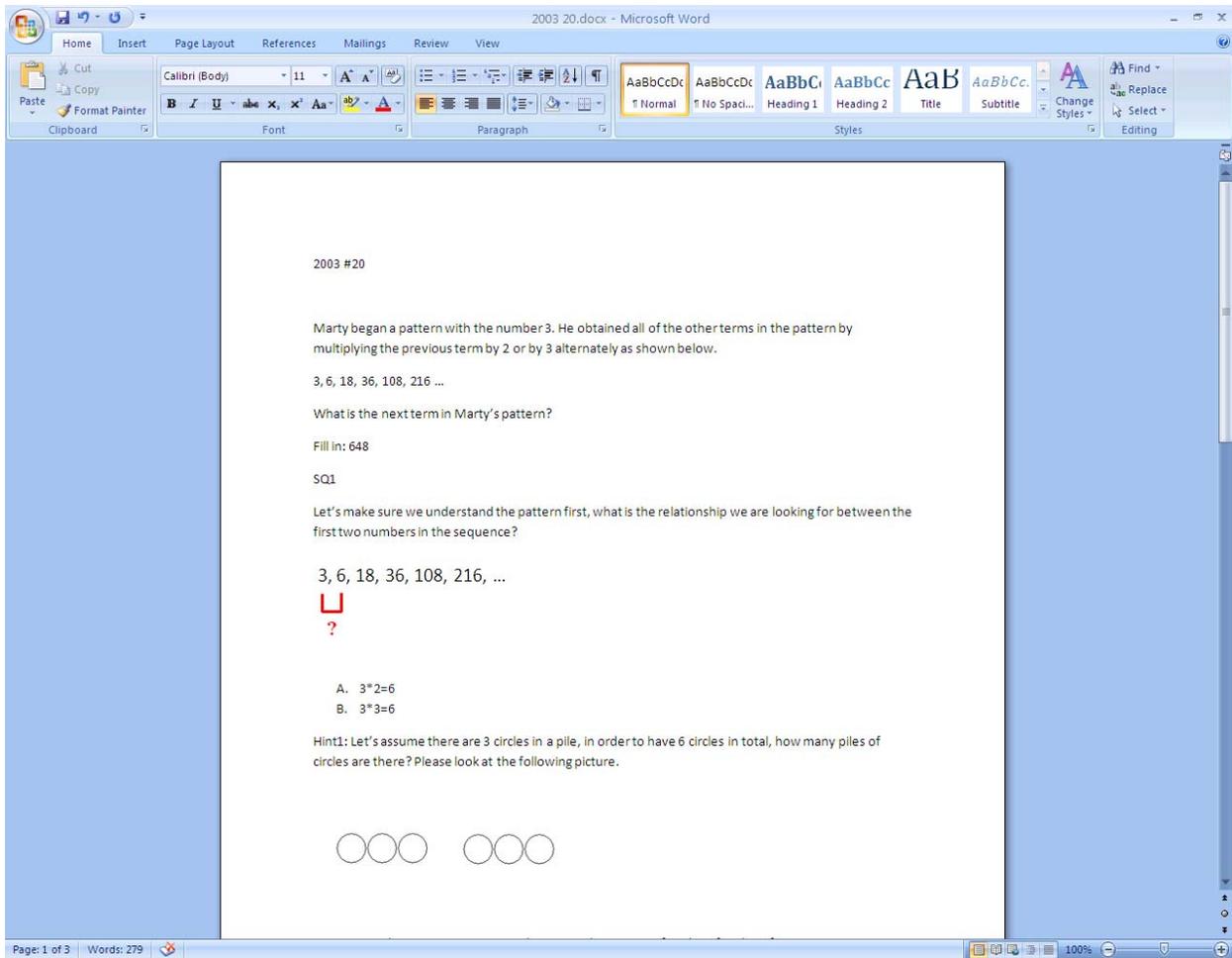


Figure 5-1: Sample Drafted Content of Scaffolding Questions

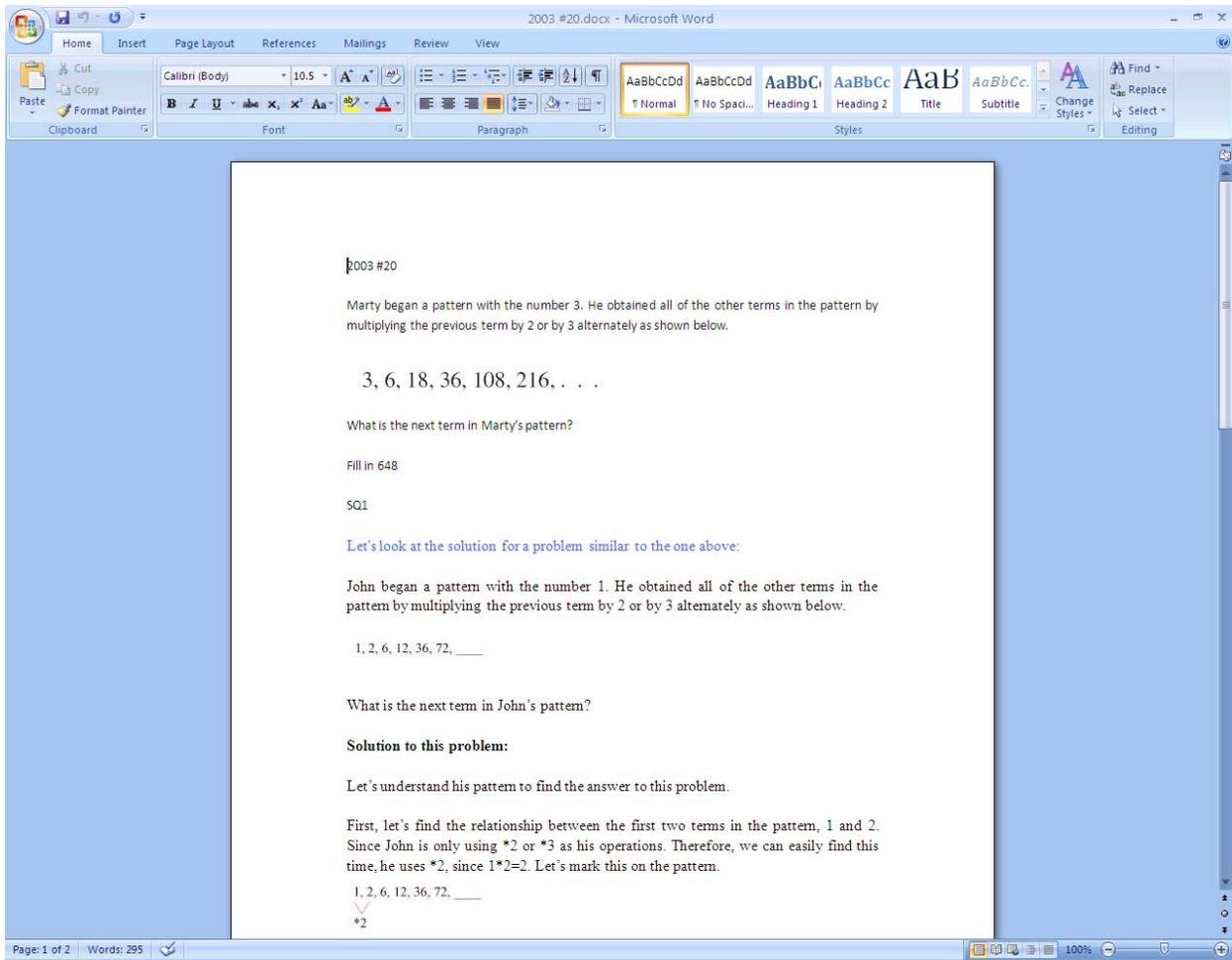


Figure 5-2: Sample Drafted Content of Worked example Questions

5.2.2 Building the ASSISTments

After a drafted content is read by our advisor, we then build the ASSISTment problem on the builder. Since the drafted content already contained the correct mathematic problem and operations, the only task here is to put the content online. However, due to fact that the ASSISTment program is still under development, we often need to modify settings and avoid bugs while building a problem. Therefore, this process is often time consuming, which give us another reason to have drafted content first.

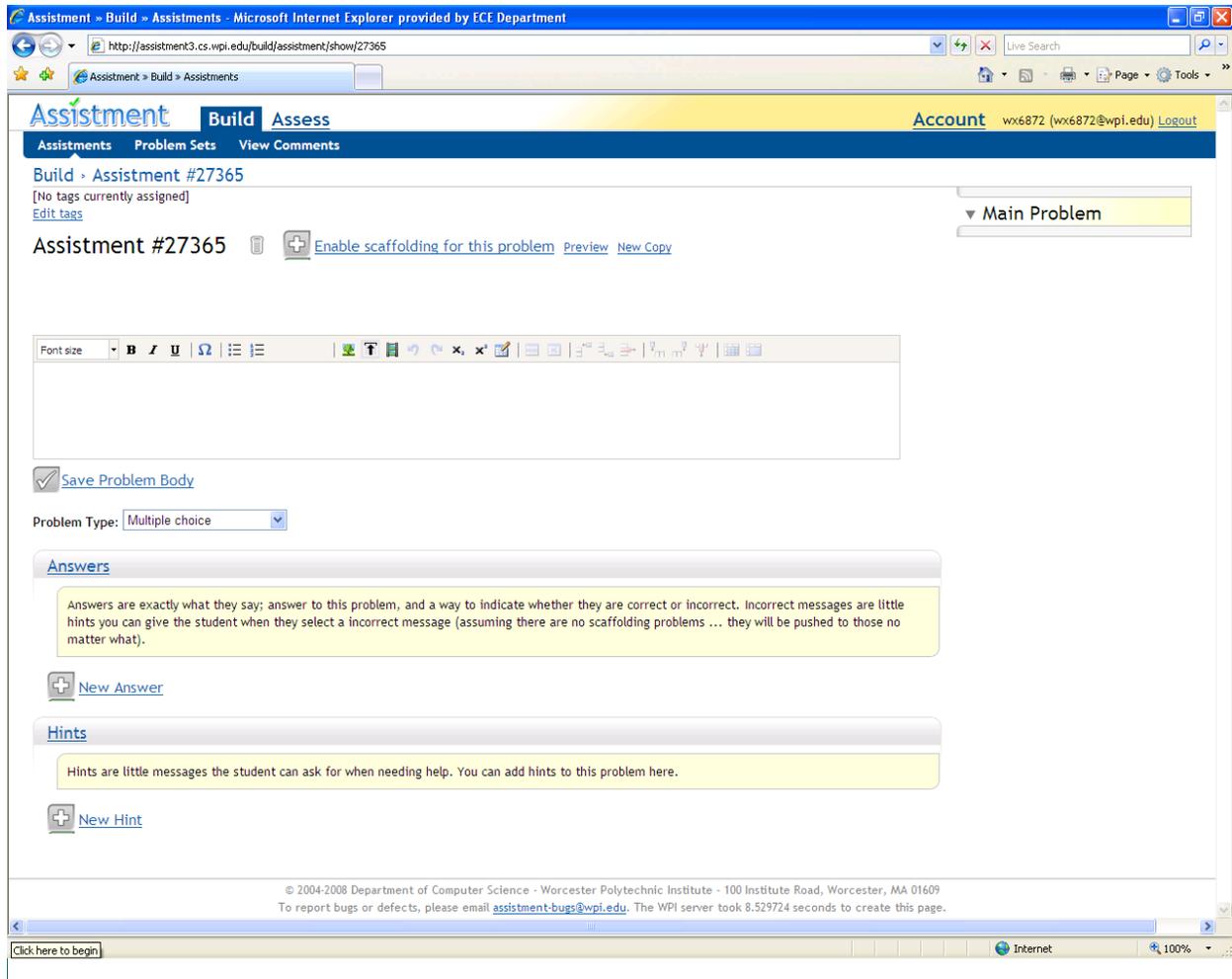


Figure 5-3: The ASSISTment Building Screen

Although the interface looks fairly straightforward, we constantly experience difficulties and frustrations when using ASSISTment builder.

One of the biggest problems is the poor stability of the ASSISTment. Corrupts of the entire systems have occurred a couple of times during our project. And corrupts of small parts occur very often. However, the ASSISTment group always tries to find the problems and fix them. Our team has been giving feedbacks on corrupts, new updates and fixes throughout our work. The figure below shows a screenshot of the builder after a drafted content is filled in.

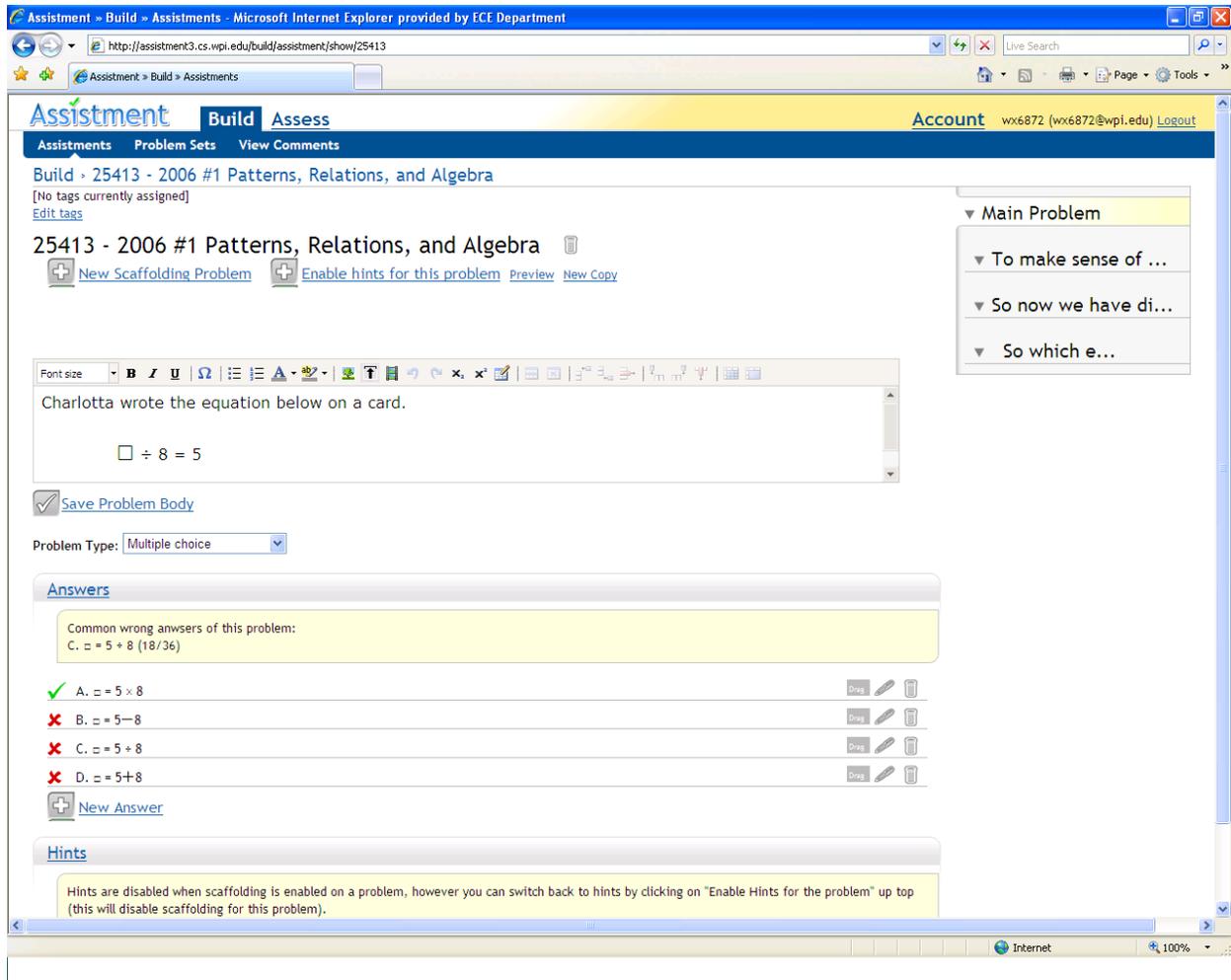


Figure 5-4: A Screenshot of the Builder after Drafted Content is filled in

5.3 Workflow

As stated previously, the target of our team is to finish both scaffolding and worked example questions for Patterns, Relations and Algebra. To achieve our goal, an efficient workflow is extremely necessary. As you can see, we need to build a lot of ASSISTment problems. Therefore, most of our time, nearly three terms, is devoted to building problems. At the end, each of us has built in total 50 problems, half of scaffolding questions, and the other half of work-example questions.

During the first term and most of the second term, we concentrated on building scaffolding questions, since there are many ways to construct a same question. In order to find the most straightforward and succinct one for the 6 graders, we constantly communicated with Cristina Heffernan, one of our advisors, who then determined whether our drafted contents are ready to be put onto builder.

During the rest of the second term and beginning of the third term, we worked on building worked example questions, which were usually easy to draft, since we basically provided a similar problem and solved it step by step. Therefore, we were able to finish these problems in a short period of time.

Finally, for the rest of the third term, we sorted the problems and fixed minor errors left in the problems. And then, we finally built our experiments which enabled us to compare the efficiency of scaffold questions and work-example questions. We are going to give examples of our each type of ASSISTment problems later. In the end, under the instruction from our advisor, we obtained the data from the experiment, analyzed them and derived the conclusions.

5.4 Refinements

During the project, although we have been following the workflow and making solid progress, minor adjustments sometimes are necessary to ensure the quality of our ASSISTment problems.

5.4.1 Peer Review

A very efficient way of solving difficulties is to get opinions or feedbacks from our team members. Although there are only three members in our team, we are all specialized in building the same kind of problems. And each of us is very familiar with the ASSISTment system and workflow of the project. So a team member can often obtain valuable advices from the other two members.

5.4.2 Drafts

To ensure the quality of built content, accurate and correct drafts are the priorities. Because we are converting drafted contents directly to built contents most of the times, a good drafted content will save a lot of time. To change a built content can be very time consuming. Therefore, throughout the project, we have been in close contact with Cristina Heffernan, who provided valuable advices. By doing this, we can save much time by changing less errors on builder.

5.5 Content Walkthrough

In this section, we will give provide a couple of examples of how we actually build the ASSISTment problems. As said previously, we are basically building problems with two methods, scaffolding and worked example.

5.5.1 Scaffolding Questions

5.5.1.1 ASSISTment ID# 27366

The following ASSISTment was created by Prawal Shrestha. It is based off the fifth item on the 2007 MCAS 6th grade Math Test.

Original Problem:

What is the value of the expression below when $\square = 3$?

$$2(\square) + 5$$

[Comment on this question](#)

[Request Help](#)

Type your answer below (mathematical expression):

[Submit Answer](#)

Figure 5-5: ASSISTment #27366

The problem is involved with 6th grade algebraic substitution. The best way to guide the students on this problem is to actually solve it step by step.

The first difficulty a 6th grader might encounter is the substitution. The concept of variable and substitution is still fairly new to a 6th grader. Therefore, our first scaffolding question should tell them where the substitution takes place. So if the student answers this problem wrong or click on “Request Help”, the first scaffolding question will show up as in the following picture.

Let's move on and figure out this problem

The question asks for the value of the expression : $2(\square) + 5$ when $\square = 3$.
In order to solve the question lets break it down in to smaller parts.
Look at the expressions given below. Which expression has the correct substitution for \square ?

[Comment on this question](#)

[Request Help](#)

Select one:

- A. $2(9)+5$
- B. $2(6)+5$
- C. $2(3)+5$
- D. $2(1)+5$

[Submit Answer](#)

Figure 5-6: First Scaffolding Question of ASSISTment #27366

Just in case a student still doesn't know how to substitute the variable into the equation. We provided detailed intuitive hints to guide the student. If the student clicks on "Request Help", the first hint will be provided.

Let's move on and figure out this problem

The question asks for the value of the expression : $2(\square) + 5$ when $\square = 3$.
In order to solve the question lets break it down in to smaller parts.
Look at the expressions given below. Which expression has the correct substitution for \square ?

[Comment on this question](#)

We are given that \square equals 3.

[Comment on this hint](#)

[Request Help](#)

Select one:

- A. $2(9)+5$
- B. $2(6)+5$
- C. $2(3)+5$
- D. $2(1)+5$

[Submit Answer](#)

Figure 5-7: First Scaffolding Question of ASSISTment #27366

If the student still does not know the correct answer to this scaffolding question, we have more hints that we believe can guide the student to the right answer in the end. So when the student clicks on “Request Help” for several more times, all the hints can be shown.

Let's move on and figure out this problem

The question asks for the value of the expression : ' $2(\square) + 5$ ' when $\square = 3$.
In order to solve the question lets break it down in to smaller parts.
Look at the expressions given below. Which expression has the correct substitution for \square ?

[Comment on this question](#)

We are given that \square equals 3.

[Comment on this hint](#)

Which of the given answer choices has 3 substituted for \square ?

- A. $2(9)+5$
- B. $2(6)+5$
- C. $2(3)+5$
- D. $2(7)+5$

[Comment on this hint](#)

Option C has 3 substituted for \square . So option C has the correct substitution for \square .)

[Comment on this hint](#)

Select one:

A. $2(9)+5$

Figure 5-8: First Scaffolding Question of ASSISTment #27366

After knowing what substitution means, we think a 6th grader might not know how to deal with parenthesis. Therefore, the next scaffolding question should ask them the operation around the parenthesis.

Thus we know that the expression is:

$$2(3) + 5$$

What do we do next?

[Comment on this question](#)

[Request Help](#)

Select one:

- A. Multiply 2 and 3
- B. Add 3 and 5
- C. Add 2 and 5

[Submit Answer](#)

Figure 5-9: Second Scaffolding Question of ASSISTment #27366

If our concern was right, that is, a student doesn't know how to do this problem, and then he/she can request help to obtain some hints again.

Thus we know that the expression is:

$$2(3) + 5$$

What do we do next?

[Comment on this question](#)

In number operations if a multiplication and addition come together which one do you do first?

[Comment on this hint](#)

If a multiplication and addition come together then the multiplication is done first.

[Comment on this hint](#)

Given expression has both addition and multiplication. The multiplication should be performed before the addition. Thus the next step is to multiply 2 and 3.

[Comment on this hint](#)

Select one:

- A. Multiply 2 and 3
- B. Add 3 and 5
- C. Add 2 and 5

[Submit Answer](#)

Figure 5-10: Second Scaffolding Question of ASSISTment #27366

Now the student should obtain the normal algebraic expression, in this case, $2 * 3 + 5$. However, for a 6th grader, to calculate an expression involved with both multiplication and addition can be confusing. So we still need to go through the rest of the operations with them. As you know, we should calculate multiplication first in this case.

Now let us do some calculations. We have,

$$2(3)+5$$

This expression can be written as

$$\Delta + 5$$

What is the value of Δ ?

[Comment on this question](#)

[Request Help](#)

Type your answer below (mathematical expression):

[Submit Answer](#)

Figure 5-11: Third Scaffolding Question of ASSISTment #27366

And just to guide them through the multiplication, the hints are very intuitive and straightforward in this case, since we think that most 6th graders should have no problem with $2 * 3$.

Now let us do some calculations. We have,

$$2(3)+5$$

This expression can be written as

$$\Delta + 5$$

What is the value of Δ ?

[Comment on this question](#)

What expression does the Δ replace?

[Comment on this hint](#)

The Δ replaces the expression $2(3)$ which is 2 multiplied by 3.

[Comment on this hint](#)

2 multiplied by 3 is 6. So, 6 must be the answer.

[Comment on this hint](#)

Type your answer below (mathematical expression):

[Submit Answer](#)

Figure 5-12: Third Scaffolding Question of ASSISTment #27366

The last but not least, after we help the student break down the problem into simple expression $6 + 5$, the problem is extremely easy at this point. Instead of just asking them what the result of $6 + 5$ is, we want them to go back to the original problem and actually go through the entire problem themselves to obtain a better understanding of this kind of problem, which is the reason of having ASSISTment – improve students' abilities to learn.

So the final scaffolding question is exactly the original problem.

What is the value of the expression below when $\square = 3$?
 $2(\square) + 5$

[Comment on this question](#)

[Request Help](#)

Type your answer below (mathematical expression):

[Submit Answer](#)

Figure 5-13: Fourth Scaffolding Question of ASSISTment #27366

However, just in case the student did not learn through the previous scaffolding questions, we still want to guide them to the final answer and hope they get something out from our ASSISTment.

Now let us go back to our given problem.

What is the value of the expression below when $\square = 3$?

$$2(\square) + 5$$

[Comment on this question](#)

The value of \square is 3. So we substitute 3 in the expression.

[Comment on this hint](#)

When we substitute 3 in the expression we get:

$$2(3) + 5$$

Next we have to multiply 2 and 3 and add the product to 5.

[Comment on this hint](#)

2 times 3 is 6. Next 6 plus 5 is 11. So, 11 must be the answer.

[Comment on this hint](#)

Type your answer below (mathematical expression):

[Submit Answer](#)

Figure 5-14: Fourth Scaffolding Question of ASSISTment #27366

5.5.2 Worked Example Questions

5.5.2.1 ASSISTment ID# 26147

The following ASSISTment was created by Xing Wei. It is based off the second item on the 2006 MCAS 6th grade Math Test.

Original Problem:

Assistment

You are previewing content.

Assistment #26147

Sheila started the geometric pattern shown below.

1, 3, 9, 27, ___?

If the pattern continues as shown, what is the next term in the pattern?

[Comment on this question](#)

[Request Help](#)

Type your answer below:

[Submit Answer](#)

Figure 5-15: ASSISTment ID# 26147

As introduced previously, using worked example method, we basically provide a similar problem and solve it step by step, hence it is called “worked example”.

Let's move on and figure out this problem

Let's look at the solution for a problem similar to the one above:

Jack started the geometric pattern shown below.

1, 2, 4, 8, ?

If the pattern continues as shown, what is the next term in the pattern?

Solution to this problem:

In order to solve the problem, we need to find out what the pattern is.

Let's look at the first two numbers in the pattern, 1 and 2.

What calculation can we take to obtain 2 from 1? In another word, what can we put in the square of equation below in order to make the equation to be true?

$$1 \square = 2$$

With our knowledge, we can think of two simple scenarios to fill in the square.

$$1 \square + 1 = 2$$

$$1 \square * 2 = 2$$

Now, let's look at the relationship between the 2nd term and the 3rd term in the sequence, 2 and 4.

With the same method, we need to figure out the content of the square in the equation below.

$$2 \square = 4$$

Again, two simple scenarios we can think of are:

$$2 \square + 2 = 4$$

$$2 \square * 2 = 4$$

We can see " * 2 " can be used by both pairs of numbers. So let's use *2 to check the next pair of numbers in the pattern.

So the number after 4 in the sequence should be $4 * 2 = 8$.

Let's find the next number in the sequence, which is circled in red.

1, 2, 4, (8), ?

So our guess is right. The pattern of the sequence is marked in the sequence below.

1, 2, 4, 8, ?
 √√√√
 *2 *2 *2 *2

So the next term in the sequence should be the result of $8 * 2$.

$8 * 2 = 16$.

Therefore, the next term in the sequence is 16.

[Comment on this question](#)

Select one:

I have read the example and now I am ready to try again.

Submit Answer

Figure 5-16: Worked Example of ASSISTment ID# 26147

After the worked example, we just go back to the original problem to see if the student is benefited from the worked example.

Sheila started the geometric pattern shown below.

1, 3, 9, 27, ___?

If the pattern continues as shown, what is the next term in the pattern?

[Comment on this question](#)

[Request Help](#)

Type your answer below:

[Submit Answer](#)

Figure 5-17: ASSISTment ID# 26147

However, if the student doesn't know the answer, we just give them the answer in order to get him/her out of this problem to do the other problems.

Sheila started the geometric pattern shown below.

1, 3, 9, 27, ___?

If the pattern continues as shown, what is the next term in the pattern?

[Comment on this question](#)

The correct answer is 81. Please enter 81.

[Comment on this hint](#)

Type your answer below:

Submit Answer

Figure 5-18: ASSISTment ID# 26147

5.5.3 Experiments

5.5.3.1 ASSISTment Problem Set ID# 5163

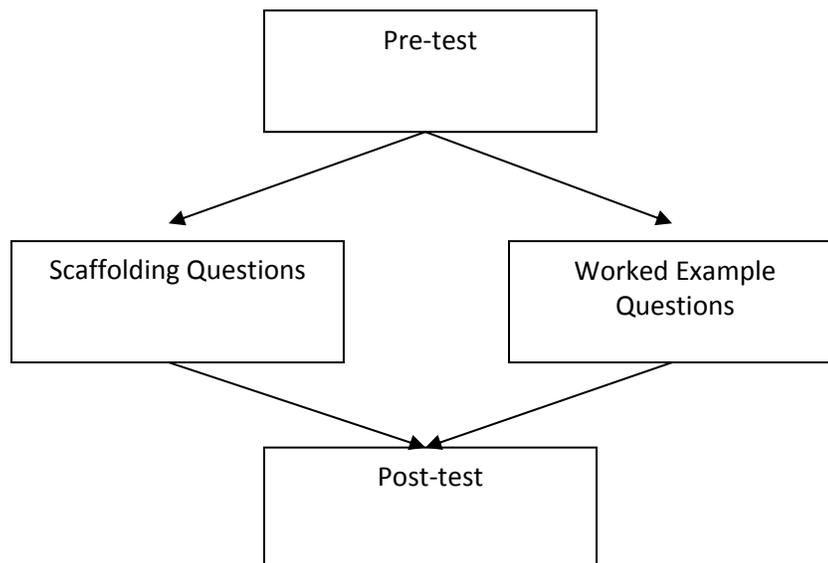
The purpose of our project is to compare the difference in efficiency between scaffolding questions and worked example questions. To achieve this purpose, a well conducted experiment is extremely important.

In ASSISTment program, the experiment can be implemented by using the problem set feature, which allows us to add problems built into a structure. The interface of problem set in ASSISTment builder is shown below.

Figure 5-19: Problem Set Interface

In this interface, we can add sections, which is basically a subset of problems. And then, we can choose the problem set type, which includes linear, random order and choose conditions, etc.

In our case, since we are comparing two categories, it is important for us to straighten out how to construct each experiment. The structure of an experiment should look one below.



So the overall experiment should be linear, with the body, scaffolding and worked example questions, being choose condition, which means a student has equal chance of getting either scaffolding questions or worked example questions.

Therefore, the top level of a problem set should look like the picture below.

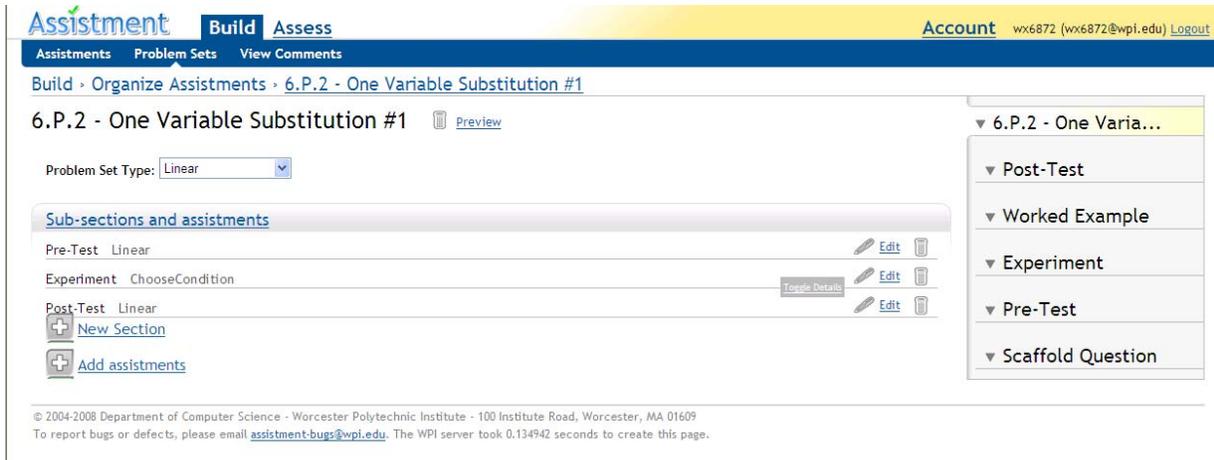


Figure 5-20: Top Level of Problem Set # 5163

And for each of the sections in the picture above, Pre-Test, Experiment and Post-Test, they should be linear, since we want the students to do the problems in the same order.



Figure 5-21: Pre-Test of Problem Set # 5163

Assistment **Build** Assess Account wx6872 (wx6872@wpi.edu) Logout

Assistments Problem Sets View Comments

Build > Organize Assistments > 6.P.2 - One Variable Substitution #1

Experiment

Problem Set Type: ChooseCondition

Sub-sections and assistments

Scaffold Question Linear  [Edit](#) 

Worked Example Linear  [Edit](#) 

 [New Section](#)

 [Add assistments](#)

- ▼ 6.P.2 - One Varia...
- ▼ Post-Test
- ▼ Worked Example
- ▼ Experiment
- ▼ Pre-Test
- ▼ Scaffold Question

© 2004-2008 Department of Computer Science - Worcester Polytechnic Institute - 100 Institute Road, Worcester, MA 01609
To report bugs or defects, please email assistment-bugs@wpi.edu. The WPI server took 0.134942 seconds to create this page.

Figure 5-22: Experiment of Problem Set # 5163

Assistment **Build** Assess Account wx6872 (wx6872@wpi.edu) Logout

Assistments Problem Sets View Comments

Build > Organize Assistments > 6.P.2 - One Variable Substitution #1

Scaffold Question

Problem Set Type: Linear

Sub-sections and assistments

25854 - Grade_6_Y_04_Q_12 Assistment [Preview](#)  [Edit](#) 

25347 - Grade_6_Y_07_Q_5 Assistment [Preview](#)  [Edit](#) 

25699 - G6_2002_14 Assistment [Preview](#)  [Edit](#) 

 [New Section](#)

 [Add assistments](#)

- ▼ 6.P.2 - One Varia...
- ▼ Post-Test
- ▼ Worked Example
- ▼ Experiment
- ▼ Pre-Test
- ▼ Scaffold Question

© 2004-2008 Department of Computer Science - Worcester Polytechnic Institute - 100 Institute Road, Worcester, MA 01609
To report bugs or defects, please email assistment-bugs@wpi.edu. The WPI server took 0.134942 seconds to create this page.

Figure 5-23: Scaffolding Question of Problem Set # 5163

Assistment **Build** Assess Account wx6872 (wx6872@wpi.edu) Logout

Assistments Problem Sets View Comments

Build > Organize Assistments > 6.P.2 - One Variable Substitution #1

Worked Example

Problem Set Type: Linear

Sub-sections and assistments

26269 - Grade_06_Y_04_Q_12_WO	Assistment	Preview	Edit	
26129 - Grade_06_Y_07_Q_05_WO	Assistment	Preview	Edit	
26252 - G6_2002_14_Worked	Assistment	Preview	Edit	

[New Section](#)

[Add assistments](#)

- ▼ 6.P.2 - One Varia...
- ▼ Post-Test
- ▼ **Worked Example**
- ▼ Experiment
- ▼ Pre-Test
- ▼ Scaffold Question

© 2004-2008 Department of Computer Science - Worcester Polytechnic Institute - 100 Institute Road, Worcester, MA 01609
To report bugs or defects, please email assistment-bugs@wpi.edu. The WPI server took 0.134942 seconds to create this page.

Figure 5-24: Worked Example Questions of Problem Set # 5163

Assistment **Build** Assess Account wx6872 (wx6872@wpi.edu) Logout

Assistments Problem Sets View Comments

Build > Organize Assistments > 6.P.2 - One Variable Substitution #1

Post-Test

Problem Set Type: Linear

Sub-sections and assistments

26270 - Grade_06_Y_04_Q_18_WO	Assistment	Preview	Edit	
-------------------------------	------------	-------------------------	----------------------	--

[New Section](#)

[Add assistments](#)

- ▼ 6.P.2 - One Varia...
- ▼ **Post-Test**
- ▼ Worked Example
- ▼ Experiment
- ▼ Pre-Test
- ▼ Scaffold Question

© 2004-2008 Department of Computer Science - Worcester Polytechnic Institute - 100 Institute Road, Worcester, MA 01609
To report bugs or defects, please email assistment-bugs@wpi.edu. The WPI server took 0.134942 seconds to create this page.

Figure 5-25: Post-Test of Problem Set # 5163

6 Study

6.1 Hypotheses

The ASSISTment System is effective, in other words students showed learning by using the system. Moreover, using scaffold questions is more effective than using worked examples in tutoring students.

6.2 Method

6.2.1 Experiment Design

Our team worked with the *Patterns, Relations and Algebra* section of MCAS mathematics. We first built ASSISTment questions of scaffold type for all problems in the section from the year 2001 to 2007. Next, we built corresponding ASSISTments of worked example type as well. After building both scaffold and worked examples we grouped scaffold worked example pairs based on their type. We had categorized the questions into the following types:

- Fact Family
- One Variable Substitution
- Number Pattern (Value)
- Number Pattern (Relation)
- Relation from graph
- Graph from relation
- Relation from Table
- Table from Relation
- Value from graph

- Interpreting Picture
- Finding Value (Word Problem)
- Finding Equation
- Finding Value
- Value from Table

The problem sets were then created according to the above groups which were used to assess the learning of the students.

6.2.2 Experiment Participants

We administered the ASSISTment in a number of schools. Table 6.1 shows the name of the schools that we approached and the number of students from each school that participated. :

Table 6-1: List of schools that participated in our study

Name of School	Student Count
Burncoat Middle School	1
Forest Grove Middle School	40
Memorial Middle Fitchburg	3
Oak Middle School	4
Worcester East Middle School	290

These schools are from the Shrewsbury and Worcester area.

6.2.3 Data Collection

The problem sets that we created were administered to the students at the schools shown in table 6.1. The ASSISTment system is capable of recording the actions of the students. The answers that the student type or select in a session are all logged. From the log we extracted the data of the students' performance.

Using a program an excel spread sheet was generated from the log file. The spread sheet consisted of the following information:

- Problem set id
- ASSISTment id
- Teacher
- School
- Student ID
- Student Name
- Student IRT
- Pre-test answer
- Problem answers and scores
- Post-test answer and scores
- Problem set type (Scaffold or Worked Example)
- Date

6.3 Data Analysis

Once we had the excel sheet in our hands we were able to do some analysis. First we scored the pre test of the students. Students who had a right answer for any question without taking any help received a score of 1 and students who entered the wrong answer or used the help provided received a score of 0.

The gain of the students in every problem set was also calculated. The gain is simply the score for the pre-test subtracted from the post-test.

We also added the following filters to our data in order to make sure there wasn't any bias in our data:

- Students who got both pre-test and post-test correct were not considered
- Students who didn't input any answer for pre-test got a score of 0 for the pre-test
- Students who didn't input any answer for post-test were not considered

6.3.1 Overall Gain

In order to see if there was overall gain using the ASSISTment System, we calculated the average gain of each student. Next, we performed a two-sample t-test comparing the average gain with zero in order to check for the null hypothesis that the students don't learn at all. Table 6.2 shows the result of the t-test.

Table 6-2: t-Test, Two-Sample Assuming Unequal variances, for overall gain

	<i>Gain</i>	<i>Variable 2</i>
Mean	0.396848	0
Variance	0.192073	0
Observations	105	105
Hypothesized Difference	Mean	0
df	104	
t Stat	9.278662	
P(T<=t) one-tail	1.37E-15	
t Critical one-tail	1.659637	
P(T<=t) two-tail	2.75E-15	
t Critical two-tail	1.983037	

From the table above we can see that we had 105 observations. Also, the p-value of the test is very small, less than 0.05 meaning that we can reject the null hypothesis and confidently conclude that there was learning using the system. The mean gain indicates there was a 39.6% of learning.

6.3.2 Scaffolding Gain

Next we looked at the gain of the scaffold questions to check their effectiveness. For this purpose we considered only the students who attempted the scaffolding questions. Similar to the overall gain, we performed a two-sample t-test comparing the average gain with zero in order to check for the null hypothesis. The result of the test is shown in table 6.3

Table 6-3: t-Test, Two-Sample Assuming Unequal variances, for scaffold gain

	<i>Scaffold gain</i>	<i>Variable 2</i>
Mean	0.467948718	0
Variance	0.250582751	0
Observations	78	78
Hypothesized Mean Difference	0	
df	77	
t Stat	8.256005566	
P(T<=t) one-tail	1.63305E-12	
t Critical one-tail	1.664884538	
P(T<=t) two-tail	3.2661E-12	
t Critical two-tail	1.991254363	

From the table above we can see that we had 78 observations. Also, the p-value of the test is very small, less than 0.05 meaning that we can reject the null hypothesis and confidently conclude that there was learning due to scaffold questions. The mean gain indicates there was a 46.7% of learning.

6.3.3 Worked Example Gain

Also, we looked at the gain of the scaffold questions to check their effectiveness. For this purpose we considered only the students who attempted the worked examples. We again performed a two-sample t-test comparing the average gain with zero in order to check for the null hypothesis. The result of the test is shown in table 6.4

Table 6-4: t-Test, Two-Sample Assuming Unequal Variances, for worked example gain

	<i>Worked example gain</i>	<i>Variable 2</i>
Mean	0.345882353	0
Variance	0.309787737	0
Observations	85	85
Hypothesized Mean Difference	0	
df	84	
t Stat	5.729355311	
P(T<=t) one-tail	7.65933E-08	
t Critical one-tail	1.66319668	
P(T<=t) two-tail	1.53187E-07	
t Critical two-tail	1.988609629	

From the table above we can see that we had 85 observations. Also, the p-value of the test is very small, less than 0.05 meaning that we can reject the null hypothesis and confidently conclude that there was learning due to worked examples. The mean gain indicates there was a 34.5% of learning.

6.3.4 Comparison between Scaffolding and Worked Example Gain

We compared scaffold and worked examples in order to verify our second hypothesis that scaffold questions are more effective than worked examples. For this we considered only those **students who attempted both scaffolding and worked example** questions. We performed a two-sample t-test comparing the average gain between gain of scaffold questions and the gain of worked examples. The result of the test is shown in table 6.5

Table 6-5: t-Test, Two-Sample Assuming Unequal Variances, for comparison between scaffold questions and worked examples

	<i>Scaffold Gain</i>	<i>Worked example gain</i>
Mean	0.494252874	0.334483
Variance	0.260443974	0.275476
Observations	58	58
Hypothesized Difference	Mean 0	
df	114	
t Stat	1.662108904	
P(T<=t) one-tail	0.04961917	
t Critical one-tail	1.65832997	
P(T<=t) two-tail	0.099238339	
t Critical two-tail	1.980992234	

From the table above we can see that we had 58 observations. In this test the null hypothesis cannot be completely rejected since the p-value is greater than 0.05. However the p-value of 0.09 indicates that the result we got might be because of 9.9% chance which is small enough value. Hence we can rely confidently enough in the results of the test. It indicates that the mean gain from scaffold questions and

worked examples are 49.4% and 33.4% respectively. Therefore it can be concluded that there was more learning from scaffold questions than the worked examples.

6.3.5 Comparison based on IRT

Here we split the data into two groups based on the student IRT, students with high IRT and students with low IRT. Students with IRT greater or equal to 0.1991 were put into the high group and the rest in the low group. The IRT value of 0.1991 was the median value and was chosen so as to equally distribute students into two groups. We then compared scaffold and worked examples gain in two groups. We performed two-sample t-tests comparing the average gain in both the groups.

Table 6.6 shows the result of the t-test performed on the group with low IRT and table 6.7 shows the result of the t-test performed on the group with high IRT.

Table 6-6: t-Test: Two-Sample Assuming Unequal Variances, for comparing scaffold and worked examples in the group with low IRT

	<i>Variable 1</i>	<i>Variable 2</i>
Mean	0.345238095	0.24047619
Variance	0.248824221	0.280440917
Observations	28	28
Hypothesized Mean Difference	0	
df	54	
t Stat	0.761983834	
P(T<=t) one-tail	0.224692528	
t Critical one-tail	1.673564907	
P(T<=t) two-tail	0.449385055	
t Critical two-tail	2.004879275	

From the table above we can see that we had 28 observations. It indicates that the mean gain from scaffold questions and worked examples are 34.5% and 24.0% respectively meaning there was more learning from scaffold questions than the worked examples. However, since the p-value is greater than 0.05, the results from the test cannot be considered as conclusive as we expected. The test conclusion is 44.9% by chance. If we conduct this test multiple times and with many students, we might get more conclusive data.

Table 6-7: t-Test: Two-Sample Assuming Unequal Variances, for comparing scaffold and worked examples in the group with high IRT

	<i>Variable 1</i>	<i>Variable 2</i>
Mean	0.64047619	0.520833333

Variance	0.23659318	0.080527263
Observations	28	28
Hypothesized Mean Difference	0	
df	43	
t Stat	1.124226119	
P(T<=t) one-tail	0.133577021	
t Critical one-tail	1.681070704	
P(T<=t) two-tail	0.267154042	
t Critical two-tail	2.016692173	

From the table above we can see that we had 28 observations. It indicates that the mean gain from scaffold questions and worked examples are 64.0% and 52.0% respectively meaning there was more learning from scaffold questions than the worked examples. However, since the p-value is greater than 0.05, the results from the test cannot be considered as conclusive as we expected. The test result is 26.7% by chance. If we conduct this test multiple times and with many students, we might get more conclusive data.

From the comparison of high and low IRT students it seems that the students with high IRT are more likely to learn from the ASSISTment. In both cases, students are more likely to learn from the scaffold questions than the worked examples.

6.3.6 Comparison in a particular problem set

Finally we decided to look at a particular problem set and see if the result in the problem set is consistent with the overall data. Problem set 5191 had the most number of participants, 36. As such we decided to look at the results of the problem set.

We first looked at the gain of the problem set. Table 6.8 shows the result of a two-sample t-test comparing the average gain with zero in order to check for the null hypothesis.

Table 6-8: t-Test: Two-Sample Assuming Unequal Variances, for analyzing the overall gain of problem set 5191

	<i>Variable 1</i>	<i>Variable 2</i>
Mean	0.388888889	0.055555556
Variance	0.251633987	0.055555556
Observations	18	18
Hypothesized Mean Difference	0	
df	24	
t Stat	2.551595246	
P(T<=t) one-tail	0.008756709	
t Critical one-tail	1.710882067	
P(T<=t) two-tail	0.017513417	
t Critical two-tail	2.063898547	

From the table above we can see that we had total of 18 observations. It indicates that the mean gain from scaffold questions and worked examples are 38.8% and 5.55% respectively meaning there was more learning from scaffold questions and no learning at all from the worked examples. Since the p-value of the test is very small, less than 0.05 meaning that we can reject the null hypothesis and confidently rely on the conclusion of the test.

6.3.7 Comparison between low IRT student and high IRT student in a problem set

Table 6-9: t-Test: Two-Sample Assuming Unequal Variances, for comparing scaffold and worked examples for a problem set in the group with low IRT

	<i>Variable 1</i>	<i>Variable 2</i>
Mean	0.166666667	0.090909091
Variance	0.166666667	0.090909091
Observations	6	11
Hypothesized Mean Difference	0	
df	8	
t Stat	0.399043442	
P(T<=t) one-tail	0.350150687	
t Critical one-tail	1.859548033	
P(T<=t) two-tail	0.700301374	
t Critical two-tail	2.306004133	

From the table above we can see that we had total of 18 observations; 6 of them took scaffold questions and 11 took worked example. It indicates that the mean gain from scaffold questions and worked examples are 16.6% and 0.09% respectively meaning there was more learning from scaffold questions than the worked examples. However, since the p-value is greater than 0.05, the results from the test cannot be considered as conclusive as we expected. The test conclusion is 70.0% by chance. If we conduct this test for different problem set we might get different and more conclusive data.

Table 6-10: : t-Test: Two-Sample Assuming Unequal Variances, for comparing scaffold and worked examples for a problem set in the group with high IRT

	<i>Variable 1</i>	<i>Variable 2</i>
Mean	0.5	0
Variance	0.277777778	0
Observations	10	6
Hypothesized Mean Difference	0	
df	9	
t Stat	3	
P(T<=t) one-tail	0.007478182	
t Critical one-tail	1.833112923	
P(T<=t) two-tail	0.014956364	
t Critical two-tail	2.262157158	

From the table above we can see that we had total of 16 observations; 10 of them took scaffold questions and 6 took worked examples. It indicates that the mean gain from scaffold questions and worked examples are 50.0% and 0.00% respectively meaning there was more learning from scaffold questions and no learning at all from the worked examples. Since the p-value of the test is very small, less than 0.05 meaning that we can reject the null hypothesis and confidently rely on the conclusion of the test.

7 Suggestions

Although our project is complete and successful, there are still some improvements can be made to perfect the experiment.

Firstly, due to time limit, some of our built experiments were not used by the students. A larger pool of problems could have provided stronger data to analyze. The same applies to the number of students, too. We only have the data from this year's 6th graders from a couple of schools in Worcester. As ASSISTment is becoming popular, we expect the number of students using our system will increase each year. And if we can collect the data in several years' period, our experiment can be more statistically significant.

Besides, as mentioned in previous sections, it is still necessary for ASSISTment system to improve and develop. After comparing with several other online tutoring systems for MCAS test, we see rooms where our system can improve.

Moreover, we were forced to discard some data as well due to the fact that some students had not completed the problem sets. It would be better in the future if we could ensure that the students complete the problem sets once they start it.

Some improvements should be made in the ASSISTment system in detecting the experiment type, as we had cases where the experiment type of the problem set was not defined. As such, we had to discard those data as well due to their ambiguity.

8 Conclusions

From the analysis of our data on Patterns, Relations and Algebra we were able to conclude that both the scaffold questions and worked examples helped students in learning and developing problem solving skills. It also showed that that scaffolding approach was comparatively better than worked example approach.

However there are various parameters that were ignored in the analysis such as bias in the data. For instance there were cases when students did not enter any value for the pretest question and they were give zero score for the pretest. When students click on hints without inputting answer, it is considered wrong but the system doesn't warn students about the scoring system which might bias data resulting increase in the average gain.

Similarly, the post test question also has hints in it and if any student clicks on hint a score of zero is given. After following through the intermediate questions where students were encouraged to use hints, they might have considered the post test question as one of those and hence clicked on hints and got zero gain score. This might have biased the data resulting decrease in average gain. Also many students did not enter answer for the post test question which might be because they didn't have enough time. If they were given enough time they might have answered correctly.

The other constraint we had in our study was time. Although we had many problem sets ready to be used classes were running in different chapters and our problem sets could not be tested. Had we got all our problem sets used, we could have got more data to analyze that could have made our conclusions more authentic.

Also, the environment under which the test was conducted was not as ideal as expected. Though we wanted students to work independently occasional assistance from peers and teachers were inevitable.

Also there might be students who were not much interested in the ASSISTment system. Those students might have just clicked next buttons to finish the problem sets hence corrupting our data.

Thirdly, we noticed that we had more data for worked examples as compared to scaffold questions. Worked examples generally consume less time as the students have to go through a single example and have fewer number of clicks. Scaffolds on the other hand, have sub questions which demand more time for reading as well as solving and clicking. As such worked examples were completed in a shorter time than scaffold questions bringing about the difference in the count of the two experiment types.

In summary, our experimental data could have been biased on either side and given equal possibility of both favorable and unfavorable cases we can confidently overlook the effect of bias in data. This leads to a very strong conclusion that the ASSISTment system is very effective regardless of the approach taken, scaffolding questions or worked examples, though the scaffolding approach proved to be much more effective than the worked examples.

9 References

About Assistment.org. (n.d.). Retrieved May 14, 2008, from Assistment:
<http://www.assistment.org/project/about.html>

Unkown. (2007, October 12). *About MCAS*. Retrieved May 14, 2008, from Massachussets Department of Elementary and Secondary Education: <http://www.doe.mass.edu/mcas/about1.html?faq=1>

10 Appendix A: Data Tables

10.1 A.1 Data Table for Overall Gain.

Student ID	-1	0	1	Average of Gain
52617	-1	0		-0.5
52622		0		0
52625		0		0
52630			1	1
52632		0	1	0.333333333
52633		0		0
52639		0		0
52646		0		0
52653		0		0
52663		0		0
52664	-1		1	0
52672			1	1
52677			1	1
52679		0		0
53665			1	1
53746		0		0
53950		0	1	0.5
54030		0		0
55175		0	1	0.5
55185			1	1
55188			1	1
55601			1	1
55602	-1			-1
55603			1	1
55604		0	1	0.333333333
55606		0	1	0.666666667
55608			1	1
55611		0	1	0.5
55612		0	1	0.5
55613		0	1	0.5
55614		0	1	0.5
55616	-1	0	1	0.25
55617			1	1
55623			1	1
55624		0	1	0.166666667
55625		0	1	0.2
55626		0	1	0.666666667

55627		0	1	0.285714286
55628	-1	0		-0.5
55629		0	1	0.75
55630		0	1	0.5
55631	-1	0	1	0
55632		0	1	0.5
55633		0	1	0.25
55635	-1			-1
55637		0	1	0.666666667
55638	-1	0	1	0
55639			1	1
55640			1	1
55641	-1		1	0
55642		0	1	0.666666667
55643		0	1	0.333333333
55651		0	1	0.666666667
55652		0		0
55653		0	1	0.25
55654		0	1	0.75
55655			1	1
55656			1	1
55657		0	1	0.5
55658			1	1
55659	-1	0	1	0.2
55662		0		0
55663		0		0
55664		0		0
55665		0	1	0.333333333
55669		0	1	0.5
55671		0	1	0.333333333
55673		0	1	0.4
55675		0	1	0.6
55677		0	1	0.5
55680		0	1	0.666666667
55684		0	1	0.5
55687		0		0
55690			1	1
55691		0	1	0.166666667
55692			1	1
55693		0		0
55695		0		0
55696			1	1
55698	-1	0	1	0

55699		0	1	0.5
55700		0	1	0.2
55701			1	1
55702	-1	0	1	-0.2
55706		0	1	0.5
55712		0	1	0.333333333
55842			1	1
55854		0		0
56576		0	1	0.333333333
56577		0	1	0.333333333
57805		0	1	0.5
58606		0	1	0.5
59803		0		0
59806		0	1	0.333333333
60398		0	1	0.666666667
60489		0	1	0.5
61776		0		0
62333		0	1	0.5
62631		0	1	0.4
62711		0	1	0.333333333
63857		0		0
63858		0		0
63860			1	1
64645		0		0
64886			1	1
Grand Total	-1	0	1	0.367132867

10.2 A.2 Data Table for Scaffolding Gain.

Student ID	Average of Gain
52617	0
52622	0
52632	0
52653	0
52664	-1
52672	1
53665	1
53746	0
53950	0
54030	0
55175	0
55603	1
55604	1
55606	0.5
55608	1
55611	0.666666667
55612	1
55614	0
55616	-1
55617	1
55624	0.5
55625	0
55626	1
55627	0
55629	1
55630	0.666666667
55631	0.5
55632	0.5
55633	1
55637	0
55638	0
55639	1
55640	1
55641	1
55642	1
55643	1
55651	1
55653	0.5
55654	0.5

55655	1
55656	1
55657	1
55658	1
55659	0.333333333
55662	0
55663	0
55664	0
55665	0.333333333
55669	0.5
55671	0.5
55673	0.666666667
55675	0.666666667
55680	0.75
55684	0
55691	0.25
55692	1
55693	0
55695	0
55696	1
55699	0.666666667
55700	0.333333333
55702	-0.5
55712	0
56576	1
56577	1
57805	0.5
58606	0.5
59803	0
59806	1
60398	1
60489	1
61776	0
62333	0
62631	0.666666667
62711	1
63857	0
63858	0
64645	0
Grand Total	0.444444444

10.3 A.3 Data Table for Worked Example Gain.

Student ID	Average of Gain
52617	-1
52625	0
52630	1
52632	1
52633	0
52639	0
52646	0
52663	0
52664	1
52677	1
52679	0
53950	1
55175	1
55185	1
55188	1
55601	1
55602	-1
55604	0
55606	1
55608	1
55611	0
55612	0
55613	0.5
55614	1
55616	0.666666667
55623	1
55624	0
55625	0.5
55626	0
55627	0.333333333
55628	-0.5
55629	0.666666667
55630	0
55631	-1
55632	0.5
55633	0
55635	-1
55637	1
55638	0

55639	1
55640	1
55641	-1
55642	0.5
55643	0.2
55651	0.5
55652	0
55653	0
55654	1
55655	1
55656	1
55657	0
55659	0
55663	0
55669	0.5
55671	0
55673	0
55675	0.5
55677	0.5
55680	0.5
55684	1
55687	0
55690	1
55691	0
55695	0
55698	0
55699	0
55700	0
55701	1
55702	0
55706	0.5
55712	1
55842	1
55854	0
56576	0.2
56577	0
58606	0.5
59806	0
60398	0.333333333
60489	0
61776	0
62333	1
62631	0

62711	0
63860	1
64886	1
Grand Total	0.298013245

10.4 A.4 Data Table for Comparison between Scaffolding and Worked Example

Gain.

Student ID	Experiment Gain		
	Scaffold Gain	WE Gain	Average of Gain
52617	0	-1	-0.5
52632	0	1	0.333333333
52664	-1	1	0
53950	0	1	0.5
55175	0	1	0.5
55604	1	0	0.333333333
55606	0.5	1	0.666666667
55608	1	1	1
55611	0.666666667	0	0.5
55612	1	0	0.5
55614	0	1	0.5
55616	-1	0.666666667	0.25
55624	0.5	0	0.166666667
55625	0	0.5	0.2
55626	1	0	0.666666667
55627	0	0.333333333	0.285714286
55629	1	0.666666667	0.75
55630	0.666666667	0	0.5
55631	0.5	-1	0
55632	0.5	0.5	0.5
55633	1	0	0.25
55637	0	1	0.666666667
55638	0	0	0
55639	1	1	1
55640	1	1	1
55641	1	-1	0
55642	1	0.5	0.666666667
55643	1	0.2	0.333333333

55651	1	0.5	0.666666667
55653	0.5	0	0.25
55654	0.5	1	0.75
55655	1	1	1
55656	1	1	1
55657	1	0	0.5
55659	0.333333333	0	0.2
55663	0	0	0
55669	0.5	0.5	0.5
55671	0.5	0	0.333333333
55673	0.666666667	0	0.4
55675	0.666666667	0.5	0.6
55680	0.75	0.5	0.666666667
55684	0	1	0.5
55691	0.25	0	0.166666667
55695	0	0	0
55699	0.666666667	0	0.5
55700	0.333333333	0	0.2
55702	-0.5	0	-0.2
55712	0	1	0.333333333
56576	1	0.2	0.333333333
56577	1	0	0.333333333
58606	0.5	0.5	0.5
59806	1	0	0.333333333
60398	1	0.333333333	0.666666667
60489	1	0	0.5
61776	0	0	0
62333	0	1	0.5
62631	0.666666667	0	0.4
62711	1	0	0.333333333
Grand Total	0.463636364	0.289473684	0.375

10.5 A.5 Data Table for Comparison based on IRT.

Student IRT	Experiment Gain		
	Scaffold Gain	WE Gain	Average of Gain
-1.653252	0	0	0
-1.236281	0	0	0
-1.232065	0.666666667	0	0.5
-1.126415	0.666666667	0	0.5
-0.755814	0	1	0.333333333
-0.741227	1	0	0.333333333
-0.607127	1	0.2	0.333333333
-0.551507	0	0.333333333	0.285714286
-0.533274	0	0	0
-0.475495	0	0	0
-0.462872	1	0.5	0.666666667
-0.461974	0.666666667	0.5	0.6
-0.456329	0	1	0.5
-0.452871	1	0.5	0.666666667
-0.446089	0.333333333	0	0.2
-0.445209	0.5	-1	0
-0.445104	-0.5	0	-0.2
-0.444449	-1	1	0
-0.444436	0	-1	-0.5
-0.444255	0.333333333	0	0.2
-0.443957	0.5	1	0.75
-0.443784	0	1	0.5
-0.440946	1	0.2	0.333333333
-0.438874	0.5	0	0.25
-0.376833	0.5	0.5	0.5
-0.334158	0.5	0	0.333333333
-0.137203	0	1	0.666666667
0.1991	1	0	0.666666667
0.306214	0.666666667	0	0.4
0.317633	0.5	0.5	0.5
0.368466	1	0	0.5
0.394091	1	0.333333333	0.666666667
0.415345	1	0	0.333333333
0.415696	1	0	0.25
0.435944	0.5	0.5	0.5
0.439992	1	1	1
0.442304	1	0	0.5
0.443792	0.5	0	0.166666667

0.444285	1	0	0.333333333
0.444495	0.25	0	0.166666667
0.445161	0	0.5	0.2
0.445355	1	1	1
0.446576	-1	0.666666667	0.25
0.455098	1	-1	0
0.458386	1	0	0.5
0.467164	1	1	1
0.476295	1	1	1
0.480621	0.666666667	0	0.5
0.519902	0	1	0.333333333
0.858939	0.75	0.5	0.666666667
1.247751	1	0.666666667	0.75
1.316329	0	1	0.5
1.324535	0.5	1	0.666666667
1.333211	0	1	0.5
1.365849	1	1	1
Grand Total	0.463636364	0.289473684	0.375

10.6 A.6 Data Table for Comparison in a particular problem set.

Student IRT	Experiment Gain		
	Scaffold Gain	WE Gain	Average of Gain
-1.653252	0	0	0
-1.236281		0	0
-1.232065	0		0
-0.741227		0	0
-0.607127		0	0
-0.551507		0	0
-0.533274	0		0
-0.461974	0		0
-0.452871		0	0
-0.446089		0	0
-0.445104		0	0
-0.444255	1		1
-0.443957		1	1
-0.440946		0	0
-0.438874		0	0
-0.376833	0		0
-0.334158		0	0
-0.137203	0		0
0.306214		0	0
0.317633	0		0
0.394091	1		1
0.439992	1		1
0.442304		0	0
0.443792		0	0
0.444285		0	0
0.444495	1		1
0.445161	0		0
0.445355	1		1
0.476295	1		1
0.519902	0		0
0.858939		0	0
1.324535	0		0
N\A	0.5	0	0.3333333333
Grand Total	0.388888889	0.055555556	0.222222222

11 Appendix B: Problem Set Details

# of Q	Problem Set ID#	Groups	PreTest ID#	Post Test ID#	Scaffold Experiment ID#	Worked Experiment ID#
4	5160	6 P.3 Fact Family	26476	26260	26334	26376
					25413	26143
					26367	26402
4	5163	6.P.2 - One Variable Substitution #1	26483	26270	25854	26269
					25347	26129
					25699	26252
5	5166	6.P.2 - One Variable Substitution #2	26499	26126	25402	26125
					25977	26394
					25975	26246
					26366	26401
3	5189	6.P.1 - Number Pattern (Value) # 1	26529	26328	23998	26147
					25456	26393
3	5190	6.P.1 - Number Pattern (Value) # 2	26530	26395	26096	26396
					26357	26383
3	5164	6.P.1 - Number Pattern (Relation)	26484	26276	26386	26387
					25616	26372
3	5162	6.P.6 - Relation from graph	26481	26398	25908	26326
					25862	26278
3	5157	6.P.4 - Graph from relation	26528	26385	25968	26350
					26377	26379
5	5156	6.P.7 Relation from Table	26477	26244	25857	26306
					26100	26230
					26098	26399
					26111	26313

3	5150	6.P.4 - Table from Relation	26482	26307	25328	26231
					25879	26243
4	5191	6.P.5 - Value from graph	26535	26404	26101	26327
					25372	26273
					25694	26262
4	5192	6.P.5 - Value from graph(2)	26536	26282	25754	26281
					25599	26279
					26341	26374
3	5140	6.P.6 - Interpreting Picture	26405	26381	25839	26380
					25848	26382
3	5170	6.P.5 Finding Value (Word Problem)	26506	26508	25907	26314
					25592	26128
3	5161	6.P.4 Finding Equation	26507	26309	25875	26149
					26342	26375
6	5159	6.P.3 Finding Value	26478	26229	25640	26132
					25834	26266
3	5169	6.P.3 Finding Value	27242	26317	26097	26397
					26115	26259
3	5158	6.P.4 - Value from Table #1	26480	26265	25590	26131
					25552	26130
3	5168	6.P.4 - Value from Table #2	26500	26127	26109	26310
					26110	26311
9		Exception				

12 Appendix C: Scaffold Assistments

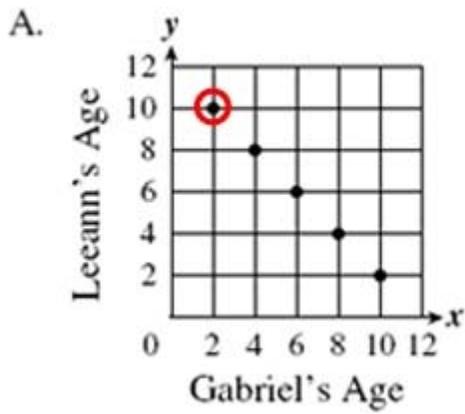
Submit Answer

Let's move on and figure out this problem

First let us learn how to read the graph.

Look at the circled dot in option A which is given below.

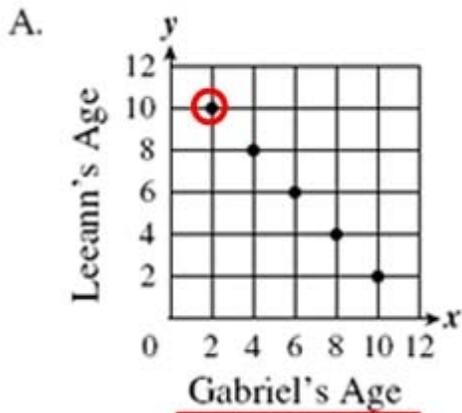
According to this dot, what is Gabriel's Age?



[Comment on this question](#)

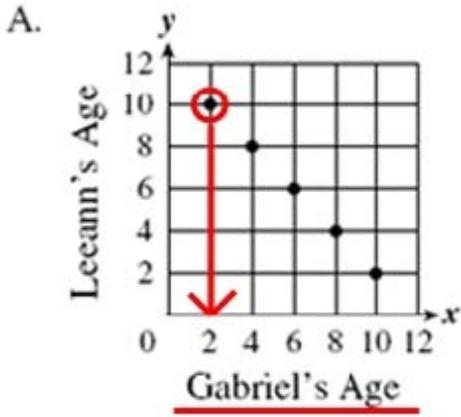
We need to find the age of Gabriel represented by the dot. So

we have to look at the axis that is labeled "Gabriel's age".



[Comment on this hint](#)

If we draw a straight line starting at the dot and all the way to the bottom, it will give us the age of Gabriel.



[Comment on this hint](#)

The red line intersects the bottom number line at 2, which must be Gabriel's age.

Type in 2.

[Comment on this hint](#)

Type your answer below (mathematical expression):

• 2

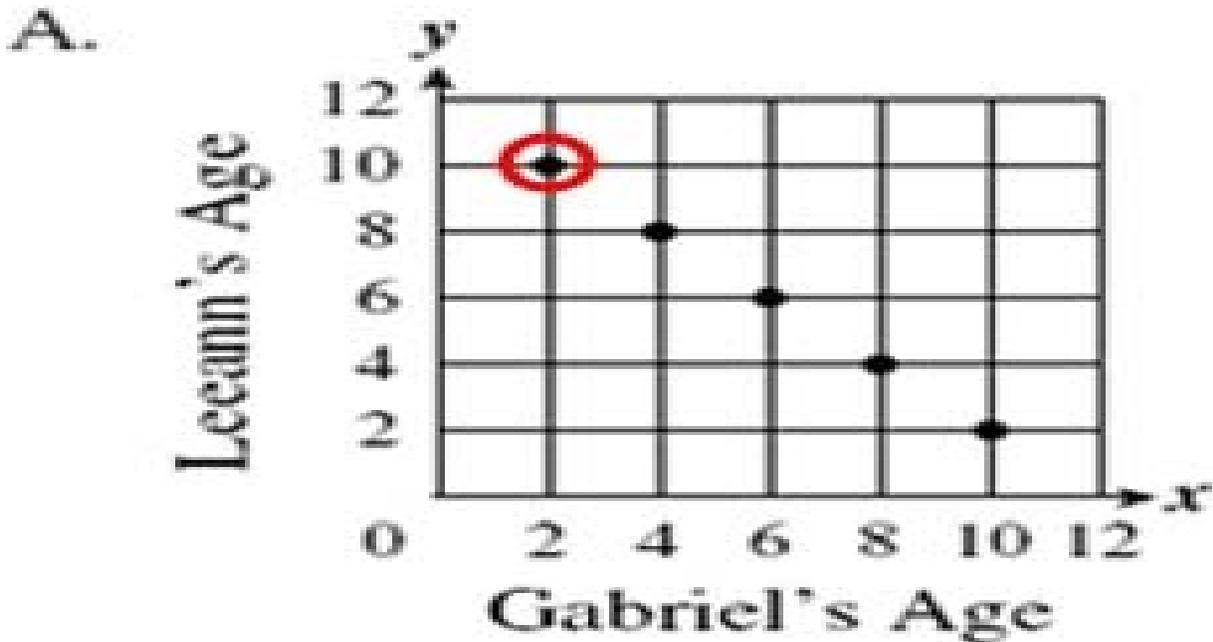
Submit Answer

Correct!

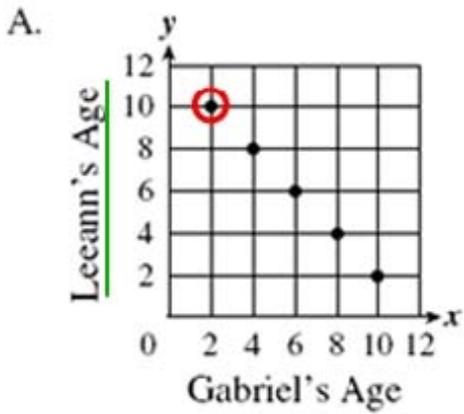
Now the circled dot tells us that Gabriel's age is 2. What about Leeann?

Look at option A with the circled dot again.

According to the dot, what is Leeann's age?

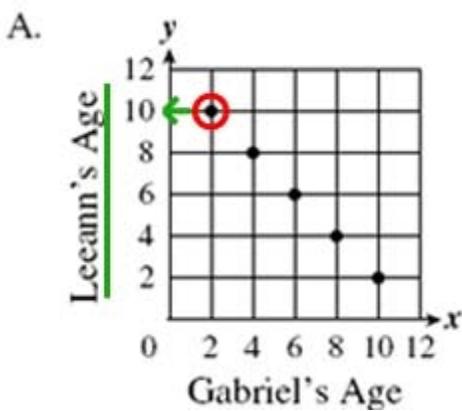


We need to find the Leeann's age represented by the dot. So we have to look at the axis that is labeled "Leeann's Age".



[Comment on this hint](#)

If we draw a straight line starting at the dot and all the way across to the side, it will give us Leeann's Age.



[Comment on this hint](#)

The green line intersects the side number line at 10, which must be Leeann's age.

Type in 10.

[Comment on this hint](#)

Type your answer below (mathematical expression):

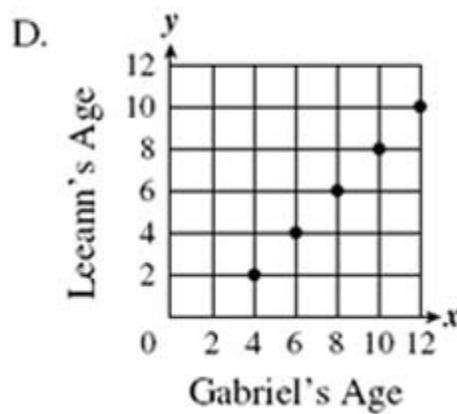
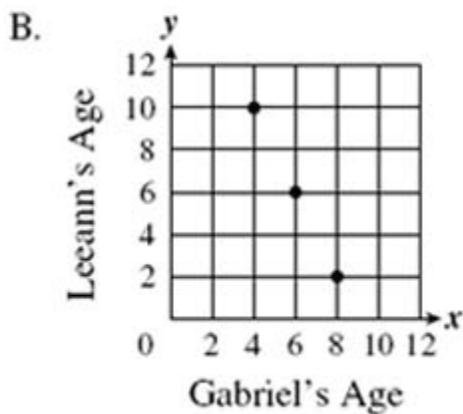
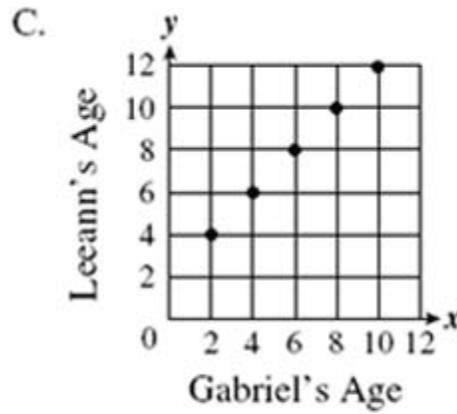
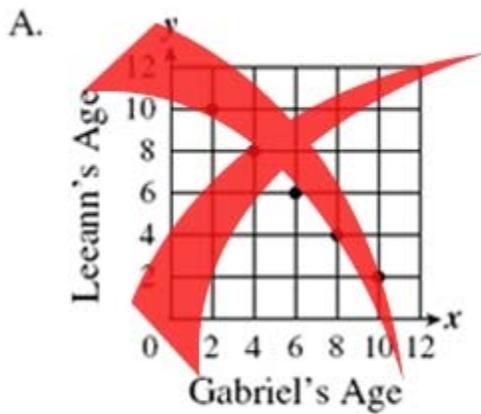
⌘10

Submit Answer

Correct!

So from the left-most dot of option A we can see that Gabriel's age is 2, when Leeann's age is 10.

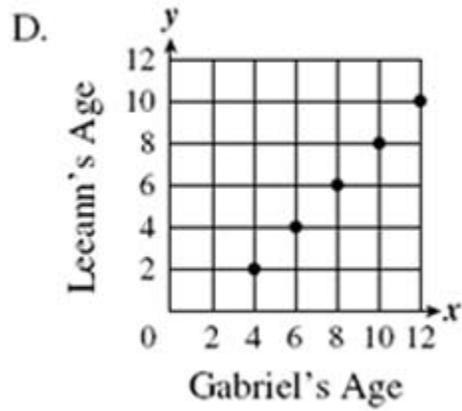
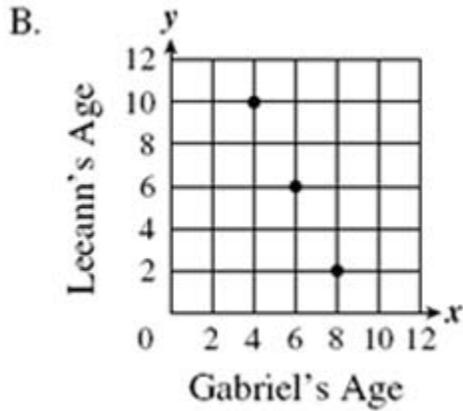
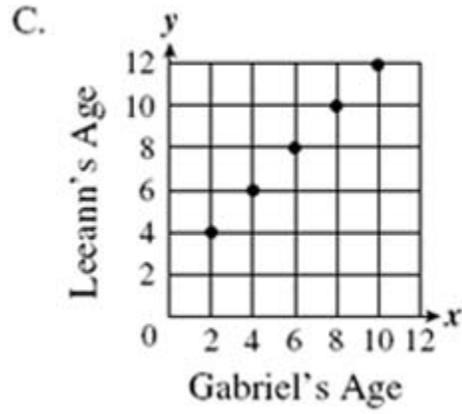
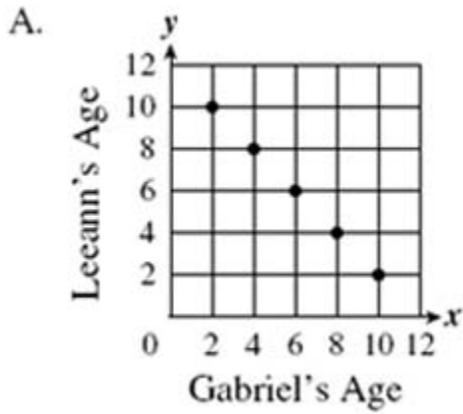
Thus we can see that in option A Leeann is older than Gabriel. But the question says that Gabriel is 2 years older than Leeann. Hence, **option A is not correct.**



We know option A is not correct. Now see if you can apply the process above and find the right answer. You should try to apply the process in more than one dot in each option.

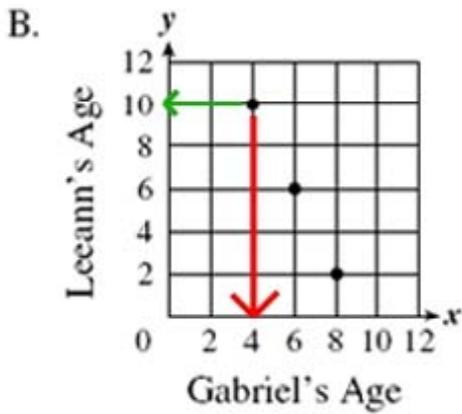
Gabriel is 2 years older than his sister, Leeann.

Which of the following graphs correctly represents the relationship between Gabriel's age and Leeann's age, in years?



[Comment on this question](#)

Let us see if option B is correct.



When we draw two lines from the left-most dot, one going straight down and the other to the right, we see that Leeann's age is 10 when Gabriel's age is 4.

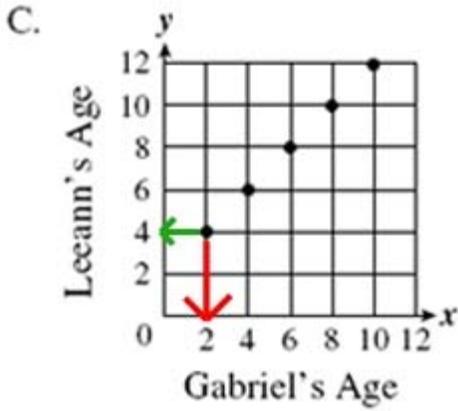
[Comment on this hint](#)

The question says Gabriel is 2 years older than Leeann, so option B does not correctly represent the

relationship between Gabriel and Leeann's age as here Leeann is older than Gabriel.

[Comment on this hint](#)

Let us see if option C is correct.



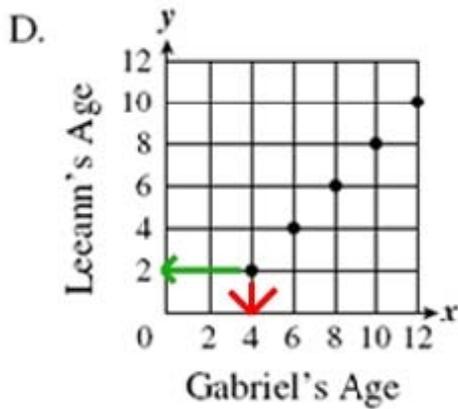
When we draw two lines from the left-most dot, one going straight down and the other to the right, we see that Leeann's age is 4 when Gabriel's age is 2.

[Comment on this hint](#)

The question says Gabriel is 2 years older than Leeann, so option C does not correctly represent the relationship between Gabriel's and Leeann's age as here Leeann is older than Gabriel.

[Comment on this hint](#)

From option D we can observe that Gabriel is 4 years old when Leeann is 2 years old.



[Comment on this hint](#)

$4 - 2 = 2$ So Gabriel is 2 years older than Leeann which is the relation stated in the question.

So option D has the right graph. Select option D.

[Comment on this hint](#)

Select one:

- A
- B
- C
- D

Submit Answer

Correct! You are done with this problem!

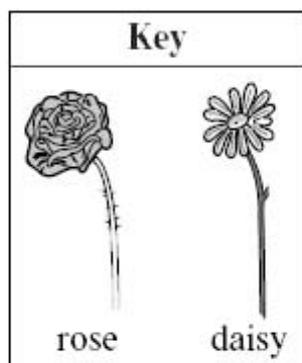
[Comment on this problem](#)

Assistment

Assistment #25745

You are previewing content.

A flower shop sells the two flower arrangements shown below.



Each rose has the same price, and each daisy has the same price. What is the price of one rose?

[Comment on this question](#)

Request Help

Type your answer below (mathematical expression):

Submit Answer Let's move on and figure

[Out this problem](#) The second arrangement has a higher cost than the first arrangement, so there is some difference between the two arrangements.

What is the difference between the two flower arrangements?



[Comment on this question](#)

This is how a daisy looks like:



Count the number of daisies in both the arrangements and see if they are different.

[Comment on this hint](#)

The first arrangement has 3 daisies and the second arrangement has 3 daisies as well.

So there is no difference in the number of daisies in the two arrangements.

[Comment on this hint](#)

This is how a rose looks like:



rose

Count the number of roses in both the arrangements and see if they are different.

[Comment on this hint](#)

The first arrangement has 1 rose while the second arrangement has 3 roses.

Thus, the second arrangement has 2 more roses than the first arrangement.

That is our answer so select B.

[Comment on this hint](#)

Select one:

- A. First arrangement has 2 more roses than the second arrangement.
- B. Second arrangement has 2 more roses than the first arrangement.
- C. First arrangement has 4 more daisies than the second arrangement.
- D. Second arrangement has 3 more daisies than the first arrangement.

Submit Answer

Correct!

The second arrangement has 2 more roses than the first arrangement. Also, the price of the second arrangement is more than the price of the first arrangement.

So the price of the two roses equal:

A.	Price of first arrangement	-	Price of second arrangement	Comment on this question
B.	Price of second arrangement	-	Price of first arrangement	
C.	Price of first arrangement	+	Price of second arrangement	
D.	Cannot say			

The increase in the price is due to the addition of the two roses.

[Comment on this hint](#)

The price of the 2 roses equals the difference (-) of the larger price minus the smaller price.

[Comment on this hint](#)

So, Price of the 2 roses = Price of second arrangement - Price of first arrangement

Select option B.

[Comment on this hint](#)

Select one:

- A.
- B.
- C.
- D.

Submit Answer Correct! Now, What

is the price of the two roses? [Comment](#)

[on this question](#)

Price of the 2 roses = Price of second arrangement - Price of first arrangement

[Comment on this hint](#)

Look at the given picture above to find the price of the two arrangements.

[Comment on this hint](#)

Price of the first arrangement is \$15 and the price of the second arrangement is \$27.

Price of 2 roses = \$27 - \$15

[Comment on this hint](#)

$$27 - 15 = 12.$$

Type in 12.

[Comment on this hint](#)

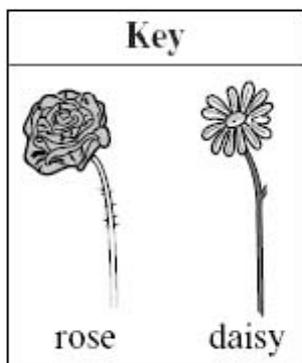
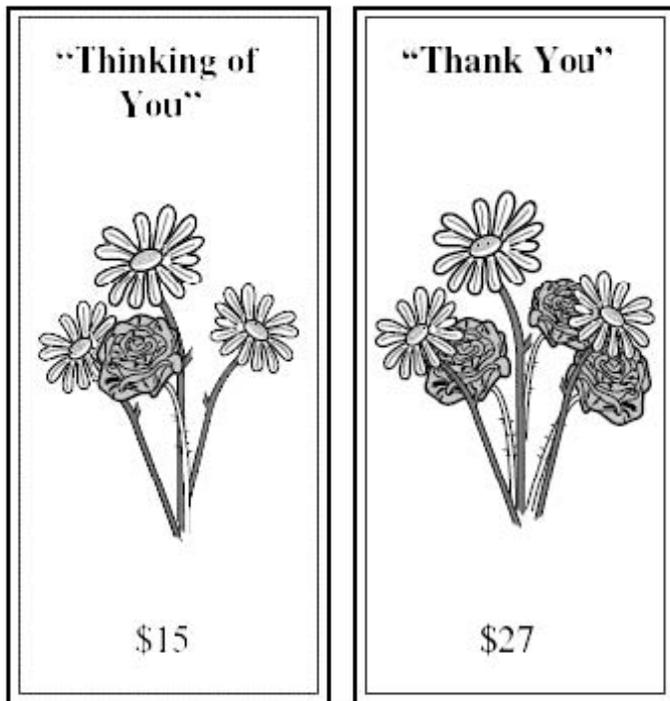
Type your answer below (mathematical expression):

- 12

Submit Answer Correct! Now I think you are ready to answer the

[original question](#). A flower shop sells the two flower

arrangements shown below.



Each rose has the same price, and each daisy has the same price. What is the price of one rose?

[Comment on this question.](#)

Price of each rose is the same.

[Comment on this hint](#)

From above we know that the price of 2 roses is \$12.

[Comment on this hint](#)

We have to divide 12 by 2 to get the price of a single rose.

[Comment on this hint](#)

$$12 \div 2 = 6.$$

Thus the price of each rose is \$6.

Type in 6.

[Comment on this hint](#)

Type your answer below (mathematical expression):

- 6

Submit Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

Assistment #25854

You are previewing content.

What is the value of the expression below when $\Delta = 3$?

$$4(\Delta) - 5$$

[Comment on this question](#)

Request Help

Type your answer below (mathematical expression):

•

Submit Answer

Let's move on and figure out this problem

The question asks for the value of the expression:

$$4(\Delta) - 5 \text{ when } \Delta = 3.$$

In order to solve the question lets break it down in to smaller parts.

Look at the expressions given below. Which expression has the correct substitution for Δ ?

[Comment on this question](#)

We are given that Δ equals 3.

[Comment on this hint](#)

Option B has 3 substituted for Δ . So option B is

has the correct substitution for Δ . Select option B.

[Comment on this hint](#)

Select one:

- A. $4(2)-5$
- B. $4(3)-5$
- C. $4(4)-5$
- D. $4(5)-5$

Submit Answer

Correct!

Thus we know that the expression is:

$4(3) - 5$ What do we

do next?

[Comment on this question](#)

~~In number operations~~ If a multiplication and subtraction come together which one do you do first?

If a multiplication and subtraction come together then the multiplication is done first.

[Comment on this hint](#)

Given expression has both subtraction and multiplication. The multiplication should be performed before the subtraction. Thus

the next step is to **multiply 4 and 3**.

[Comment on this hint](#)

Select one:

- A. Multiply 4 and 3
- B. Subtract 3 from 5
- C. Subtract 5 from 3

Submit Answer Correct! Now let us do some calculations. We know we are suppose to do multiplication first which is the portion in red. $4(3) - 5$ What is the value of \diamond in the following expression? $\diamond - 5$

[Comment on this question](#)

What expression does the \diamond replace?

[Comment on this hint](#)

The \diamond replaces the expression $4(3)$ which is 4 multiplied by 3.

[Comment on this hint](#)

$4 * 3 = 12$. Thus the value

of \diamond is 12.

[Comment on this hint](#)

Type your answer below (mathematical expression):

*12

Submit Answer

Correct!

Now let us go back to our given problem.

What is the value of the expression below when $\Delta = 3$?

$4(\Delta) - 5$

[Comment on this question](#)

When we substitute 3 in the expression we get:

$4(\Delta) - 5$ $4(3) - 5$

[Comment on this hint](#)

Next we have to multiply 4 and 3.

[Comment on this hint](#)

4 times 3 is 12. So replacing $4(3)$ with 12 we get :

$4(\Delta) - 5$ $4(3) - 5$ $12 - 5$

[Comment on this hint](#)

Finally we have to subtract 5 from the product, $4(3)$, which is 12.

[Comment on this hint](#)

$12 - 5 = 7$. So, 7 is

the answer. Type in

7.

[Comment on this hint](#)

Type your answer below (mathematical expression):

✖7

Submit Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

Assistment #25857

You are previewing content.

Which of the following is a possible rule for the input-output table shown below?

Input 1 2 3 4 5
Output 3 5 7 9 11

[Comment on this question](#)

Request Help

Select one:

- ⌘ A. The output is 2 plus the input.
- ⌘ B. The output is 3 times the input.
- ⌘ C. The output is 0.5 less than half the input.
- ⌘ D. The output is 1 more than twice the input.

Submit Answer

Let's move on and figure out this problem

[Let us look at one rule at a time and try to find the rule that works.](#)

The first rule says, "Output is 2 plus the input". The input of the first column is 1.

According to the rule what is the output?

[Comment on this question](#)

The rule says that output is 2 plus input, so we should do: 2

+1.

[Comment on this hint](#)

$2+1=3$. So 3 should be the output of the first

column. Type in 3.

[Comment on this hint](#)

Type your answer below (mathematical expression):

⌘3

Submit Answer

Correct!

So far "Output is 2 plus the input" works. So

according to the "Add 2 to input" rule we have,

Input	Output
1	2
2	3 Δ

In the above table, what is the value of Δ according to the rule of "Output is 2 plus the input"?

[Comment on this question](#)

The given input is 2.

So we need to do: 2 +

2.

[Comment on this hint](#)

2 + 2 = 4. So, the value

of Δ is 4. Type in 4.

[Comment on this hint](#)

Type your answer below (mathematical expression):

• 4

Submit Answer Correct! So from the rule of adding 2 to the input, 4 is the output of the second input. But in the table from the original question 4 is not the output of the second input, so rule A is not the correct rule.

See if you can use this process of elimination to find the right rule.

Which of the following is a possible rule for the input-output table shown below?

Input	1	2	3	4	5	Output
	3	5	7	9	11	

[Comment on this question](#)

Rule B says that the output is 3 times the input. Check this rule.

[Comment on this hint](#)

The first input is 1.

$$1 * 3 = 3.$$

Input 1

Output 3

This is the output in the table for the first input. Check for the second input to see if the rule is correct.

[Comment on this hint](#)

The second input is 2.

$$2 * 3 = 6.$$

Input 1 2 Output 3 6 This is not the output in the table
for the second input. So, **rule B is not correct.**

[Comment on this hint](#)

Rule C says that the output is 0.5 less than half the input; that is, $\text{output} = \text{Input}/2 - 0.5$.

The first input is 1 so, $\text{Output} = 1/2 - 0.5$ $\text{Output} = 0.5 - 0.5$

Output = 0 This is not the output in the table for the first input. So, rule C is not correct.

[Comment on this hint](#)

Rule D says that the output is 1 more than twice the input, that is, Output = 2*input + 1. Check this rule.

[Comment on this hint](#)

The first input is 1.
 $(1 * 2) + 1 = 3.$

Input 1
Output 3

This is the output in the table for the first input. Check for the second input to see if the rule is correct.

[Comment on this hint](#)

The second input is 2.
 $(2 * 2) + 1 = 5.$

Input 1 2 Output 3 5 This is also the output in the table for the second input. Also rules A, B, and C are not correct. So, rule D is the rule for the input-output table. Select D.

[Comment on this hint](#)

Select one:

- ⌘ A. The output is 2 plus the input.
- ⌘ B. The output is 3 times the input.
- ⌘ C. The output is 0.5 less than half the input.
- ⌘ D. The output is 1 more than twice the input.

Submit Answer

Correct! You are done with this problem!

[Comment on this problem.](#)

Assistment

You are previewing content.

If $h - 6 = 10$, which of the following is true?

[Comment on this question](#)

Request Help

Select one:

B. $h = 10 - 6$

C. $h = 10 * 6$

A. $h = 10 + 6$

D. $h = 10 \div 6$ Submit

Answer

Let's move on and figure out this problem

[You can use you understanding of fact families to solve this problem.](#)

What are the other facts in the fact family of $2 + 3 = 5$?

A: $5 + 3 = 2$

$5 + 2 = 3$

B: $5 \div 3 = 2$

$\div 2 = 3$

C: $5 - 3 = 2$

$- 2 = 3$

D: $5 * 3 = 2$

$5 * 2 = 3$

[Comment on this question](#)

Let us look at one option at a time.

[Comment on this hint](#)

[In the first option we have,](#)

$5 + 3 = 2$ But we know number 5 added to number 3 is 8, so option A is not correct.

[Comment on this hint](#)

In option B we have, $5 \div 3 = 2$ Number 5 divided by number 3 is not 2, it is some fraction. So, option B is not correct as well.

[Comment on this hint](#)

In option C we have, $5 - 3 =$

2 This is true. Also we have

$5 - 2 = 3$ And this is also

true.

[Comment on this hint](#)

Option C is correct. Let us check option D, to make sure that C is the answer.

[Comment on this hint](#)

Option D has, $5 * 3 = 2$ But 5 times 3 is equal to 15. Thus option C has the other fact families. Select option C.

[Comment on this hint](#)

Select one:

- Option A
- Option B
- Option C

✖

Option D

Submit Answer

Correct!

We know from fact families that when 2

+ 3 = 5, the following are also true: 5 - 3

= 2 5 - 2 = 3

Now try to answer the asked question.

If $h - 6 = 10$, which of the following is true?

[Comment on this question](#)

We know from fact families

If, $2 + 3 = 5$ Then, $5 - 3 = 2$ 5

- 2 = 3 are also true.

[Comment on this hint](#)

The given equation is

$h - 6 = 10$

[Comment on this hint](#)

Thus from fact families,

$h = 10 + 6$

is also true.

Select option A.

[Comment on this hint](#)

Select one:

D. $h = 10 \div 6$ Submit

B. $h = 10 - 6$

C. $h = 10 * 6$

A. $h = 10 + 6$

Answer

Correct! You are done with this problem!

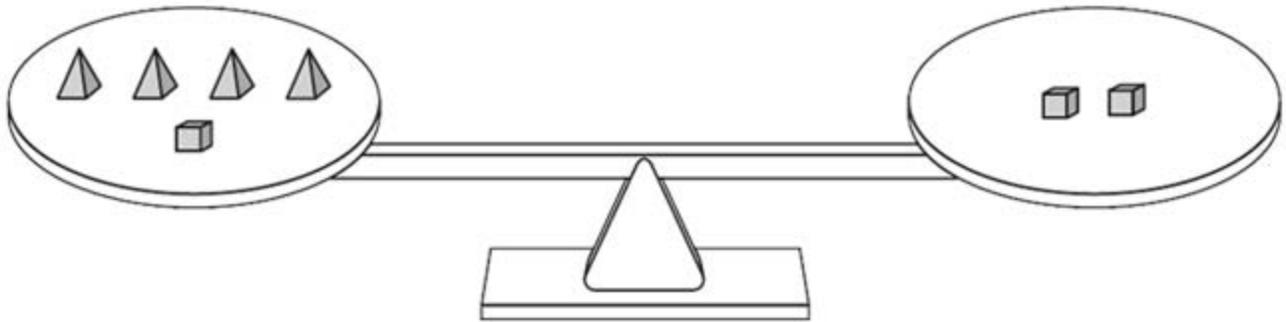
[Comment on this problem](#)

Assistment

Assistment #25839

You are previewing content.

The picture below shows a balanced scale.



How many pyramids balance 1 cube?

[Comment on this question](#)

[Request Help](#)

Type your answer below (mathematical expression):

*

Submit Answer

Let's move on and figure out this problem

[Let us first identify the objects on the balance scale.](#)

Which of the following expression best describes the objects in the balanced scale shown above?

[Comment on this question](#)

This is how a cube looks like:



This is how a pyramid looks like:



Count the number of cubes and pyramids on the right side.

[Comment on this hint](#)

The right side has 2 cubes.

[Comment on this hint](#)

Count the number of cubes and pyramids on the left side.

[Comment on this hint](#)

The left side has 4 pyramids and 1 cube. The right side has 2 cubes. So option B best describes the objects in the balanced scale.

[Comment on this hint](#)

Select one:

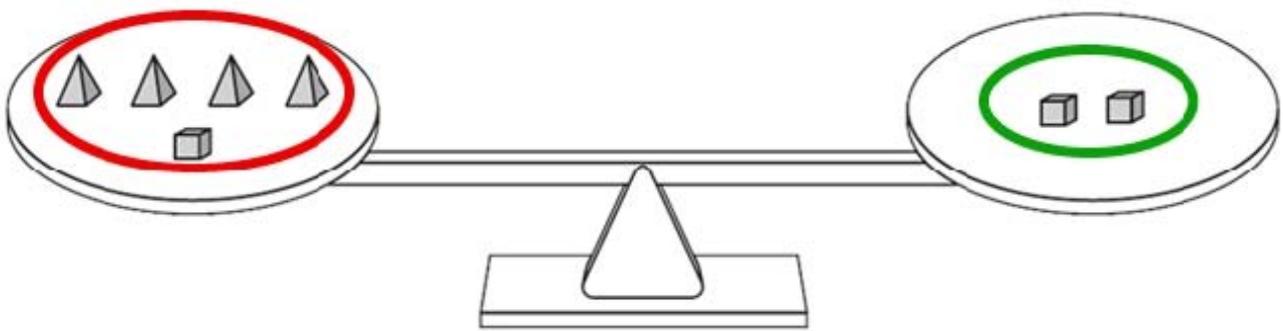
- A. The left side has 4 pyramids; the right side has 2 cubes.
- B. The left side has 4 Pyramids and 1 cube; the right side has 2 cubes.
- C. The left side has 1 cube; the right side has 2 cubes.
- D. The left side has 1 cube; the right side has 1 pyramid.

Submit Answer

Correct!

Now we know that:

The left side of the balance has 4 pyramids and 1 cube while the right side of the balance has 2 cubes.



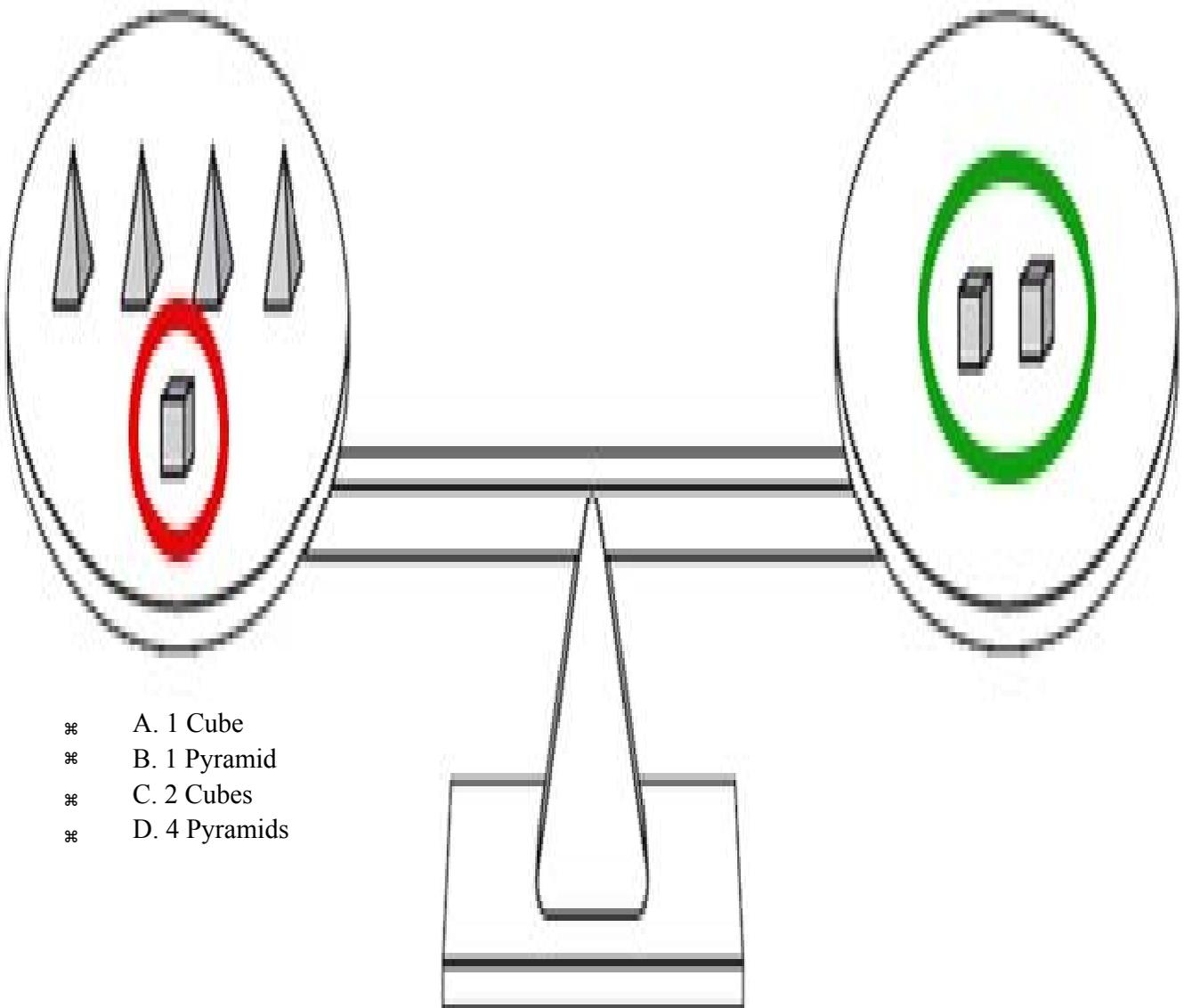
What is common between the two sides?

[Comment on this question](#)

The left side has both pyramids and cubes while the right side has only cubes.

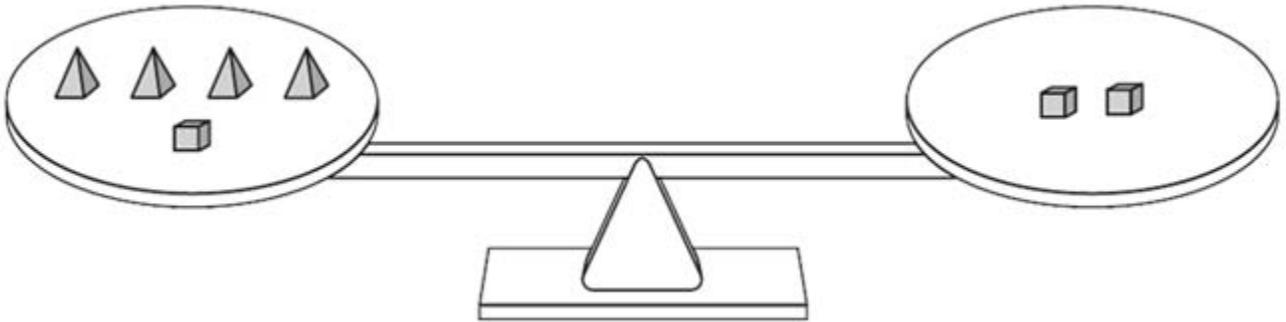
[Comment on this hint](#)

The object that is common between the two sides is cubes.



- ⌘ A. 1 Cube
- ⌘ B. 1 Pyramid
- ⌘ C. 2 Cubes
- ⌘ D. 4 Pyramids

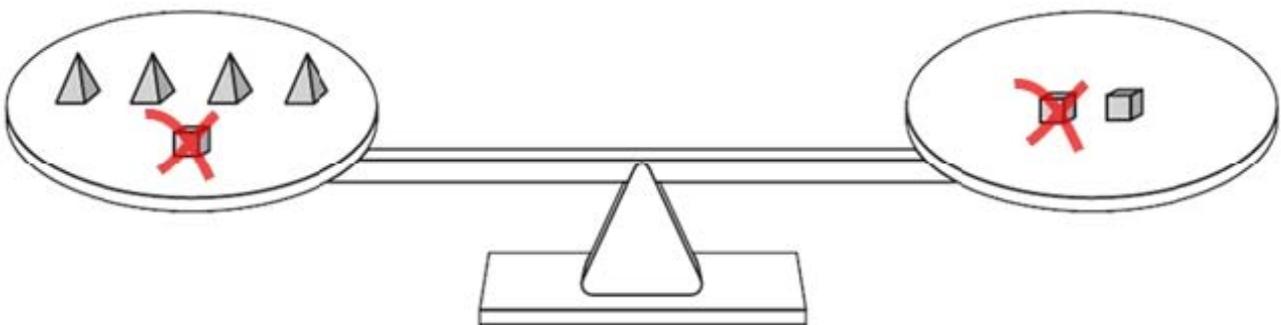
Submit Answer Correct! Now we know that in the scale the two sides have a cube in common. The picture below shows a balanced scale.



How many pyramids balance 1 cube?

[Comment on this question](#)

We know that 1 cube is common between the two sides. So removing 1 cube from both sides still keeps the scale balanced.



[Comment on this hint](#)

When we remove 1 cube from each side we are left with 4 pyramids on the left and 1 cube on the right.

[Comment on this hint](#)

Thus 4 pyramids balance 1 cube.

Type in 4.

[Comment on this hint](#)

Type your answer below (mathematical expression):

⌘4

Submit Answer

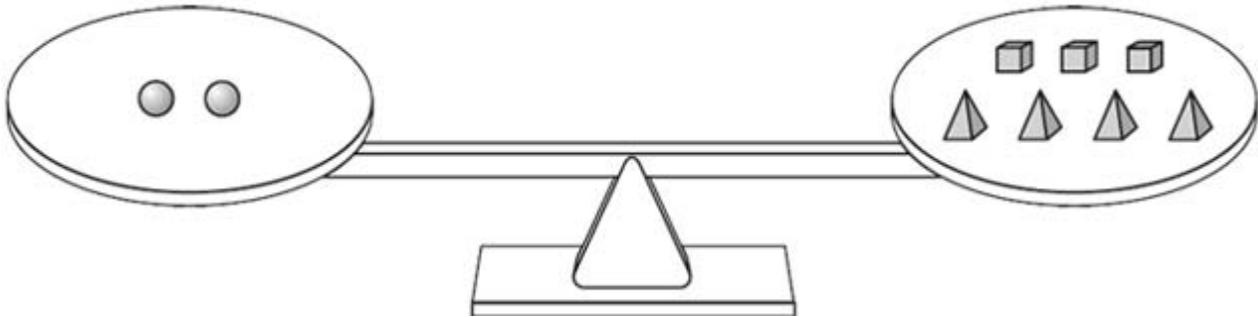
Correct! You are done with this problem!

[Comment on this problem.](#)

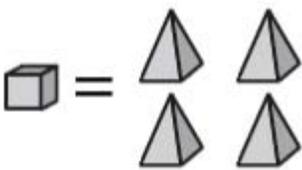
Assistment

You are previewing content.

The picture below shows a balanced scale.



4 pyramids balance 1 cube.



How many pyramids balance 1 sphere?

[Comment on this question](#)

[Request Help](#)

Type your answer below (mathematical expression):

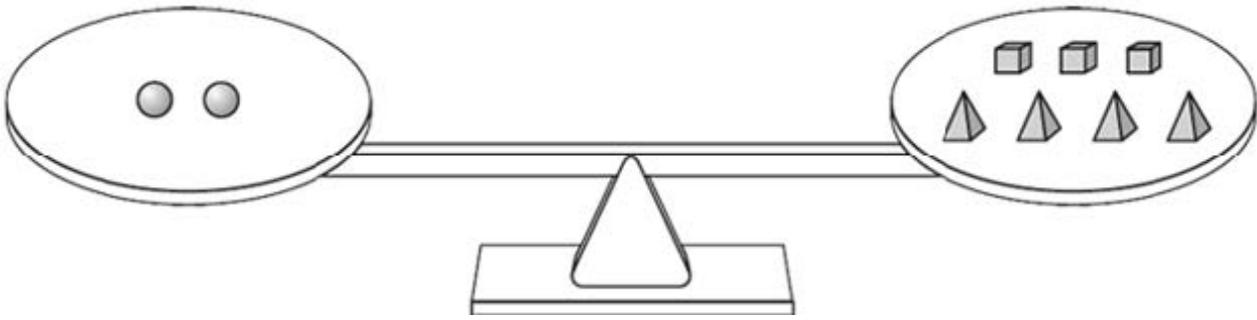
✖

Submit Answer

Let's move on and figure out this problem

[Let us first identify the objects on the balance pans.](#)

Which of the following expression best describes the objects in the balanced scale?



[Comment on this question](#)

This is how a cube looks like:



This is how a pyramid looks like:



This is how a sphere looks like:



Count the number of cubes, pyramids and spheres on the left side.

[Comment on this hint](#)

The left side has 2 spheres only.

[Comment on this hint](#)

Count the number of cubes, pyramids and spheres on the right side.

[Comment on this hint](#)

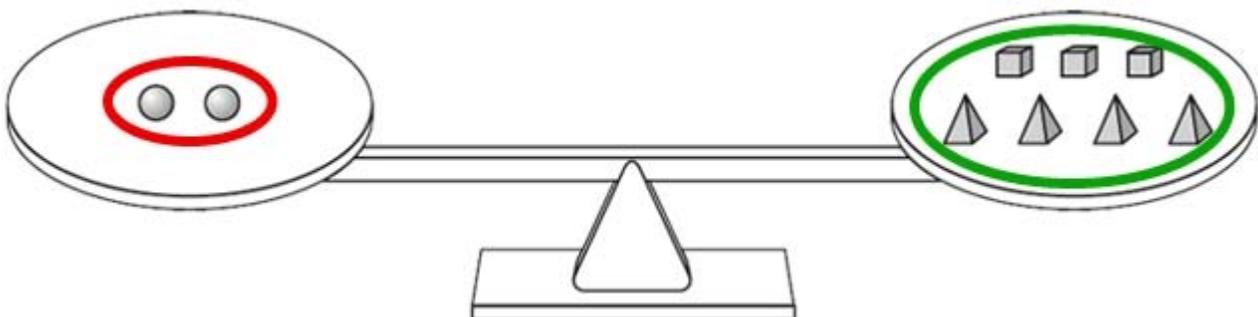
The right side has 4 pyramids and 3 cubes. The left side has 2 spheres. So option C best describes the objects in the balanced scale.

[Comment on this hint](#)

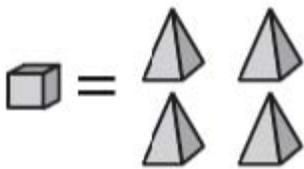
Select one:

- ⌘ A. The left side has 2 spheres while the right side has 4 pyramids.
- ⌘ B. The left side has 2 spheres while the right side has 3 cubes.
- ⌘ C. The left side has 2 spheres while the right side has 3 cubes and 4 pyramids.
- ⌘ D. The left and right both sides have 2 spheres.

Submit Answer Correct! Now we know that: the **two spheres on the left side** are balanced
by **3 cubes and 4 pyramids on the right side**



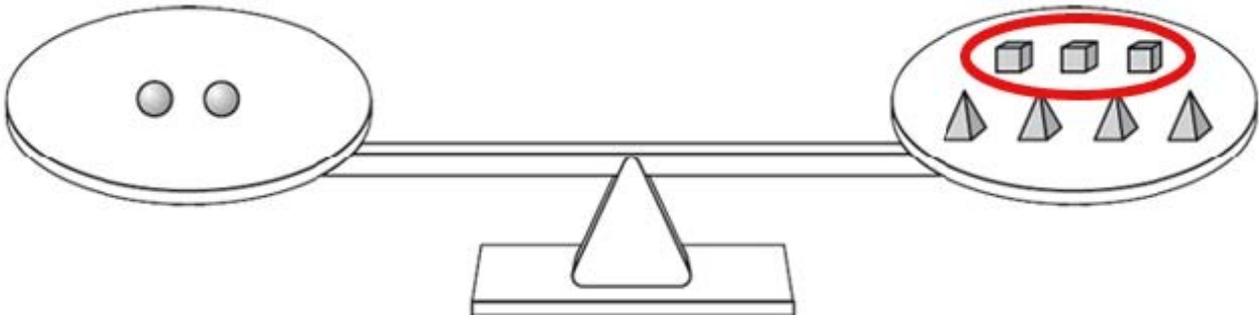
Also we know that 1 cube is balanced by 4 pyramids.



If we replace the cubes on the right side with pyramids, how many pyramids do we need on the right to balance the 2 spheres on the left?

[Comment on this question](#)

There are 3 cubes on the right.



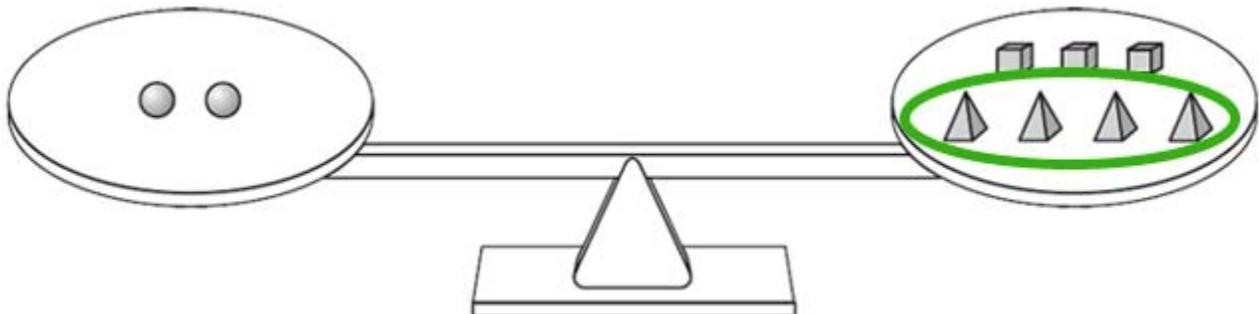
[Comment on this hint](#)

4 pyramids balance 1 cube so we need to replace the 3 cubes by :

$3 \times 4 = 12$ pyramids.

[Comment on this hint](#)

We have 4 original pyramids on the right side.



[Comment on this hint](#)

So total number of pyramids required to balance the 2 spheres is:

$12 + 4 = 16$ Type in 16.

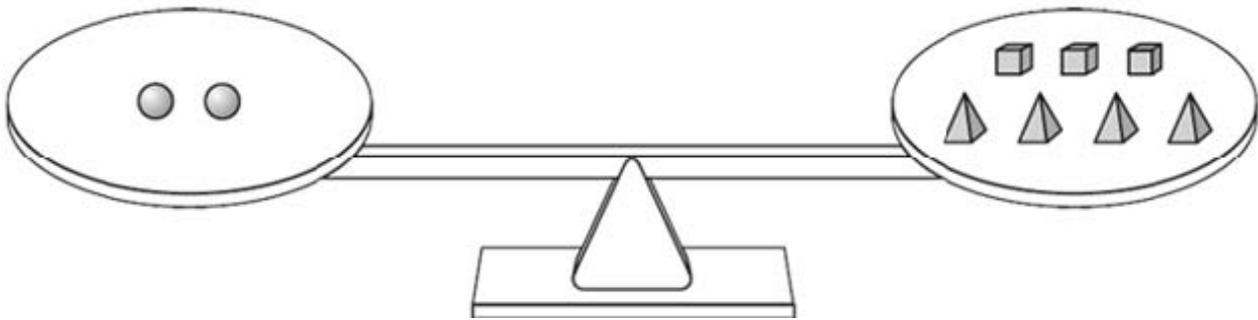
[Comment on this hint](#)

Type your answer below (mathematical expression):

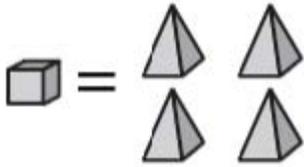
⌘16

Submit Answer Correct! From above we figured that the 2 spheres on the left can be balanced by 16 pyramids. Let us go back to our original question.

The picture below shows a balanced scale.



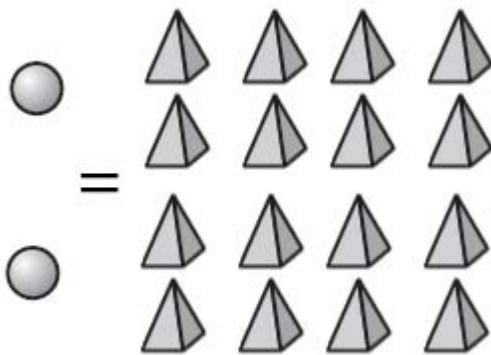
4 pyramids balance 1 cube.



How many pyramids balance 1 sphere?

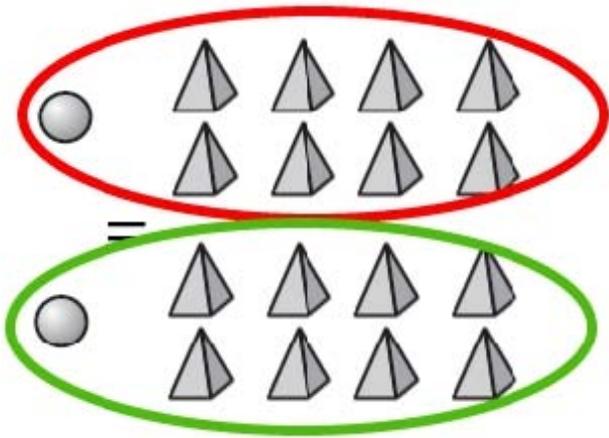
[Comment on this question](#)

16 pyramids balance 2 spheres.



[Comment on this hint](#)

So 1 sphere is balanced by 16/2 pyramids.



[Comment on this hint](#)

$16/2=8$. Thus 8 pyramids balance

a cube. Type in 8.

[Comment on this hint](#)

Type your answer below (mathematical expression):

✖8

Submit Answer

Correct! You are done with this problem!

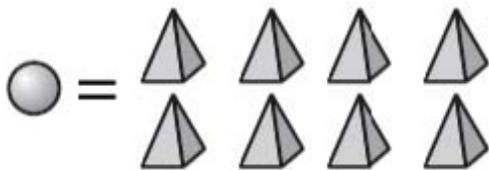
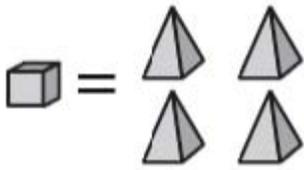
[Comment on this problem](#)

Assistment

Assistment #25848

You are previewing content.

The weight of 1 cube is equal to the weight of 4 pyramids while the weight of 1 sphere is equal to the weight of 8 pyramids.



Which weighs more, 3 spheres or 5 cubes?

[Comment on this question](#)

[Request Help](#)

Select one:

- A. 3 spheres
- B. 5 cubes
- C. Cannot tell

[Submit Answer](#)

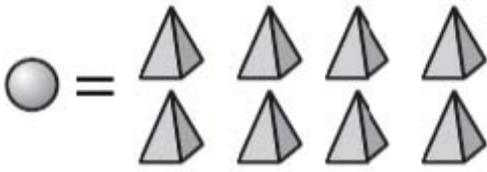
Let's move on and figure out this problem

[To compare the spheres and cubes we can convert each one to pyramids. Let us start with the spheres.](#)

How many pyramids weigh the same as 3 spheres?

[Comment on this question](#)

Weight of 1 sphere = weight of 8 pyramids.



[Comment on this hint](#)

Weight of 3 spheres = weight of $3 * 8$ pyramids.

[Comment on this hint](#)

$3 * 8 = 24$. Thus 3 spheres is equivalent to 24 pyramids. Type in 24.

[Comment on this hint](#)

Type your answer below (mathematical expression):

⌘24

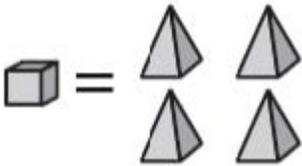
Submit Answer Correct! Now we know that

3 spheres=24 pyramids. Let us now convert cubes to pyramids.

How many pyramids weigh the same as 5 cubes?

[Comment on this question](#)

Weight of 1 cube = weight of 4 pyramids.



[Comment on this hint](#)

Weight of 5 cubes = weight of 5*4 pyramids.

[Comment on this hint](#)

$5 \times 4 = 20$. Thus 5 cubes is equivalent to 20

pyramids. Type in 20.

[Comment on this hint](#)

Type your answer below (mathematical expression):

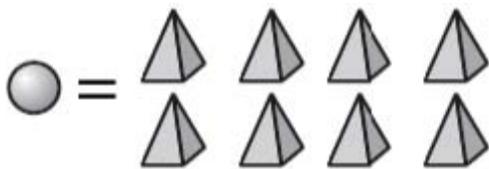
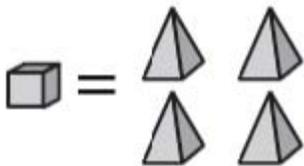
- 20

Submit Answer

Correct!

[I think now you are ready to answer the original question.](#)

The weight of 1 cube is equal to the weight of 4 pyramids while the weight of 1 sphere is equal to the weight of 8 pyramids.



Which weighs more, 3 spheres or 5 cubes?

[Comment on this question](#)

weight of 3 spheres = weight of 24 pyramids.

[Comment on this hint](#)

weight of 5 cubes = weight of 20 pyramids.

[Comment on this hint](#)

24 is greater than 20.

[Comment on this hint](#)

Thus 3 spheres weigh more than 5 cubes.

Select option A.

[Comment on this hint](#)

Select one:

- A. 3 spheres
- B. 5 cubes
- C. Cannot tell

Submit Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

Assistment #25970

You are previewing content.

If $\Delta = 3$, what is the value of the expression below? (6

+ Δ) \div 2

[Comment on this question](#)

Request Help

Type your answer below (mathematical expression):

⌘

Submit Answer

Let's move on and figure out this problem

The question asks for the value of the expression: $(6 + \Delta) \div 2$ when $\Delta = 3$. In

order to solve the question lets break it down to smaller parts.

Look at the expressions given below. Which expression has the correct substitution for Δ ?

[Comment on this question](#)

~~We are given that~~ Δ equals 3.

Which of the given answer choices has 3 substituted for Δ ?

A. $(6+ 1) \div 2$

B. $(6 + 2) \div 2$

C. $(6 + 3) \div 2$

D. $(6 + 4) \div 2$

[Comment on this hint](#)

Option C has 3 substituted for Δ . So option C is

has the correct substitution for Δ .

[Comment on this hint](#)

Select one:

- A. $6 + 2 \div 2$
- B. $(6 + 2) \div 2$
- C. $(6 + 3) \div 2$
- D. $(6 + 4) \div 2$

Submit Answer Correct! Thus we know that the expression is: $(6 + 3) \div 2$ What do we do next? [Comment on this question](#) In number operations if there is some expression in parenthesis then operation of the parenthesis is performed first.

[Comment on this hint](#)

Given expression has parenthesis so the operation in the parenthesis is done first.

[Comment on this hint](#)

6 plus 3 is in the parenthesis which must be performed first. Thus Add 6 to 3 is the next step. Select option A.

[Comment on this hint](#)

Select one:

- A. Add 6 to 3
- B. Divide 3 by 2
- C. Add 6 to 2

Submit Answer Correct! Now let us do some calculations. We know we are supposed to perform the addition inside the parenthesis first which is the portion in red.

$$(6+3)\div 2$$

What is the value of \diamond in the following expression?

$$\diamond \div 2$$

[Comment on this question](#)

What expression does the \diamond replace?

[Comment on this hint](#)

The \diamond replaces the expression $(6+3)$.

[Comment on this hint](#)

$6 + 3 = 9$ Thus the value of

\diamond is 9. Type in 9.

[Comment on this hint](#)

Type your answer below (mathematical expression):

- 9

Submit Answer Correct! Now let us go back to our

given problem. If $\Delta = 3$, what is the value of the

expression below? $(6 + \Delta) \div 2$

[Comment on this question](#)

When we substitute 3 in the expression we get:

$$(6+\Delta) \div 2 \quad (6+3) \div 2$$

[Comment on this hint](#)

Next we have to Add 6 and 3.

[Comment on this hint](#)

$6+3=9$. So replacing $(6+3)$ with 9 we get :

$$(6+\Delta)\div 2$$
$$(6+3)\div 2 = 9$$
$$\div 2$$

[Comment on this hint](#)

Finally we have to divide 9 by 2.

[Comment on this hint](#)

$$9 \div 2 = 4.5$$

Type in 4.5

[Comment on this hint](#)

Type your answer below (mathematical expression):

- 4.5

Submit Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

You are previewing content.

In which of the following tables does each pair of numbers (x, y) satisfy the equation shown below? $x + 6 = y$

Table A

x	y
1	7
2	9
3	9

Table C

x	y
1	7
2	8
3	9

Table B

x	y
1	6
2	8
3	10

Table D

x	y
1	5
2	4
3	3

[Comment on this question](#)

[Request Help](#)

Select one:

- A. Table A
- B. Table B
- C. Table C
- D. Table D

Submit Answer

Let's move on and figure out this problem

All the tables have 1, 2 and 3 for x.

So we need to check for $x=1$, $x=2$ and $x=3$, in the equation

$$x + 6 = y$$

Start with $x = 1$, what is the corresponding value of y ?

[Comment on this question](#)

The given expression is:

$$x + 6 = y$$

[Comment on this hint](#)

Putting $x = 1$ in the equation we get, 1

$$+ 6 = y$$

[Comment on this hint](#)

$$1 + 6 = 7$$

Type in 7.

[Comment on this hint](#)

Type your answer below (mathematical expression):

⌘7

Submit Answer

Correct!

When $x = 1$, $y = 7$. Tables A and C have this x and y value, while tables

B and D do not. So tables B and D do not satisfy the equation.

Table A

x	y
1	7
2	9
3	9

Table C

x	y
1	7
2	8
3	9

Table B

x	y
1	6
2	8
3	10

Table D

x	y
1	5
2	4
3	3

One of tables A and C satisfies the equation. Use the shown method of elimination to answer the asked question.

In which of the following tables does each pair of numbers (x, y) satisfy the equation shown below? $x + 6 = y$

Table A

x	y
1	7
2	9
3	9

Table C

x	y
1	7
2	8
3	9

Table B

x	y
1	6
2	8
3	10

Table D

x	y
1	5
2	4
3	3

[Comment on this question](#)

The given expression is:

$$x + 6 = y$$

[Comment on this hint](#)

Let us find the value of y when $x=2$.

[Comment on this hint](#)

Putting $x=2$ in the equation we get, 2

$$+ 6 = y$$

[Comment on this hint](#)

$$2+6=8 \text{ So, when } x=2$$

$$y=8.$$

[Comment on this hint](#)

We crossed out B and D. Out of the remaining two options, A and C, only option C has the right value of y for $x=2$.

x	y
1	7
2	9
3	9

x	y
1	7
2	8
3	9

x	y
1	6
2	8
3	10

x	y
1	5
2	4
3	3

[Comment on this hint](#)

Thus, table C satisfies the given equation.

Select option C.

[Comment on this hint](#)

Select one:

- A. Table A
- B. Table B
- C. Table C
- D. Table D

Submit Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

Assistment #26123

You are previewing content.

What is the solution to the equation shown below?

$$2x - 4 = 12$$

[Comment on this question](#)

Request Help

Select one:

- A. 4
- B. 8
- C. 12
- D. 16

Submit Answer

Let's move on and figure out this problem

Let us plug in one option at a time in the given equation and try to find the solution.

Option A has $x = 4$. What is the value of the left side of the equation when we put $x = 4$?



The image shows the equation $2x - 4 = 12$. The left side of the equation, $2x - 4$, is circled in red.

[Comment on this question](#)

The left side of the equation is:

$$2x - 4$$

[Comment on this hint](#)

Let us replace the x with 4. We get, 2

$$* 4 - 4$$

[Comment on this hint](#)

We need to perform the multiplication first and then the subtraction.

[Comment on this hint](#)

$$2 * 4 - 4 = 8 - 4 = 4$$

[Comment on this hint](#)

Thus when $x = 4$, the left side of the equation has a value of 4.

Type in 4.

[Comment on this hint](#)

Type your answer below (mathematical expression):

4

Submit Answer Correct! When $x = 4$, the left side of the equation is equal to 4 which is not equal to 12, so $x = 4$ is not the solution to the equation.

Go ahead and try this method of elimination and answer the asked question.

What is the solution to the equation shown below?

$$2x - 4 = 12$$

[Comment on this question](#)

The left side of the equation is: $2x$

- 4 And the right side is equal to

12.

[Comment on this hint](#)

The second option, B, has $x = 8$. Let us check if this is the solution.

[Comment on this hint](#)

When we put $x = 8$ we get,

$$2 * 8 - 4 = 16$$
$$- 4 = 12$$

This is equal to the right side of the equation.

[Comment on this hint](#)

The third option, B, has $x=12$. Let us check if this is the solution.

$$2 * 12 - 4 = 24 - 4$$
$$= 20$$

This is not equal to the right side of the equation.

[Comment on this hint](#)

The fourth option, D, has $x = 16$. Let us check if this is the solution.

$$2 * 16 - 4 = 32 - 4$$
$$= 28$$

This is not equal to the right side of the equation.

[Comment on this hint](#)

Hence only option B satisfies the equation.

Thus option B, $x = 8$, is the solution to the given equation.

Select option B.

[Comment on this hint](#)

Select one:

- A. 4
- B. 8
- C. 12

⌘ D. 16 Submit

Answer
Correct! You are done with this
problem!

[Comment on this problem.](#)

Assistment

Assistment #26357

You are previewing content.

What number should be between 35 and 61 in the following arithmetic progression? 35,

____, 61, 74, 87

[Comment on this question](#)

Request Help

Type your answer below (mathematical expression):

-

Submit Answer

Let's move on and figure out this problem

In order to find the missing number, we need to first find a pattern between the numbers.

Start by comparing the last 2 numbers in the pattern. Let us find the difference between the two numbers and see if the difference carries on.

What is $87 - 74$?

[Comment on this question](#)

~~87-74 means~~ $87 - 74$ means that you take 74 out from 87 and the remaining number is the answer.

$$87 - 74 = 13$$

Type in 13.

[Comment on this hint](#)

Type your answer below (mathematical expression):

- 13

Submit Answer

Correct!

The difference between the last two terms was 13. Let us confirm that **subtracting 13 from the number** is the pattern we have for the arithmetic progression.

What is $74 - 13$?

[Comment on this question](#)

~~74-13 means that~~ you take 13 out from 74 and the remaining number is the answer.

$$74 - 13 = 61$$

Type in 61.

[Comment on this hint](#)

Type your answer below (mathematical expression):

- 61

Submit Answer

Correct!

61 is the number before 74. Thus the rule of subtracting 13 works.

Try using this rule to answer the asked question.

What number should be between 35 and 61 in the following arithmetic progression? 35,

____, 61, 74, 87

[Comment on this question](#)

~~To find the number~~ we need to subtract 13 from 61.

We need to find $61 - 13$.

[Comment on this hint](#)

$$61 - 13 = 48$$

[Comment on this hint](#)

Thus 48 should be between 35 and 61.

Type in 48.

[Comment on this hint](#)

Type your answer below (mathematical expression):

⌘48

Submit Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

Assistment #26386

You are previewing content.

Which of the following could be the rule used to create the number pattern shown below? 93,

45, 21, 9, 3

[Comment on this question](#)

Request Help

Select one:

- A. Subtract 48.
- B. Divide by 2.
- C. Divide by 3 then add 13
- D. Subtract 3 then divide the result by 2.

Submit Answer

Let's move on and figure out this problem

[Let us look at one rule at a time and try to find the rule that works.](#)

The first rule says, "**Subtract 48**". The first number in the sequence is 93.

According to the rule what is the next number in the sequence?

[Comment on this question](#)

The rule says to subtract 48, so we should do:

$93 - 48$

[Comment on this hint](#)

$93 - 48 = 45$. So 45 should be the next number in

the sequence.

[Comment on this hint](#)

Type your answer below (mathematical expression):

- 45

Submit Answer

Correct!

So far "Subtract 48" works. So according to the "Subtract 48" rule we have,

$$\begin{array}{cc} 93, & 45 \\ \searrow & \swarrow \\ (93 - 48) & \end{array}$$

What is the third number in the sequence according to the rule of subtracting 48?

[Comment on this question](#)

From the above question we found that 45 is the second number in the sequence.

So now to find the third number we have to subtract 48 from 45.

[Comment on this hint](#)

$45 - 48 = -3$. So the third number in

sequence is -3.

[Comment on this hint](#)

Type your answer below (mathematical expression):

- -3

Submit Answer Correct! So from the rule of subtracting 48, -3 is the third number in the sequence.

$$\begin{array}{ccc} 93, & 45, & -3 \\ \searrow & \swarrow & \\ (93 - 48) & (45 - 48) & \end{array}$$

But -3 is not the third term in our given sequence so rule A is not the correct rule.

See if you can use this process of elimination to find the right rule.

Which of the following could be the rule used to create the number pattern shown below? 93,

45, 21, 9, 3

[Comment on this question](#)

~~Rule B says to~~ **divide by 2**. Check this rule.

$$93 / 2 = 46.5.$$

$$93, 46.5$$
$$(93 / 2)$$

46.5 is not the second number in the given sequence.

Thus option B is also not the right rule.

[Comment on this hint](#)

Rule C says to **first divide by 3 and then add 14**. Go ahead and divide the first number in

the given sequence by 3 and then add 14 to it.

[Comment on this hint](#)

$$93 / 3 = 31.$$

$$31 + 14 = 45.$$

$$93, 45$$
$$(93 / 3) + 14$$

45 is the second number in the given sequence. Try to find the third number using this rule.

[Comment on this hint](#)

$$45 / 3 = 15$$
$$15 + 14$$
$$= 29$$

29 is not the third number in the given sequence. Thus option C is also not the right rule.

93, 45, 29



$$(93 / 3) + 14 \quad (45 / 3) + 14$$

[Comment on this hint](#)

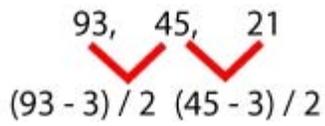
Finally let us look at rule D. Rule D says "Subtract 3 and then divide the result by 2." Check this rule.

[Comment on this hint](#)

$93 - 3 = 90$. And $90 / 2 = 45$.

Also, $45 - 3 = 42$. And $42 / 2$

$= 21$.



[Comment on this hint](#)

Rule D gives the right sequence. Also, A, B, and C are not the right rule so rule D is the correct rule used to create the number pattern.

[Comment on this hint](#)

Select one:

- A. Subtract 48.
- B. Divide by 2.
- C. Subtract 3 then add 13.

D. Subtract 3 then divide the result by 2. Submit

Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

Assistment #25347

You are previewing content.

What is the value of the expression below when $\square = 3$?

$$2(\square) + 5$$

[Comment on Problem #31044](#)

Request Help

Type your answer below (mathematical expression):

⌘

Submit Answer

Let's move on and figure out this problem

The question asks for the value of the expression : '2(\square) + 5' when $\square = 3$. In order to solve the question lets break it down in to smaller parts.

Look at the expressions given below. Which expression has the correct substitution for \square ?

[Comment on Problem #31045](#)

We are given that \square equals 3.

[Comment on Hint #23792](#)

Which of the given answer choices has 3 substituted for \square ?

A. 2(9)+5

B. 2(6)+5

C. 2(3)+5

D. 2(7)+5

[Comment on Hint #23793](#)

Option C has 3 substituted for \square . So option C has the correct substitution for \square .)

[Comment on Hint #24174](#)

Select one:

⌘ A. 2(9)+5

-
- C. $2(3)+5$
- B. $2((6))+5$

Submit Answer

Correct!

Thus we know that the expression is:

$$2(3) + 5$$

What do we do next?

[Comment on Problem #31046](#)

In number operations if a multiplication and addition come together which one do you do first?

[Comment on Hint #23795](#)

If a multiplication and addition come together then the multiplication is done first.

[Comment on Hint #23796](#)

Given expression has both addition and multiplication. The multiplication should be performed before the addition. Thus the next step is to multiply 2 and 3.

[Comment on Hint #23797](#)

Select one:

-
- B. Add 3 and 5
- A. Multiply 2 and 3

Submit Answer

Correct!

Now let us do some calculations. We have,
 $2(3)+5$ This expression can be written as $\Delta + 5$

What is the value of Δ ?

[Comment on Problem #31047](#)

What expression does the Δ replace?

[Comment on Hint #23798](#)

The Δ replaces the expression $2(3)$ which is 2 multiplied by 3.

[Comment on Hint #23799](#)

2 multiplied by 3 is 6. So, 6 must be the answer.

[Comment on Hint #23995](#)

Type your answer below (mathematical expression):

• 6

Submit Answer

Correct!

Now let us go back to our given problem.

What is the value of the expression below when $x = 3$?

$$2(x) + 5$$

[Comment on Problem #31050](#)

The value of x is 3. So we substitute 3 in the expression.

When we substitute 3 in the expression we get: $2(3) + 5$ Next

we have to multiply 2 and 3 and add the product to 5.

[Comment on Hint #24001](#)

2 times 3 is 6. Next 6 plus 5 is 11. So, 11 must be the answer.

Type your answer below (mathematical expression):

- 11

Submit Answer

Correct! You are done with this problem!

[Comment on Assistent #25347](#)

Assistment

Assistment #25552

You are previewing content.

Lucinda earns \$20 each week. She spends \$5 each week and saves the rest. The table below shows the total amount that she saved at the end of each week for 4 weeks.

Lucinda's Savings at the End of Each Week

Week	1	2	3	4
Total Amount Saved	\$15	\$30	\$45	\$50

Lucinda continues to save at the same rate. What will be Lucinda's total amount saved at the end of 7 weeks?

[Comment on Problem #31576](#)

Request Help

Type your answer below (mathematical expression):

•

Submit Answer Let's move on and figure

out this problem

The question says Lucinda earns \$20 each week. Out of the \$20 she spends \$5 and saves the rest.

So what is the amount she saves each week?

[Comment on Hint #24309](#)

Subtract the total she earns from the total she saves.

Lucinda earns \$20 each week and spends \$5. So each week she saves $20 - 5 = 15$, that is each week she saves \$15. You can also look at the table and see that for 1 week she saved \$15.

Week	1	2	3	4
Total Amount Earned	\$15	\$30	\$45	\$60

[Comment on Hint #24310](#)

Type your answer below (mathematical expression):

⌘15

Submit Answer Correct! We want to know how much she earns in 7 weeks. We can do that by filling out the table. Lets start by finding how much she saves in 5 weeks.

What is the value that goes in the orange box on the table?

Week	1	2	3	4	5	6	7
Total Amount Earned	\$15	\$30	\$45	\$60			

[Comment on Problem #31578](#)

Notice the pattern for each one week added we add on \$15.

		+1 →	+1 →	+1 →	+1 →	+1 →	+1 →
Week	1	2	3	4	5	6	7
Total Amount Earned	\$15	\$30	\$45	\$60			
		→ +15	→ +15	→ +15	→ +15		

[Comment on Hint #24311](#)

We need to add \$15 to \$60 to get the next value.

		+1 →	+1 →	+1 →	+1 →	+1 →	+1 →
Week	1	2	3	4	5	6	7
Total Amount Earned	\$15	\$30	\$45	\$60			
		→ +15	→ +15	→ +15	→ +15		

[Comment on Hint #24321](#)

$\$60 + \$15 = \$75$. Thus 75 goes in the orange box.

[Comment on Hint #24322](#)

Type your answer below (mathematical expression):

⌘75

Submit Answer Correct! [Now let us go back to our given problem.](#) Lucinda earns \$20 each week. She spends \$5 each week and saves the rest. The table below shows the total amount that she saved at the end of each week for 4 weeks.

Lucinda's Savings at the End of Each Week

Week	1	2	3	4
Total Amount Saved	\$15	\$30	\$45	\$50

[Comment on Problem #31582](#)

We have learned that Lucinda saved \$75 by week 5. Add 15 to 75 to find the amount she saves by week 6.

		+1 →	+1 →	+1 →	+1 →	+1 →	+1 →
Week	1	2	3	4	5	6	7
Total Amount Earned	\$15	\$30	\$45	\$60	\$75		
		→ +15	→ +15	→ +15	→ +15	→ +15	

[Comment on Hint #24324](#)

$\$75 + \$15 = \$90$. So by week 6 she saves \$90. Add \$15 to \$90 and you will find the amount she saves by week 7.

		+1 →	+1 →	+1 →	+1 →	+1 →	+1 →
Week	1	2	3	4	5	6	7
Total Amount Earned	\$15	\$30	\$45	\$60	\$75	\$90	
		→ +15	→ +15	→ +15	→ +15	→ +15	→ +15

[Comment on Hint #24325](#)

$\$90 + \$15 = \$105$. So by week 7 she saves \$105.

		+1 →	+1 →	+1 →	+1 →	+1 →	+1 →
Week	1	2	3	4	5	6	7
Total Amount Earned	\$15	\$30	\$45	\$60	\$75	\$90	\$105
		→ +15	→ +15	→ +15	→ +15	→ +15	→ +15

[Comment on Hint #24326](#)

Type your answer below (mathematical expression):

-

Submit Answer

Correct! You are done with this problem!

[Comment on Assistent #25552](#)

Assistment

You are previewing content.

Lucinda earns \$20 each week. She spends \$5 each week and saves the rest. The table below shows the total amount that she saved at the end of each week for 4 weeks.

Lucinda's Savings at the End of Each Week

Week	1	2	3	4
Total Amount Saved	\$15	\$30	\$45	\$50

Lucinda continues to save at the same rate. How many

weeks will it take for Lucinda to save \$300?

[Comment on Problem #31655](#)

Request Help

Type your answer below (mathematical expression):

•

Submit Answer

Let's move on and figure out this problem

The question says Lucinda earns \$20 each week. Out of the \$20 she spends \$5 and saves the rest.

So what is the amount that is added to her savings each week?

[Comment on Problem #33107](#)

Subtract the total she earns from the total she saves.

[Comment on Hint #26333](#)

Lucinda earns \$20 each week and spends \$5. So each week she saves $20 - 5 = 15$, that is, each week she saves \$15.

[Comment on Hint #26334](#)

Thus each week \$15 is added to her savings.

		+1 →	+1 →	+1 →	
Week	1	2	3	4	
Total Amount Saved	\$15	\$30	\$45	\$60	
		→ +15	→ +15	→ +15	

Type in 15.

[Comment on Hint #26336](#)

Type your answer below (mathematical expression):

⌘15

Submit Answer

Correct!

So we can fill up the table by adding \$15 to the total amount saved each additional week. Another way to fill in the table is to see a pattern between the number of weeks and the total savings.

What is the rule between the number of weeks and the total savings?

[Comment on Problem #33108](#)

We need to add \$15 to the total amount saved for each additional week.

Thus to find the total amount saved, we need to perform repeated addition.

[Comment on Hint #26344](#)

Repeated addition means multiplication.

[Comment on Hint #26345](#)

Thus multiplying \$15 with number of weeks will give the total amount saved.

Select option C.

[Comment on Hint #26346](#)

Select one:

- ⌘
- ⌘
- ⌘

B. Total Sayings = \$15 ÷ Number of Weeks

C. Total Savings = \$15 * Number of Weeks

⌘

D. Total Savings = \$15 / Number of Weeks

Submit Answer

Correct!

Thus we know that in order to find the total savings we multiply \$15 with number of weeks.

Total Amount Saved = \$15 * Number of Weeks.

Let 'w' represent the number of weeks and 's' represent the total amount saved.

Which of the following equations help us to calculate the number of weeks that Lucinda takes to save \$300?

[Comment on Problem #33112](#)

We know, Total Amount Saved = \$15 * Number

of weeks

[Comment on Hint #26352](#)

Also,

s = Total Amount Saved

w = Number of Weeks

[Comment on Hint #26353](#)

So we have, s = 15 * w. This is the equation that will help us calculate

the number of weeks. So select option D.

[Comment on Hint #26354](#)

Select one:

⌘

⌘

⌘ B. S = 15 + w

⌘ C. S = 300 w

⌘ D. S = 15 * w Submit

Answer

Correct!

We know that we need to use the following equation to find the total number of weeks: $S =$

$$15 * w$$

Now let us try to find the answer to the question that was given to us.

Lucinda earns \$20 each week. She spends \$5 each week and saves the rest. The table below shows the total amount that she saved at the end of each week for 4 weeks.

Lucinda's Savings at the End of Each Week

Week	1	2	3	4
Total Amount Saved	\$15	\$30	\$45	\$50

Lucinda continues to save at the same rate. How many

weeks will it take for Lucinda to save \$300?

[Comment on Problem #33113](#)

We need to use the following equation to find the number of weeks: $S =$

$$15 * w$$

[Comment on Hint #26355](#)

We need to find the number of weeks that Lucinda takes to save \$300.

We replace s by 300 in the equation. Thus we get, $300 = 15 * w$

[Comment on Hint #26359](#)

To find the number of weeks, w , we divide 300 by 15.

[Comment on Hint #26360](#)

$$300 / 15 = 20.$$

So Lucinda takes 20 weeks to save \$300.

Type in 20.

[Comment on Hint #26361](#)

Type your answer below (mathematical expression):

- 20

Submit Answer

Correct! You are done with this problem!

[Comment on Assistent #25590](#)

Assistment

You are previewing content.

In which of the following tables do the data show a **constant rate of change** in the total distance traveled during a four-hour trip?

A. Distance Travelled

Time (hours)	Total Distance (miles)
1	50
2	80
3	140
4	230

C. Distance Travelled

Time (hours)	Total Distance (miles)
1	30
2	60
3	120
4	240

B. Distance Travelled

Time (hours)	Total Distance (miles)
1	60
2	120
3	150
4	165

D. Distance Travelled

Time (hours)	Total Distance (miles)
1	50
2	100
3	150
4	200

[Comment on Problem #30991](#)

Request Help

Select one:

- A
- B
- C
- D

Submit Answer

Let's move on and figure out this problem
The question says:

"A **constant rate of change** in the total distance traveled during a four-hour trip"

What does this mean?

[Comment on Problem #31000](#)

~~A constant rate of~~ change means that the distance changes by the same amount.

~~Since the distance~~ changes by the same amount, this means each hour the distance added is the same.

Select one:

- ⌘ A. For each hour the distance added is the same.
- ⌘ B. Each hour the distance doubles.
- ⌘ C. Each hour the total distance always stays the same.

Submit Answer Correct! [Now let us look at option A to see if it has a constant rate of change.](#)

A. Distance Travelled

Time (hours)	Total Distance (miles)
1	50
2	80
3	140
4	230



Find the change in the distance travelled from **hour 1** to **hour 2**.

[Comment on Problem #31124](#)

We have to subtract 50 from 80.

[Comment on Hint #24007](#)

50 subtracted from 80 is 30. So, 30 must be the change in the distance travelled from **hour 1** to **hour 2**.

[Comment on Hint #24008](#)

Type your answer below (mathematical expression):

- 30

Submit Answer

Correct!

We know that the difference in distance covered from hour 1 to hour 2 is 30 miles. Now let's look at the change in distance going from hour 2 to hour 3.

A. Distance Travelled

Time (hours)	Total Distance (miles)
1	50
2	80
3	140
4	230

$80 - 50 = 30$

Find
 $140 - 80$

Look at the table above and find the change in distance from hour 2 to hour 3.

[Comment on Problem #31125](#)

We have to subtract 80 from 140.

[Comment on Hint #24012](#)

80 subtracted from 140 is 60. So, 60 must be the change in distance from hour 2 to hour 3.

[Comment on Hint #24013](#)

Type your answer below (mathematical expression):

- 60

Submit Answer Correct! Since the rate of change in A is not the same, A does not have a constant rate of change.

A. Distance Travelled

Time (hours)	Total Distance (miles)
1	50
2	80
3	140
4	230

$$80 - 50 = 30$$

$$140 - 80 = 60$$

C. Distance Travelled

Time (hours)	Total Distance (miles)
1	30
2	60
3	120
4	240

B. Distance Travelled

Time (hours)	Total Distance (miles)
1	60
2	120
3	150
4	165

D. Distance Travelled

Time (hours)	Total Distance (miles)
1	50
2	100
3	150
4	200

Now see if you can find out which of the remaining 3 options, B, C and D, has a constant rate of change.

[Comment on Problem #31126](#)

Like we did for option A, subtract one distance from another in each option and see which has a constant change.

[Comment on Hint #23847](#)

Let us look at option B.

Total distance covered in 2 hours - total distance covered in 1 hour =

$$120 - 60 = 60. \text{ And,}$$

Total distance covered in 3 hours - total distance covered in 2 hours =

$$150 - 120$$

= 30.

Thus option B does not have a constant rate of change.

[Comment on Hint #24558](#)

Let us look at option C.

Total distance covered in 2 hours - total distance covered in 1 hour =

$60 - 30 = 30$. And,

Total distance covered in 3 hours - total distance covered in 2 hours =

$120 - 60 = 60$.

Thus option C does not have a constant rate of change.

[Comment on Hint #24559](#)

Let us look at option D.

Total distance covered in 2 hours - total distance covered in 1 hour =

$100 - 50 = 50$. And,

Total distance covered in 3 hours - total distance covered in 2 hours

$$= 150 - 100$$

$$= 50.$$

Thus option D has a constant rate of change.

[Comment on Hint #24560](#)

Select one:

- B
- C
- D

Submit Answer

Correct! You are done with this problem!

[Comment on Assistentment #25328](#)

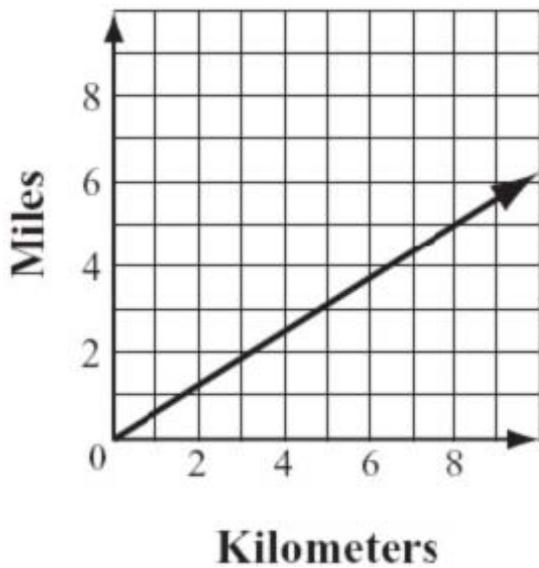
Assistment

Assistment #25372

You are previewing content.

The graph below shows the relationship between distance measured in kilometers and distance measured in miles.

Measures of Distance



Which of the following is closest to the number of miles that is equivalent to 4 kilometers?

[Comment on Problem #31123](#)

[Request Help](#)

Select one:

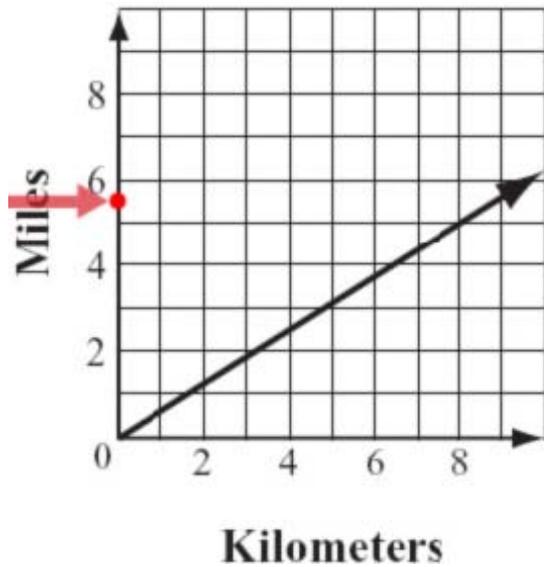
- 1.5 miles
- 2.5 miles
- 5.8 miles
- 6.2 miles

Submit Answer Let's move on and figure

out this problem

[First let us make sure you understand how to read numbers on the miles axis.](#)

Measures of Distance



What is the value at the red dot?

[Comment on Problem #31130](#)

Look at the numbers 4 and 6. The number between them is 5.

[Comment on Hint #23851](#)

The red dot lies between 5 and 6.

[Comment on Hint #23852](#)

.5 represents the half way from 5 to 6 so the number half way between 5 and 6 is 5.5. Thus 5.5 must be the answer.

[Comment on Hint #23853](#)

Select one:

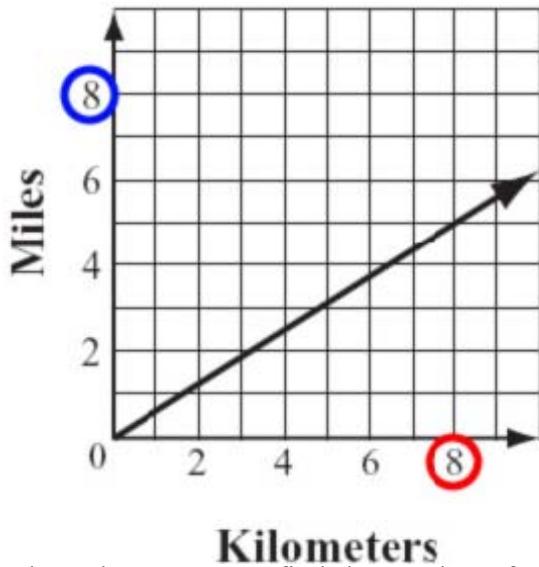
- *
- *
- * 5.5
- * ~~4.75~~

Submit Answer

Correct!

Now let us try a problem similar to the given one. We will try to find the distance in miles that is equivalent to 8 kilometers.

Measures of Distance



Where do we start to find the number of miles equivalent to 8 kilometers in the graph, the 8 with blue circle or the 8 with red circle?

[Comment on Problem #31131](#)

The question says we have to find the distance in miles equivalent to 8 kilometers. So we have been given the distance in kilometers.

[Comment on Hint #23854](#)

Since we have the distance in kilometers, we should start from the axis that is labeled kilometers. Thus, we should start from the 8 with red circle.

[Comment on Hint #23855](#)

Select one:

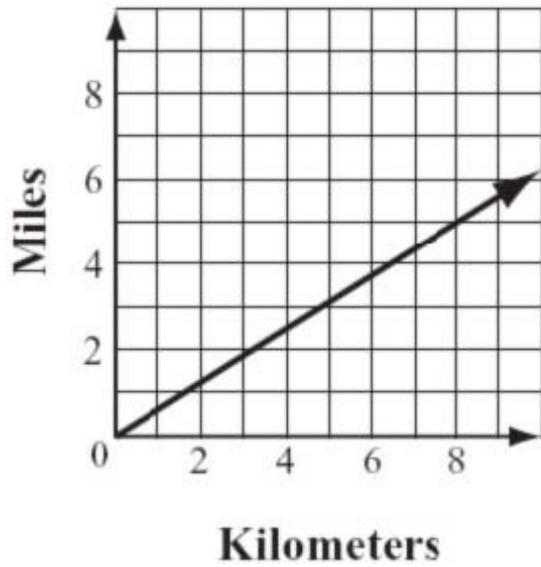
- A. The 8 with blue circle
- B. The 8 with red circle

Submit Answer

Correct!

Now we know that we have to start from number 8 of the side labelled kilometers.

Measures of Distance

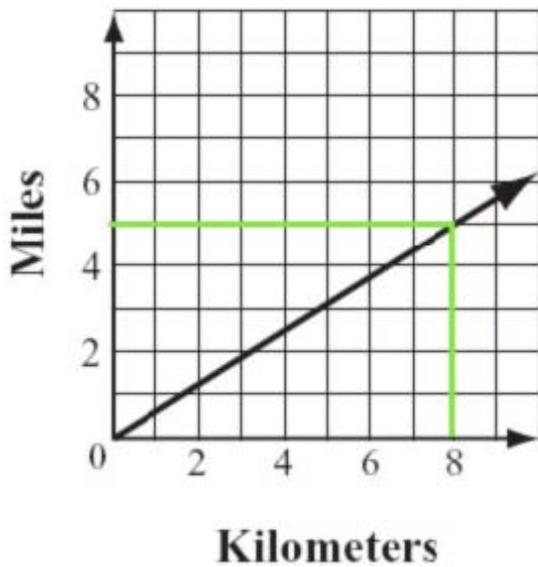


How many miles are equal to 8 kilometers?

[Comment on Problem #31132](#)

Look at the following graph. The green line is the path you have to follow to find the equivalent distance.

Measures of Distance



[Comment on Hint #23856](#)

We follow the **green line** starting from the side labelled kilometers. The value at the end of the green line is the answer.

[Comment on Hint #23857](#)

The green line ends between 4 and 6. So the answer is a number between 4 and 6.

[Comment on Hint #23858](#)

The number between 4 and 6 is 5. Thus, 5 is the answer.

[Comment on Hint #24015](#)

Type your answer below (mathematical expression):

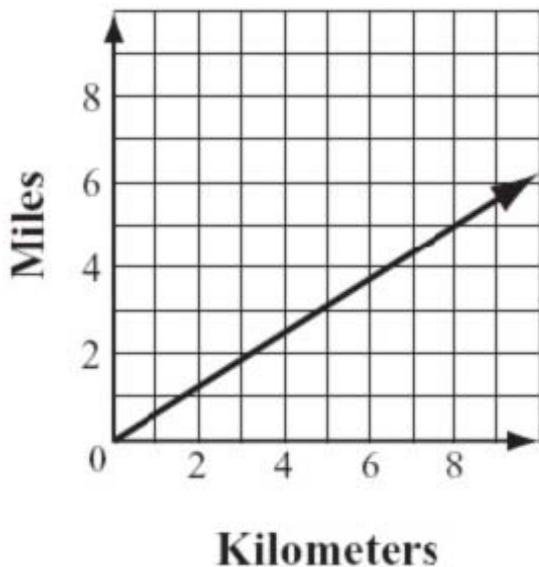
- 5

Submit Answer

Correct!

We saw how to trace the graph and find the distance in miles equivalent to the distance in kilometers. Now lets try the original question again.

Measures of Distance



Which of the following is closest to the number of miles that is equivalent to 4 kilometers?

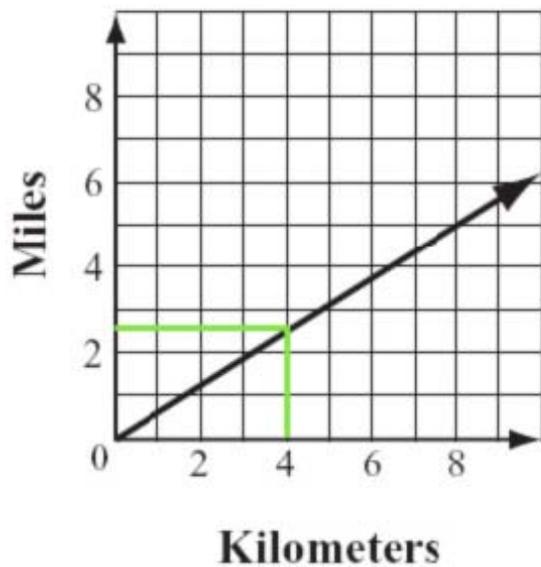
[Comment on Problem #31133](#)

In order to find the distance in miles equivalent to 4 kilometers, we have to start from the 4 kilometer point.

[Comment on Hint #23861](#)

We start tracing the path from the 4 kilometer point as shown in the figure below.

Measures of Distance



[Comment on Hint #23862](#)

As we start tracing the **green path** The distance in miles equivalent to 4 kilometers is the value at the end of the **green line**.

[Comment on Hint #23863](#)

The **green path** ends between 2 and 3. The number between 2 and 3 is 2.5. Thus, 2.5 is the answer.

[Comment on Hint #24016](#)

Select one:

-
- 2.5 miles
- 5.8 miles
- 1.5 miles

6.2 miles Submit

Answer

Correct! You are done with this problem!

[Comment on Assistentment #25372](#)

Assistment

Assistment #25640

You are previewing content.

What is the value of **N** that makes the equation below true?

$$N / 3 = 12$$

[Comment on Problem #31760](#)

Request Help

Type your answer below (mathematical expression):

⌘

Submit Answer

Let's move on and figure out this problem

[Let us take an example to understand this number sentence.](#)

If there are **N** numbers of apples, what does the following equation mean? $N /$

$$3 = 12$$

[Comment on Problem #31761](#)

[Look at the equation](#); we are dividing the total number of apples.

[3 comes after the](#) division, so we divide N into 3 piles.

The **N** apples divided by 3 equals 12. This means that the total apples are divided into 3 piles each containing 12 apples. So dividing the apples into 3 piles, each of them has 12 apples in it is the correct choice.



[Comment on Hint #24548](#)

Select one:

- ⌘
- ⌘ Taking 3 apples out from the pile and the total number of apples in the pile is 12.
- ⌘ Dividing the apples into 3 piles, each of them has 12 apples in it.
- ⌘ Taking 3 apples out from the pile, the number of remaining apples is 12.

Dividing the apples into 5 piles, each of them has 8 apples in it. Submit

Answer Correct!

Now we know that N apples are divided into 3 small piles, each pile containing 12 apples. So

what do you do to find the value of N ?

[Comment on Problem #31762](#)

You have 3 piles each with 12 apples. To find the total number of apples N , you put them together.



[Comment on Hint #24552](#)

To put the apples together simply means to add the apples in each pile together, that is to perform : $12+12+12$



[Comment on Hint #24553](#)

$12+12+12=3*12$, so option D is the how we find the value of N .

[Comment on Hint #24554](#)

Select one:

- ⌘
- ⌘ B. $12 + 3$
- ⌘ C. $12 - 3$
- ⌘ A. $12 / 3$

D. $12 * 3$ Submit

Answer

167 | Page

Correct! What is the value of **N** that makes the equation below true?

$$N / 3 = 12$$

[Comment on Problem #31763](#)

~~We have to put the~~ We have to put the 12 items in each pile together.

~~We have 3 piles of~~ We have 3 piles each with 12 items. So to find the total number we have to find $12+12+12$.

~~12+12+12 is equal~~ $12+12+12$ is equal to 36. The value of N is 36. Type in 36.

Type your answer below (mathematical expression):

*36

Submit Answer

Correct! You are done with this problem!

[Comment on Assistent #25640](#)

Assistment

You are previewing content.

The cost for labor at a car repair center is shown in the table below.

Hours	Total Cost
1	\$ 60
2	\$ 120
3	\$ 180
4	\$ 240

Based on the data in the table, which of the following expressions represent the total cost, in dollars, of a repair that requires h hours of labor?

[Comment on Problem #33095](#)

Request Help

Select one:

- A. $h + 60$
- B. $h - 60$
- C. $h * 60$
- D. $h / 60$

Submit Answer

Let's move on and figure out this problem

[Let us look at one expression at a time and try to find the expression that works.](#)

[Option A has the expression:](#)

$h + 60$ According to this expression, what is the total cost, in dollars, of a repair that requires 1 hour of labor?

[Comment on Problem #33096](#)

In the following expression:

$h + 60h$ represents the total hours of

labor.

[Comment on Hint #26308](#)

We are asked to find the total cost of 1 hour of labor, so we replace h with 1.

Thus we get, $1 + 60$

[Comment on Hint #26309](#)

$$1 + 60 = 61$$

Type in 61.

[Comment on Hint #26310](#)

Type your answer below (mathematical expression):

⌘61

Submit Answer Correct! According to option A, the total cost, in dollars, of a repair that requires 1 hour of labor is \$61. But the table shows that the total cost for one hour of labor is \$60.

Hours	Total Cost
1	\$ 60
2	\$ 120
3	\$ 180
4	\$ 240

Thus expression A is not correct.
Now let us look at option B.

Option B has the expression: h

According to this expression, what is the total cost, in dollars, of a repair that requires 1 hour of labor?

[Comment on Problem #33097](#)

In the following expression: $h - 60h$

represents the total hours of labor.

[Comment on Hint #26312](#)

We are asked to find the total cost of 1 hour of labor, so we replace h with 1. Thus we get, $1 -$

60

[Comment on Hint #26313](#)

$1 - 60 = -59$

Type in -59.

[Comment on Hint #26314](#)

Type your answer below (mathematical expression):

- -59

Submit Answer

Correct!

According to option B, the total cost, in dollars, of a repair that requires 1 hour of labor has a negative value so option B is not correct as well. Thus we know that option A and B do not represent the total cost. See if you can use this process of elimination to find the right rule.

The cost for labor at a car repair center is shown in the table below.

Car Repair Costs	
Hours	Total Cost
1	\$ 60
2	\$ 120
3	\$ 180
4	\$ 240

Based on the data in the table, which of the following expressions represent the total cost, in dollars, of a repair that requires h hours of labor?

[Comment on Problem #33098](#)

Let us check option C. Option C has the expression: h

* $60h$ represents the total hours of labor.

[Comment on Hint #26315](#)

To find the total cost of 1 hour of labor, we replace h with 1. Thus we get, $1 \cdot$

$60 = 60$ This is the value in the table.

Car Repair Costs	
Hours	Total Cost
1	\$ 60
2	\$ 120
3	\$ 180
4	\$ 240

[Comment on Hint #26316](#)

Let us find the total cost of 2 hour of labor using option C. We have, 2

* $60 = 120$

This is the value in the table.

Hours	Total Cost
1	\$ 60
2	\$ 120
3	\$ 180
4	\$ 240

[Comment on Hint #26317.](#)

So, far option C looks correct. We have to check option D as well in order to get the right option. So check option D.

[Comment on Hint #26318.](#)

Option D is :

$h / 60$.

[Comment on Hint #26319.](#)

To find the total cost of 1 hour of labor, we replace h with 1. Thus we get, $1 / 60$

This value is a fraction. But the total cost for 1 hour in the table is not a fraction.

Thus option D is not correct.

[Comment on Hint #26320.](#)

Thus option C represents the total cost, in dollars, of a repair that requires h hours of labor.

Select option C.

[Comment on Hint #26321](#)

Select one:

- ⌘ A. $h + 60$
- ⌘ B. $h - 60$
- ⌘ C. $h * 60$
- ⌘ D. $h / 60$

Submit Answer

Correct! You are done with this problem!

[Comment on Assistent #26100](#)

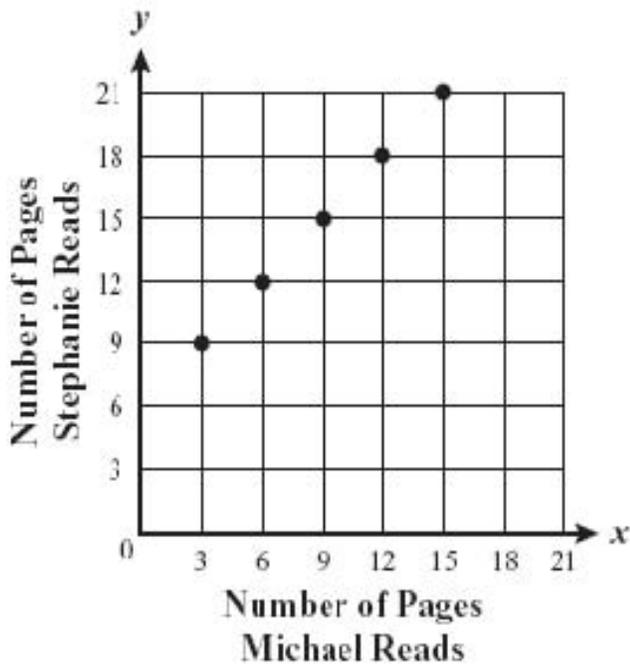
Assistment

You are previewing content.

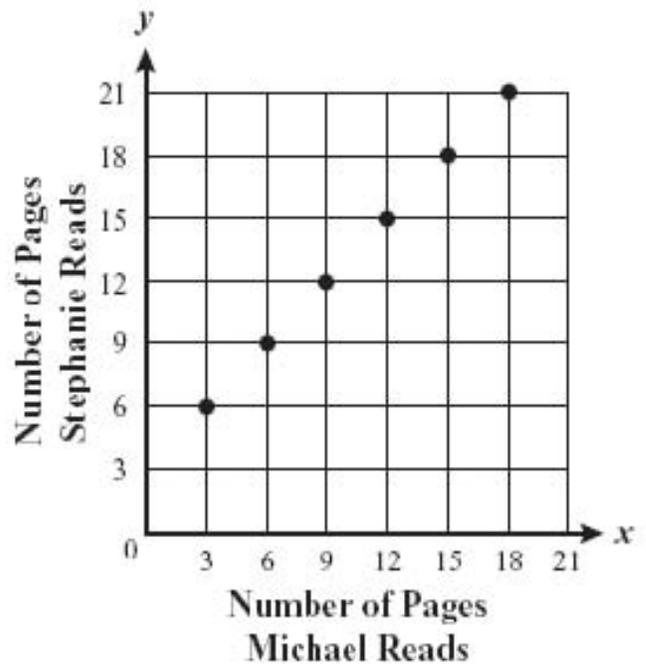
Each night, Stephanie reads 3 more pages of her book than Michael reads of his book.

Which of the following graphs correctly represents the relationship between the number of pages Stephanie reads each night and the number of pages Michael reads each night?

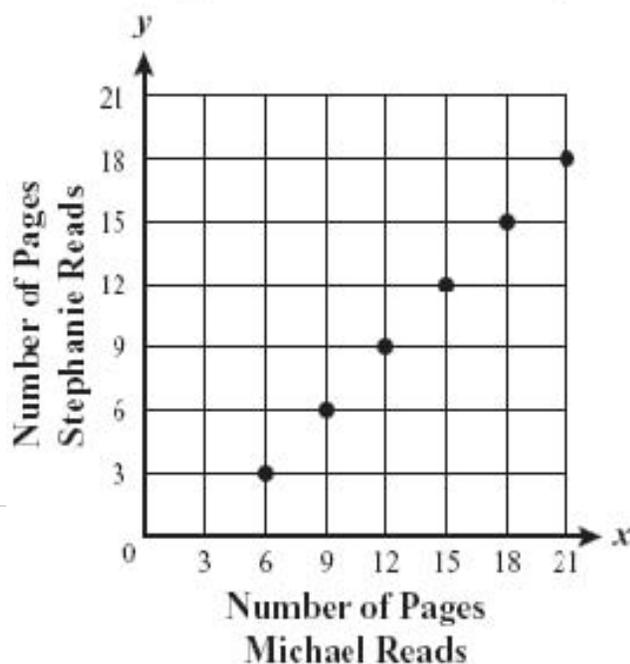
A. Pages Read Each Night



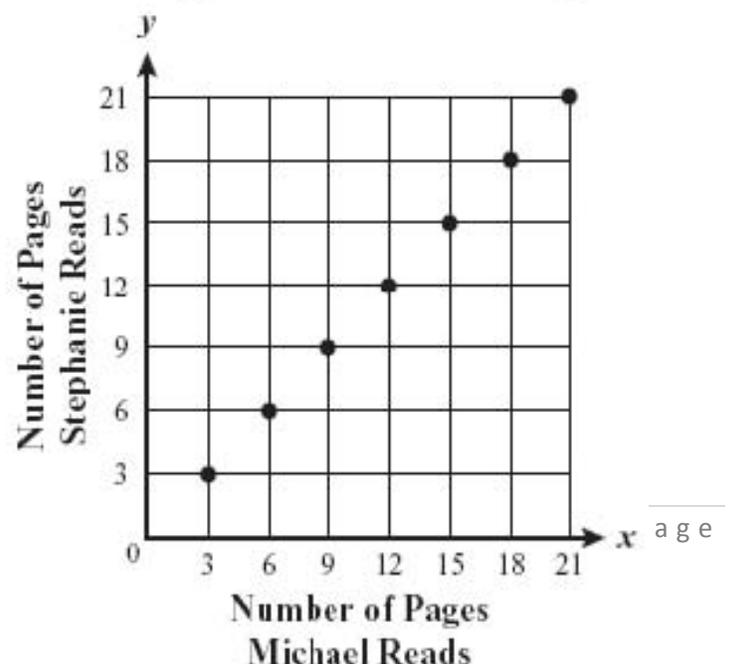
C. Pages Read Each Night



B. Pages Read Each Night



D. Pages Read Each Night



Select one:

- ⌘ A.
- ⌘ B.
- ⌘ C.
- ⌘ D.

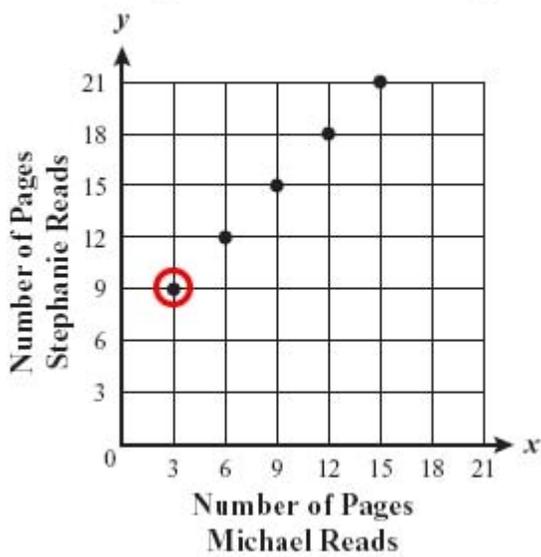
Submit Answer

Let's move on and figure out this problem

First let us learn how to read the graph.

Look at the circled dot in option A which is given below.
According to this dot, how many pages does Michael read?

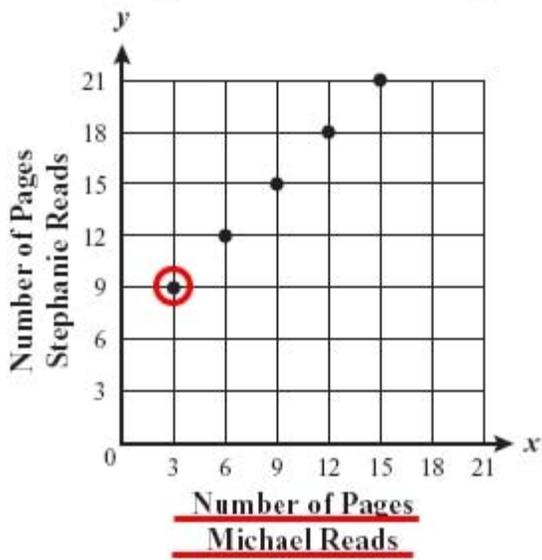
A. Pages Read Each Night



[Comment on Problem #32737](#)

We need to find the number of pages read by Michael represented by the dot. So we have to look at the axis that is labeled "Number of pages Michael reads".

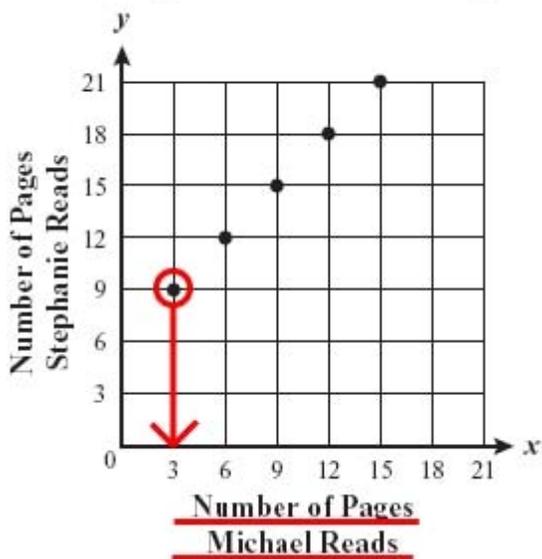
A. Pages Read Each Night



[Comment on Hint #25816](#)

If we draw a straight line starting at the dot and all the way to the bottom, it will give us the number of pages read by Michael.

A. Pages Read Each Night



[Comment on Hint #25817](#)

The red line intersects the bottom number line at 3, which must be the number of pages read by Michael.

Type in 3.

[Comment on Hint #25818](#)

Type your answer below (mathematical expression):

⌘3

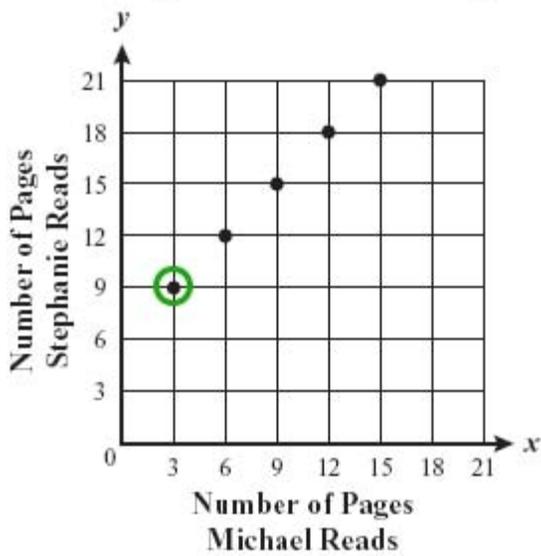
Submit Answer

Correct!

Now the circled dot tells us that Michael reads 3 pages. What about Stephanie?

Look at option A with the circled dot again. According to the dot, how many pages did Stephanie read?

A. Pages Read Each Night

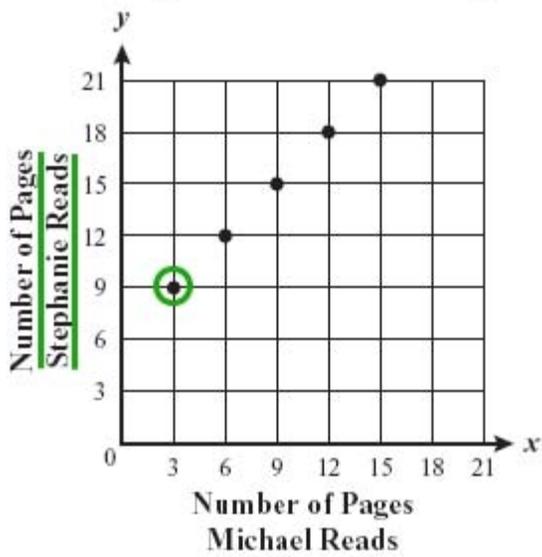


[Comment on Problem #32738](#)

We need to find the number of pages read by Stephanie represented by the dot. So

we have to look at the axis that is labeled "Number of pages Stephanie reads".

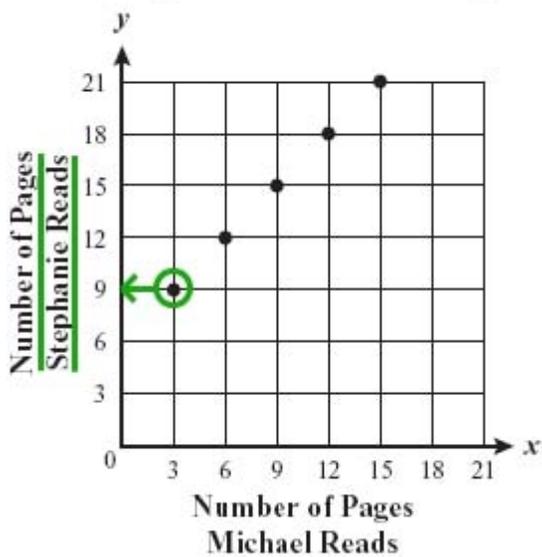
A. Pages Read Each Night



[Comment on Hint #25819](#)

If we draw a straight line starting at the dot and all the way across to the side, it will give us the number of pages read by Stephanie.

A. Pages Read Each Night



[Comment on Hint #25820](#)

The green line intersects the side number line at 9, which must be the number of pages read by Stephanie.

Type in 9.

[Comment on Hint #25821](#)

Type your answer below (mathematical expression):

✖9

Submit Answer

Correct!

So from the lowest dot of option A we can see that when Michael read 3 pages Stephanie finished reading 9 pages.

How many more pages did Stephanie read than Michael?

[Comment on Problem #32740](#)

Stephanie read 9 pages and Michael read 3 pages. The difference in

the number of pages should give you the answer.

[Comment on Hint #25823](#)

9 minus 3 is 6. So, Stephanie reads 6 more pages

than Michael. Type in 6.

[Comment on Hint #25824](#)

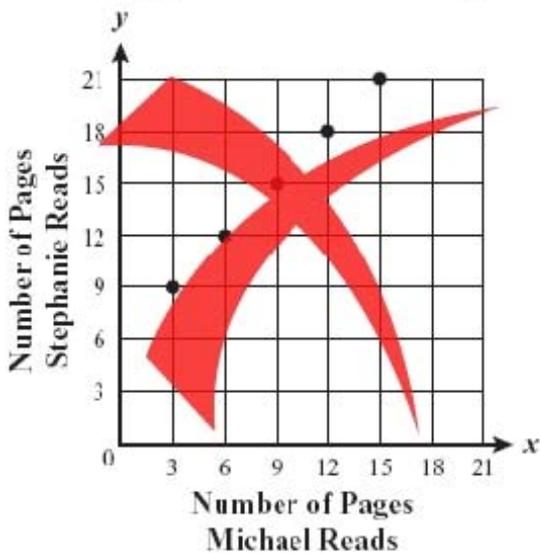
Type your answer below (mathematical expression):

• 6

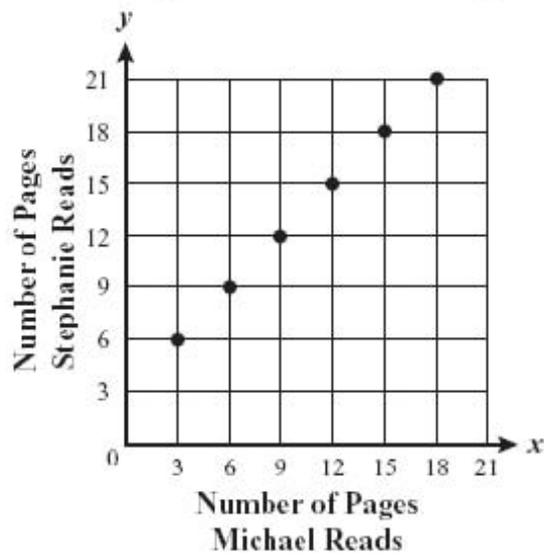
Submit Answer Correct! Thus we can see that in option A Stephanie reads 6 more pages than Michael.

The question says that each night Stephanie reads 3 more pages than Michael, so option A is not the answer.

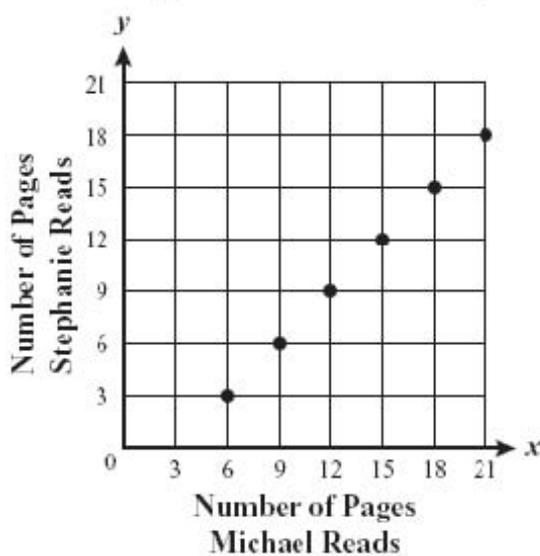
A. Pages Read Each Night



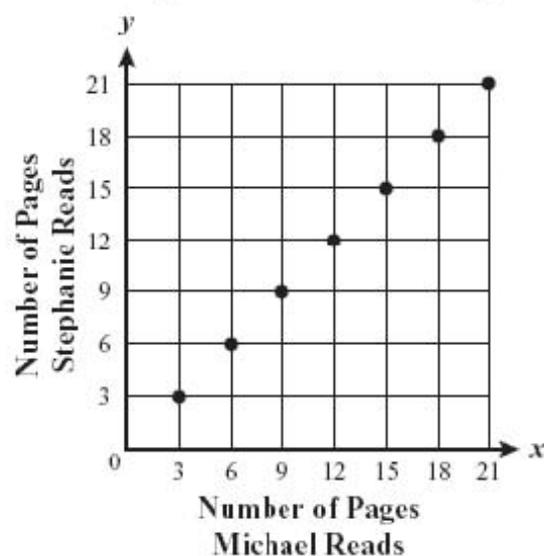
C. Pages Read Each Night



B. Pages Read Each Night



D. Pages Read Each Night



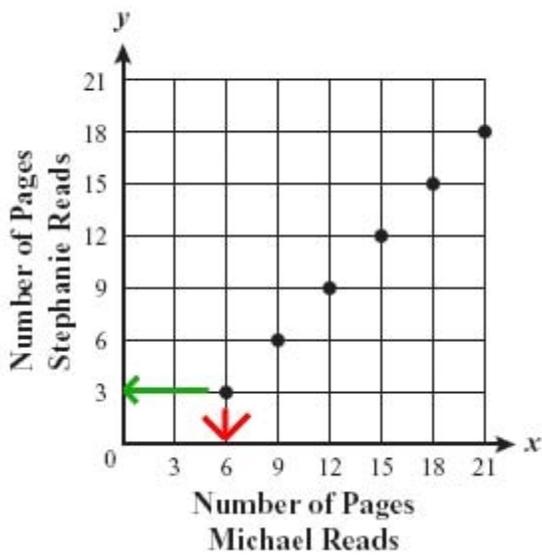
Now see if you can apply the process above and find the right answer. You should try to apply the process in more than one dot in each option.

Each night, Stephanie reads 3 more pages of her book than Michael reads of his book. Which of the given graphs correctly represents the relationship between the number of pages Stephanie reads each night and the number of pages Michael reads each night?

[Comment on Problem #32741](#)

Let us see if option B is correct.

B. Pages Read Each Night



When we draw two lines from the dot, one going straight down and the other to the right, we see that Michael reads 6 pages when Stephanie reads 3 pages.

[Comment on Hint #25825](#)

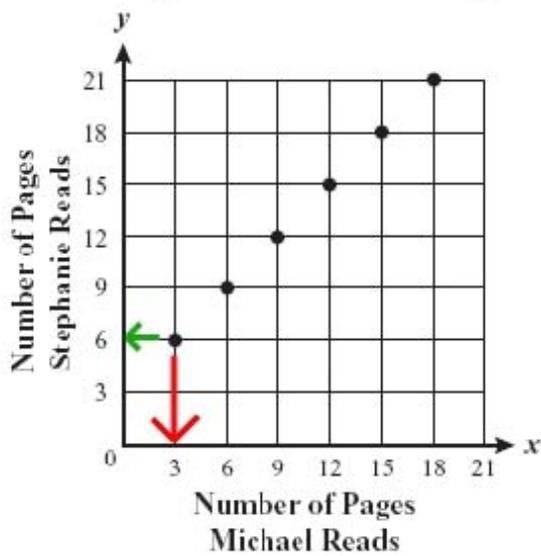
The question says Stephanie reads 3 more pages than Michael.

So option B does not correctly represent the relationship between the number of pages Stephanie reads each night and the number of pages Michael reads each night.

[Comment on Hint #25826](#)

Let us see if option C is correct.

C. Pages Read Each Night



When we draw two lines from the dot, one going straight down and the other to the right, we see that Michael reads 3 pages when Stephanie reads 6 pages.

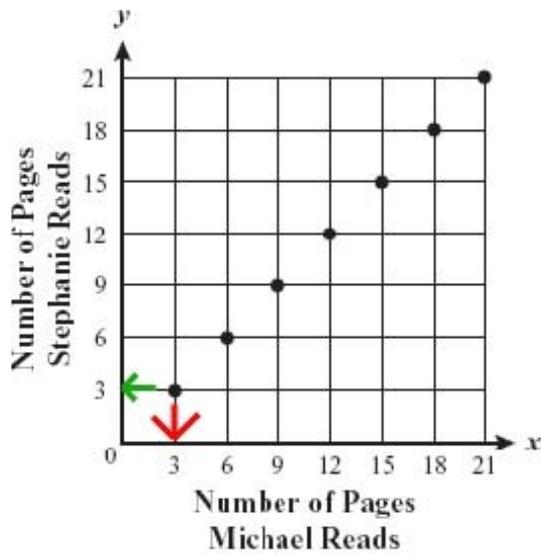
[Comment on Hint #25827](#)

We subtract the number of pages read by Michael from the number of pages read by Stephanie: $6 - 3 = 3$. So Stephanie reads 3 more pages than Michael. Option C seems to represent the relationship properly. If option D does not show this relationship then option C should be the right graphs.

[Comment on Hint #25828](#)

From option D we can observe that Stephanie and Michael read equal number of pages.

D. Pages Read Each Night



So option C correctly represents the relationship between the number of pages Stephanie reads each night and the number of pages Michael reads each night.

Select C.

[Comment on Hint #25829](#)

Select one:

- * A
- * B



D Submit Answer Correct! You
are done with this problem!

[Comment on Assistent #25968](#)

Assistment

Assistment #25861

You are previewing content.

A comet passed by Earth in the year 1835.

It passes by Earth every 60 years.

Based on this information, in which of the following years can the comet be expected to pass by Earth?

[Comment on Problem #32421](#)

Request Help

Select one:

- A. 2035
- B. 2060
- C. 2075
- D. 2080

Submit Answer

Let's move on and figure out this problem

The question says that the comet passes by Earth every 60 years. The

question also says that the comet passed by Earth in the year 1835.

So what do we have to do to find the next year in which the comet will pass Earth?

[Comment on Problem #32422](#)

"The comet passes by Earth every 60 years"

This statement means that once the comet passes earth, it takes the comet another 60 years to pass by earth again.

[Comment on Hint #25306](#)

The comet passed by Earth in 1835.

So, if it takes the comet **60 MORE years** to pass by earth again, then the next year it will pass by Earth will be **60 added to** 1835.

Thus A is shows the correct operation, select A.

[Comment on Hint #25307](#)

Select one:

- A. 60 plus 1835
- B. 60 minus 1835
- C. 60 times 1835
- D. 60 divided by 60

Submit Answer

Correct!

Now we know that we add 60 to find the next year the comet will pass by earth.

So if the comet passed earth in the year 1835, when will the comet pass earth next?

[Comment on Problem #32423](#)

The comet passes earth every 60 years so you have to add 60 to the given year in order to find the year it will next pass.

[Comment on Hint #25308](#)

The comet passed Earth on 1835. So, it will next pass

in 1835 plus 60, which is 1895.

$$\begin{array}{r} \text{Years Comet Pass : } 1835, 1895 \\ \phantom{\text{Years Comet Pass : }} \downarrow \\ \phantom{\text{Years Comet Pass : }} +60 \end{array}$$

Type in 1895.

[Comment on Hint #25309](#)

Type your answer below (mathematical expression):

⌘1895

Submit Answer Correct! [Now see if you can use the method of addition to answer the given question.](#)

A comet passed by Earth in the year 1835. It passes by Earth every 60 years. Based on this information, in which of the following years can the comet be expected to pass by Earth?

[Comment on Problem #32424](#)

After answering the previous question we know that the comet next passes Earth in 1895.

Now let's find the year in which the comet will pass next. Add 60 to 1895.

[Comment on Hint #25310](#)

1895 plus 60 is 1955.

Years Comet Pass : 1835, 1895, 1955
 \swarrow \swarrow
 +60 +60

We do not have 1955 as an option so we will have to look at the next year in which the comet will pass. Add 60 to 1955.

[Comment on Hint #25311](#)

1955 plus 60 is 2015.

Years Comet Pass : 1835, 1895, 1955, 2015
 \swarrow \swarrow \swarrow
 +60 +60 +60

We do not have 2015 as an option as well. We will have to look at the next year in which the comet will pass.

Add 60 to 2015.

[Comment on Hint #25312](#)

2015 plus 60 is 2075.

Years Comet Pass : 1835, 1895, 1955, 2015, 2075
 \swarrow \swarrow \swarrow \swarrow
 +60 +60 +60 +60

We do have 2075 as an option, option C.

This must be the year the comet is expected to pass by Earth.

Select option C.

[Comment on Hint #25313](#)

Select one:

- ⌘ A. 2035
- ⌘ B. 2060
- ⌘ C. 2075
- ⌘ D. 2080

Submit Answer

Correct! You are done with this problem!

[Comment on Assistent #25861](#)

You are previewing content.

Which of the following could be the rule used to create the number pattern shown below? 250

130, 70, 40, 25

[Comment on Problem #32416](#)

Request Help

Select one:

- ⌘ A. Subtract 120.
- ⌘ B. Subtract 10; then divide the result by 2.
- ⌘ C. Divide by 2.
- ⌘ D. Divide by 2; then add 5 to the result.

Submit Answer

Let's move on and figure out this problem

Let us look at one rule at a time and try to find the rule that works. The first rule says, "**Subtract 120**". The first number in the sequence is 250.

According to the rule what is the next number in the sequence?

[Comment on Problem #32417](#)

The rule says to subtract 120, so we should do :

250-120

[Comment on Hint #25290](#)

250 -120 = 130. So 130 should be the next number in the sequence. Type in 130.

[Comment on Hint #25291](#)

Type your answer below (mathematical expression):

189 | Page

- 130

Submit Answer

Correct!

So far "Subtract 120" works. So according to the "Subtract 120" rule we have,

$$\begin{array}{r} 250, 130, \\ -120 \end{array}$$

What is the third number in the sequence according to the rule of subtracting 120?

[Comment on Problem #32418](#)

From the above question we found that 130 is the second number in the sequence.

So now to find the third number we have to subtract 120 from 130.

[Comment on Hint #25292](#)

$130 - 120 = 10$. So the third number in

sequence is 10.

[Comment on Hint #25293](#)

Type your answer below (mathematical expression):

*10

Submit Answer

Correct!

So from the rule of subtracting 120, 10 is the third number in the sequence.

$$\begin{array}{r} 250, 130, 10 \\ -120 \quad -120 \end{array}$$

But 10 is not the third term in our given sequence so rule A is not the correct rule. See if you can use this process of elimination to find the right rule.

Which of the following could be the rule used to create the number pattern shown below? 250

130, 70, 40, 25

[Comment on Problem #32419](#)

~~Rule B says first to~~ subtract 10 and then divide the result by 2. Check this rule.

$250 - 10 = 240$. And, $240 \div 2 = 120$.

250, 120

 $(250 - 10) / 2$

120 is not the second number in the given sequence.

Thus option B is also not the right rule.

[Comment on Hint #25300](#)

Rule C says to divide by 2. Go ahead and divide the first number in the given sequence by 2.

[Comment on Hint #25301](#)

$250 \div 2 = 125$

250, 125

 $250 / 2$

125 is not the second number in the given sequence.

Thus option C is also not the right rule.

[Comment on Hint #25302](#)

Finally let us look at rule D. Rule D says "Divide by 2, then add 5 to the result."

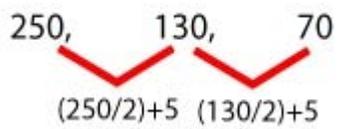
Check this rule.

[Comment on Hint #25303](#)

$250 \div 2 = 125$. And $125 + 5 = 130$.

Also, $130 \div 2 = 65$. And $65 + 5$

$= 70$.



[Comment on Hint #25304](#)

Rule D gives the right sequence. Also, A, B, and C are not the right rule so rule D is the correct rule used to create the number pattern. Select D.

[Comment on Hint #25305](#)

Select one:

- ⌘
- ⌘
- B. Subtract 10; then divide the result by 2.
- C. Divide by 2.

D. Divide by 2; then add 5 to the result. Submit

Answer

Correct! You are done with this problem!

[Comment on Assistentment #25859](#)

Assistment

Assistment #25858

You are previewing content.

Karen purchased a new camera for \$60. She also purchased 5 rolls of film.

The total cost of the camera and the rolls of film was \$90.

Karen's purchase is represented by the equation below.

In the equation, f stands for the cost of each roll of film.

$$5f + 60 = 90$$

What was the cost of each roll of film that Karen purchased?

[Comment on Problem #32413](#)

Request Help

Type your answer below (mathematical expression):

✖

Submit Answer

Let's move on and figure out this problem

[Karen spends a total of \\$90 on films and cameras.](#)

[Out of the \\$90, she spends \\$60 on camera and spends the rest to buy 5 films.](#)

What is the amount of money Karen spends to buy films?

[Comment on Problem #32414](#)

Karen spends \$60 out of \$90 on the camera and the rest on films. So to find

the amount she spends on films we need to subtract 60 from 90.

[Comment on Hint #25284](#)

$90 - 60 = 30$. So she spends \$30 on films.

Type in 30.

[Comment on Hint #25285](#)

Type your answer below (mathematical expression):

⌘30

Submit Answer

Correct!

We know that Karen spends \$30 on films and that she buys a total of 5 films.

What is the cost of each film?

[Comment on Problem #32415](#)

Karen bought 5 rolls for \$30. So if f represents the cost of each roll

we add f 5 times to get \$30. $f + f + f + f + f = 30$

[Comment on Hint #25286](#)

We need to find a number that when added 5 times to itself gives us 30.

This number can be found by dividing 30 by 5.

[Comment on Hint #25287](#)

$$30 \div 5 = 6$$

[Comment on Hint #25288](#)

$6 + 6 + 6 + 6 + 6 = 30$. So 6 must be the

cost of each roll. Type in 6.

[Comment on Hint #25289](#)

Type your answer below (mathematical expression):

⌘6

Submit Answer

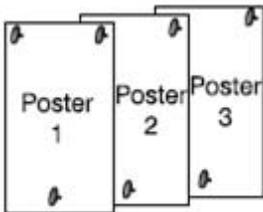
Correct! You are done with this problem!

[Comment on Assisment #25858](#)

Assistment

Assistment #26114

You are previewing content.



Ethan hung 12 posters in one row on his wall using tacks as shown in the picture above. Ethan used 3 tacks for the first poster. He used 2 tacks for each additional poster. How many tacks will he need to hang all 12 posters?

Problem #33153
Request Help

Type your answer below (mathematical expression):

•

Submit Answer

Let's move on and figure out this problem
How many posters have 3 tacks?

[Comment on Problem #33154](#)

Read the red portion carefully.

Ethan hung 12 posters in one row on his wall using tacks as shown in the picture above. **Ethan used 3 tacks for the first poster.** He used 2 tacks for each additional poster. How many tacks will he need to hang all 12 posters?

[Comment on Hint #26455](#)

Notice the green oval inside blue oval below.

Ethan used 3 tacks for **the first** poster.

So 1 poster have 3 tacks.

Type in 1.

[Comment on Hint #26456](#)

Type your answer below (mathematical expression):

⌘1

Submit Answer

Correct! How many posters have 2 tacks?

[Comment on Problem #33155](#)

Read the red portion carefully.

Ethan hung 12 posters in one row on his wall using tacks as shown in the picture above. Ethan used 3 tacks for the first poster. He used 2 tacks for each additional poster. How many tacks will he need to hang all 12 posters?

[Comment on Hint #26457](#)

Notice the green oval inside the blue oval below.

He used 2 tacks for each additional poster.

[Comment on Hint #26458](#)

Out of 12 posters 1 had three tacks. So total additional posters are $12 - 1 = 11$ posters So 11 poster have 2 tacks. Type in 11.

[Comment on Hint #26460](#)

Type your answer below (mathematical expression):

• 11

Submit Answer

Correct!

So 11 posters have 2 tacks each.

What is the total number of tacks used for 11 posters?

[Comment on Problem #33156](#)

Each of these 11 posters has 2 tacks.

[Comment on Hint #26461](#)

Therefore 11 posters will have $11 * 2$ tacks.

[Comment on Hint #26462](#)

$11 * 2 = 22$ Therefore, in total 22 tacks are used for

11 posters. Type in 22.

[Comment on Hint #26463](#)

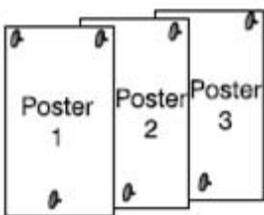
Type your answer below (mathematical expression):

- 22

Submit Answer

Correct!

Let's get back to original question.



Ethan hung 12 posters in one row on his wall using tacks as shown in the picture above. Ethan used 3 tacks for the first poster. He used 2 tacks for each additional poster. How many tacks will he need to hang all 12 posters?

[Comment on Problem #33157](#)

There are 12 posters in total.

[Comment on Hint #26464](#)

1 poster uses 3 tacks.

Other 11 posters use 22 tacks in total.

[Comment on Hint #26465](#)

So total number of tacks for 12 posters = 3 tacks for first poster + 22 tacks for other 11 posters = $3 + 22 = 25$ Type in 25

[Comment on Hint #26467](#)

Type your answer below (mathematical expression):

⌘25

Submit Answer

Correct! You are done with this problem!

[Comment on Assisment #26114](#)

Assistment

Assistment #26115

You are previewing content.

What does m equal in this equation?

$3m + 2 = 17$ Note : $3m$ means 3 times

m .

[Comment on Problem #33158](#)

Request Help

Type your answer below (mathematical expression):

⌘

Submit Answer

Let's move on and figure out this problem

Let's break this problem into parts.

What number goes in the box below?

[Comment on Problem #33159](#)

The question can be understood as: When 2 is added to the number

in the blue box it will become 17.

[Comment on Hint #26468](#)

Another way to understand it is: The number in

the blue box is 2 less than 17.

[Comment on Hint #26469](#)

15 is 2 less than 17.

Type in 15.

[Comment on Hint #26470](#)

Type your answer below (mathematical expression):

- 15

Submit Answer

Correct! Now you

know that

$$15 + 2 = 17$$

$$3m + 2 = 17$$

This means $3m = 15$. What value of m makes $3m = 15$? Remember:

$3m$ means 3 times m !

[Comment on Problem #33160](#)

Remember there are fact families:

If $3 * 6 = 18$ Then $3 = 18 \div 6$ $6 = 18$

$\div 3$

[Comment on Hint #26471](#)

$3m$ means 3 times m !

So $3m = 3 * m$

[Comment on Hint #26472](#)

Therefore $3 * m = 15$

[Comment on Hint #26473](#)

Using the fact family again

$$m = 15 \div 3$$

[Comment on Hint #26475](#)

$$m = 15 \div 3$$

$$= 5 \text{ So } m =$$

5. Type in

5.

[Comment on Hint #26476](#)

Type your answer below (mathematical expression):

*5

Submit Answer

Correct! You are done with this problem!

[Comment on Assisment #26115](#)

Assistment

Assistment #26116

You are previewing content.

Which can be used to find the missing number in the number sentence below?

$$3 * \square = 39$$

[Comment on Problem #33161](#)

Request Help

Select one:

- ⌘ $3 \div 39$
- ⌘ $3 * 39$
- ⌘ $39 \div 3$
- ⌘ $39 - 3$

Submit Answer

Let's move on and figure out this problem

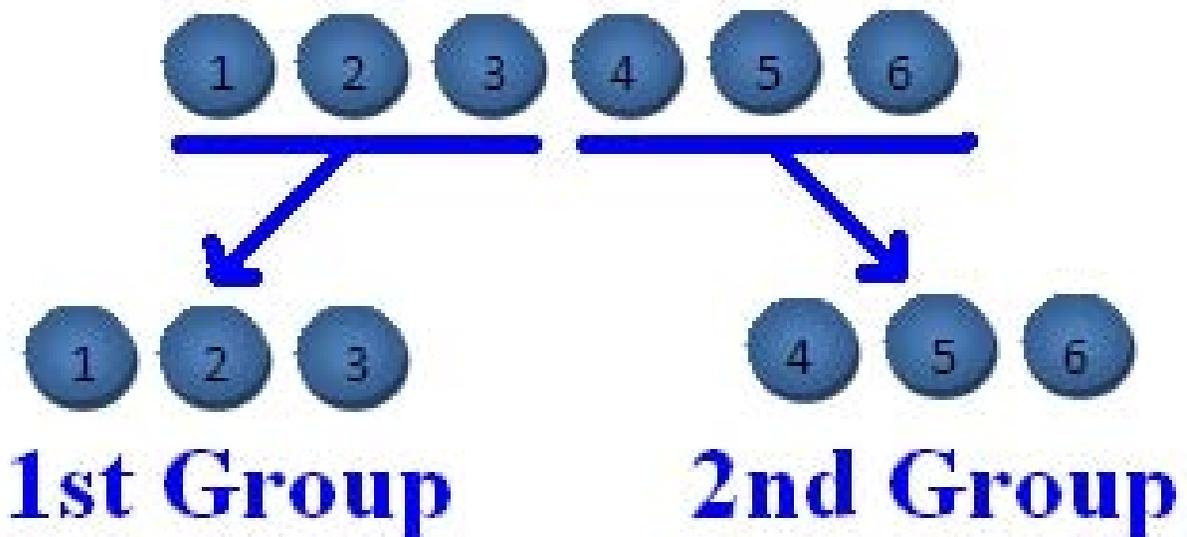
Let's take the following example. $2 * 3 = 6$

What is the value of $6 \div 3$?

[Comment on Problem #33162](#)

$6 \div 3$ can be understood as 6 balls divided into groups of 3 balls.

[Comment on Hint #26477](#)



Type in 2.

[Comment on Hint #26479](#)

Type your answer below (mathematical expression):

✖2

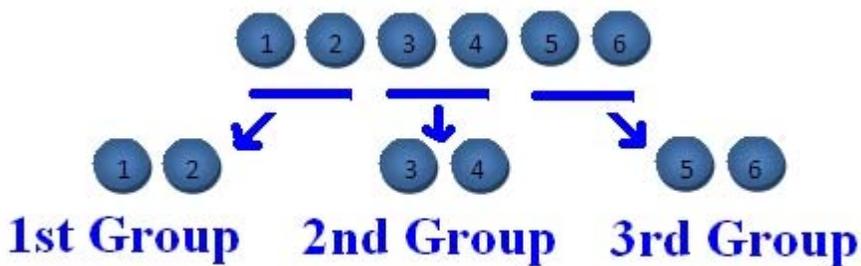
Submit Answer

Correct! Continuing the same example, $2 * 3 = 6$ What is the value of $6 \div 2$?

[Comment on Problem #33163](#)

$6 \div 2$ can be understood as 6 balls divided into groups of 2 balls.

[Comment on Hint #26480](#)



[Comment on Hint #26481](#)

So 6 balls can be divided into **three groups** of 2 balls.

Type in 3.

[Comment on Hint #26482](#)

Type your answer below (mathematical expression):

• 3

Submit Answer

Correct! Continuing the same example, $2 * 3 = 6$

Which of the following is not true?

[Comment on Problem #33164.](#)

$6 = 2 * 3$ is same as $2 * 3 = 6$; only left and right hand side parts are exchanged. So

$6 = 2 * 3$ is True.

[Comment on Hint #26483.](#)

From first scaffolding question we found that If

$2 * 3 = 6$ then $2 = 6 \div 3$. So $2 = 6 \div 3$ is True.

[Comment on Hint #26484.](#)

From second scaffolding question we found that If

$2 * 3 = 6$ then $3 = 6 \div 2$. So $3 = 6 \div 2$ is True.

[Comment on Hint #26485.](#)

Only option $3 = 2 \div 6$ is left.

So $3 = 2 \div 6$ is **not True**.

Select $3 = 2 \div 6$

[Comment on Hint #26486.](#)

Select one:

-
-
- $2 = 6 \div 3$
- $6 = 2 * 3$

$3 = 2 \div 6$ Submit

Answer

Correct! So, from the previous example we

found that: If $2 * 3 = 6$ Then $6 = 2 * 3$

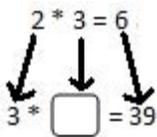
$2 = 6 \div 3$ $3 = 6 \div 2$ all are true. Now let's get back to original question again.

Which can be used to find the missing number in the number sentence below?

$$3 * \square = 39$$

[Comment on Problem #33165](#)

Let's compare $2 * 3 = 6$ and $3 * \square = 39$



[Comment on Hint #26488](#)

We know that If 2

$* 3 = 6$ Then $6 =$

$2 * 3$ $2 = 6 \div 3$

$= 6 \div 2$ all are

true.

[Comment on Hint #26491](#)

So,



[Comment on Hint #26489](#)

Then



So select $39 \div 3$.

[Comment on Hint #26490](#)

Select one:

- $3 \div 39$
- $3 * 39$
- $39 \div 3$
- $39 - 3$

Submit Answer

Correct! You are done with this problem!

[Comment on Assistent #26116](#)

Assistment

Assistment #26339

You are previewing content.

Ralph gets on his bike at 10 A.M. and rides towards his friend's house 9 miles away. At 10:12 A.M. he has ridden 3 miles. If he keeps going at the same rate, when will he arrive at his friend's house?

[Comment on Problem #33884](#)

Request Help

Select one:

- 10:21 A.M.
- 10:24 A.M.
- 10:36 A.M.
- 10:48 A.M.

Submit Answer

Let's move on and figure out this problem First of

all what does going at the same rate mean?

[Comment on Problem #33885](#)

Same rate means going in a same speed.

[Comment on Hint #27480](#)

This would mean you would cover equal distance in equal time intervals.

Select "covering equal distance in equal time interval."

[Comment on Hint #27776](#)

Select one:

-
- increasing speed repetitively after certain time interval
- decreasing speed repetitively after certain time interval
- covering equal distance in equal time interval

covering twice the distance in same interval of time Submit

Answer Correct!

How much time does Ralph take to cover 3 miles?

[Comment on Problem #33886](#)

The question says:

Ralph started at 10 A.M. (see the colored text below)

Ralph gets on his bike at 10 A.M. and rides towards his friend's house 9 miles away. At 10:12 A.M. he has ridden 3 miles. If he keeps going at the same rate, when will he arrive at his friend's house?

[Comment on Hint #27482](#)

The question also says:

Ralph has covered 3 miles at 10:12 A.M. (See the colored text below)

Ralph gets on his bike at 10 A.M. and rides towards his friend's house 9 miles away. **At 10:12 A.M. he has ridden 3 miles.** If he keeps going at the same rate, when will he arrive at his friend's house?

[Comment on Hint #27483](#)

10:12 A.M. is 12 minutes past 10 A.M.

[Comment on Hint #27484](#)

Therefore Ralph took 12 minutes to cover 3 miles.

Select 12 minutes.

[Comment on Hint #27485](#)

Select one:

- 3 mintues
- 9 minutes
- 10 minutes
- 12 minutes

Submit Answer Correct! Now you know Ralph is riding at a constant rate and that means he will cover equal distance in equal time intervals.

You also know that he took 12 minutes to cover 3 miles.

To find the total time he needs, you have to know the total distance he has to cover.

How much distance (in miles) does Ralph need to cover?

[Comment on Problem #33887](#)

The question says:

Ralph is going to his friend's house 9 miles away. (See the highlighted text below)

Ralph gets on his bike at 10 A.M. and rides towards his friend's house 9 miles away. At 10:12 A.M. he has ridden 3 miles. If he keeps going at the same rate, when will he arrive at his friend's house?

[Comment on Hint #27486](#)

Therefore Ralph needs to cover 9 miles.

Type in 9.

[Comment on Hint #27487](#)

Type your answer below (mathematical expression):

•

Submit Answer

Correct!

Now you know:

Ralph is riding at a constant rate and that means he will cover equal distance in equal time intervals.

Ralph took 12 minutes to cover 3 miles.

And Ralph has to cover 9 miles in total.

So let's get back to the original question again.

Ralph gets on his bike at 10 A.M. and rides towards his friend's house 9 miles away. At 10:12 A.M. he has ridden 3 miles. If he keeps going at the same rate, when will he arrive at his friend's house?

[Comment on Problem #33888](#)

Let's make a table.

[Comment on Hint #27488](#)

Ralph covered 3 miles in 12 minutes.

Since he is covering equal distance in same interval of time, in next 12 minutes he will cover another 3 miles.

This would give the following table:

Distance covered	Time	Clock Time
3 miles	12 minutes	10:12 A.M.
6 miles	$12 + 12 = 24$ minutes	10:24 A.M.

Ralph hasn't covered 9 miles yet. Let's continue on the table.

[Comment on Hint #27491](#)

After Ralph covers next 3 miles the new table would look like:

Distance covered	Time	Clock Time
3 miles	12 minutes	10:12 A.M.
6 miles	$12 + 12 = 24$ minutes	10:24 A.M.
9 miles	$24 + 12 = 36$ minutes	10:36 A.M.

So Ralph takes 36 minutes to cover 9 miles and reach his friend's house.

Select 10:36 A.M.

[Comment on Hint #27493](#)

Select one:

- 10:21 A.M.
- 10:24 A.M.
- 10:36 A.M.
- 10:48 A.M.

Submit Answer

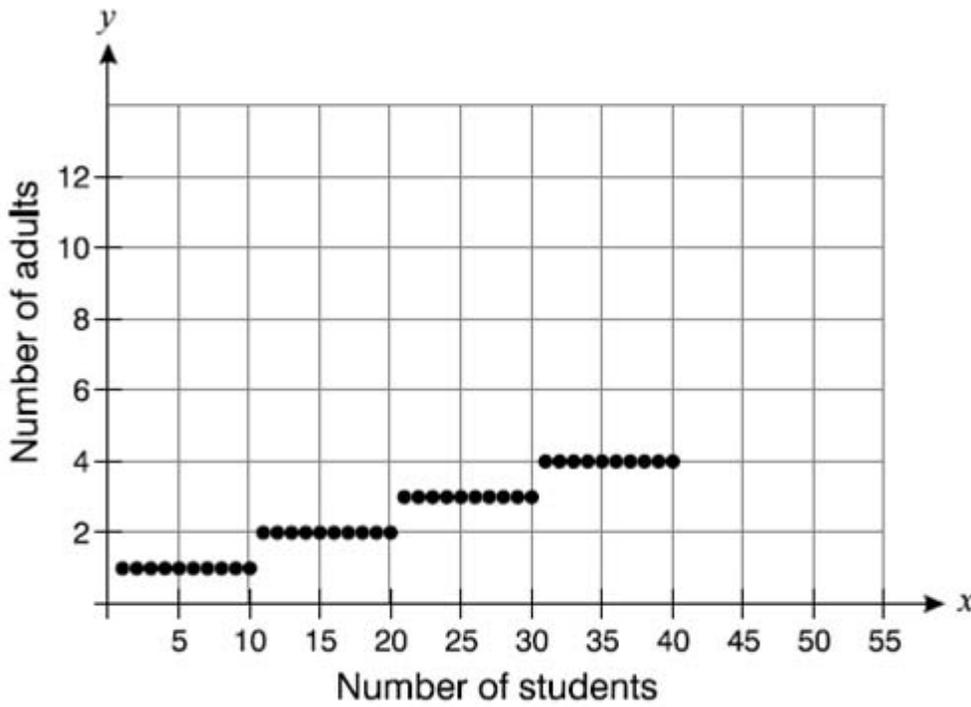
Correct! You are done with this problem!

[Comment on Assistentment #26339](#)

Assistment

You are previewing content.

Use the graph below to answer this question.



The graph shows how many adults are needed to go on a field trip, based on the number of students going. If the relationship shown by the graph continues, how many adults are needed if 52 students are going on a field trip?

[Comment on Problem #33890](#)

Request Help

Type your answer below (mathematical expression):

•

Submit Answer Let's move on and figure

out this problem

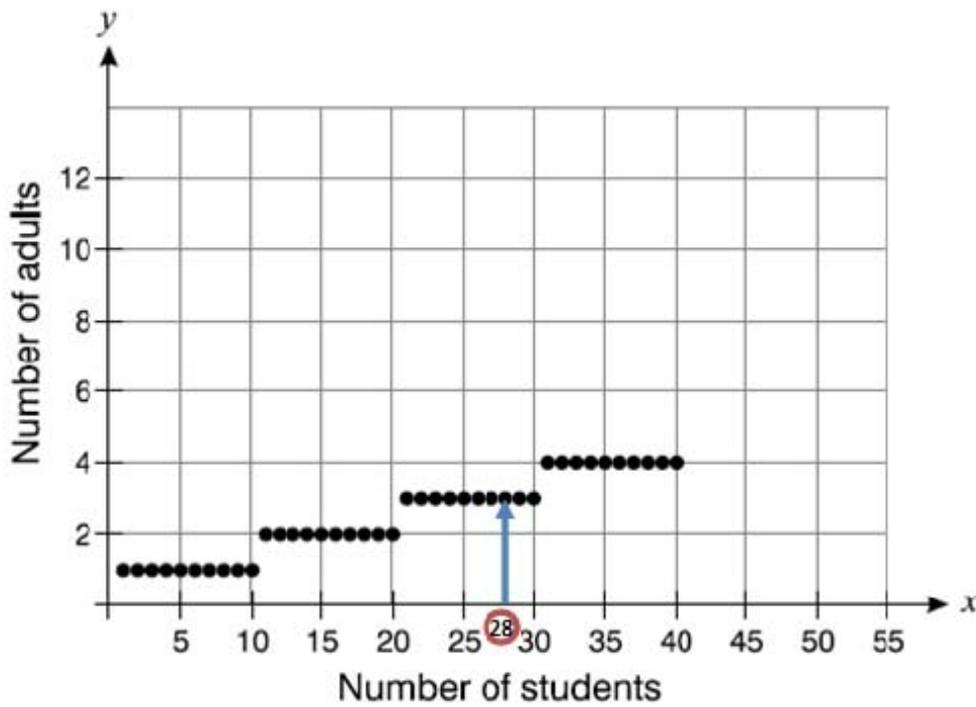
<http://assistment3.cs.wpi.edu/build/preview/assistment/26341>

Let's first make sure you know how to read this graph.

How many adults are needed if 28 students are going on a field trip?

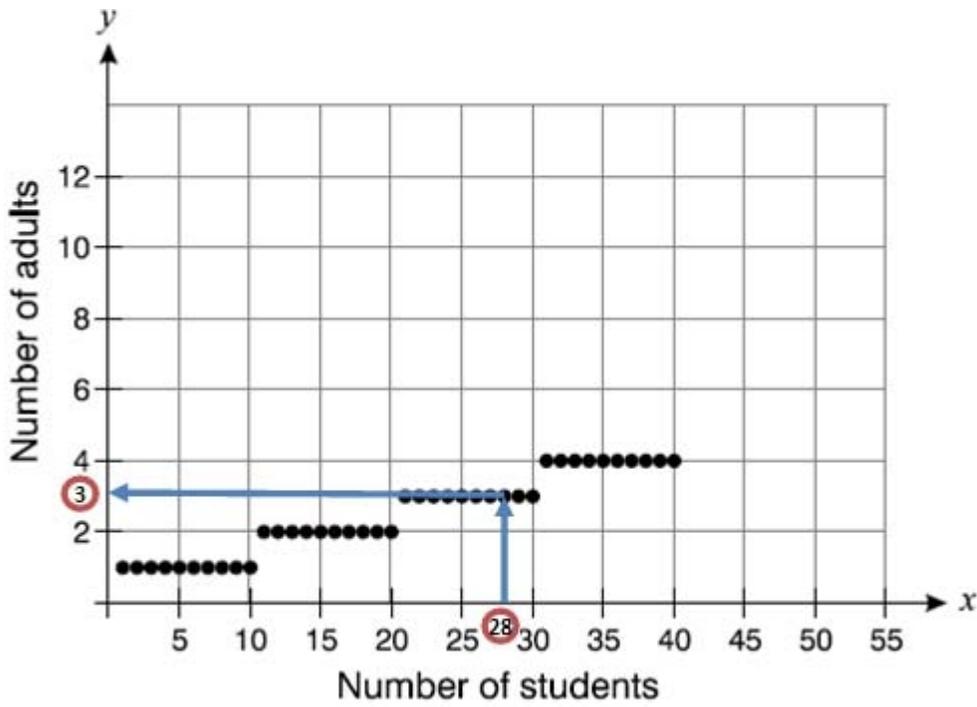
[Comment on Problem #33894.](#)

Draw a vertical line from 28 in the "Number of students" axis to the marker in the graph.



[Comment on Hint #27498.](#)

Draw a horizontal line from the marker you reached to the "Number of adults" axis.



[Comment on Hint #27499](#)

The number you reached is the number of adults needed.

[Comment on Hint #27500](#)

Hence 3 adults are needed if 28 students are going on a field trip.

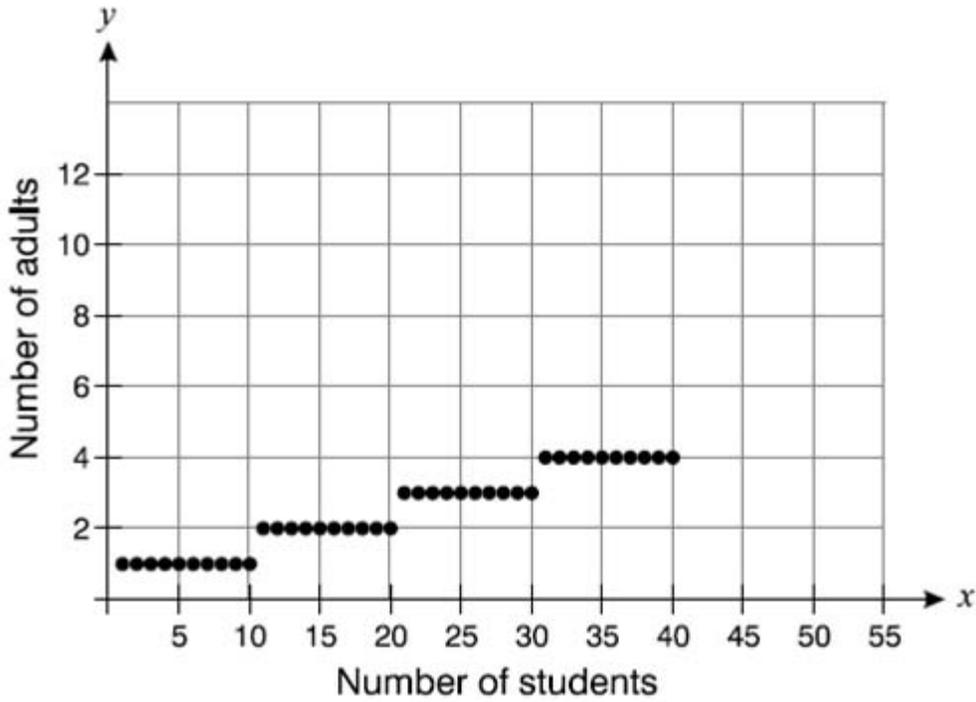
Type in 3.

[Comment on Hint #27501](#)

Type your answer below (mathematical expression):

Submit Answer Correct! Now let's get back to the original question again.

Use the graph below to answer this question.



The graph shows how many adults are needed to go on a field trip, based on the number of students going. If the relationship shown by the graph continues, how many adults are needed if 52 students are going on a field trip?

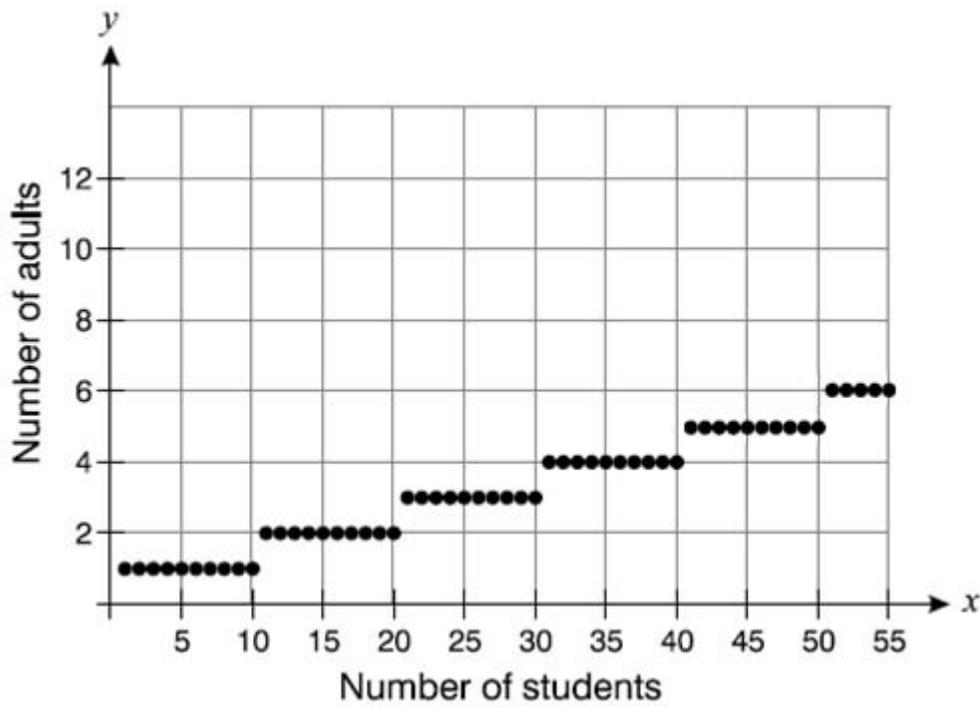
[Comment on Problem #33895](#)

There are not enough markers in the given graph.

First of all add markers properly.

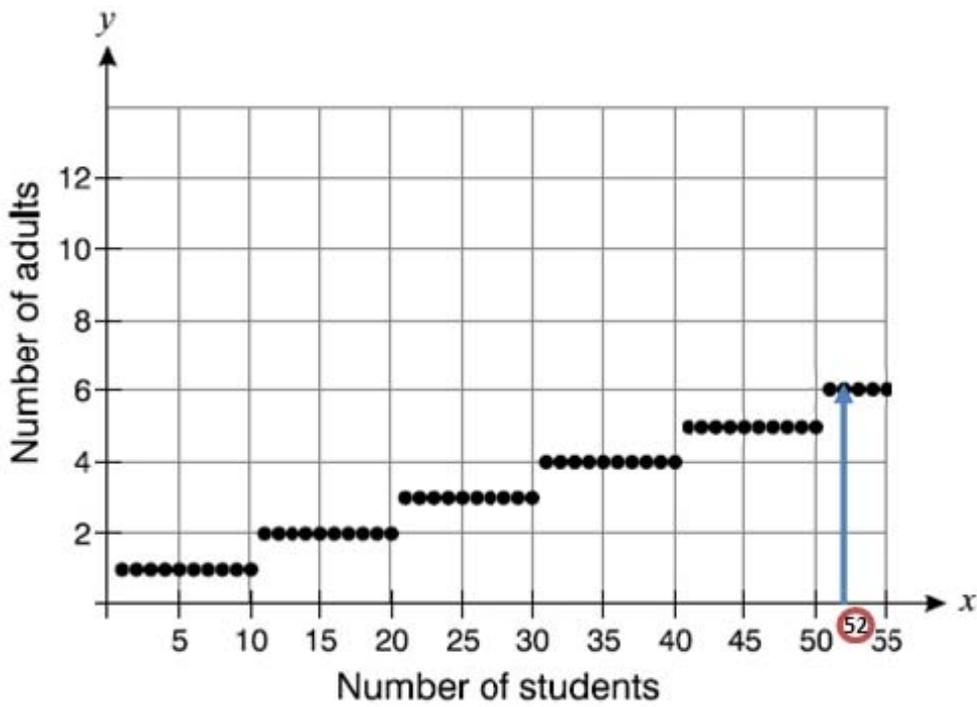
[Comment on Hint #27502](#)

The graph with added markers would look like:



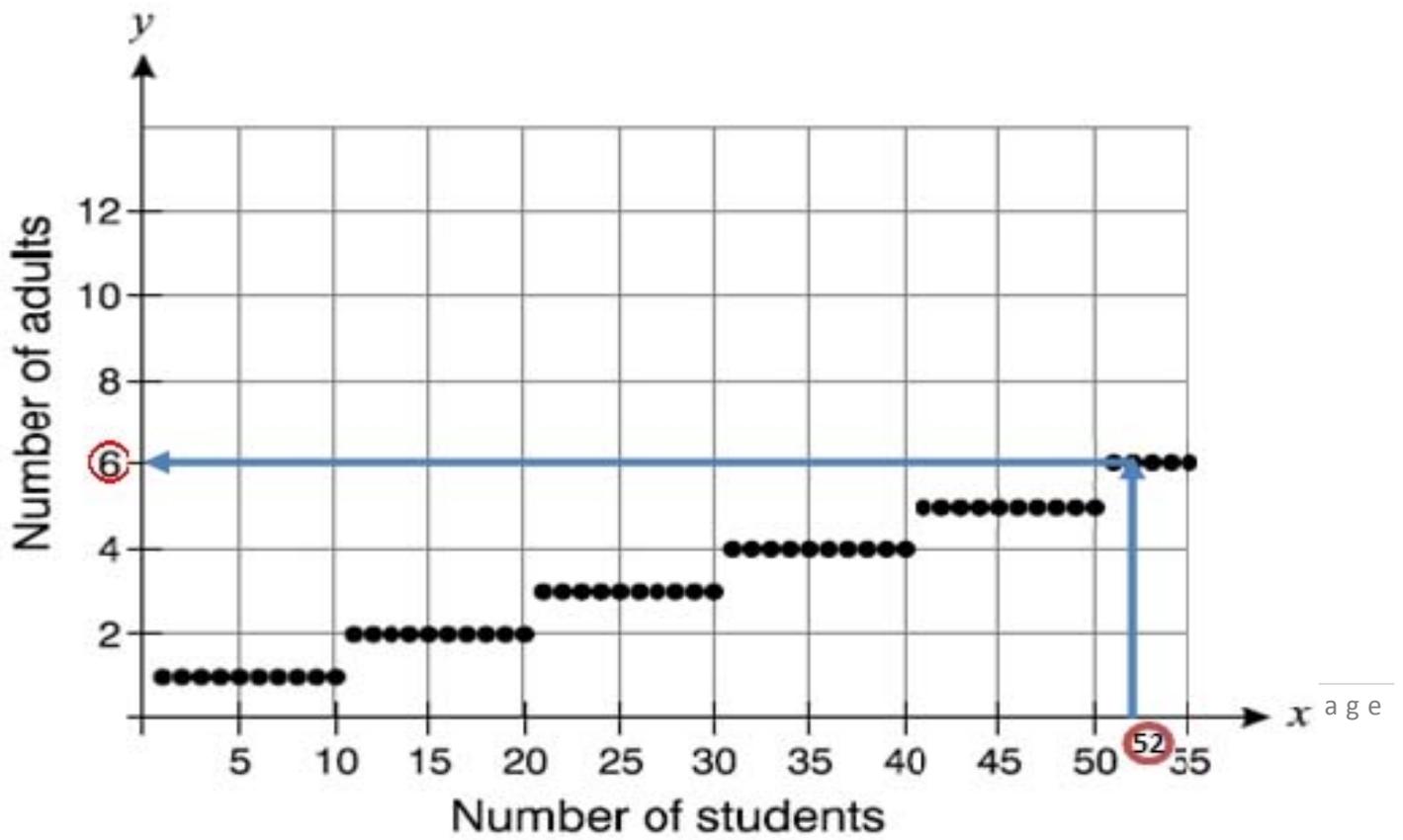
[Comment on Hint #27503](#)

Draw a vertical line from 52 in the "Number of students" axis to the marker in the graph.



[Comment on Hint #27504.](#)

Draw a horizontal line from the marker you reached to the "Number of adults" axis.



[Comment on Hint #27505](#)

The number you reached is the number of adults needed.

[Comment on Hint #27506](#)

Hence 6 adults are needed if 52 students are going on a field trip.

Type in 6.

[Comment on Hint #27507](#)

Type your answer below (mathematical expression):

⌘6

Submit Answer

Correct! You are done with this problem!

[Comment on Assistentment #26341](#)

Assistment

Assistment #26342

You are previewing content.

Use the picture below to answer this question.



Marion wants to rent a canoe to go out on a lake. The cost is \$2.00 plus \$1.50 for each hour.

Using numbers, symbols, and the variable n , write an expression for how much it would cost to rent the canoe for n hours.

[Comment on Problem #33897](#)

Request Help

Type your answer below (mathematical expression):

•

Submit Answer

Let's move on and figure out this problem. In order to find the expression for the cost we must look carefully at the problem and find all the different forms of cost.

What is the basic cost?

219 | Page

<http://assistment3.cs.wpi.edu/build/preview/assistment/26342>

Note: Basic cost is the cost that Marion has to pay no matter for many hours he rents the canoe.

[Comment on Problem #33926](#)

See the highlighted part of the question below.

Marion wants to rent a canoe to go out on a lake. The cost is \$2.00 plus \$1.50 for each hour.

[Comment on Hint #27551](#)

Therefore the basic cost is \$2.00

Type in 2.

[Comment on Hint #27552](#)

Type your answer below (mathematical expression):

2

Submit Answer

Correct! What is the cost per hour for renting canoe?

[Comment on Problem #33927](#)

See the highlighted part of the question below.

Marion wants to rent a canoe to go out on a lake. The cost is \$2.00 plus \$1.50 for each hour.

[Comment on Hint #27556](#)

Therefore the cost per hour is \$1.50.

Type in 1.50

[Comment on Hint #27557](#)

Type your answer below (mathematical expression):

1.5

Submit Answer Correct! You know the basic charge is \$2.00 and charge for each hour is \$1.50.

The question asks to write an expression for a trip that is n hours long.

Instead let's first calculate how much it would cost to go on a trip that is 4 hours long.

How much would it cost for a 4 hour trip?

[Comment on Problem #33928](#)

Total cost = Basic Cost + Cost for 4 hours

[Comment on Hint #2774](#)

The basic charge is \$2.00 and the charge for each hour is \$1.50.

Therefore the charge for 4 hours = $4 * 1.50$

[Comment on Hint #27559](#)

Therefore

Total cost = Basic Cost + Cost for 4 hours =

$2 + 4 * 1.5$

Select $2 + 4 * 1.5$

[Comment on Hint #27772](#)

Select one:

- $2 + 1.5$
- $1.5 + 4 * 2$
- $1.5 * 4 * 2$
- $2 + 1.5$

$2 + 4 * 1.5$ Submit

Answer

Correct!

Now you know the basic charge is \$2.00.

The charge for n hours is $n * 1.50$

Let's get back to the original problem again.

Use the picture below to answer this question.



Marion wants to rent a canoe to go out on a lake. The cost is \$2.00 plus \$1.50 for each hour.

Using numbers, symbols, and the variable n , write an expression for how much it would cost to rent the canoe for n hours.

[Comment on Problem #33929](#)

So now you know:

Total cost = Basic Cost + Cost for n hours

Basic Cost = \$2.00

Cost for each hour = \$1.50

[Comment on Hint #27775](#)

With this information you found the cost for 4 hours:

Total cost = Basic Cost + Cost for 4 hours =
 $2 + 4 * 1.5$

[Comment on Hint #27562](#)

Similarly, the cost for n hours would be:

Total cost = Basic Cost + Cost for n hours =
 $2 + n * 1.5$

[Comment on Hint #27563](#)

Type in $2 + n * 1.5$

[Comment on Hint #27586](#)

Type your answer below (mathematical expression):

- $2+n*1.5$

Submit Answer

Correct! You are done with this problem!

[Comment on Assistentment #26342](#)

Assistment

Assistment #25592

You are previewing content.

Sara hired her brother James to help her sell lemonade. Sara agreed to pay James \$1.00, plus \$0.10 for each glass of lemonade that he sold. Sara paid James \$3.60. How many glasses of lemonade did James sell?

[Comment on Problem #31657](#)

Request Help

Select one:

- 26
- 36
- 46
- 56

Submit Answer

Let's move on and figure out this problem. How much does Sara pay James just to show up?

[Comment on Problem #31658](#)

Sara hired her brother James to help her sell lemonade. Sara agreed to pay James \$1.00, plus \$0.10 for each glass of lemonade that he sold. Sara paid James \$3.60.

[Comment on Hint #25124](#)

Sara hired her brother James to help her sell lemonade. Sara agreed to pay James \$1.00, plus \$0.10 for each glass of lemonade that he sold. Sara paid James \$3.60.

[Comment on Hint #25125](#)

It is \$1.00. Type in 1.

[Comment on Hint #25126](#)

Type your answer below (mathematical expression):

⌘1

Submit Answer

Correct!

How much does James get for **each** glass of lemonade that he sells?

[Comment on Problem #31659](#)

Sara hired her brother James to help her sell lemonade. Sara agreed to pay James \$1.00, plus \$0.10 for each glass of lemonade that he sold. Sara paid James \$3.60.

[Comment on Hint #25127](#)

Sara hired her brother James to help her sell lemonade. Sara agreed to pay James \$1.00, plus \$0.10 for each glass of lemonade that he sold. Sara paid James \$3.60.

[Comment on Hint #25128](#)

It is \$0.10. Type in 0.10.

[Comment on Hint #25129](#)

Type your answer below (mathematical expression):

⌘0.1

Submit Answer

Correct! How much did James get for **only** selling lemonade glasses?

[Comment on Problem #31660](#)

It is total money James earned apart from what he got for just showing up.

[Comment on Hint #24419](#)

James got \$3.60 in total and \$1.00 for just showing up.

[Comment on Hint #24420](#)

$3.60 - 1.00 = 2.60$ Therefore James got \$2.60 by only selling

lemonade glasses.

[Comment on Hint #24422](#)

Type in 2.60 [#25130](#)

Type your answer below (mathematical expression):

● 2.6

Submit Answer

Correct! Now we know James got \$2.60 for just selling lemonade glasses.

We also know James got \$0.10 for each glass of lemonade that he sold. So

how many glasses of lemonade did James sell?

[Comment on Problem #31661](#)

~~It is total money~~ he got by only selling lemonade glasses divided by money he got for selling each glass.

It is $\$2.60 \div \0.10

[Comment on Hint #24424](#)

\$2.60 has 260 cents. \$0.10 has 10 cents

How many 10 cents make 260 cents?

[Comment on Hint #24425](#)

$260 \div 10 = 26$ Therefore 26 of the 10 cents

make 260 cents.

[Comment on Hint #24426](#)

Therefore James sold 26 glasses of lemonade.

Type in 26.

[Comment on Hint #24427](#)

Type your answer below (mathematical expression):

⌘26

Submit Answer

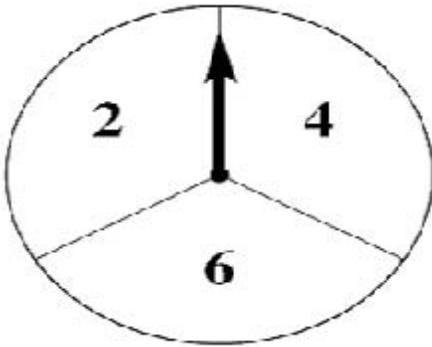
Correct! You are done with this problem!

[Comment on Assistent #25592](#)

Assistment

You are previewing content.

Ramon is going to spin the arrow on the spinner twice and add the results.



What is the **most likely** sum of the two spins?

[Comment on Problem #31688](#)

Request Help

Select one:

- 6
- 8
- 10
- 12

Submit Answer

Let's move on and figure out this problem Which of the following table shows all the possible pairs?

A. B. C.

Pairs	Pairs	Pairs
$2 + 4$	$2 + 2$	$2 + 2$
$2 + 6$	$2 + 4$	$2 + 4$
$4 + 6$	$4 + 4$	$2 + 6$
	$4 + 6$	$4 + 4$

$4 + 6$
$6 + 6$

[Comment on Problem #31701](#)

First of all note that you can get same number in two different spins.

That is a pair can have same number too!

[Comment on Hint #25783](#)

The first table doesn't consider the case when you get same number in two spins. So

A is not the answer.

[Comment on Hint #25784](#)

The second table is missing some pairs.

Namely, $2 + 6$ and $6 + 6$. So B is not the

answer.

[Comment on Hint #25785](#)

The third table has all possible pairs.

So C is the answer. Select C.

[Comment on Hint #25786](#)

Select one:

- A
- B
- C
- None

Submit Answer

Correct! Now you know there can be 6 distinct pairs. The question asks for sum of the 2 spins. We need to find all the sums.

What is the sum in the blue box?

[Comment on Problem #31702](#)

[Add Comment #25787](#)

$2 + 2 = 4$ Therefore 4 goes in the
blue box. Type in 4.

[Comment on Hint #25788](#)

Type your answer below (mathematical expression):

⌘4

Submit Answer

Correct! Now we understand the meaning of the sum of two spins. On your paper fill out the whole table. Which sum repeats the most?

[Comment on Problem #31703](#)

Using the method to find the number in blue box above, we can fill the whole table as

Pairs	Sum
$2 + 2$	4
$2 + 4$	6
$2 + 6$	8
$4 + 4$	8
$4 + 6$	10
$6 + 6$	12

[Comment on Hint #25789](#)

In the sum column, we can see that 8 repeats twice and no other values repeat.

So 8 repeats the most.

Type in 8.

[Comment on Hint #25791](#)

Type your answer below (mathematical expression):

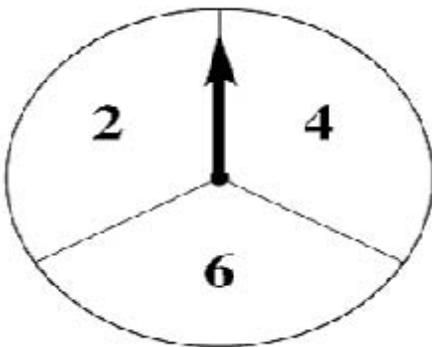
- 8

Submit Answer

Correct!

Now let's get back to the original question.

Ramon is going to spin the arrow on the spinner twice and add the results.



What is the **most likely** sum of the two spins?

[Comment on Problem #31704](#)

We just filled the table with all possible pairs and their sum.

[Comment on Hint #25792](#)

We also found out that 8 comes twice whereas all other sums come only once.

[Comment on Hint #25793](#)

So, 8 is the most likely sum value.

Type in 8.

[Comment on Hint #25794](#)

Type your answer below (mathematical expression):

⌘8

Submit Answer

Correct! You are done with this problem!

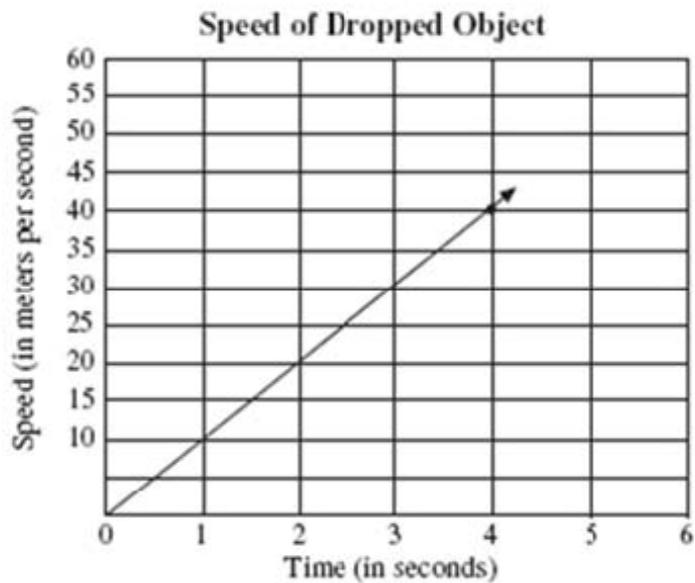
[Comment on Assistentment #25609](#)

Assistment

Assistment #25694

You are previewing content.

The graph below shows the speed of the dropped object over time.



Based on the graph, what will be the approximate speed of the dropped object after 5 seconds?

[Comment on Problem #31905](#)

[Request Help](#)

Select one:

- 5 meters per second
- 25 meters per second
- 50 meters per second
- 75 meters per second

[Submit Answer](#)

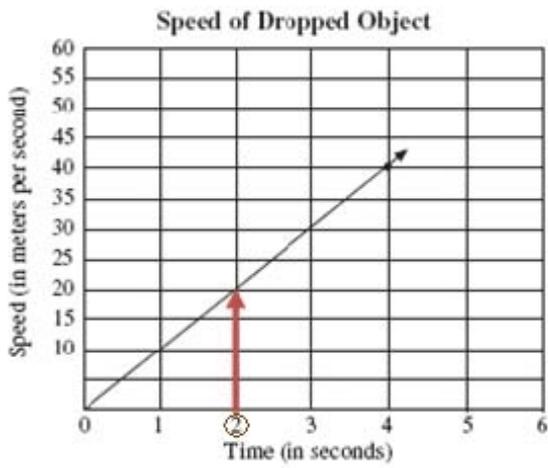
Let's move on and figure out this problem. Let's make sure you know how to read the graph. What will be the speed (in meters per second) of the dropped object at after 2 seconds?

[Comment on Problem #31912](#)

Step 1. Choose 2 in the time axis. Then draw a vertical line from 2 to the line in the graph.

[Comment on Hint #24693](#)

Step 1.



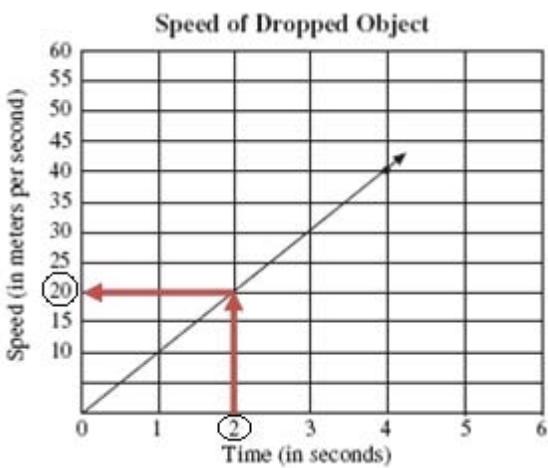
[Comment on Hint #24694](#)

Step 2.

From the point where the vertical line meets the line in the graph draw a horizontal line towards speed axis.

[Comment on Hint #24695](#)

Step 2.



[Comment on Hint #24696](#)

The horizontal line ends at 20 in the speed axis. So after 2 seconds, the speed of the dropping object would be 20 meters per second.

[Comment on Hint #24697](#)

Type in 20.

[Comment on Hint #24698](#)

Type your answer below (mathematical expression):

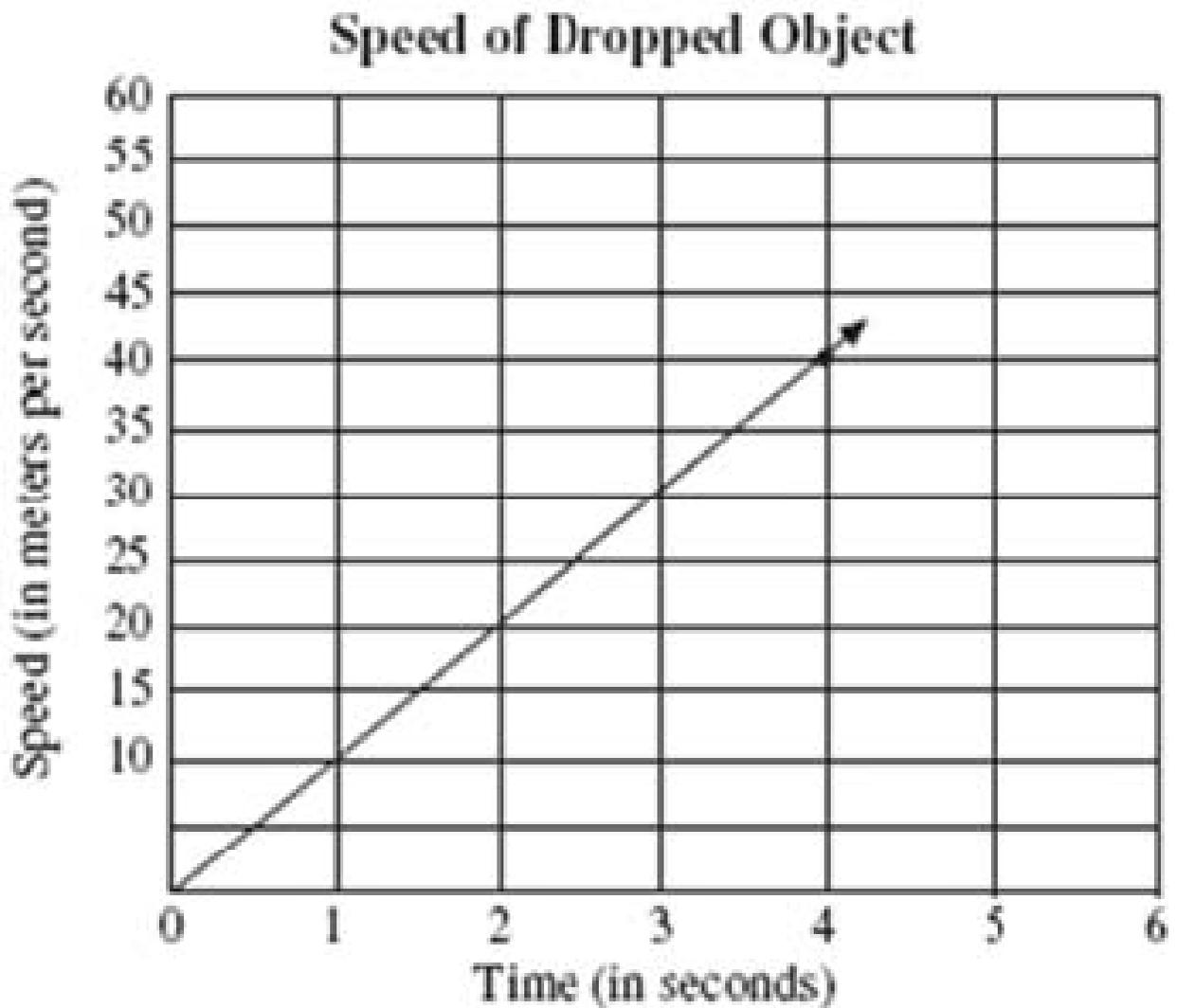
*20

Submit Answer

Correct!

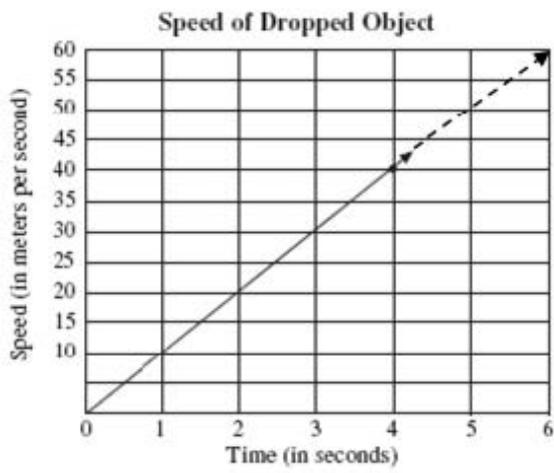
Now we know how to read the graph. Let's go back to the original question.

The graph below shows the speed of the dropped object over time.



[Comment on Hint #24699](#)

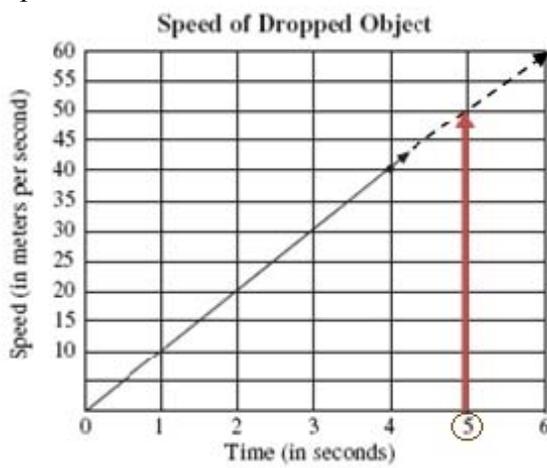
The extended graph looks like :



Now follow the steps that you learned in the earlier question.

[Comment on Hint #24700](#)

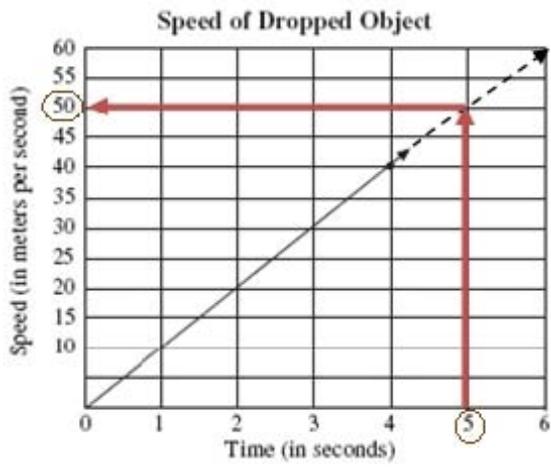
Step 1. From the "5" in the time axis draw a vertical line towards the extended line in the graph.



[Comment on Hint #24701](#)

Step 2.

From the point where the vertical line meets the extended line the graph, draw a horizontal line towards the speed axis.



[Comment on Hint #24702](#)

From the above graph you can see that the horizontal line ends at 50 in the speed axis.

Therefore, after 5 seconds, the speed of the falling object would be 50 meters per second.

[Comment on Hint #24703](#)

Type in 50.

[Comment on Hint #24704](#)

Type your answer below (mathematical expression):

⌘50

Submit Answer

Correct! You are done with this problem!

[Comment on Assistent #25694](#)

Assistment

Assistment #25699

You are previewing content.

Maria charges \$5.00 to mow a lawn, plus \$6.00 per hour. Maria uses the equation $C = 5 + 6h$ to determine C , the amount of money she charges for mowing lawns. If h represents the number of hours it takes to mow a lawn, how much money (in dollars) will Maria charge if she mows a lawn for 3 hours?

[Comment on Problem #31921](#)

Request Help

Select one:

- 11
- 14
- 21
- 23

Submit Answer

Let's move on and figure out this problem

Let's understand the question again.

Maria charges \$5.00 to mow a lawn, plus \$6.00 per hour. Maria uses the equation $C = 5 + 6h$ to determine **C , the amount of money she charges for mowing lawns.** If **h represents the number of hours** it takes to mow a lawn, how much money will Maria charge if **she mows a lawn for 3 hours?**

$C = 5 + 6h$ The amount of money Maria

charges is C . h is the number of hours.

Maria mows for 3 hours. $h = 3$

Which of the following expression has correct substitution for h in the equation of C ?

[Comment on Problem #31922](#)

The equation is $C = 5 + 6h$ Remember! $6h$ is same as 6

times h which means $6 * h$

[Comment on Hint #26290](#)

We know $h = 3$.

[Comment on Hint #26291](#)

Therefore

$$C = 5 + 6h \quad C = 5 + 6$$

$$* h \quad C = 5 + 6 * 3$$

Select $C = 5 + 6 * 3$

[Comment on Hint #26293](#)

Select one:

$C = 5 + 6 \div 3$

$C = 5 + 6 * 3$

$C = 5 + 6 * 5$ Submit

Answer Correct!

Now you know the correct expression is $C = 5 + 6 * 3$. According to the correct **order of operations**, one operation should be done before the other.

Which operation must be done first?

[Comment on Problem #31923](#)

Just follow **PE(MD)(AS)**:

Parenthesis, **E**xponents, **M**ultiplication and **D**ivision (from left to right), **A**ddition and **S**ubtraction (from left to right).

[Comment on Hint #24708](#)

Take a look at the expression:

$C = 5 + 6 * 3$ You see that there is **multiplication** and **addition** to do. You must do the **multiplication** first.

Select **Multiplication**.

[Comment on Hint #24709](#)

Select one:

- Multiplication
 Addition

Multiplication Submit

Answer Correct!

Great! **Multiplication** should be done first.

Now let's look go back to our equation.

$C = 5 + 6 * 3$ What is the value of the

expression? [Problem #31924](#)

Just follow **PE(MD)(AS)**:

Do the **multiplication** first.

$$C = 5 + 6 * 3$$

$$C = 5 + 18$$

[Comment on Hint #24710](#)

Next, **add** the answer you got from the **multiplication** to the number left in the expression.

$$C = 5 + 6 * 3$$
$$= 5 + 18$$
$$C = 23$$

[Comment on Hint #24711](#)

Therefore the value of the expression is 23.

Type in 23.

[Comment on Hint #24712](#)

Type your answer below (mathematical expression):

- 23

Submit Answer

Correct! You are done with this problem!

[Comment on Assistent #25699](#)

Assistment

Assistment #25700

You are previewing content.

Shani saved three times as much money as Bill. If Bill saved d dollars, which expression shows how much money Shani saved?

[Comment on Problem #31926](#)

Request Help

Select one:

- $3d$
- $d \div 3$
- $d + 3$
- $d - 3$

Submit Answer

Let's move on and figure out this problem. Which of the following expression correctly represents the statement "a times b" ?

[Comment on Problem #31927](#)

"times" refers to multiplication.

[Comment on Hint #24713](#)

"a times b" means "a multiplied to b"

[Comment on Hint #24714](#)

That means $a * b$.

Select $a * b$.

[Comment on Hint #24715](#)

Select one:

- - $a + b$
 - $a - b$
 - $a * b$
- $a \div b$ Submit Answer Correct!

Now we know a times b is $a * b$.

Shani saved **3 times** as much money as Bill saved. Bill saved **d** dollars. Which expression shows how much money Shani saved?

[Comment on Problem #31928](#)

You know **times** refers to **multiplication**.

Shani saved **3 times** as much **money** as **Bill** saved.

[Comment on Hint #24717](#)

Shani saved **3 times** as much **money** as **Bill** saved.

Bill saved **d** dollars. Therefore $3 * d$. Which is same as $3d$.

[Comment on Hint #24723](#)

Select $3d$.

[Comment on Hint #24725](#)

Select one:

- $3d$
- $d \div 3$
- $d + 3$
- $d - 3$

Submit Answer

Correct! You are done with this problem!

[Comment on Assistentment #25700](#)

Assistment

You are previewing content.

What value of p makes the equation below true?

$$3p + 1 = 13 \text{ Note : } 3p \text{ means } 3 \text{ times } p.$$

[Comment on Problem #32346](#)

Request Help

Type your answer below:

•

Submit Answer

Let's move on and figure out this problem

Lets break this problem into parts. What number goes in the box below?


$$\square + 1 = 13$$

[Comment on Problem #32347](#)

When 1 is added to the number in the blue box it will become 13.

[Comment on Hint #25175](#)

Another way to understand it is: The number in

the blue box is 1 less than 13.

[Comment on Hint #25539](#)

12 is 1 less than 13.

Type in 12.

[Comment on Hint #25540](#)

Type your answer below (mathematical expression):

⌘12

Submit Answer

Correct!

Let's look at the numbers in the box now.

Now you know that $12 + 1 = 13$

We had $3p + 1 = 13$

What value of p makes $3p = 12$?

Remember: 3 p means 3 times p!

[Comment on Problem #32348](#)

~~How many "3" will~~ make 12?

Two "3" = $3 + 3 = 3 * 2 = 6$ Three "3" =

$3 + 3 + 3 = 3 * 3 = 9$ Four "3" = $3 + 3 +$

$3 + 3 = 3 * 4 = 12$

[Comment on Hint #25543](#)

Oh! we found it! Four

"3" makes 12 That

means $3 * 4 = 12$ Type

in 4.

[Comment on Hint #25544](#)

Type your answer below (mathematical expression):

⌘4

Submit Answer

Correct!

Let's see what we got so far.

We had $3p + 1 = 13$

We had $12 + 1 = 13$

Now you know that $3 * 4 + 1 = 13$

Compare the first and third equations.

What is the value of p? Remember!!!

3p means 3 * p.

[Comment on Problem #32572](#)

If you see at the numbers in the blue box in the first and third equation: 3p

$$= 3 * 4$$

[Comment on Hint #25545](#)

We know 3p means 3 * p. So, 3p = 3

$$* 4 \quad 3 * p = 3 * 4 \quad \text{Oh! I think we}$$

found the answer!!!

[Comment on Hint #25546](#)

$$3 * p = 3 * 4 \quad \text{!! p multiplied to 3 is equal to 4}$$

multiplied to 3. This means p is equal to 4.

Type in 4.

[Comment on Hint #25547](#)

Type your answer below (mathematical expression):

*4

Submit Answer

246 | Page

Correct! You are done with this problem!

[Comment on Assisment #25834](#)

Assistment

Assistment #25907

You are previewing content.

Admission to the Basketball Hall of Fame in Springfield is \$5.00 per student. A group of students bought admission tickets. One student spent an extra \$9.00 for a poster. The total amount they spent was \$34.00. How many students were in the group?

[Comment on Problem #32571](#)

Request Help

Type your answer below (mathematical expression):

⌘

Submit Answer

Let's move on and figure out this problem
Suppose the group had only 1 student.

How much will he spent?

[Comment on Problem #32573](#)

He will spent on the admission fee and a poster.

[Comment on Hint #25548](#)

Cost of admission is \$5.00.

Cost of a poster is \$9.00.

[Comment on Hint #25549](#)

So, he will spent $\$5.00 + \9.00 , that is \$14.00.

Type in 14.

[Comment on Hint #25550](#)

Type your answer below (mathematical expression):

⌘14

Submit Answer Correct! Now suppose

the group had 2 students.

Number of Students	Cost
1	14.00
2	?

How much will they spent in total?

[Comment on Problem #32574](#)

Okay, one more student is going to the Basketball Hall of Fame now!

[Comment on Hint #25551](#)

Then he also has to pay \$5.00 for admission.

[Comment on Hint #25552](#)

So the total cost increases by \$5.00.

[Comment on Hint #25553](#)

$$\$14.00 + \$5.00 = \$19.00$$

Type in 19.

[Comment on Hint #25554](#)

Type your answer below (mathematical expression):

⌘19

Submit Answer Correct! Again suppose

the group had 3 students.

Number of Student	Cost
1	\$14.00
2	$\$14.00 + \$5.00 = \$19.00$
3	?

How much will they spent in total?

[Comment on Problem #32575](#)

One more student is going to the Basketball Hall of Fame!

No problem! All he has to do is pay his admission fee.

[Comment on Hint #25555](#)

So, the added student will also pay \$5.00 for admission.

[Comment on Hint #25556](#)

That means the total cost again increases by \$5.00.

[Comment on Hint #25557](#)

$$\$19.00 + \$5.00 = \$24.00$$

Type in 24.

[Comment on Hint #25558](#)

Type your answer below (mathematical expression):

⌘24

Submit Answer

Correct! Let's get back to the question again.

Admission to the Basketball Hall of Fame in Springfield is \$5.00 per student. A group of students bought admission tickets. One student spent an extra \$9.00 for a poster. The total amount they spent was \$34.00. How many students were in the group?

[Comment on Problem #32576](#)

Fill the table till you get 34 in the cost column.

Number of Students	Cost
1	\$14.00
2	$\$14.00 + \$5.00 = \$19.00$
3	$\$19.00 + \$5.00 = \$24.00$
4	?

.....

?	\$34.00
---	---------

[Comment on Hint #25559](#)

Here is the table that you should come up with.

Number of	Cost
Number of Cost	

Students	
1	\$14.00
2	$\$14.00 + \$5.00 = \$19.00$
3	$\$19.00 + \$5.00 = \$24.00$
4	$\$24.00 + \$5.00 = \$29.00$
5	$\$29.00 + \$5.00 = \$34.00$

Oh we got 34!!!

[Comment on Hint #25560](#)

Total cost = \$34.00 when number of students = 5.

So there were 5 students in the group. Type in 5.

[Comment on Hint #25561](#)

Type your answer below:

⌘5

Submit Answer

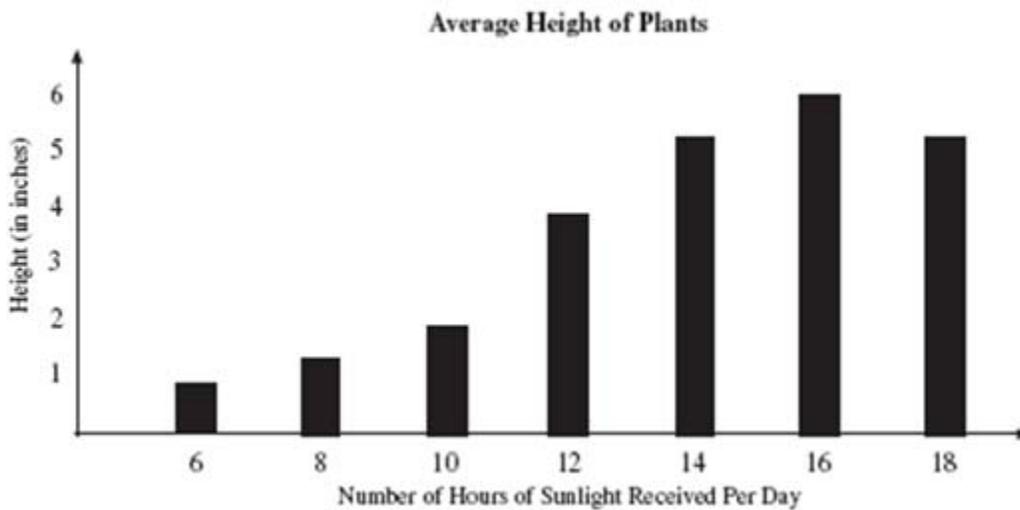
Correct! You are done with this problem!

[Comment on Assistent #25907](#)

Assistment

You are previewing content.

The graph below shows the average height of plants based on a specific number of hours of sunlight received daily.



According to the graph, which of the following is a true statement?

- A. The plants grow taller as the number of hours of sunlight the plants receive increases.
- B. The average height of the plants cannot be taller than 3 inches with less than 18 hours of sunlight per day.
- C. The average height of the plants is taller with 12 hours of sunlight per day than with 14 hours of sunlight per day.
- D. The average height of the plants is taller with 16 hours of sunlight per day than with 14 hours of sunlight per day.

[Comment on Problem #32577](#)

Request Help

Select one:

- A
- B
- C
- D

Submit Answer

Let's move on and figure out this problem. Let's check all the options. Let's check option

A first. Option A says: The plants grow taller as the number of hours of sunlight the plants receive increases. Is it True or false?

[Comment on Problem #32578](#)

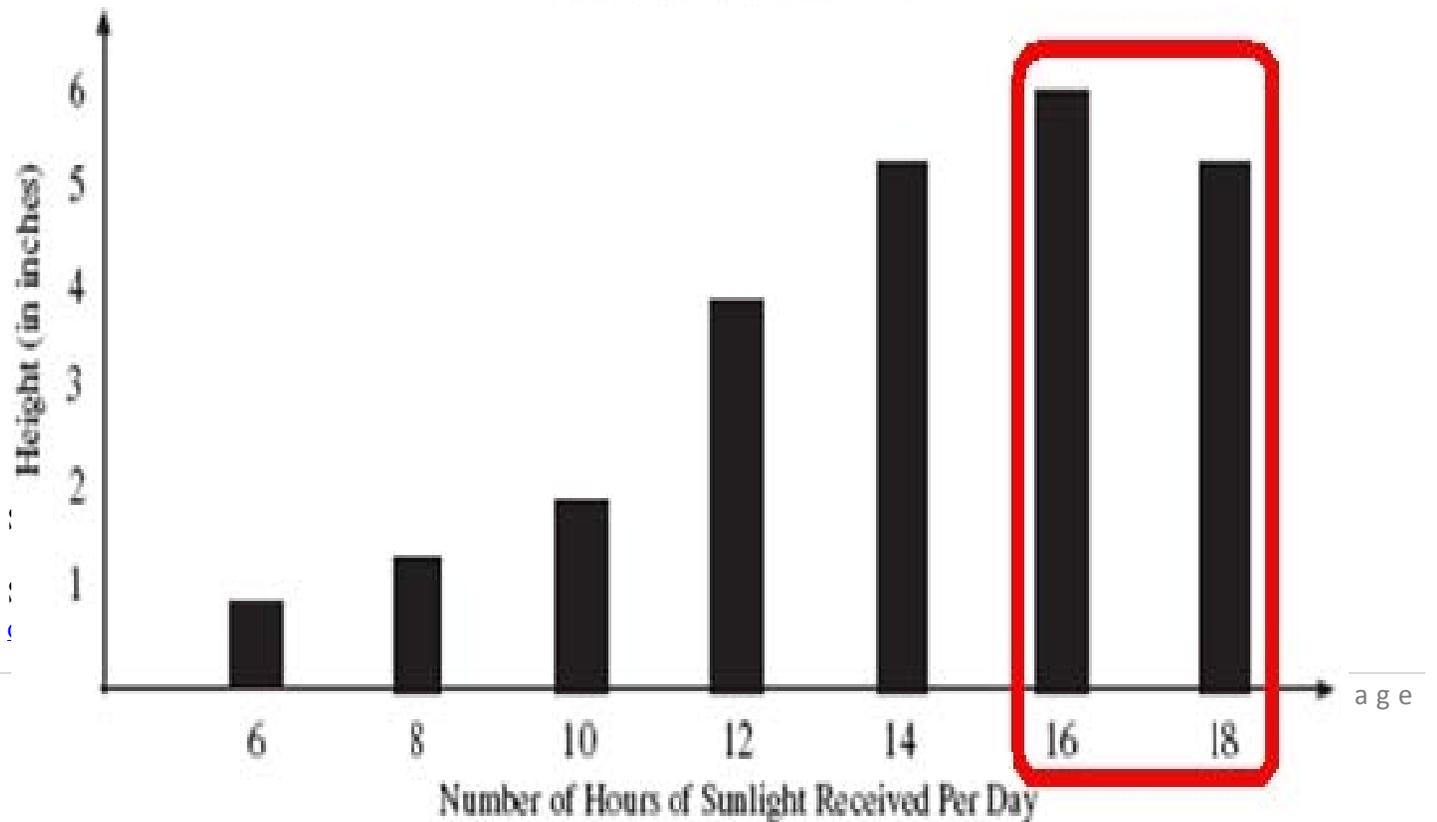
Notice that the height of the bar corresponds to the average height of plants.

Statement A says, "as the number of hours increases" We can see this by looking at the axis for hours at the bottom of the graph. As the hours increase does the height of the plant always increase?

[Comment on Hint #25563](#)

The last bar is shorter than the one before it.

Average Height of Plants



Select one:

-
- False**

Submit Answer

Correct!

Let's look at the statement B now.

Statement B says:

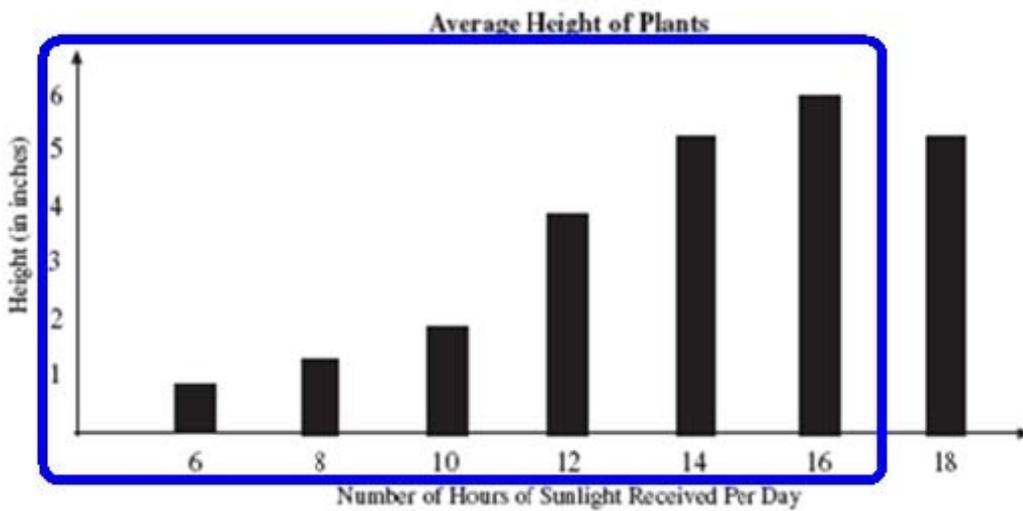
The average height of the plants cannot be taller than 3 inches with less than 18 hours of sunlight per day. Is it True or

False?

[Comment on Problem #32579](#)

Look at the bars with numbers less than 18 in the sunlight per day axis.

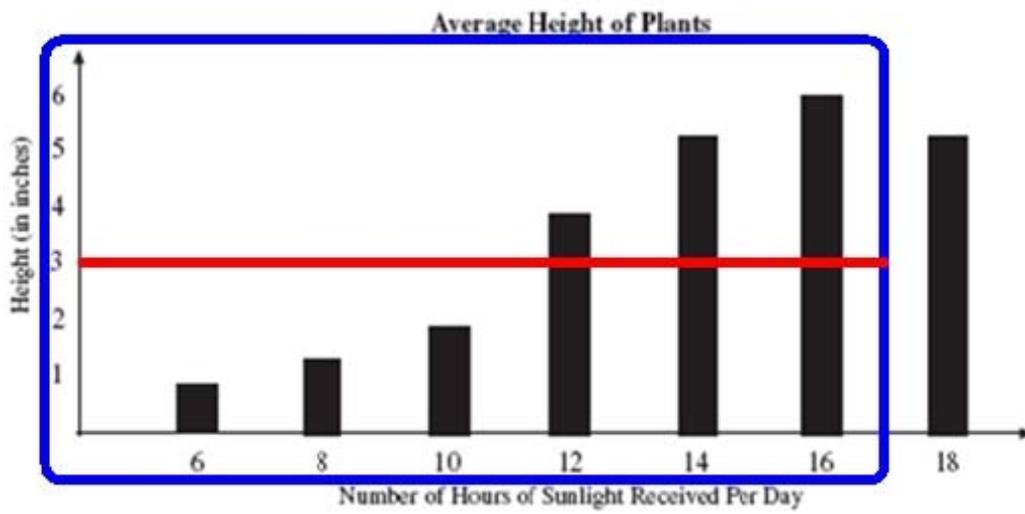
That means all bars except the last one.



[Comment on Hint #25580](#)

Draw a horizontal line from 3 in the height axis.

[Comment on Hint #25581](#)



The option says no bars are taller than 3 inches. That is no bars are above the horizontal red line drawn from 3 inches in the height axis. Is it the case here?

[Comment on Hint #25583.](#)

Of course not. Three of the bars are above the red line!! So this option is also False!

Select False.

[Comment on Hint #25584.](#)

Select one:

True

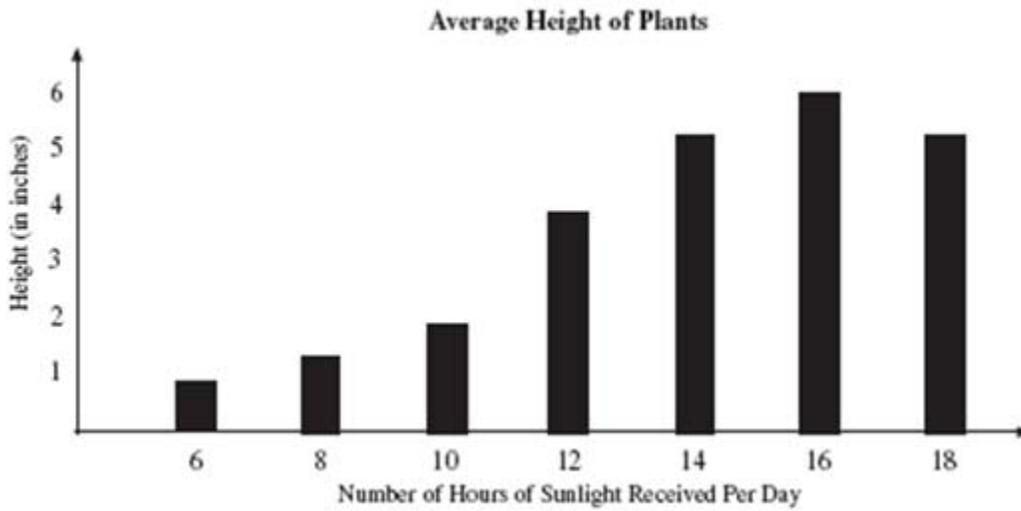
False Submit

Answer Correct!

Use the similar ideas as above and find out the TRUE statement.

Let's go back to the main question again.

The graph below shows the average height of plants based on a specific number of hours of sunlight received daily.



- A. The plants grow taller as the number of hours of sunlight the plants receive increases.
- B. The average height of the plants cannot be taller than 3 inches with less than 18 hours of sunlight per day.
- C. The average height of the plants is taller with 12 hours of sunlight per day than with 14 hours of sunlight per day.
- D. The average height of the plants is taller with 16 hours of sunlight per day than with 14 hours of sunlight per day.

[Comment on Problem #32580](#)

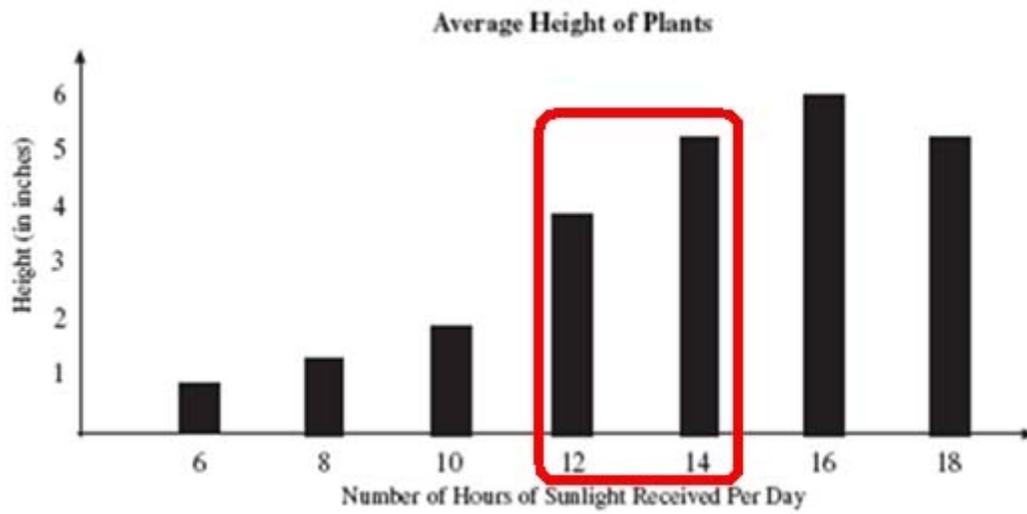
We have already eliminated A and B. Now we need to check C and D to find the one that is true.

Let's check option C.

The average height of the plants is taller with 12 hours of sunlight per day than with 14 hours of sunlight per day.

[Comment on Hint #25596](#)

The statement C says that the height at 12 hours is taller than the height at 14 hours.



Is it the case?

[Comment on Hint #25597.](#)

Of course not. The height at 12 hours is **shorter** than the height at 14 hours. So it is also FALSE.

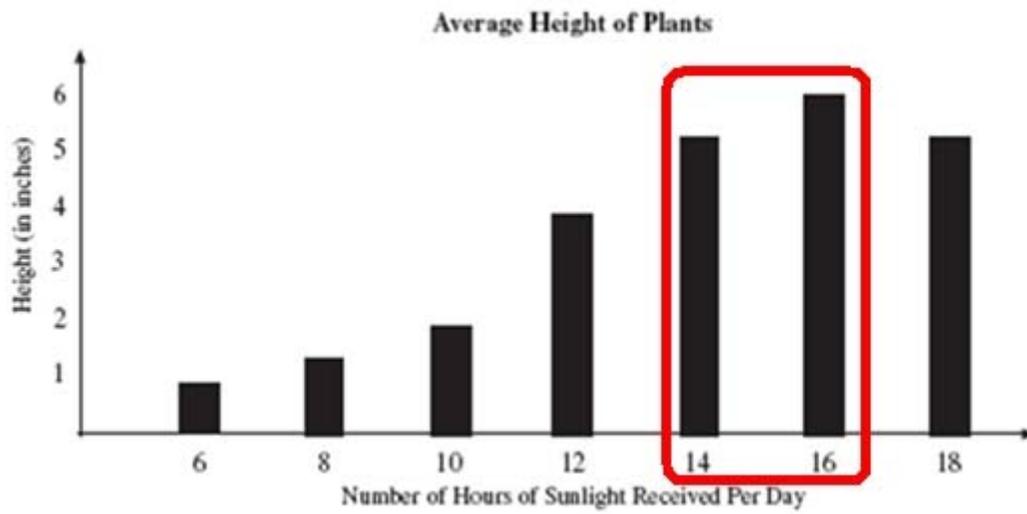
[Comment on Hint #25598.](#)

Now let's look at our final option D.

The average height of the plants is taller with 16 hours of sunlight per day than with 14 hours of sunlight per day.

[Comment on Hint #25599.](#)

The statement D says that the height at 16 hours is taller than the height at 14 hours.



Is it the case?

[Comment on Hint #25600](#)

Of course. The height at 16 hours is **taller** than the height at 14 hours. So it is TRUE. So D is the correct statement. Select D.

[Comment on Hint #25601](#)

Select one:

- A
- B
- C
- D

Submit Answer

Correct! You are done with this problem!

[Comment on Assistent #25908](#)

Assistment

Assistment #26099

You are previewing content.

According to the pattern shown in the table below, what is the value of y when x is 12?

x	y
5	25
10	50
12	?
17	85

[Comment on Problem #33090](#)

[Request Help](#)

Type your answer below (mathematical expression):

⌘

[Submit Answer](#)

Let's move on and figure out this problem. You have to find the relation between x and y first.

Take the first pair (circled with blue line in the table below).

Which one of these equations does not relate $x = 5$ to $y = 25$?

[Comment on Problem #33091](#)

In the first pair $x = 5$ and $y = 25$. So

substitute x with 5 and calculate y.

[Comment on Hint #26294](#)

Let's check $y = x + 20$ first. $y = x + 20 = 5 +$

$20 = 25$ In the first pair y was in fact 25 .

Hence $y = x + 20$ correctly relates x and y .

[Comment on Hint #26296](#)

Let's check $y = x * 5$ now. $y = x * 5 = 5 * 5 = 25$ In

the first pair y was in fact 25 . Hence equation $y = x *$

5 correctly relates x and y .

[Comment on Hint #26297](#)

Let's check $y = x * x$ now. $y = x * x = 5 * 5 = 25$ In

the first pair y was in fact 25 . Hence equation $y = x *$

x correctly relates x and y .

[Comment on Hint #26298](#)

Let's check $y = x * 4 + 10$ now. y

$= x * 4 + 10 = 5 * 4 + 10$

$$= 20 + 10$$

= 30 In the first pair y was **not** 30. Hence equation $y = x * 4 + 10$

does not correctly relate x and y .

[Comment on Hint #26299](#)

So $y = x * 4 + 10$ does not relate $x = 5$ to $y = 25$ correctly.

Select $y = x * 4 + 10$

[Comment on Hint #26322](#)

Select one:

- $y = x + 20$
- $y = x * 5$
- $y = x * x$
- $y = x * 4 + 10$

Submit Answer

Correct!

So the following equations satisfies the first pair.

$y = x + 20$ $y = x * 5$ $y = x * x$ Now let's check if these

satisfy the second pair as well.

x	y
5	25
10	50
12	?
17	85

Which one of these equations **relates** $x = 10$ to $y = 50$ correctly?

[Comment on Problem #33092](#)

In the second pair $x = 10$ and $y = 50$. So

substitute x with 10 and calculate y .

[Comment on Hint #26300](#)

Let's check $y = x + 20$ first. $y = x + 20 = 10 + 20 = 30$

In the second pair y was **not** 30 . Hence $y = x + 20$

does not correctly relate x and y .

[Comment on Hint #26301](#)

Let's check $y = x * 5$ now. $y = x * 5 = 10 * 5 =$

50 In the second pair y was 50 . Hence $y = x * 5$

does correctly relate x and y .

[Comment on Hint #26302](#)

Let's check $y = x * x$ now. $y = x * x = 10 * 10 = 100$

In the second pair y was **not** 100 . Hence $y = x * x$

does not correctly relate x and y .

[Comment on Hint #26303](#)

So $y = x * 5$ correctly relates $x = 10$ and $y = 50$ as well.

Select $y = x * 5$

[Comment on Hint #26323](#)

Select one:

$y = x * 30$

$y = x * x$ Submit

Answer Correct!

So the following equation satisfies the first and the second pair.

$y = x * 5$ Does this equation satisfy the fourth pair

as well?

x	y
5	25
10	50
12	?
17	85

[Comment on Problem #33093](#)

In the fourth pair $x = 17$ and $y = 85$. So

substitute x with 17 and calculate y .

[Comment on Hint #26304](#)

$$y = x * 5$$

$$= 17 * 5 =$$

85

In the fourth pair y was in fact 85. Hence equation $y = x * 5$ correctly relates x and y for all pairs. Select Yes.

[Comment on Hint #26305](#)

Select one:

- No
 Yes

No Submit

Answer Correct!

Now let's get back to original question again.

According to the pattern shown in the table below, what is the value of y when x is 12?

x	y
5	25
10	50
12	?
17	85

[Comment on Problem #33094](#)

We know x and y are correctly related by the equation: y

$$= x * 5$$

[Comment on Hint #26306](#)

In the third pair $x = 12$. So substitute x with 12 in the equation and calculate y .

[Comment on Hint #26307](#)

$$y = x * 5 = 12 * 5 =$$

60

Therefore when $x = 12$; $y = 60$.

Type in 60.

[Comment on Hint #26311](#)

Type your answer below:

⌘60

Submit Answer

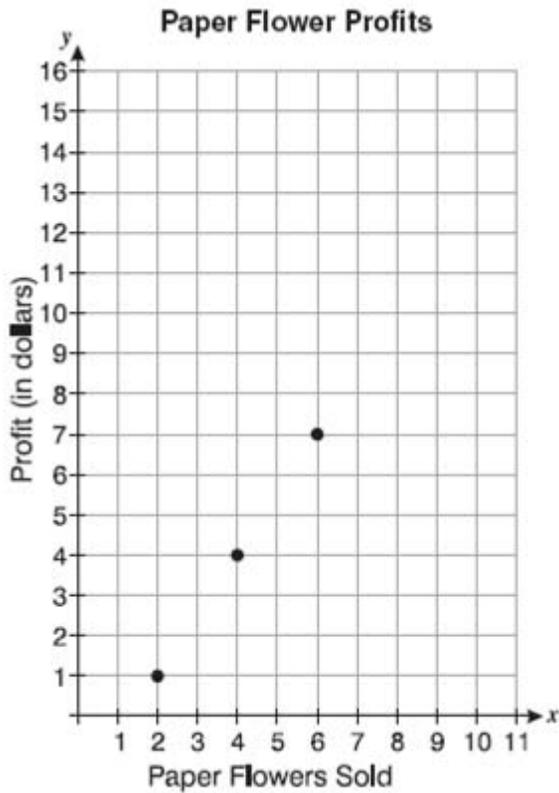
Correct! You are done with this problem!

[Comment on Assistent #26099](#)

Assistment

You are previewing content.

A local charity group made paper flowers for a craft fair. The graph below shows their profit based on the number of flowers sold.



If the relationship shown by the graph continues, what would the profit be if the group sold 10 flowers?

[Comment on Problem #33099](#)

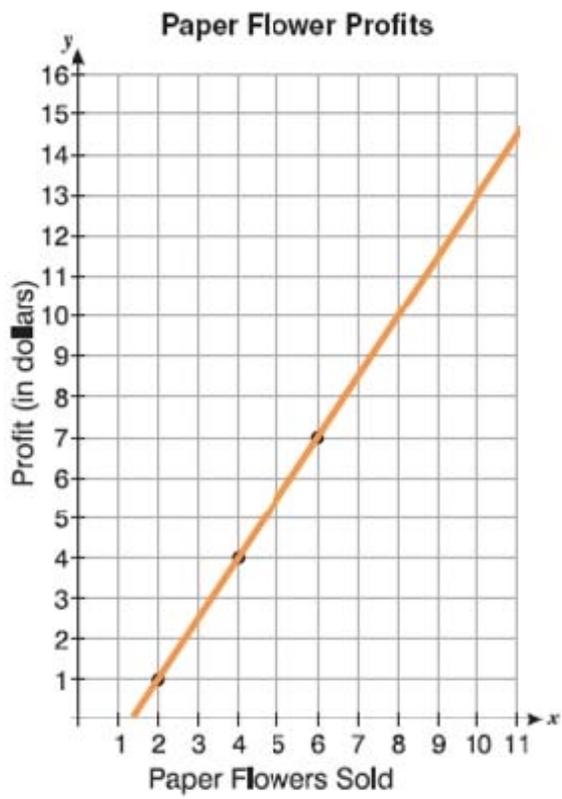
Request Help

Type your answer below (mathematical expression):

•

Submit Answer

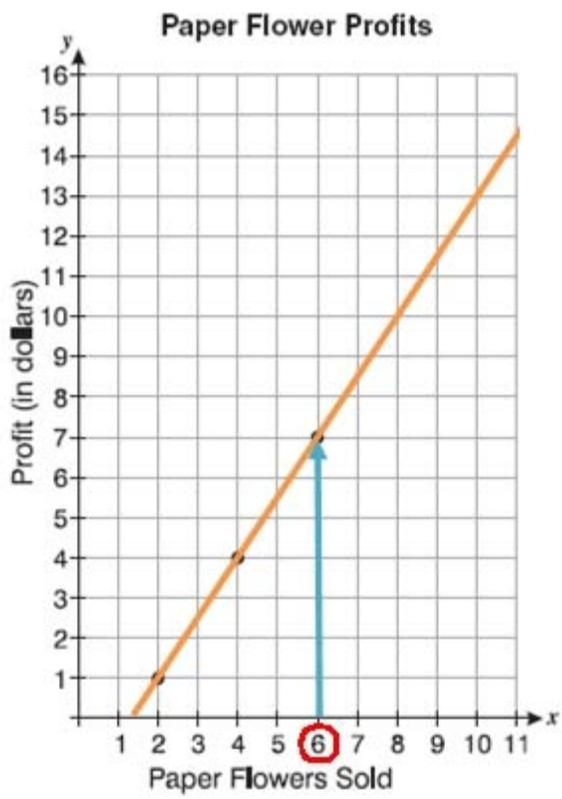
Let's move on and figure out this problem. If you draw a straight line joining all given points, that line will give you the relation between Paper Flowers Sold and Profit (in dollars).



Now let's see if you can relate Paper Flowers Sold and Profit (in dollars)

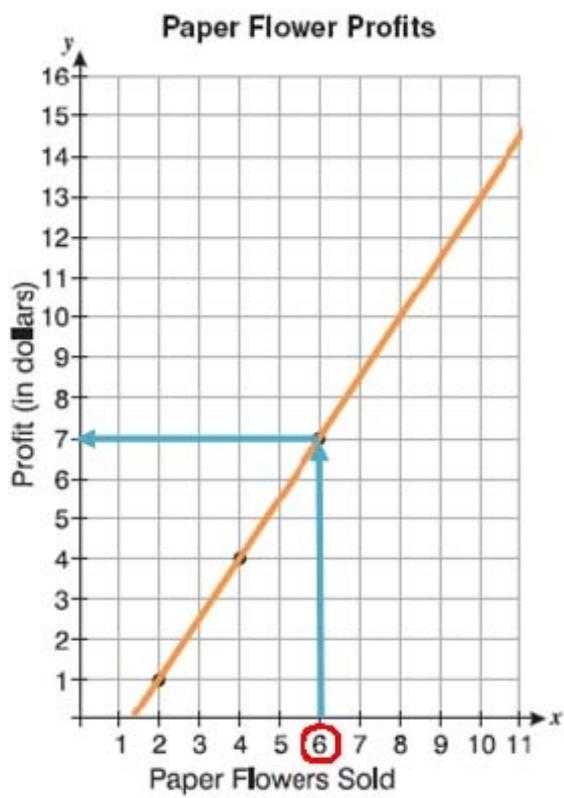
What is the profit (in dollars) when number of paper flowers sold is 6?

Draw a vertical line from 6 in the Paper Flowers Sold axis to the orange line.



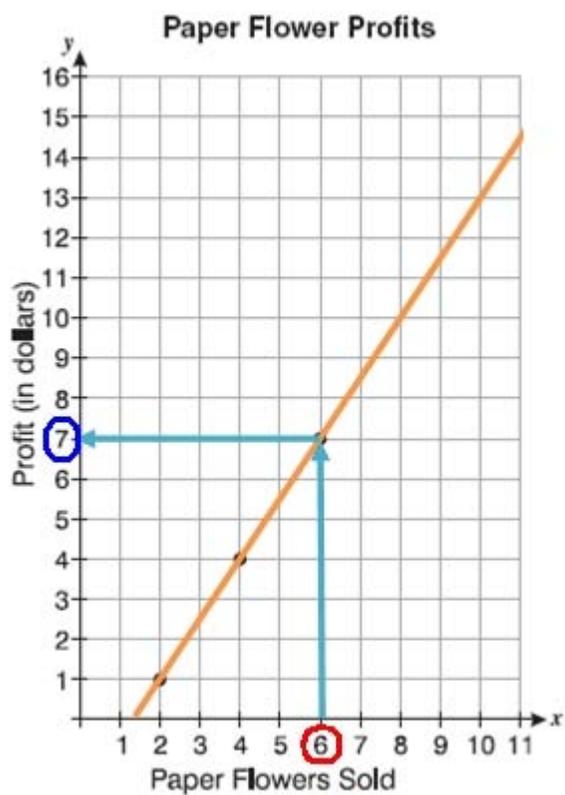
[Comment on Hint #26324](#)

Draw a horizontal line from the point you reached in the orange line towards the Profit (in dollars) axis.



[Comment on Hint #26325](#)

The number you reached in the Profit (in dollars) axis is the profit made.



So if the group sold 6 paper flowers, they made 7 dollars profit.

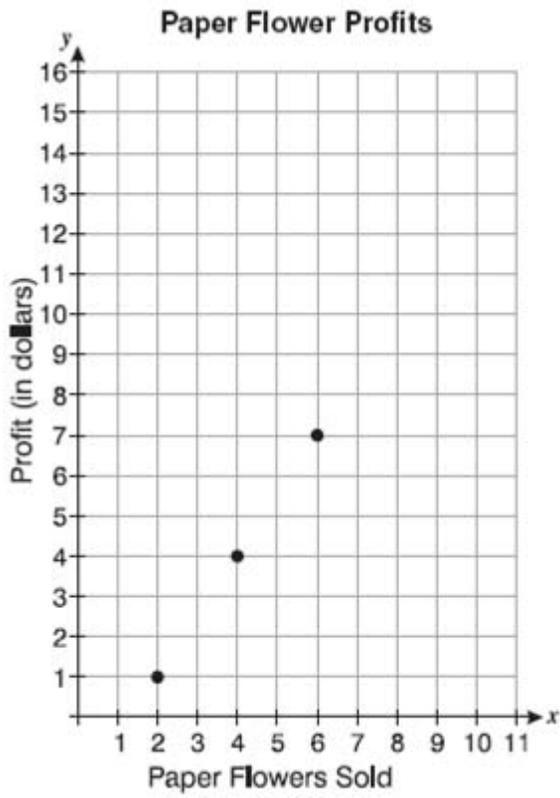
Type in 7.

[Comment on Hint #26326](#)

Type your answer below (mathematical expression):

- 7

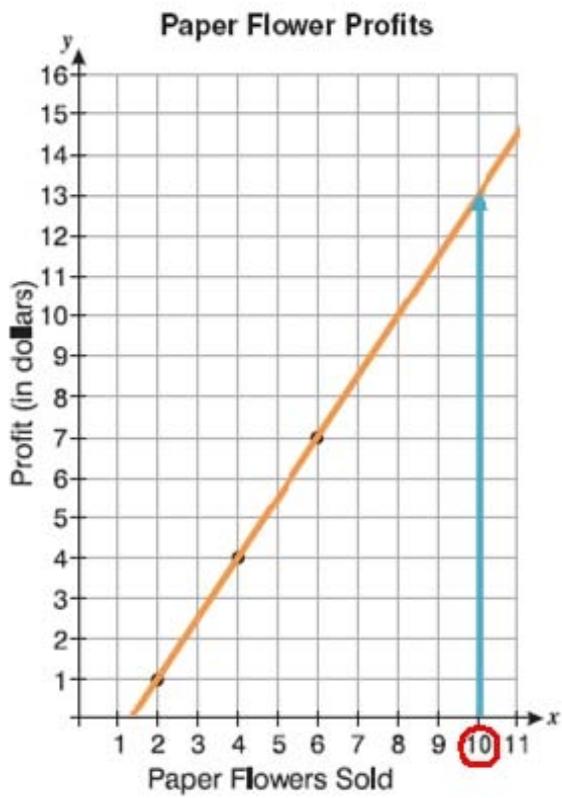
Submit Answer Correct! Repeat the same technique and answer the original question. A local charity group made paper flowers for a craft fair. The graph below shows their profit based on the number of flowers sold.



If the relationship shown by the graph continues, what would the profit be if the group sold 10 flowers?

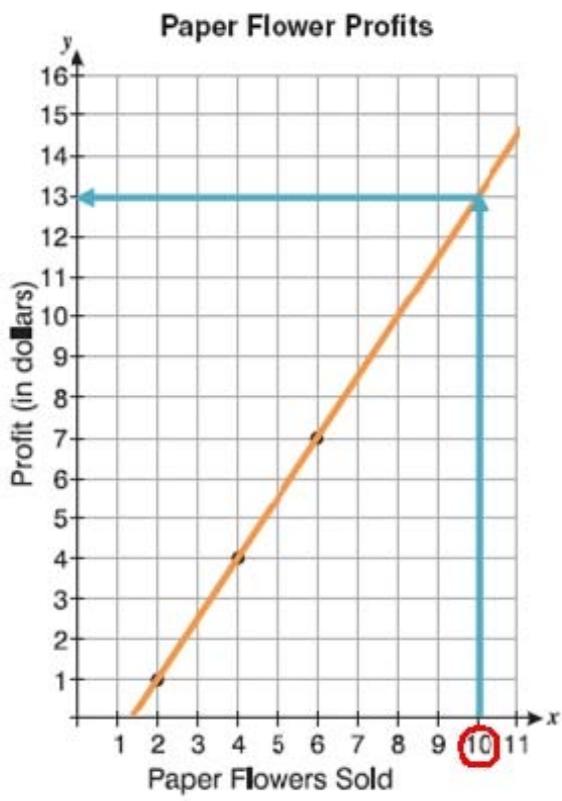
[Comment on Problem #33101](#)

Draw a vertical line from 10 in the Paper Flowers Sold axis to the orange line.



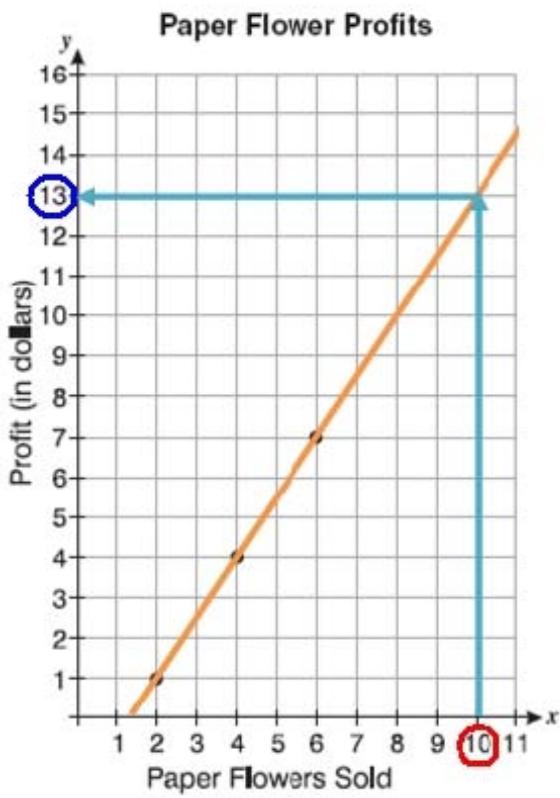
[Comment on Hint #26327](#)

Draw a horizontal line from the point you reached in the orange line towards the Profit (in dollars) axis.



[Comment on Hint #26328](#)

The number you reached in the Profit (in dollars) axis is the profit made.



So if the group sold 10 paper flowers, they made 13 dollars profit.

Type in 13.

[Comment on Hint #26329](#)

Type your answer below (mathematical expression):

⌘13

Submit Answer

Correct! You are done with this problem!

[Comment on Assistent #26101](#)

Assistment

Assistment #26102

You are previewing content.

Cai bought popcorn for herself and 2 friends, plus a drink only for herself. The popcorn cost \$2 for each person, and the total cost for Cai's purchase was \$7.50. If d is the cost of a drink, which equation below could be used to determine the cost of Cai's drink?

[Comment on Problem #33104](#)

Request Help

Select one:

- $2 + d = \$ 7.50$
- $2 + 2d = \$ 7.50$
- $3(2) + d = \$ 7.50$
- $3(2) + 3d = \$ 7.50$

Submit Answer

Let's move on and figure out this problem. Let's first find the number of popcorns and drink Cai bought. How many popcorns and drink did Cai buy?

[Comment on Problem #33105](#)

Read the portion in red carefully.

Cai bought popcorn for herself and 2 friends, plus a drink only for herself. The popcorn cost \$2 for each person, and the total cost for Cai's purchase was \$7.50. If d is the cost of a drink, which equation below could be used to determine the cost of Cai's drink?

[Comment on Hint #26330](#)

Cai bought 1 popcorn for herself and 2 popcorns for her friends.

That is $1 + 2 = 3$ popcorns.

[Comment on Hint #26331](#)

Read the portion in red carefully.

Cai bought popcorn for herself and 2 friends, plus a drink only for herself. The popcorn cost \$2 for each person, and the total cost for Cai's purchase was \$7.50. If d is the cost of a drink, which equation below could be used to determine the cost of Cai's drink?

[Comment on Hint #26332](#)

So Cai bought only 1 drink.

So Cai bought 3 popcorns and 1 drink.

Select 3 popcorn and 1 drink.

[Comment on Hint #26337](#)

Select one:

- 1 popcorn and 1 drink
- 2 popcorn and 1 drink
- 3 popcorn and 1 drink
- 3 popcorn and 2 drink

Submit Answer Correct! Now what is the cost of

1 popcorn and 1 drink?

[Comment on Problem #33106](#)

Read the portion in red carefully.

Cai bought popcorn for herself and 2 friends, plus a drink only for herself. **The popcorn cost \$2 for each person**, and the total cost for Cai's purchase was \$7.50. If d is the cost of a drink, which equation below could be used to determine the cost of Cai's drink?

[Comment on Hint #26338](#)

So each popcorn costs \$2.00.

[Comment on Hint #26339](#)

Read the portion in red carefully.

Cai bought popcorn for herself and 2 friends, plus a drink only for herself. The popcorn cost \$2 for each person, and the total cost for Cai's purchase was \$7.50. If **$d$ is the cost of a drink**, which equation below could be used to determine the cost of Cai's drink?

[Comment on Hint #26340](#)

So each drink costs d dollars.

[Comment on Hint #26341](#)

So each popcorn costs \$2.00 and each drink costs \$d.

Select \$2.00 for a popcorn and \$d for a drink.

[Comment on Hint #26342](#)

Select one:

- ⌘ \$2.00 for a popcorn and \$2.00 for a drink
- ⌘ \$7.50 for popcorns and \$2.00 for a drink
- ⌘ \$2.00 for a popcorn and \$d for a drink
- ⌘ \$7.50 for popcorns and \$d for a drink

Submit Answer

Correct!

Now we know Cai bought 3 popcorns and 1 drink.

We know the cost of 1 drink is \$d. We know the cost of 1 popcorn is \$2.00.

Let's find the cost of 3 popcorns first.

How much does 3 popcorns cost?

[Comment on Problem #33110](#)

Cost of 3 popcorn = cost of 1 popcorn + cost of 1 popcorn + cost of 1 popcorn

[Comment on Hint #26347](#)

Cost of 3 popcorn = cost of 1 popcorn + cost of 1 popcorn + cost of 1 popcorn = 2

+ 2 + 2

[Comment on Hint #26349](#)

Cost of 3 popcorn = cost of 1 popcorn + cost of 1 popcorn + cost of 1 popcorn = 2

+ 2 + 2 = 3 * 2

= 3(2)

Remember!! parenthesis () means multiplication *.

Select 3(2).

[Comment on Hint #26351](#)

Select one:

- 3(d)
- 3(2)
- 3 + d
- 3 + 2

Submit Answer

Correct!

Now, what was the total cost for Cai's purchase?

[Comment on Problem #33111](#)

Total cost = cost of 3 popcorns + cost of 1 drink

[Comment on Hint #26357](#)

Total cost = cost of 3 popcorns + cost of 1 drink

Cost of 3 popcorns = 3(2) Cost of 1 drink = d

[Comment on Hint #26358](#)

Therefore,

Total cost = cost of 3 popcorns + cost of 1 drink =

3(2) + d

Select 3(2) + d.

[Comment on Hint #26363](#)

Select one:

-
- 2 + d
- 2 + 2d
- 3(2) + d

⌘

$3(2) + 3d$

Submit Answer

Correct!

Now let's go back to question again.

Cai bought popcorn for herself and 2 friends, plus a drink only for herself. The popcorn cost \$2 for each person, and the total cost for Cai's purchase was \$7.50. If d is the cost of a drink, which equation below could be used to determine the cost of Cai's drink?

[Comment on Problem #33114](#)

We found out that total cost for Cai's purchase was $3(2) + d$.

[Comment on Hint #26364](#)

Read the portion in red carefully.

Cai bought popcorn for herself and 2 friends, plus a drink only for herself. The popcorn cost \$2 for each person, and **the total cost for Cai's purchase was \$7.50**. If d is the cost of a drink, which equation below could be used to determine the cost of Cai's drink?

[Comment on Hint #26365](#)

Total cost for Cai's purchase was \$7.50.

[Comment on Hint #26366](#)

So $3(2) + d$ must equal \$7.50, which means

$3(2) + d = \$7.50$. Therefore select $3(2) + d =$

$\$7.50$.

[Comment on Hint #26367](#)

Select one:

$2 + 2d = \$7.50$

~~$3(2) + d = \$7.50$~~

$3(2) + 3d = \$7.50$ Submit Answer

Correct! You are done with this

problem!

[Comment on Assistent #26102](#)

Assistment

You are previewing content.

A booth at the State Fair is offering pony rides for children. The table below shows the relationship between the number of rides a child takes and the cost of the rides.

Pony Rides	
Number	Cost
1	\$2.00
2	\$2.50
3	\$3.00
4	\$3.50
10	?

If the pattern continues in the same way, what is the cost for 10 rides? (Don't write \$ symbol)

[Comment on Problem #33134](#)

Request Help

Type your answer below (mathematical expression):

*

Submit Answer

Let's move on and figure out this problem

Let's first understand the pattern.

Pony Rides	
Number	Cost
1	\$2.00
2	\$2.50
3	\$3.00
4	\$3.50
10	?

1 + ? = \$2.50
2 + ? = \$3.00
3 + ? = \$3.50

What number goes into the blue box? (Don't write \$ symbol)

[Comment on Problem #33135](#)

\$2.50 is 50 cents more than \$2.00.

So $2.00 + 0.50 = 2.50$

[Comment on Hint #26416](#)

Similarly

$2.50 + 0.50 = 3.00$ and

$3.00 + 0.50 = 3.50$ So 0.50 goes into the blue box. Type in 0.50.

[Comment on Hint #26417](#)

Type your answer below (mathematical expression):

⌘.5

Submit Answer Correct! Now we know for each additional ride you

have to pay \$0.50 more. Let's get back to the original question.

Pony Rides	
Number	Cost
1	\$2.00
2	\$2.50
3	\$3.00
4	\$3.50
10	?



Pony Rides	
Number	Cost
1	\$2.00
2	\$2.50
3	\$3.00
4	\$3.50
5	
6	
7	
8	
9	
10	?

$$\begin{aligned}
 &+ \$0.50 = \$2.50 \\
 &+ \$0.50 = \$3.00 \\
 &+ \$0.50 = \$3.50
 \end{aligned}$$

[Comment on Hint #26418.](#)

We know each additional ride costs \$0.50 more.

Pony Rides	
Number	Cost
1	\$2.00
2	\$2.50
3	\$3.00
4	\$3.50
5	
6	
7	
8	
9	
10	?

$$\begin{aligned}
 &+ \$0.50 = \$2.50 \\
 &+ \$0.50 = \$3.00 \\
 &+ \$0.50 = \$3.50 \\
 &+ \$0.50 = \$4.00 \\
 &+ \$0.50 = \$4.50 \\
 &+ \$0.50 = \$5.00 \\
 &+ \$0.50 = \$5.50 \\
 &+ \$0.50 = \$6.00 \\
 &+ \$0.50 = \$6.50
 \end{aligned}$$

Pony Rides	
Number	Cost
1	\$2.00
2	\$2.50
3	\$3.00
4	\$3.50
5	\$4.00
6	\$4.50
7	\$5.00
8	\$5.50
9	\$6.00
10	\$6.50

Therefore \$6.50 goes into the green box.

Type in 6.50.

[Comment on Hint #26431](#)

Type your answer below (mathematical expression):

- 6.5

Submit Answer

Correct! You are done with this problem!

[Comment on Assistent #26109](#)

Assistment

You are previewing content.

A booth at the State Fair is offering pony rides for children. The table below shows the relationship between the number of rides a child takes and the cost of the rides.

Pony Rides	
Number	Cost
1	\$2.00
2	\$2.50
3	\$3.00
4	\$3.50
?	\$5.50

Francie had \$5.50 to spend. What is the **greatest** number of rides she could take?

[Comment on Problem #33139](#)

Request Help

Type your answer below (mathematical expression):

•

Submit Answer

Let's move on and figure out this problem
Let's first understand the pattern.

Pony Rides	
Number	Cost
1	\$2.00
2	\$2.50
3	\$3.00
4	\$3.50
?	\$5.50

$1 + ? = \$2.50$
 $2 + ? = \$3.00$
 $3 + ? = \$3.50$

What number goes into the blue box? (Don't write \$ symbol)

[Comment on Problem #33140](#)

\$2.50 is 50 cents more than \$2.00.

So $2.00 + 0.50 = 2.50$

[Comment on Hint #26424](#)

$2.50 + 0.50 = 3.00$ and

$3.00 + 0.50 = 3.50$ So 0.50 goes into the blue box. Type in 0.50 .

[Comment on Hint #26425](#)

Type your answer below (mathematical expression):

- .5

Submit Answer

Correct! Now you know that for each additional ride you have to pay $\$0.50$ more. Then make a new table till you get $\$5.50$ in the cost column.

Pony Rides	
Number	Cost
1	\$2.00
2	\$2.50
3	\$3.00
4	\$3.50
	\$4.00
	\$4.50
	\$5.00
?	\$5.50

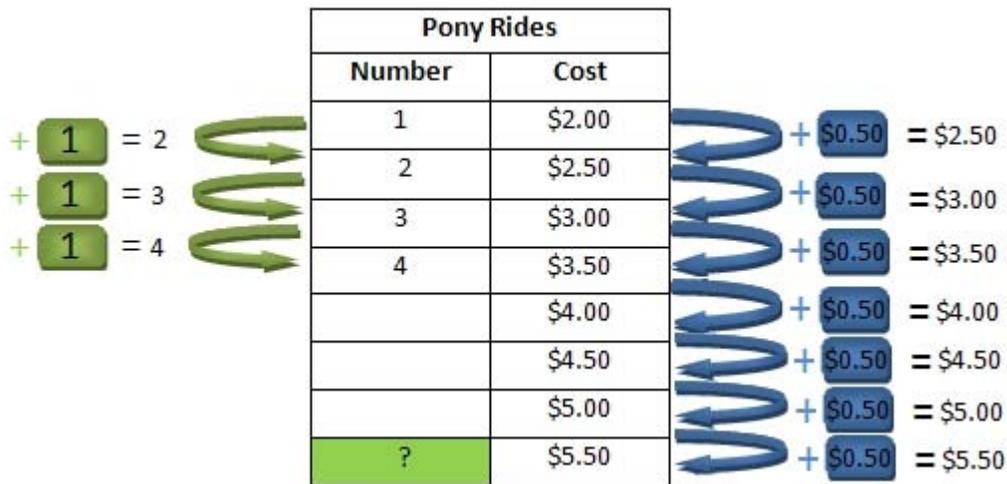


$+ \$0.50 = \2.50
 $+ \$0.50 = \3.00
 $+ \$0.50 = \3.50
 $+ \$0.50 = \4.00
 $+ \$0.50 = \4.50
 $+ \$0.50 = \5.00
 $+ \$0.50 = \5.50

What goes in the green box?

[Comment on Problem #33141](#)

Notice that the number column is increasing by one in each row.



[Comment on Hint #26426](#)

If you follow the pattern the completed table looks like:



Therefore 8 goes into the green box.

Type in 8.

[Comment on Hint #26428](#)

Type your answer below (mathematical expression):

*8

Submit Answer

Correct! Let's get back to the original question again. A booth at the State Fair is offering pony rides for children. The table below shows the relationship

between the number of rides a child takes and the cost of the rides.

Pony Rides	
Number	Cost
1	\$2.00
2	\$2.50
3	\$3.00
4	\$3.50
?	\$5.50

Francie had \$5.50 to spend. What is the **greatest** number of rides she could take?

[Comment on Problem #33142](#)

From the table earlier you found that 8 rides cost \$5.50. See the circled part below.

Pony Rides	
Number	Cost
1	\$2.00
2	\$2.50
3	\$3.00
4	\$3.50
5	\$4.00
6	\$4.50
7	\$5.00
8	\$5.50

[Comment on Hint #26429](#)

Hence 8 is the greatest number of rides that Francie can take with \$5.50.

Type in 8.

[Comment on Hint #26430](#)

Type your answer below (mathematical expression):

• 8

Submit Answer

Correct! You are done with this problem!

[Comment on Assistent #26110](#)

Assistment

Assistment #26111

You are previewing content.

A booth at the State Fair is offering pony rides for children. The table below shows the relationship between the number of rides a child takes and the cost of the rides.

Pony Rides	
Number	Cost
1	\$2.00
2	\$2.50
3	\$3.00
4	\$3.50

Write an expression using n to show the cost of n rides.

(Use * for multiplication)

[Comment on Problem #33144](#)

[Request Help](#)

Type your answer below (mathematical expression):

•

Submit Answer

Let's move on and figure out this problem

Let's first understand the pattern.

Pony Rides	
Number	Cost
1	\$2.00
2	\$2.50
3	\$3.00
4	\$3.50

What number goes into the blue box? (Don't write \$ symbol)

[Comment on Problem #33148](#)

\$2.50 is 50 cents more than \$2.00.

So $2.00 + 0.50 = 2.50$

[Comment on Hint #26434](#)

Similarly

$2.50 + 0.50 = 3.00$ and

$3.00 + 0.50 = 3.50$ So 0.50 goes into the box. Type in 0.50.

[Comment on Hint #26435](#)

Type your answer below (mathematical expression):

• .5

Submit Answer

Correct!

What number goes into the green box?



[Comment on Problem #33149](#)

Notice that the number column is increasing by one in each row.

[Comment on Hint #26436](#)

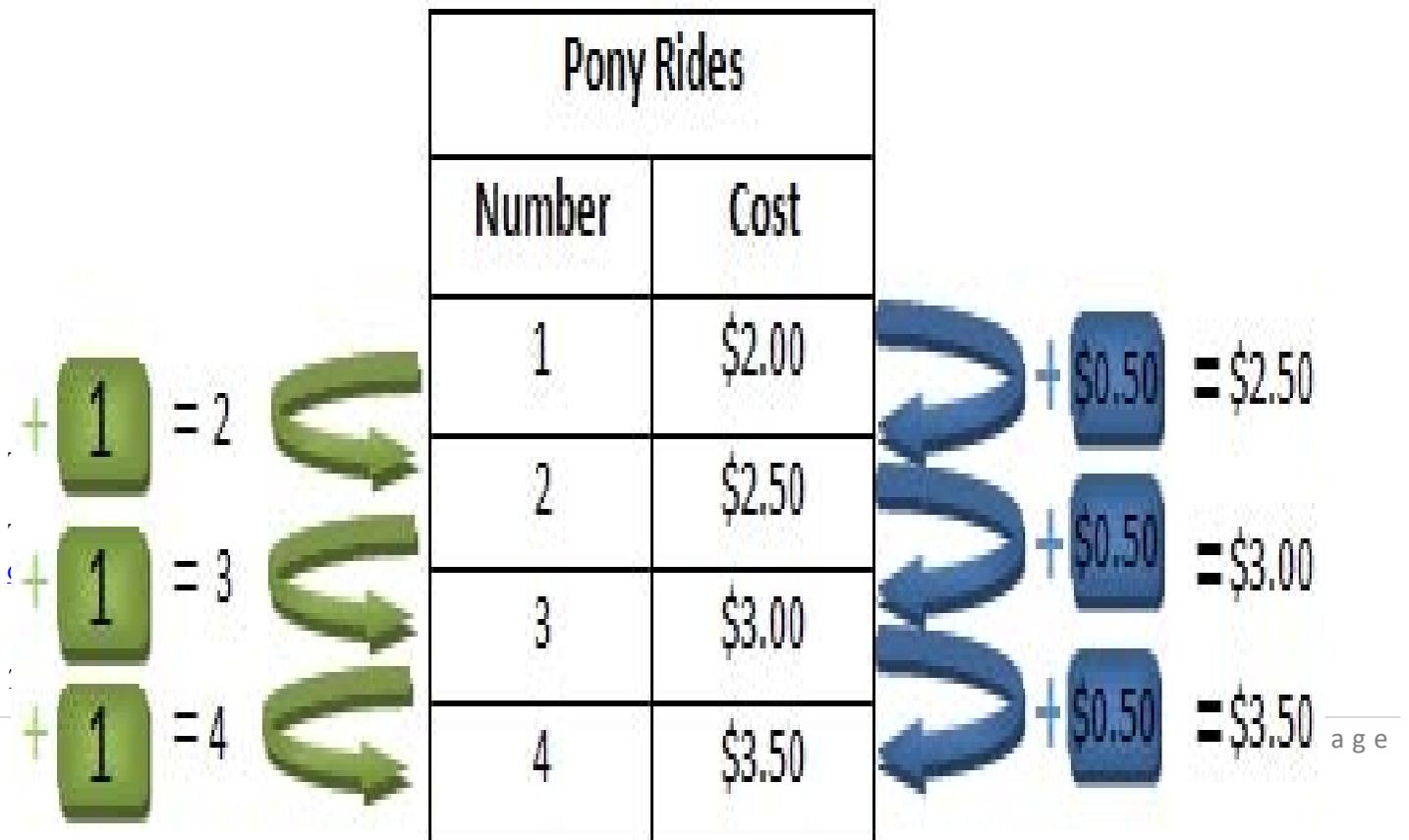
So the pattern is :

$$1 + 1 = 2 \quad 2 + 1 = 3$$

$$3 + 1 = 4$$

[Comment on Hint #26437](#)

This would result the following table



- 1

Submit Answer

Correct!

Pony Rides	
Number	Cost
1	\$2.00
2	\$2.50
3	\$3.00
4	\$3.50

So from the table above we can say each ride costs \$0.50. But the total cost for first ride is \$2.00!! It is because it includes entrance fee as well. Then how much is the entrance fee?

(Don't write \$ symbol)

[Comment on Problem #33150.](#)

~~Total Cost = Entrance fee + Cost of a ride~~

Total Cost for first ride is \$2.00. Cost of a ride is \$0.50. Therefore Entrance Fee =

Total Cost - Cost of a ride

[Comment on Hint #26441.](#)

Entrance Fee = Total Cost - Cost of a ride =

\$2.00 - \$0.50 = \$1.50

So the entrance fee is \$1.50.

Type in 1.50.

[Comment on Hint #26444.](#)

Type your answer below (mathematical expression):

⌘1.5

Submit Answer

Correct! Now let's get back to the original question. Write an expression using n to show the cost of n rides.

Pony Rides	
Number	Cost
1	\$2.00
2	\$2.50
3	\$3.00
4	\$3.50

[Comment on Problem #33152](#)

Total Cost = Entrance Fee + Cost of n rides

Each ride costs 0.50. So n ride costs $0.50 * n$.

Therefore Total Cost = Entrance Fee + Cost

of n rides Total Cost = Entrance Fee + $0.50 *$

n

[Comment on Hint #26453](#)

Entrance Fee = 1.50 Therefore Total Cost =

Entrance Fee + Cost of n rides Total Cost =

Entrance Fee + $0.50 * n$

= $1.50 + 0.50 * n$ Type in

$1.50 + 0.50 * n$.

[Comment on Hint #26454](#)

Type your answer below (mathematical expression):

- $1.5 + .5*n$

Submit Answer

Correct! You are done with this problem!

[Comment on Assistent #26111](#)

Assistment

Assistment #25402

You are previewing content.

What is the value of the expression below when $x = 16$? $2x$

+ 15

[Comment on Problem #31206](#)

Request Help

Type your answer below (mathematical expression):

•

Submit Answer

Let's move on and figure out this problem

In order to calculate this expression we first need to substitute 16 in for x .

Which expression has the substitution done correctly?

[Comment on Problem #31217](#)

Remember $2x$ means $2 * x$

[Comment on Hint #25797](#)

We know $x = 16$.

[Comment on Hint #25798](#)

Therefore $2x + 15 = 2 * x + 15$

$= 2 * 16 + 15$ Select $2 * 16 + 15$.

[Comment on Hint #25799](#)

Select one:

$2 * 16 + 15$

$31 + 15$

Submit Answer Correct! Now we

know the expression is

$$2 * 16 + 15$$

According to the correct **order of operations**, one operation should be done before the other.

Which operation must be done first?

[Comment on Problem #31218.](#)

Just follow **PE (MD) (AS) Parenthesis, Exponents, Multiplication and Division** (from left to right), **Addition** and **Subtraction** (from

left to right).

[Comment on Hint #24477.](#)

Take a look at the expression:

$2 \times 16 + 15$ You see that there is **multiplication** and **addition** to do. You must do the **multiplication** first.

Select **Multiplication**.

[Comment on Hint #24478.](#)

Select one:

- Addition
- Multiplication

Submit Answer

Correct!

Great, the multiplication should be done first.

Now let's look go back to the original question.

What is the value of the expression below when $x = 16$?

$$2x + 15$$

[Comment on Problem #31221](#)

Do the multiplication first.

$$2 * 16 + 15$$
$$32 + 15$$

[Comment on Hint #23973](#)

Next, **add** the result of the **multiplication** to the number in the right.

$$2 * 16 + 15$$
$$32 + 15$$
$$47$$

[Comment on Hint #23974](#)

47 is the answer.

Type in 47.

[Comment on Hint #24479](#)

Type your answer below (mathematical expression):

- 47

Submit Answer

Correct! You are done with this problem!

[Comment on Assistentment #25402](#)

Assistment

You are previewing content.

What is the value of the expression below when $\Delta = 8$?

$$\frac{\Delta}{2} - 2$$

[Comment on Problem #31223](#)

Request Help

Type your answer below:

✖

Submit Answer

Let's move on and figure out this problem

Δ in the expression $\frac{\Delta}{2} - 2$

Let's start by substituting in what we know about the Which of the following corresponds to the given problem?

$$\frac{2}{2} - 2$$

$$\frac{8}{2} - 2$$

$$\frac{2}{8} - 2$$

$$\frac{2}{8} - 8$$

[Comment on Problem #31224](#)

We know that $\Delta = 8$

So we just replace the Δ in the expression $\frac{\Delta}{2} - 2$ with 8.

[Comment on Hint #25795](#)

$\frac{8}{2} - 2$ is the correct answer.

Select B.

[Comment on Hint #25796](#)

Select one:

- A
- B
- C
- D

Submit Answer

Correct!

Now we know that the questions corresponds to $\frac{8}{2} - 2$

According to the correct **order of operations**, one operation should be done before the other.

Which operation must be done first?

[Comment on Problem #31225](#)

Just follow **PE (MD) (AS) Parenthesis, Exponents, Multiplication and Division** (from left to right), **Addition and Subtraction** (from left to right).

[Comment on Hint #26284](#)

Take a look at the expression:

$$\frac{8}{2} - 2$$

You see that there is **division** and **subtraction** to do.

You must do the **division** first. Select **division**.

[Comment on Hint #26285](#)

Select one:

- Subtraction

Division Submit

Answer Correct!

Great! Division must be done first. Now lets

get back to original question again.

What is the value of the expression below
when $\Delta = 8$?

$$\frac{\Delta}{2} - 2$$

[Comment on Problem #31226](#)

Now we know we have to perform $8 \div 2$ first. So lets replace the circled part

below with its value and subtract 2 from it?

$$\left(\frac{8}{2}\right) - 2$$

[Comment on Hint #23978](#)

$$\left(\frac{8}{2}\right) - 2$$

$$= 4 - 2 \text{ (4 is the value of circled part above) } =$$

Type in 2.

[Comment on Hint #23979](#)

Type your answer below (mathematical expression):

2

Submit Answer

Correct! You are done with this problem!

[Comment on Assistentment #25408](#)

Assistment

Assistment #25591

You are previewing content.

Based on the pattern in the input-output table below, what is the value of y when $x = 4$?

Input (x)	Output (y)
1	7
2	14
3	21
4	?

[Comment on Problem #31656](#)

Request Help

Type your answer below:

✖

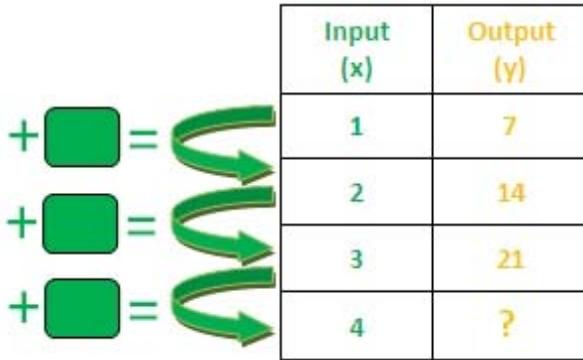
Submit Answer

Let's move on and figure out this problem

Let's start by making sense of the table.

What number goes in the green box?

In other words by how much is the input (x) increasing?



[Comment on Problem #31662](#)

$$1 + \boxed{?} = 2$$

[Comment on Hint #24429](#)

$$1 + \boxed{1} = 2$$

[Comment on Hint #24430](#)

Therefore 1 goes into the green box.

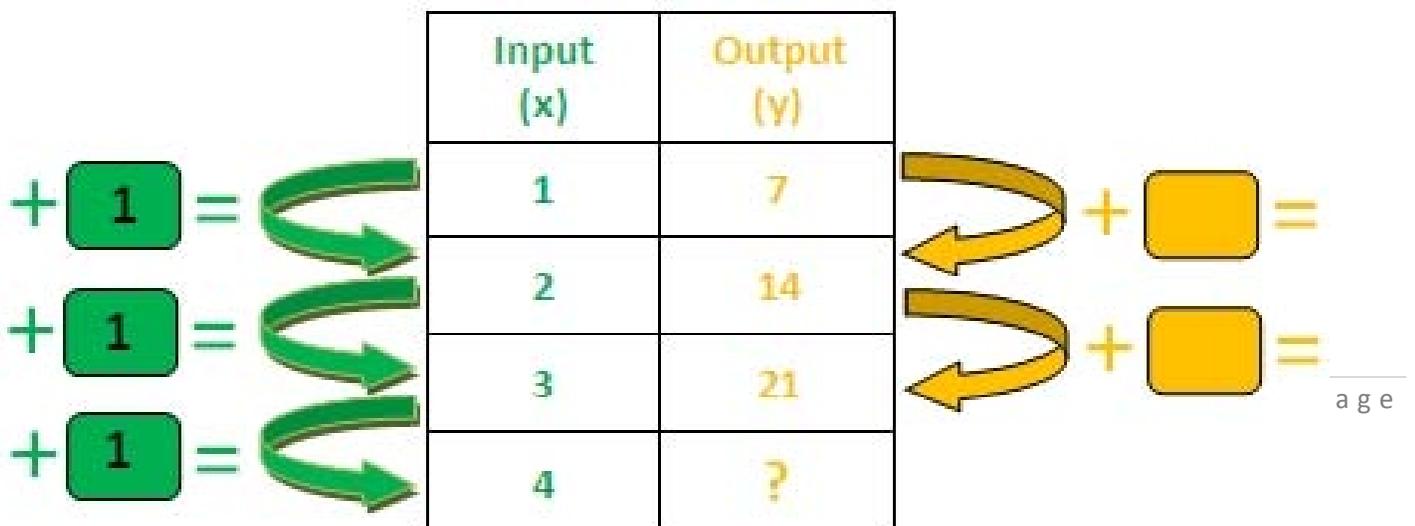
[Comment on Hint #24431](#)

Type your answer below:

- 1

Submit Answer

Correct! So we have the input values increasing by 1. What goes in the yellow box? In other words by how much is the output (y) increasing?



[Comment on Problem #31663](#)

$$7 + \boxed{?} = 14$$

[Comment on Hint #24432](#)

$$7 + \boxed{7} = 14$$

[Comment on Hint #24433](#)

Therefore 7 goes into the yellow box.

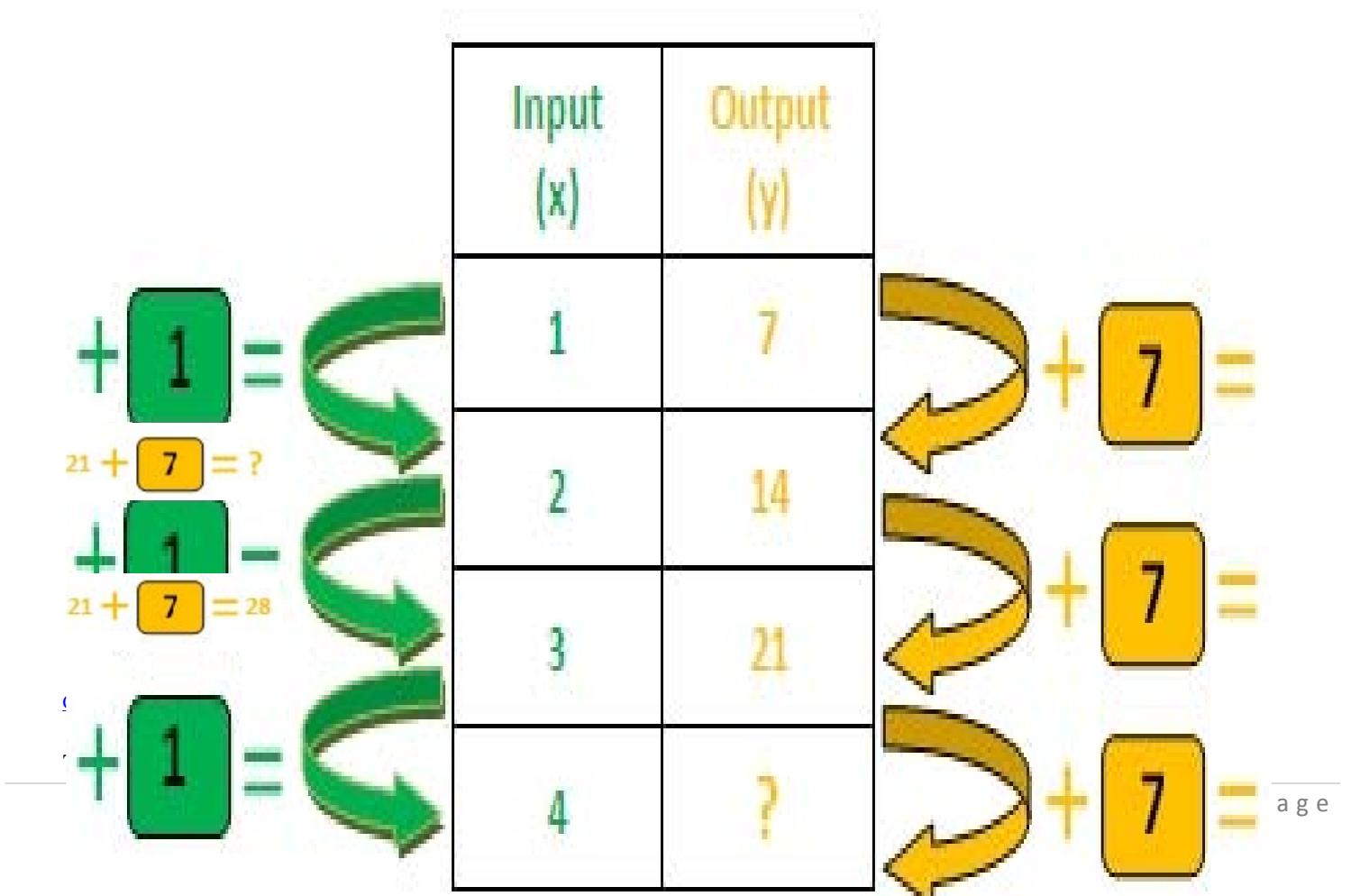
[Comment on Hint #24435](#)

Type your answer below:

- 7

Submit Answer

Correct! Now you are ready to answer the original question. Based on the pattern in the input-output table below, what is the value of y when $x = 4$?



[Comment on Hint #24438](#)

Type your answer below:

- 28

Submit Answer

Correct! You are done with this problem!

[Comment on Assistent #25591](#)

Assistment

Assistment #25616

You are previewing content.

Arnie wrote the number pattern below:

1, 2, 5, 14, 41

If the pattern continues in the same way, which of the following rules can Arnie use to find the next number in the number pattern?

[Comment on Problem #31700](#)

Request Help

Select one:

- ⌘ A. Add 1
- ⌘ B. Multiply by 2
- ⌘ C. Multiply by 2; then add 1
- ⌘ D. Multiply by 3; then subtract 1

Submit Answer

Let's move on and figure out this problem Let us look at one rule at a time and try to find the rule that works.

The first rule says, "**Add 1**". The **first** number in the sequence is 1.

According to the rule what is the **second** number in the sequence?

[Comment on Problem #33935](#)

The rule says to add 1, so we should do : 1

+ 1

[Comment on Hint #27571](#)

$$1 + 1 = 2$$

So 2 should be the next number in the sequence.

Type in 2.

[Comment on Hint #27572](#)

Type your answer below (mathematical expression):

2

Submit Answer

Correct! So far "Add 1" works. So according to the "Add 1" rule we have,



1, 2,
+1

Now what is the third number in the sequence according to the rule of adding 1?

[Comment on Problem #33936](#)

From the above question we found that 2 is the second number in the sequence.

So now to find the third number we have to add 1 to 2.

[Comment on Hint #27573](#)

$$2 + 1 = 3$$

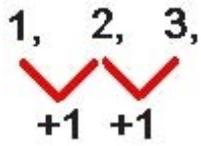
So the third number in sequence is 3. Type in 3.

[Comment on Hint #27575](#)

Type your answer below (mathematical expression):

- 3

Submit Answer Correct! So from the rule of adding 1, 3 is the third number in the sequence.



But 3 is not the third term in our given sequence. So rule A is not the correct rule. See if you can use this process of elimination to find the right rule.

Arnie wrote the number pattern below:

1, 2, 5, 14, 41

If the pattern continues in the same way, which of the following rules can Arnie use to find the next number in the number pattern?

[Comment on Problem #33938](#)

Rule B says "Multiply by 2".

Check this rule.

[Comment on Hint #27576](#)

By Rule B, the second number should be:

$$* 2 = 2$$



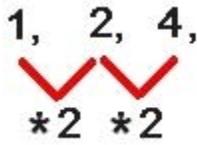
2 is in fact the second number in the sequence.

Let's see if this rule gives the third number as well.

[Comment on Hint #27577](#)

By Rule B, the third number should be: 2

$$* 2 = 4$$



4 is not the third number in the sequence.

Hence Rule B is also not the correct rule.

[Comment on Hint #27578](#)

Now let's move on to check Rule C.

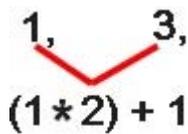
Rule C says "Multiply by 2, then add 1".

[Comment on Hint #27579](#)

By Rule C, the second number should be:

$$1 * 2 = 2 \text{ (Multiply by 2)}$$

$$2 + 1 = 3 \text{ (then add 1)}$$



3 is not the second number in the sequence.

Hence Rule C is also not the correct rule.

[Comment on Hint #27580](#)

Now let's move on to check Rule D.

Rule D says "Multiply by 3, then subtract 1".

[Comment on Hint #27585](#)

By Rule D, the second number should be:

$$1 * 3 = 3 \text{ (Multiply by 3)}$$

$$3 - 1 = 2 \text{ (then subtract 1)}$$

1, 2,
 $(1 * 3) - 1$

2 is in fact the second number in the sequence.

Let's see if this rule gives the third number as well.

[Comment on Hint #27581](#)

By Rule D, the third number should be:

$$2 * 3 = 6 \text{ (Multiply by 3)}$$

$$6 - 1 = 5 \text{ (then subtract 1)}$$

1, 2, 5
 $(1 * 3) - 1$ $(2 * 3) - 1$

5 is in fact the third number in the sequence.

Let's see if this rule gives other numbers in the sequence as well.

[Comment on Hint #27582](#)

If you follow on the Rule D, other numbers also satisfies it as shown below.



Hence Rule is the correct rule.

Select Rule D: "Multiply by 3, then subtract 1"

[Comment on Hint #27584](#)

Select one:

- A. Add 1
- B. Multiply by 2
- C. Multiply by 2; then add 1
- D. Multiply by 3; then subtract 1

Submit Answer

Correct! You are done with this problem!

[Comment on Assistent #25616](#)

Assistment

Assistment #25698

You are previewing content.

Which of the following represents the statement "3 times the sum of 2 and 4"?

[Comment on Problem #31916](#)

[Request Help](#)

Select one:

$3 + (2 * 4)$

$3 * 4 + 2$

$3 * 2 + 4$

$3 * (2 + 4)$ Submit

Answer

Let's move on and figure out this problem. Let's compare this problem with another question.

Which of the following is same as "a times b"?

[Comment on Problem #31917](#)

a times b means a multiplied to b.

So select a * b

[Comment on Hint #26286](#)

Select one:

a - b

a * b

$a \div b$ Submit Answer Correct! Which of the following is

same as "the sum of c and d"?

[Comment on Problem #31918](#)

the sum of c and d means c added to d.

315 | Page

So select $c + d$.

[Comment on Hint #26288](#)

Select one:

- $c + d$
- $c - d$
- $c * d$
- $c \div d$

Submit Answer

Correct! Now let's see the question again. 3

times the sum of 2 and 4. We are looking for 3 times the part in red. Let's find part in red first. What is the sum of 2 and 4?

[Comment on Problem #31919](#)

the sum of 2 and 4 means 2 added to 4.

Select $2 + 4$.

[Comment on Hint #26289](#)

Select one:

-
- $2 + 4$
- $2 - 4$
- $2 * 4$
- $2 \div 4$ Submit

Answer

Correct! We know a times b = $a * b$ Let's see the question again. 3 times the sum of 2 and 4

= 3 times (2 + 4) Which of the following represents that statement?

[Comment on Problem #31920](#)

We know 3 times the sum of

$$2 \text{ and } 4 = 3 \text{ times } (2 + 4)$$

[Comment on Hint #24705](#)

3 times (2 + 4) means 3 multiplied to (2 + 4)

So select $3 * (2 + 4)$

[Comment on Hint #24706](#)

Select one:

$3 + 2 * 4$

$3 * 2 + 4$

$3 * (2 + 4)$ Submit Answer

Correct! You are done with this problem!

[Comment on Assistent #25698](#)

You are previewing content.

What does m equal in this equation?

$$3m + 2 = 17$$

[Comment on this question](#)

Request Help

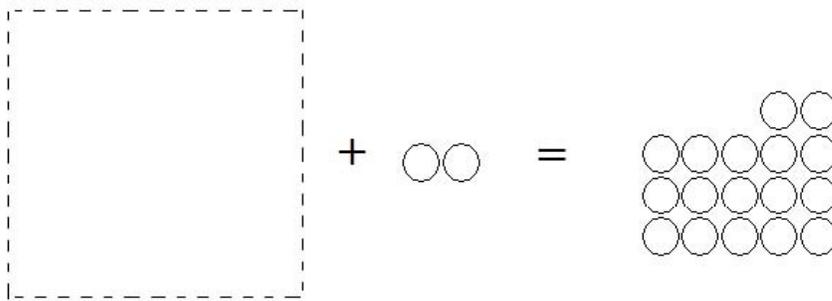
Type your answer below:

- |

Submit Answer Let's move on and figure

out this problem

First, let's think $3m$ represents a pile of circles. And we can obtain 17 circles by putting 2 more circles into this pile. Please have a look at the picture below.



How many circles should be in the blank?

[Comment on this question](#)

Please count how many circles we have on the right of the equation, and compare that with the number of circles we have right now on the left of the equation.

[Comment on this hint](#)

There are 17 circles on the right side, and 2 circles on the left side.

[Comment on this hint](#)

So we need 15 circles in the blank to keep the equation balanced.

[Comment on this hint](#)

Type your answer below:

⌘15

Submit Answer

Correct!

Now we know $3m$ represents 15 circles. We can have the following equation:

$3m = 15$ What does this equation mean?

[Comment on this question](#)

Remember, $3m = 15$ is the same as $3 * m = 15$.

[Comment on this hint](#)

Multiplication indicates multiple times of addition.

[Comment on this hint](#)

$3 * m = 15$ is the same as $m + m + m = 15$.

[Comment on this hint](#)

So if we put together 3 piles of circles, each has m circles in it. There are 15 circles in total. C is correct.

[Comment on this hint](#)

Select one:

⌘

⌘

⌘ B. If we put together three piles of circles, each has 15 circles in it. The total number of circles is m .

⌘ A. The total number of circles is m . There are 15 circles in total.

D. If we move out 3 circles from a pile of 15 circles, the number of remaining circles is m .

Submit Answer

Correct!

Now let's see if you can solve the original problem.

What does m equal in this equation?

$3m + 2 = 17$

[Comment on this question](#)

We already know that $3m = 15$ or $m + m + m = 15$ from previous section.

[Comment on this hint](#)

Please look at the picture below. If we break a pile of 15 circles into three equal parts, how many circles are there in each part?



[Comment on this hint](#)

There are 5 circles in each part. So the value of m is 5.

[Comment on this hint](#)

Type your answer below:

• | 5

Submit Answer

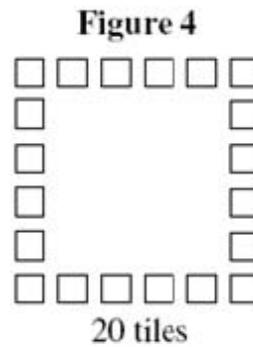
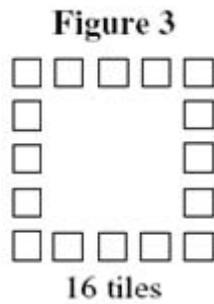
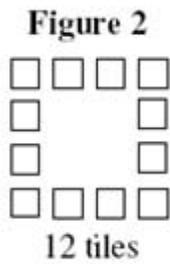
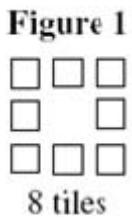
Correct!
You are done with this problem!

[Comment on this problem](#)

Assistment

You are previewing content.

The first four figures in a pattern are shown below.



Based on the pattern above, how many tiles will be in Figure 7?

[Comment on this question](#)

[Request Help](#)

Type your answer below:

•

Submit Answer

Let's move on and figure out this problem

From the diagram, we can see the square constructed with tiles is becoming larger and larger. So let's make a table showing the relationship between figure number and total number of tiles.

Figure number	

What should be the title in the yellow cell in the table?

[Comment on this question](#)

We are looking for relationship between which two quantities?

[Comment on this hint](#)

We are looking for relationship between figure number and total number of tiles.

[Comment on this hint](#)

So "Total number of tiles" is the correct answer, choose B.

[Comment on this hint](#)

Select one:

- ⌘ A. Number of tiles in one side of the square
- ⌘ B. Total number of tiles
- ⌘ C. Area of the square
- ⌘ D. Number of tiles to construct two squares

Submit Answer

Correct!

Let's fill in the table.

Figure number	Total number of tiles
1	

What should be the number in the red cell?

[Comment on this question](#)

The left column of the table lists the figure number, so we should look at Figure 1 to figure out what to

put in the red cell.

[Comment on this hint](#)

The right column of the table lists the total number of tiles used to construct the square, so please read the total number of tiles in Figure 1.

Look at Figure 1 below. Pay attention to content in red circle.



[Comment on this hint](#)

The total number of tiles used in Figure 1 is 8.

Type in 8.

[Comment on this hint](#)

Type your answer below:

- 8

Submit Answer

Correct!

After doing the same for the rest of the table, we obtain this:

Please use the table and find out which one of the following expressions describes the relationship between these two quantities.

Figure number	Total number of tiles
1	8
2	12
3	16
4	20

[Comment on this question](#)

Let's check A.

If we substitute Figure number=1 into the equation in A,

Total number of tiles= $1*4=4$.

But from the table, we know when Figure number = 1, Total number of tiles=8.

So **A is incorrect**, now check the rest of the choices.

[Comment on this hint](#)

For B, If we substitute Figure number=1 into the equation, Total number of tiles= $1+10=14$.

But from the table, we know when Figure number = 1, Total number of tiles=8.

So **B is incorrect**, now check the rest of the choices.

[Comment on this hint](#)

For D, If we substitute Figure number=1 into the equation, Total number of tiles= $1*3+6=9$.

But from the table, we know when Figure number = 1, Total number of tiles=8.

So **D is incorrect**, now check the rest of the choices.

[Comment on this hint](#)

After checking C, we may find out that C satisfies each pair of data from the table. So

C is the right choice, choose C. [Comment on this hint](#) *Select one:*

- A. Figure number+10=Total number of tiles
- B. Figure number+10=Total number of tiles
- C. Figure number*4+4=Total number of tiles
- D. Figure number*4=Total number of tiles

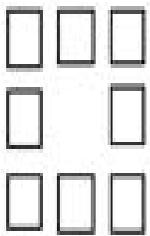
Submit Answer

Correct!

Now use the formula we concluded above. Try to solve the original problem again.

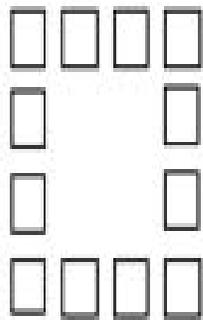
The first four figures in a pattern are shown below.

Figure 1



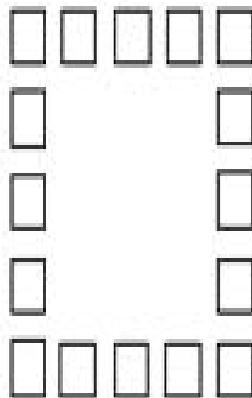
8 tiles

Figure 2



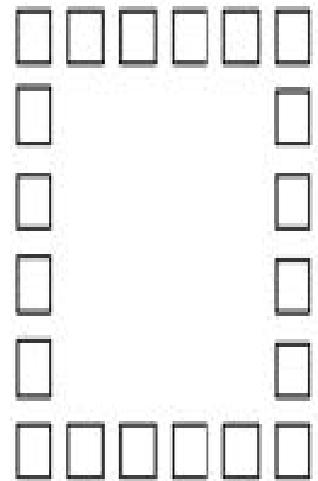
12 tiles

Figure 3



16 tiles

Figure 4



20 tiles

We already concluded that $\text{Figure number} \times 4 + 4 = \text{Total number of tiles}$. Please substitute $\text{Figure number} = 7$ into this equation.

[Comment on this hint](#)

After substitution, we will have $\text{Total number of tiles} = 7 \times 4 + 4$.

[Comment on this hint](#)

Total number of tiles =

$$7 \times 4 + 4$$

$$28 + 4$$

$$32$$

32 tiles will be in Figure 7. Type in 32.

[Comment on this hint](#)

Type your answer below:

- 32

Submit Answer

Correct! You are done with this problem!

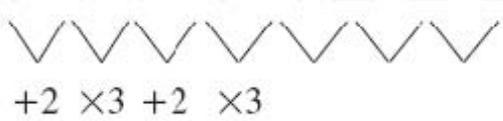
[Comment on this problem](#)

Assistment

Assistment #25456

You are previewing content.

Diana made the diagram below to find the next term in a number pattern.

Number Pattern	1, 3, 9, 11, 33, __, __, ?
Diana's Work	

What should Diana write as the eighth term in the number pattern?

[Comment on this question](#)

Request Help

Type your answer below:

•

Submit Answer

Let's move on and figure out this problem

Let's figure out what the 6th term is.

According to Diana's work, what is the next operation we should use?

[Comment on this question](#)

From Diana's work, we can see the operations she is using are *3 and +2 following each other.

[Comment on this hint](#)

The last operation she used was *3.

[Comment on this hint](#)

So the operation we should use now is +2.

[Comment on this hint](#)

Select one:

[Comment on this question](#)

From Diana's work, we can see the operations she is using are $\times 3$ and $+2$ following each other.

[Comment on this hint](#)

The last operation we used was $+2$.

[Comment on this hint](#)

So the operation we should use now is $\times 3$.

[Comment on this hint](#)

Select one:

- A. $\times 2$
 B. $\times 3$

Submit Answer

Correct!

We already know the next operation we should use is $\times 3$.

Number	
Pattern	1, 3, 9, 11, 33, 35, __, ?
Diana's	
Work	$+2 \times 3 +2 \times 3 +2 \times 3$

OK, the expression for 7th term is 35×3 .

What is the value of the 7th term?

[Comment on this question](#)

OK, the expression for 7th term is 35×3 .
 $35 \times 3 = 105$

[Comment on this hint](#)

Type your answer below:

- 105

Submit Answer

Correct!

So far we have accomplished:

Number	
Pattern	1, 3, 9, 11, 33, 35, 105, <u>?</u>
Diana's	
Work	+2 ×3 +2 ×3 +2 ×3

Continue with the same method we have been using, please figure out what the 8th term is.

[Comment on this question](#)

From Diana's work, we can see the operations she is using are *3 and +2 following each other.

[Comment on this hint](#)

The last operation we used was *3.

[Comment on this hint](#)

So the operation we should use now is +2.

[Comment on this hint](#)

So the expression for the 7th term is $105+2$.

[Comment on this hint](#)

$105+2=107$.

[Comment on this hint](#)

Type your answer below:

⌘107

Submit Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

Assistment #26096

You are previewing content.

Marty began a pattern with the number 3. He obtained all of the other terms in the pattern by multiplying the previous term by 2 or by 3 alternately as shown below. 3, 6, 18, 36, 108, 216, ...

What is the next term in Marty's pattern?

[Comment on this question](#)

Request Help

Type your answer below:

•

Submit Answer

Let's move on and figure out this problem

Let's make sure we understand the pattern first, what is the relationship we are looking for between the first two numbers in the sequence?

3, 6, 18, 36, 108, 216, ...

□
?

[Comment on this question](#)

Let's assume there are 3 circles in a pile, in order to have 6 circles in total, how many piles of circles are there? Please look at the following picture.



[Comment on this hint](#)

From the previous picture, we know 6 circles consist of 2 piles of circles of 3.

[Comment on this hint](#)

So $3 \times 2 = 6$. Choose A.

[Comment on this hint](#)

Select one:

- A. $3 \times 2 = 6$
 B. $3 \times 3 = 6$

Submit Answer

Correct!

Let's mark the relationship we figured out on the sequence.

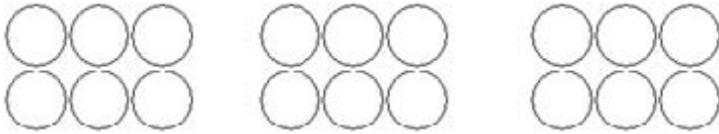
3, 6, 18, 36, 108, 216, ...

V □
*2 ?

What is the relationship between the 2nd term and 3rd term in the sequence then?

[Comment on this question](#)

Let's assume there are 6 circles in a pile, in order to have 18 circles in total, how many piles of circles are there? Please look at the following picture.



[Comment on this hint](#)

From the previous picture, we know 18 circles consist of 3 piles of circles of 6.

[Comment on this hint](#)

So $6 \times 3 = 18$. Choose A.

[Comment on this hint](#)

Select one:

- A. $6 \times 3 = 18$
 B. $6 \times 2 = 18$

Submit Answer

Correct!

After doing the same thing we can mark all the relationships between known terms in the sequence.

3, 6, 18, 36, 108, 216, ...
 $\vee \vee \vee \vee \vee$
 *2 *3 *2 *3 *2

Now, we can clearly see the pattern, what is the next term in the sequence?

[Comment on this question](#)

Continuing the pattern, we can realize that the next term in the sequence is:

$$\begin{array}{cccccc} 3, & 6, & 18, & 36, & 108, & 216, & \dots \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \\ *2 & *3 & *2 & *3 & *2 & *3 & \end{array}$$

[Comment on this hint](#)

So Next term = $216 * 3$

[Comment on this hint](#)

$216 * 3 = 648$.

$$\begin{array}{r} 216 \\ * \quad 3 \\ \hline 648 \end{array}$$

Type in 648.

[Comment on this hint](#)

Type your answer below:

⌘648

Submit Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

Assistment #26097

You are previewing content.

In the equation below, if x has a value of 3, what is the value of y ? y

$$= 3x - 1$$

[Comment on this question](#)

Request Help

Type your answer below:

•

Submit Answer Let's move on and figure out

this problem Let's substitute $x = 3$ in to the

equation first.

Which one of the following represents the equation right after substitution?

[Comment on this question](#)

Remember when we multiply a variable by a number, * can be omitted.

So $3x = 3 * x$

[Comment on this question](#)

So after the substitution, we should have $y = 3 * 3 - 1$. Choose C.

[Comment on this question](#)

Select one:

⌘

⌘

A. $y = 33 - 1$

B. $y = 3+3 - 1$

C. $y = 3*3 - 1$

338 | Page

⌘

D. $y = 3 \div 3 - 1$

Submit Answer

Correct!

Now let's compute the value of y . y

$$= 3 * 3 - 1$$

What is the first step we should take?

[Comment on this question](#)

Just follow
PE (MD) (AS)
Parenthesis, Exponents, Multiplication and Division (from left to right), Addition and Subtraction
(from left to right).

[Comment on this hint](#)

So the first step we should take is $3 * 3$.

[Comment on this hint](#)

Select one:

⌘

⌘ B. $3 * 3 - 1$

Submit Answer

Correct!

So what is the value of the red portion in the following equation?

$$y = 3 * 3 - 1$$

[Comment on this question](#)

Assume there are 3 circles in a pile, how many circles are there in total when we put 3 piles of circles together? Please look at the following picture.



[Comment on this hint](#)

There are 9 circles in total. So $3*3=9$. Type in 9.

[Comment on this hint](#)

Type your answer below:

• 9

Submit Answer

Correct!

Now the equation becomes:

$y = 3*3 - 1$ $y = 9 - 1$ What is the

final value of y ?

[Comment on this question](#)

Now we know $y = 9 - 1$. Assume we have 9 circles in a pile, and 1 of the circles is moved out from the pile, how many circles do we have left in the pile? Look at the following picture.



[Comment on this hint](#)

There are 8 circles left. $y = 9 - 1 = 8$. Type in 8.

[Comment on this hint](#)

Type your answer below:

⌘8

Submit Answer

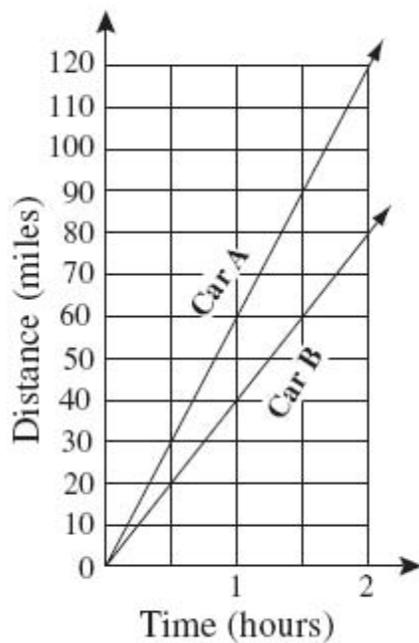
Correct! You are done with this problem!

[Comment on this problem](#)

You are previewing content.

The graph below shows the distance Car A and Car B traveled in two hours on the same road in the same direction.

Distance Traveled in Car



Which of the following statements is true about the difference between the distance traveled by Car A and the distance traveled by Car B as time progresses?

[Comment on this question](#)

[Request Help](#)

Select one:

- A. The difference in the distance between Car A and Car B decreases.
- B. The difference in the distance between Car A and Car B increases.
- C. The difference in the distance between Car A and Car B stays the same.
- D. The difference in the distance between Car A and Car B is zero.

[Submit Answer](#)

Let's move on and figure out this problem

To understand the problem, let's put the information from the graph into a table.

What title should we put into the yellow cell in the following table?

Time (hours)	Distance Car A Traveled (miles)	

[Comment on this question](#)

The question wants us to compare the distance between Car A and Car B as time progresses, so we should look at the distances both cars traveled at different specific times.

[Comment on this hint](#)

In the table, we already have "Time" and "Distance Car A Traveled".

[Comment on this hint](#)

So we only need the "Distance Car B Traveled (miles)" for the other title. Choose B

[Comment on this hint](#)

Select one:

- A. Distance Car A traveled (miles)
- B. Distance Car B traveled (miles)
- C. Time (hours)
- D. Fuel Efficiency of Car A (miles/gallon)

Submit Answer

Correct!

So the table looks like the following:

Time (hours)	Distance Car A Traveled (miles)	Distance Car B Traveled (miles)

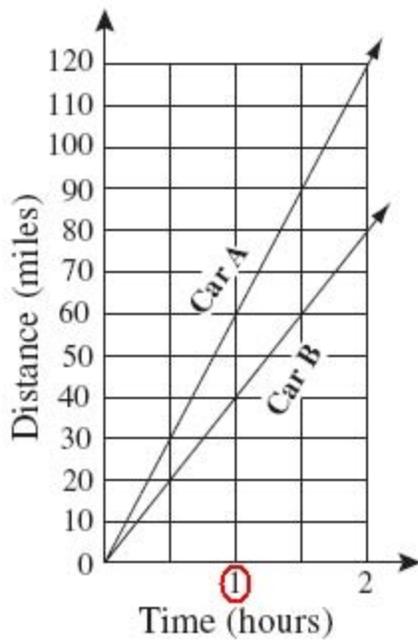
Now let's fill in the table, what should be the number in the blue cell below?

Time (hours)	Distance Car A Traveled (miles)	Distance Car B Traveled (miles)
1		

[Comment on this question](#)

Since the number under the title "Time" is 1, this means we are looking for the distance Car A traveled after 1 hour. So let's find this time first in the following graph, which is circled in red.

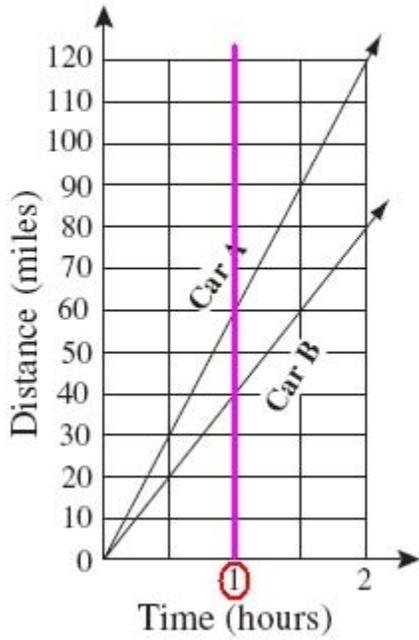
Distance Traveled in Car



[Comment on this hint](#)

Now we should find the distance Car A traveled in 1 hour. Let's draw a pink vertical line at 1 hour. Please take a look at the graph below. Where does this line intersect with the line representing Car A?

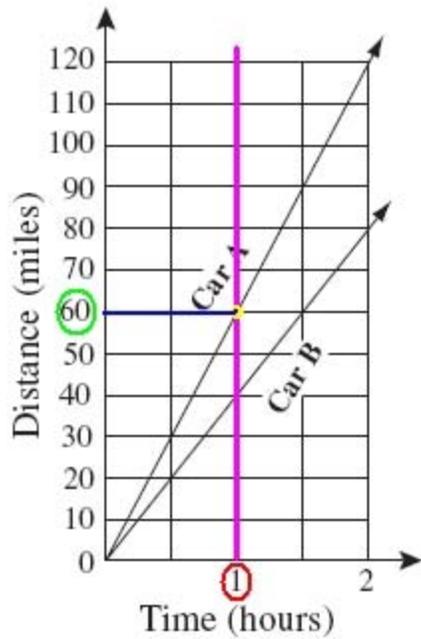
Distance Traveled in Car



[Comment on this hint](#)

In the graph below, we can see at the intersection, the corresponding value on the axis labeled "Distance" is 60. This means after 1 hour, Car A traveled 60 miles. Please Type in 60.

Distance Traveled in Car



[Comment on this hint](#)

Type your answer below:

⌘60

Submit Answer

Correct!

Using the same method, we can obtain a complete table as following:

Time (hours)	Distance Car A Traveled (miles)	Distance Car B Traveled (miles)
1	60	40
2	90	60

What's the difference between distance Car A traveled and distance Car B traveled after 1 hour (miles)?

[Comment on this question](#)

In order to find the difference after 1 hour, we should look at the row when Time is 1, which is shaded in yellow in the following table:

Time (hours)	Distance Car A Traveled (miles)	Distance Car B Traveled (miles)
1	60	40
2	90	60

[Comment on this hint](#)

From the table, we can find that distance Car A traveled was 60 miles and distance Car B traveled was 40 miles.

[Comment on this hint](#)

So the difference is $60 - 40 = 20$ (miles). Type in 20

[Comment on this hint](#)

Type your answer below:

⌘20

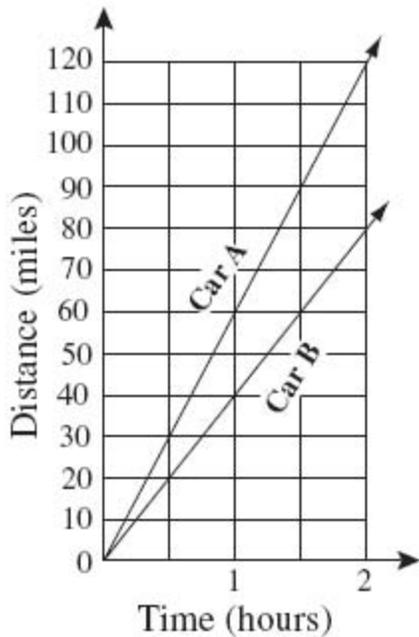
Submit Answer

Correct!

Now using the same method, try to find the difference between distance Car A traveled and distance car B traveled after 2 hours. And compare this value to the value we got in previous question. See if you can obtain the answer to the original problem.

The graph below shows the distance Car A and Car B traveled in two hours on the same road in the same direction.

Distance Traveled in Car



Which of the following statements is true about the difference between the distance traveled by Car A and the distance traveled by Car B as time progresses?

[Comment on this question.](#)

From second row of the table below, which is shaded in orange, we can find that after 2 hours, Car A traveled 90 miles and Car B traveled 60 miles.

Time (hours)	Distance Car A Traveled (miles)	Distance Car B Traveled (miles)
1	60	40
2	90	60

[Comment on this hint.](#)

So the difference between them is $90 - 60 = 30$ (miles).

[Comment on this hint.](#)

We know from previous question that after 1 hour, the distance between these two cars is 20 miles, comparing this to 30 miles after 2 hours. We can conclude that the distance between these two cars is increasing as time progresses. Choose B.

[Comment on this hint](#)

Select one:

- ⌘ A. The difference in the distance between Car A and Car B decreases.
- ⌘ B. The difference in the distance between Car A and Car B increases.
- ⌘ C. The difference in the distance between Car A and Car B stays the same.
- ⌘ D. The difference in the distance between Car A and Car B is zero.

Submit Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

Assistment #26364

You are previewing content.

In the input-output table below, what will be the value of y when $x = 5$?

Input	Output
x	y
2	5
3	7
4	9
5	?

[Comment on this question](#)

Request Help

Type your answer below:

•

Submit Answer Let's move on and figure

out this problem

Let's look at the pattern in the table to help us fill in the value of y for $x = 5$. What is the change in y between $x = 2$ and $x = 3$?

Input	Output
x	y
2	5
3	7
4	9
5	?

+1 ↓ ↓ +?

[Comment on this question](#)

From the table, we can see that when x increases from 2 to 3, y increases from 5 to 7.

[Comment on this hint](#)

Therefore, the increase in y is the difference between 7 and 5.

[Comment on this hint](#)

$7 - 5 = 2$. So the correct answer is 2. Choose A.

[Comment on this hint](#)

Select one:

- A. 2
- B. 3
- C. 4
- D. 5

Submit Answer

Correct!

So to get from 5 to 7 we add 2. What is the change in y between $x = 3$ and $x = 4$?

Input	Output
x	y
2	5
3	7
4	9
5	?

+1 ↓
 +1 ↓

↓ +2
 ↓ +?

[Comment on this question](#)

From the table, we can see that when x increases from 3 to 4, y increases from 7 to 9.

[Comment on this hint](#)

Therefore, the increase in y is the difference between 9 and 7.

[Comment on this hint](#)

$9 - 7 = 2$. So the correct answer is 2. Choose A.

[Comment on this hint](#)

Select one:

- A. 2
- B. 3
- C. 4
- D. 5

Submit Answer

Correct!

Now you probably can see the pattern. If we continue this pattern, we can have the entire table marked as following:

	Input	Output	
	x	y	
+1 ↓	2	5	↓ +2
+1 ↓	3	7	↓ +2
+1 ↓	4	9	↓ +2
	5	?	

Now please try to find the value of y when x = 5.

[Comment on this question](#)

We already find the pattern: each time when x increases by 1, y increases by 2.

[Comment on this hint](#)

So when x goes from 4 to 5, the value of y should be $9 + 2$.

[Comment on this hint](#)

$9 + 2 = 11$. 11 is the correct answer. Please type in 11.

[Comment on this hint](#)

Type your answer below:

- 11

Submit Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

Assistment #26366

You are previewing content.

Agnes earns d dollars for babysitting each week. She also receives an allowance of \$10 per week. The expression below can be used to calculate the amount of money she will have at the end of 5 weeks.

$$(10 + d) * 5$$

What is the amount of money Agnes will have at the end of five weeks if $d = \$25$?

[Comment on this question](#)

Request Help

Type your answer below:

•

Submit Answer

Let's move on and figure out this problem

We already know the expression to calculate the amount of money Agnes will have at the end of 5 weeks, which is:

$$(10 + d) * 5$$

And we also know the value of d :

$$d = \$25$$

So what we need to do is to substitute the value of d into the expression given. Which of the following is the correct expression in dollars we can obtain right after substitution?

[Comment on this question](#)

We are substituting $d = 25$ (\$) into the equation.

So the expression we should obtain right after substitution is $(10 + 25) * 5$.

[Comment on this hint](#)

Select one:

- A. $(10 * 25) * 5$
- B. $(10 + 25) * 5$
- C. $(10 - 25) * 5$
- D. $(10 \div 25) * 5$

Submit Answer

Correct!

Now we know the expression becomes:

$$(10 + 25) * 5$$

Just follow

PE (MD) (AS)

Parenthesis, Exponents, Multiplication and Division (from left to right), Addition and Subtraction (from left to right).

So we should compute the expression in the parenthesis first. What is the value of the portion in parenthesis (in red)?

$$(10 + 25) * 5$$

[Comment on this question](#)

The portion in parenthesis is $10 + 25$.

$10 + 25 = 35$. Type in 35.

[Comment on this hint](#)

Type your answer below:

⌘35

Submit Answer

Correct!

Now the expression becomes:

$$(10 + 25) * 5$$

$$35 * 5$$

Now see if you can solve the problem from this point.

Agnes earns d dollars for babysitting each week. She also receives an allowance of \$10 per week. The expression below can be used to calculate the amount of money she will have at the end of 5 weeks.

$$(10 + d) * 5$$

What is the amount of money Agnes will have at the end of five weeks if $d = \$25$

[Comment on this question](#)

We already derived the expression (in dollars) as following:

$$(10 + 25) * 5$$

$$35 * 5$$

[Comment on this hint](#)

So we just need to find the value of $35 * 5$.

[Comment on this hint](#)

$35 * 5 = 175$. So the answer is 175. Enter 175.

[Comment on this hint](#)

Type your answer below (mathematical expression):

- 175

Submit Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

Assistment #26098

You are previewing content.

Based on the information given in the table shown below, which of the following equations correctly states the relationship between x and y ?

x	y
1	3
2	4
3	5
4	6
5	7

[Comment on this question](#)

[Request Help](#)

Select one:

- A. $y = 2x$
- B. $y = x \div 2$
- C. $y = x + 2$
- D. $y = x - 2$

Submit Answer

Let's move on and figure out this problem

We can use guess and check to do this problem. Let's start with A. Please look at the table below, substitute x value circled in red into $y = 2x$. What is the y value you get?

x	y
1	3
2	4
3	5
4	6
5	7

[Comment on this question](#)

The circled x value is 1. So substitute $x = 1$ into the equation. After substitution, we have $y = 2 * 1$.

[Comment on this hint](#)

$y = 2 * 1 = 2$. Type in 2.

[Comment on this hint](#)

Type your answer below:

2

Submit Answer

Correct!

Now please read the corresponding y value (circled in blue) from the table when $x = 1$.

x	y
1	3
2	4
3	5
4	6
5	7

From the table above, we know expected y value should be 3, which does not match the value we

calculated, 2. So we can eliminate A. Now let's check B. Please substitute the x value circled in red into the equation $y = x \div 2$.

x	y
1	3
2	4
3	5
4	6
5	7

What is the y value you get?

[Comment on this question](#)

The circled value is 1. So substitute $x = 1$ into the equation.

[Comment on this hint](#)

After substitution, $y = 1 \div 2 = \frac{1}{2}$. Choose A.

[Comment on this hint](#)

Select one:

- A: 3
- B: $\frac{1}{2}$

Submit Answer

Correct!

Now please read the corresponding y value (circled in blue) from the table when $x = 1$.

x	y
1	3
2	4
3	5
4	6
5	7

From the table above, we know expected y value should be 3, which does not match the value we calculated, $\frac{1}{2}$. So we can eliminate B.

Now please use the same method and do the original problem.

Based on the information given in the table shown below, which of the following equations correctly states the relationship between x and y ?

x	y
1	3
2	4
3	5
4	6
5	7

[Comment on this question.](#)

Let's check D. If we substitute $x = 1$ into $y = x - 2$, then $y = 1 - 2 \neq 3$. Therefore, we can eliminate D.

[Comment on this hint](#)

After checking C with several x values from the table, we know that C is the correct answer. Choose C.

[Comment on this hint](#)

Select one:

- ⌘
- ⌘ B. $y = x \div 2$
- ⌘ C. $y = x + 2$
- ⌘ A. $y = 2x$

D. $y = x - 2$ Submit

Answer

Correct! You are done with this problem!

[Comment on this problem.](#)

Assistment

Assistment #25977

You are previewing content.

What is the value of the expression below when $x=3$?

$$4x + 1$$

[Comment on this question](#)

Request Help

Type your answer below:

⌘

Submit Answer

Let's move on and figure out this problem

Let's substitute in $x=3$ first. Which of the following is the correct expression right after substitution?

[Comment on this question](#)

[Remember:](#) $4x = 4 * x$.

So after substitution, you should have $4*3$. The whole expression is $4*3+1$. Choose D.

[Comment on this hint](#)

Select one:

- ⌘
- ⌘
- ⌘ B. $4-3+1$
- ⌘ C. $4*3+1$
- ⌘ D. $4*3+1$

Submit Answer

Correct!

363 | Page

So after substitution, we have:

$$4*3+1$$

So what is the first calculation to take to do the problem?

[Comment on this question](#)

Think about order of operation. Which operation we need to take first when both + and * exist.

[Comment on this hint](#)

Multiplication (*) comes first.

[Comment on this hint](#)

So we should calculate $4*3$ first. A is the correct choice.

[Comment on this hint](#)

Select one:

- A. $4*3$
- B. $3+1$
- C. $4+1$
- D. $4\div 3$

Submit Answer

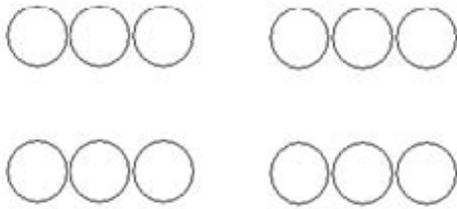
Correct!

Now that we know we need to multiply first. What is the value of red portion?

$$4*3+1$$

[Comment on this question](#)

The expression in red portion is $4*3$. Imagine we have 4 piles; each pile has 3 items in it. How many items do we have in total?



[Comment on this hint](#)

From the picture, we can see there are 12 items in total. So $4 \times 3 = 12$. Type in 12.

[Comment on this hint](#)

Type your answer below:

- 12

Submit Answer

Correct!

We've done the first few steps. Now let's see if you can finish the whole problem.

What is the value of the expression below when $x=3$?

$$4x + 1$$

[Comment on this question](#)

[After the previous steps, we already got the following expression:](#)

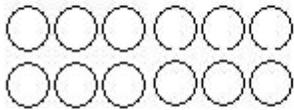
$4 \cdot 3 + 1$

$12 + 1$

What is the value of expression in the circle?

[Comment on this hint](#)

The expression in the circle is $12 + 1$. Look at the following graph:



We have two groups of circles, one group has 12 circles and the other group has one circle. Count how many circle we have in total?

[Comment on this hint](#)

There are 13 circles in total. So $12 + 1 = 13$, 13 is the answer, type in 13.

[Comment on this hint](#)

Type your answer below:

• 13

Submit Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

Assistment #25413

You are previewing content.

Charlotta wrote the equation below on a card.

$\square \div 8 = 5$ If Charlotta's equation is true, which of the following is also true?

[Comment on this question](#)

Request Help

Select one:

- A. $\square = 5 \times 8$
- B. $\square = 5 - 8$
- C. $\square = 5 \div 8$
- D. $\square = 5 + 8$

Submit Answer

Let's move on and figure out this problem. To make sense of this number sentence, let's put it into a situation.

Assume we have \square number of items in a pile, what does the following equation mean?

$$\square \div 8 = 5$$

[Comment on this question](#)

Look at the equation, we have \square , which is something, and then we have to divide.

Since 8 comes after the division sign, we divide what is in the \square into 8 piles. So it must be C.

[Comment on this hint](#)

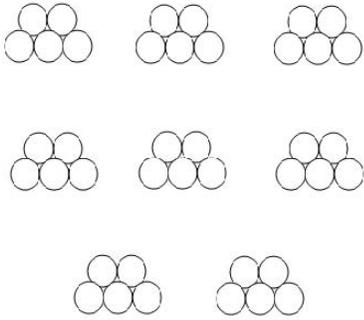
Select one:

- ⌘ A. Taking 8 items out from the pile and the number of remaining items is 5
- ⌘ B. Taking 8 items out from the pile and the total number of items in the pile is 5
- ⌘ C. Dividing the items into 8 small piles, each of them has 5 items in it.
- ⌘ D. There are only 8 items in the pile.

Submit Answer

Correct! So now we have divided what's in the \square into 8 piles, each having 5 items. How can we determine what is in the \square ?

[Comment on this question](#)



How would we find how many items we have?

[Comment on this hint](#)

We can see from the picture, to figure out the number of total items, we have to put together 8 piles, each has 5 items.

[Comment on this hint](#)

Select one:

- ⌘ A. Putting together 8 piles, each has 5 items.
- ⌘ B. Putting together 2 piles, one has 5 items, the other one has 8 items.
- ⌘ C. Taking 5 items out of a pile of 8 items.
- ⌘ D. Taking 8 items out of a pile of 5 items.

Submit Answer

Correct! So which expression is used for " putting together 8 piles, each has 5 items."?

[Comment on this question](#)

We are adding $5+5+5+5+5+5+5+5$.

[Comment on this hint](#)

We know repeated addition is the same as multiplication so $5+5+5+5+5+5+5+5 = 5 \times 8$ select 5×8

[Comment on this hint](#)

Select one:

- A. 5×8
- B. $5 + 8$
- C. $5 \div 8$
- D. $5 - 8$

Submit

Answer

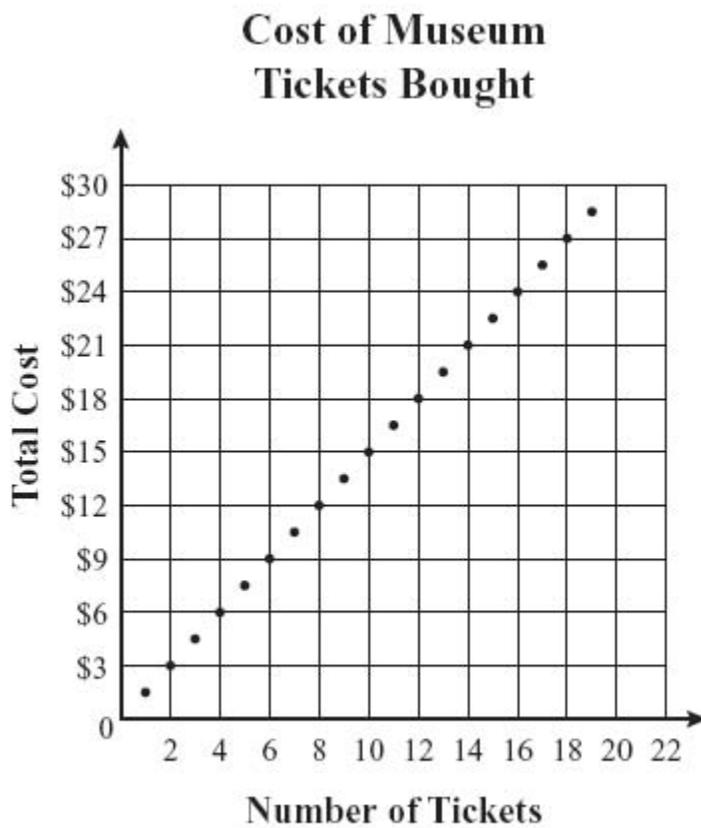
Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

You are previewing content.

The graph below shows the relationship between the number of museum tickets bought and the total cost of the tickets.



What is the greatest number of museum tickets that can be bought for \$21?
Please type in the answer.

[Comment on this question](#)

Request Help

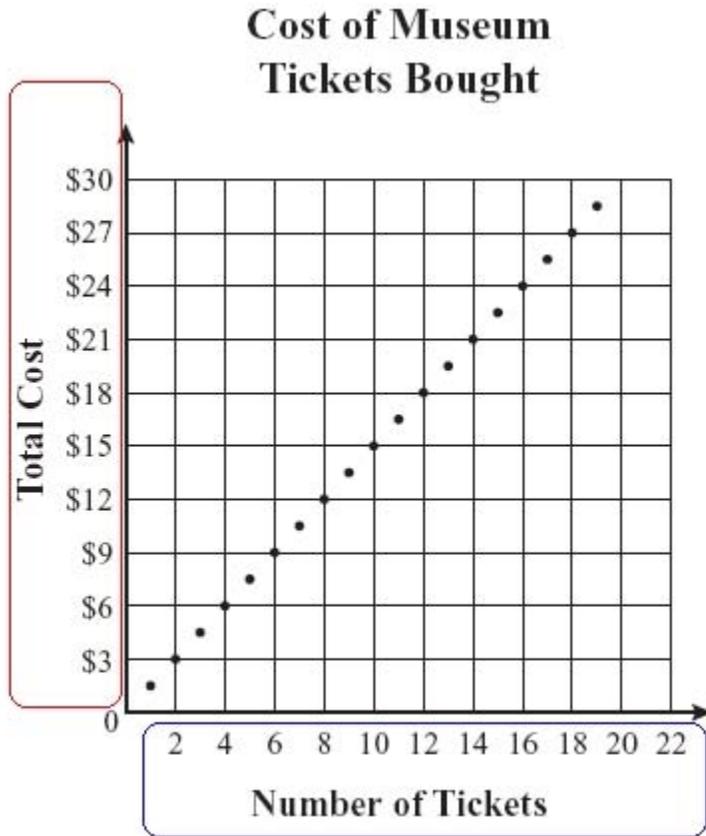
Type your answer below:

✖

Submit Answer

Let's move on and figure out this problem

Since the question asks for the number of museum tickets that can be bought for \$21, we should start by finding \$21 in the graph. Should we find \$21 along the axis circled in blue or the axis circled in red?



[Comment on this question](#)

From the problem, we know \$21 is the total cost to buy museum tickets. So we should look for it along the axis labeled "Total Cost".

[Comment on this hint](#)

The axis labeled "Total Cost" is in the red circle. Choose A.

[Comment on this hint](#)

Select one:

- ⌘ A. In the Red Circle

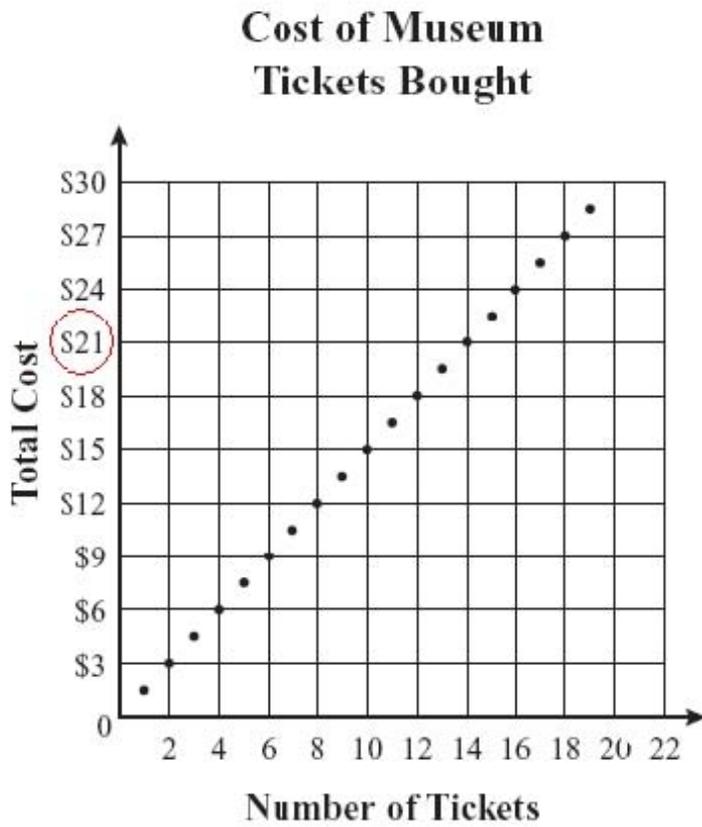
*

B. In the Blue Circle

Submit Answer

Correct!

Let's look at the graph and find the corresponding point for \$21 total cost.



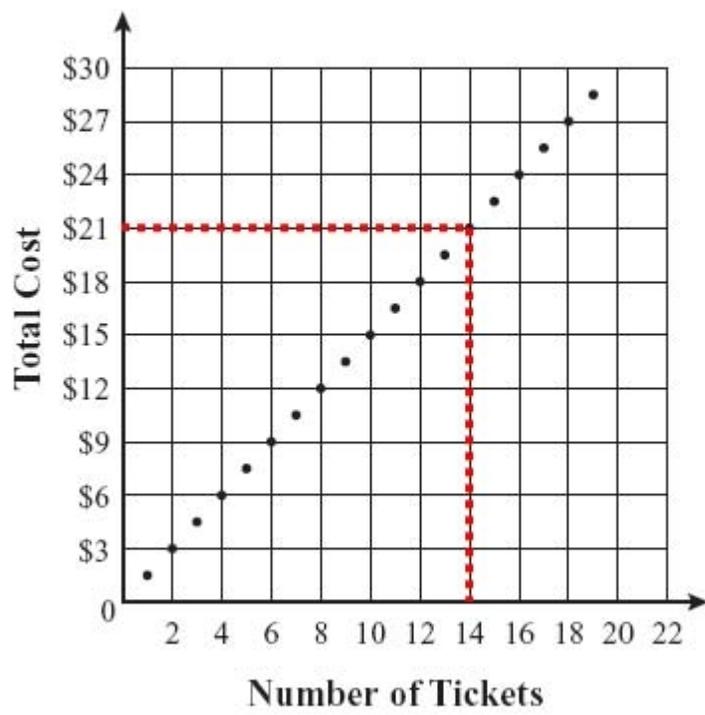
So What is the greatest number of museum tickets that can be bought for \$21?

Please type in the answer.

[Comment on this question](#)

Look at the graph below. Trace along the red dotted line and find the number along the axis labeled "Number of Tickets".

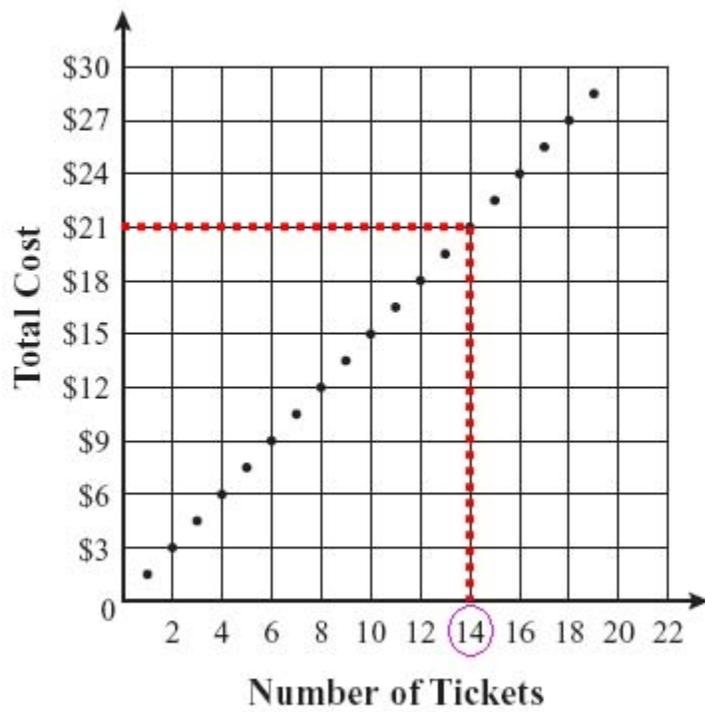
Cost of Museum Tickets Bought



[Comment on this hint](#)

The number in the pink circle is the number we are looking for.

Cost of Museum Tickets Bought



[Comment on this hint](#)

14 is in the pink circle, type in 14.

[Comment on this hint](#)

Type your answer below:

- 14

Submit Answer

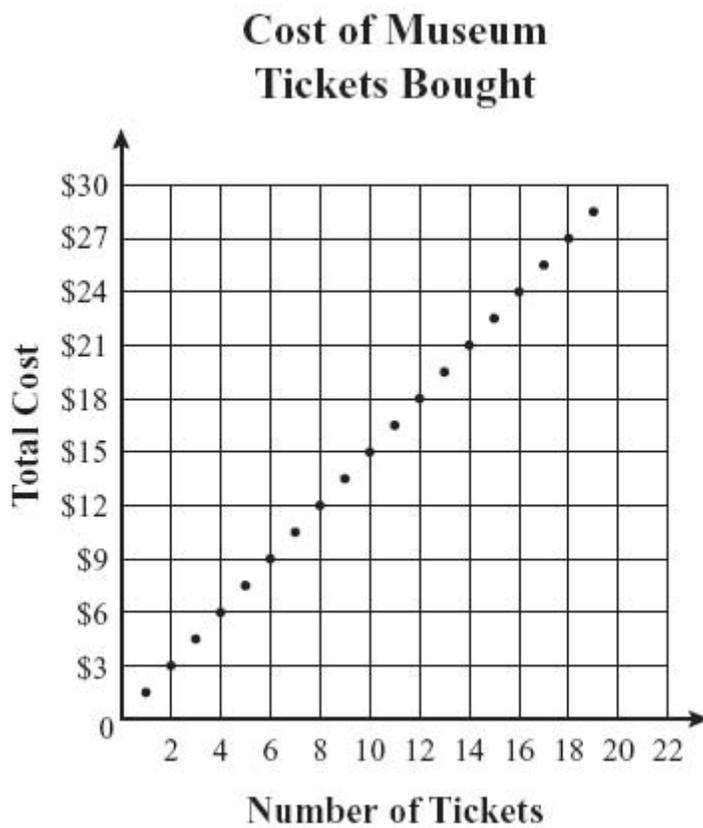
Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

You are previewing content.

The graph below shows the relationship between the number of museum tickets bought and the total cost of the tickets.



What is the cost of 1 museum ticket?

[Comment on this question](#)

[Request Help](#)

Type your answer below (mathematical expression):

•

Submit Answer

Let's move on and figure out this problem To make sure we understand the graph, let's put

the information in the graph into a table.

Number of Tickets	

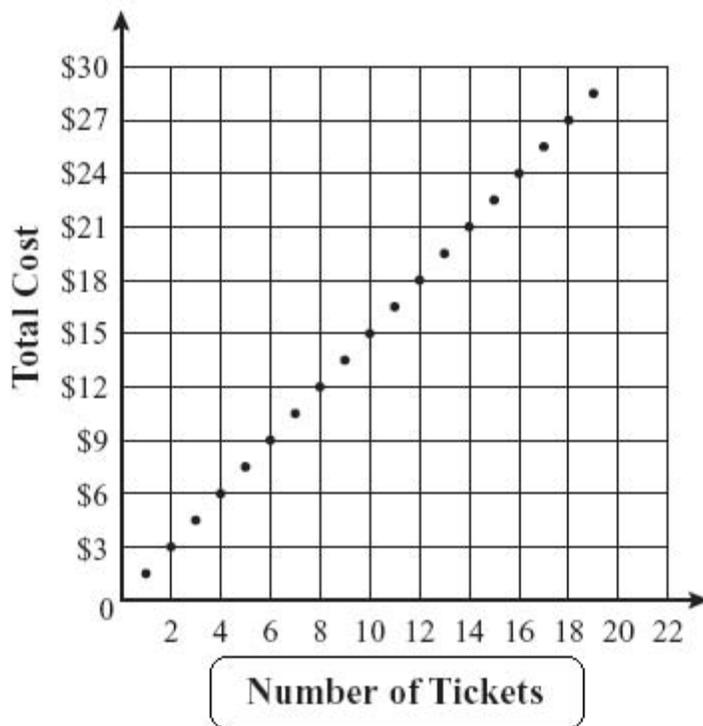
[Comment on this question](#)

The titles in the table come directly from the graph.

[Comment on this hint](#)

The first title comes from the axis labeled "Number of Tickets", which is circled in the graph below:

Cost of Museum Tickets Bought



[Comment on this hint](#)

The title in the yellow box comes from the y-axis, it is "Total Cost", select A, "total cost".

[Comment on this hint](#)

Select one:

- * A. Total cost (\$)
- * B. Average cost (\$)
- * C. Labor cost (\$)
- * D. Cost per ticket (\$)

Submit Answer

Correct!

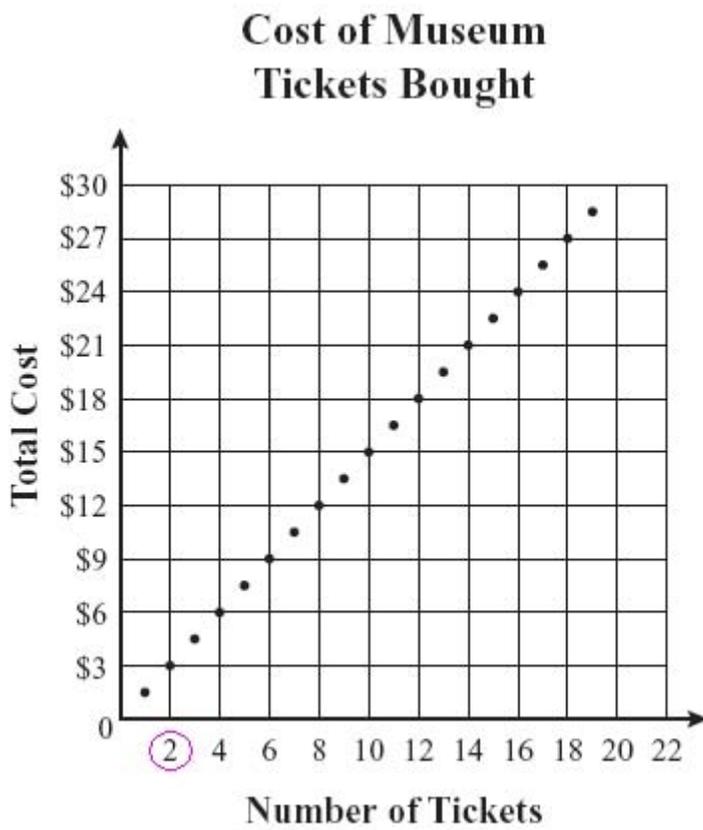
Let's fill in the table with the information from the graph.

What should be the number in the red cell?

Number of Tickets	Total Cost (\$)
2	

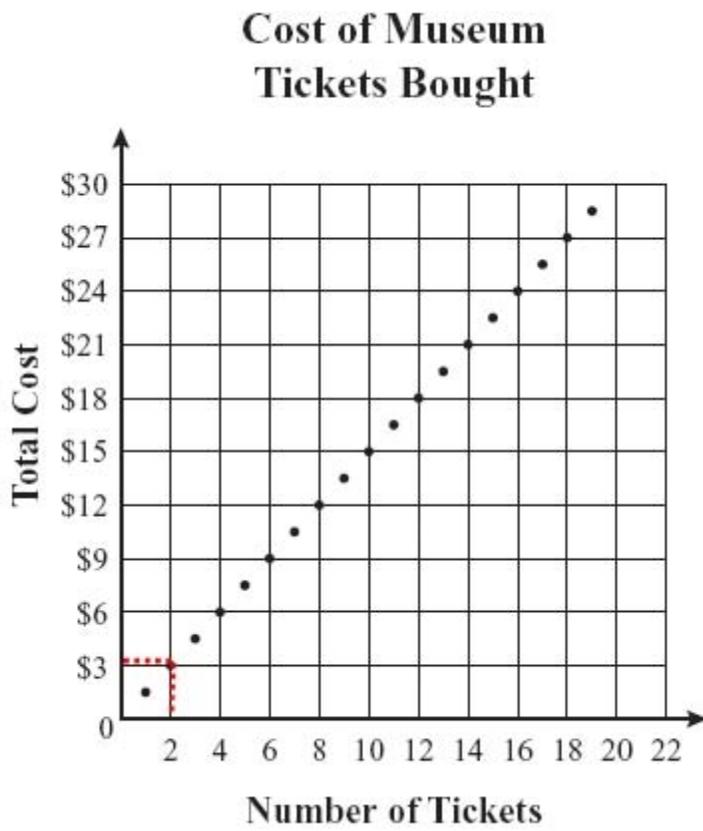
[Comment on this question](#)

So we need to find the total cost for 2 tickets. Please find "2", which represents 2 tickets are bought, it is circled in pink in the graph below:



[Comment on this hint](#)

Trace the red dotted line to find the corresponding total cost.



[Comment on this hint](#)

From the graph, we can see the dotted line is pointing to \$3. Type in 3.

[Comment on this hint](#)

Type your answer below:

3

Submit Answer

Correct!

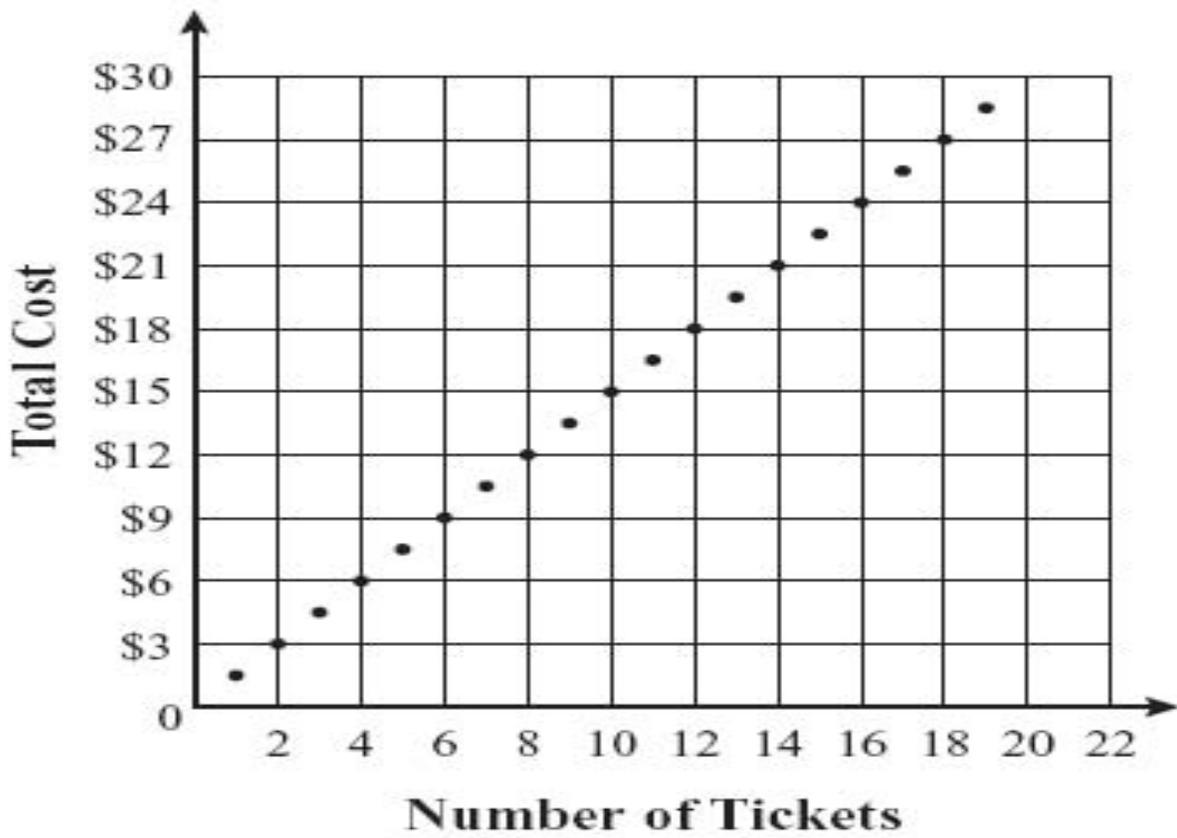
So we do the same thing for the other points and we can obtain the table in the end:

Now please use the table above and try to do the original problem.

Number of Tickets	Total Cost (\$)
2	3
4	6
6	9
8	12
10	15
12	18
14	21
16	24
18	27

The graph below shows the relationship between the number of museum tickets bought and the total cost of the tickets.

Cost of Museum Tickets Bought



What is the cost of 1 museum ticket?

[Comment on this question](#)

Now we can determine the cost of 1 ticket by using any one pair of information in the table. Try using the row in red.

Number of Tickets	Total Cost (\$)
2	3
4	6
6	9
8	12
10	15
12	18
14	21
16	24
18	27

From this row, we know the total cost of 2 tickets is \$3. How much does one ticket cost?

[Comment on this hint](#)

We should divide \$3 into 2 equal values, so we should $\$3 \div 2$.

[Comment on this hint](#)

$\$3 \div 2 = \1.50 So one ticket costs \$1.50. Type in 1.5

[Comment on this hint](#)

Type your answer below (mathematical expression):

- 1.5

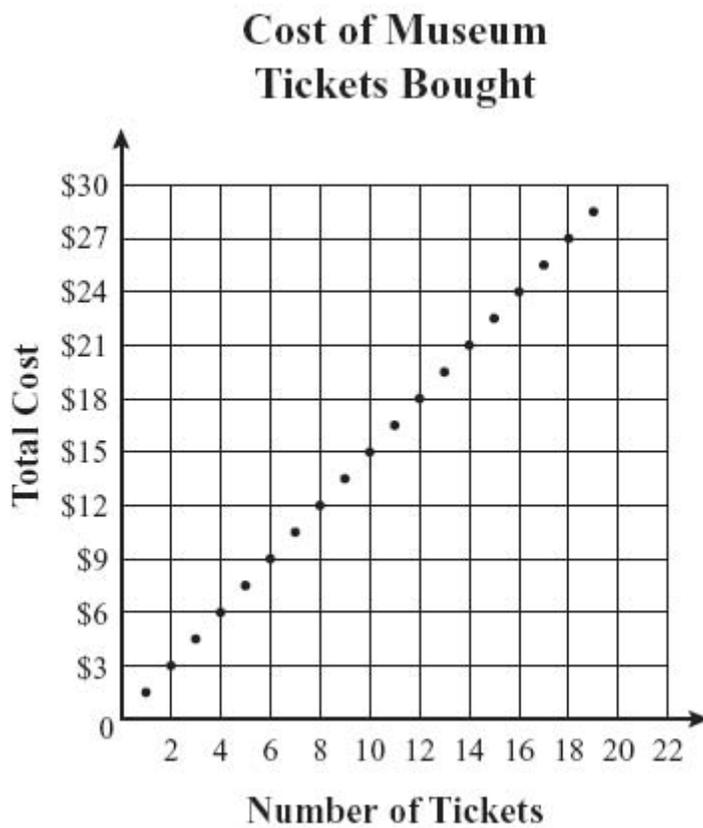
Submit Answer

Correct! You are done with this problem!

[Comment on this problem.](#)

You are previewing content.

The graph below shows the relationship between the number of museum tickets bought and the total cost of the tickets.



Which of the following represents the total cost of n tickets bought?

[Comment on this question](#)

[Request Help](#)

Select one:

- A. $3 \cdot n$
- B. $1 + n$
- C. 1.5
- D. $1.5 \cdot n$

Submit Answer

Let's move on and figure out this problem

To make sure we understand the graph, let's put the information in the graph into a table.

What should be the title in the yellow box?

Number of Tickets	

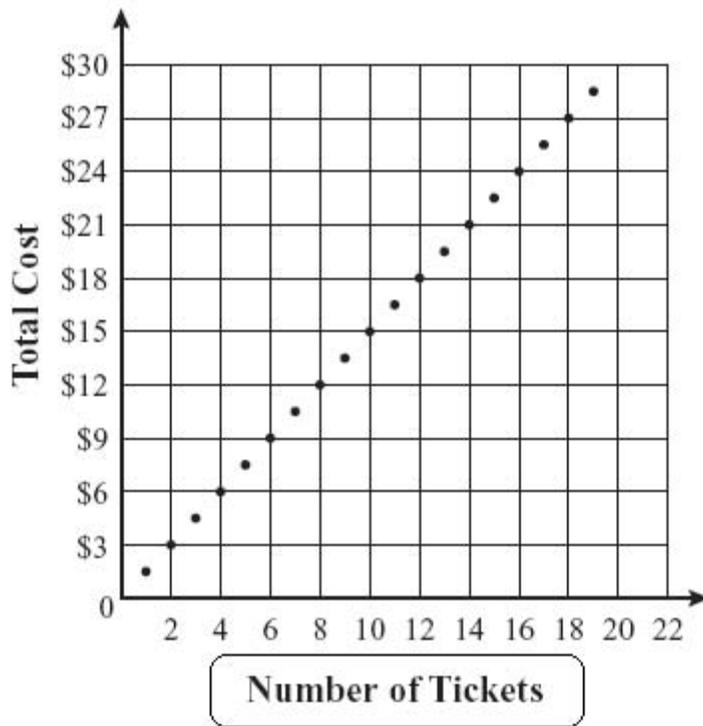
[Comment on this question](#)

The titles in the table come directly from the graph.

[Comment on this hint](#)

The first title comes from the axis labeled "Number of Tickets", which is circled in the graph below:

Cost of Museum Tickets Bought



[Comment on this hint](#)

The title in the yellow box comes from the y-axis, it is "Total Cost", select A, "total cost".

[Comment on this hint](#)

Select one:

- * A. Total cost (\$)
- * B. Average cost (\$)
- * C. Labor cost (\$)
- * D. Cost per ticket (\$)

Submit Answer

Correct!

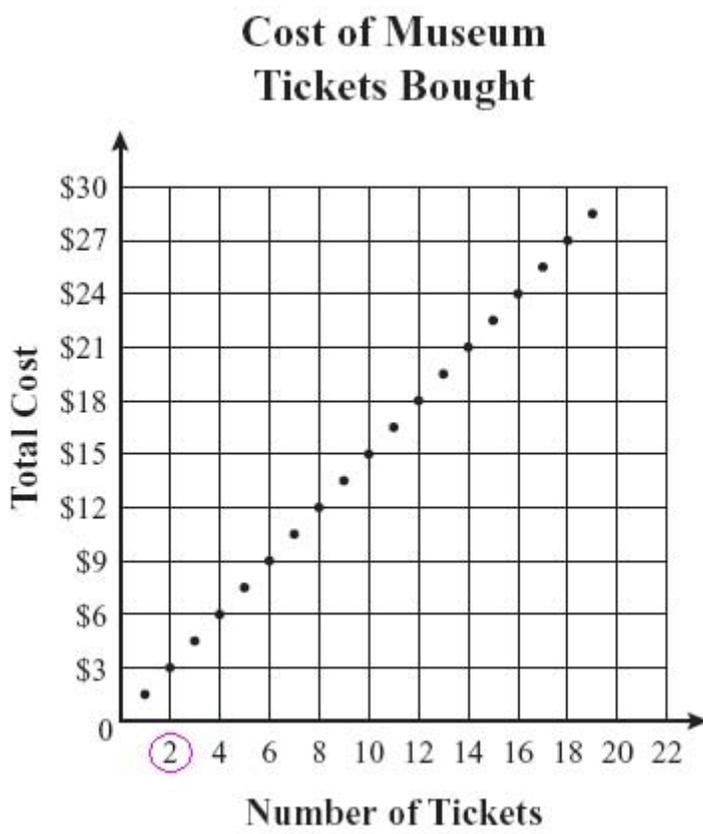
Let's fill in the table with the information from the graph.

What should be the number in the red cell?

Number of Tickets	Total Cost (\$)
2	

[Comment on this question.](#)

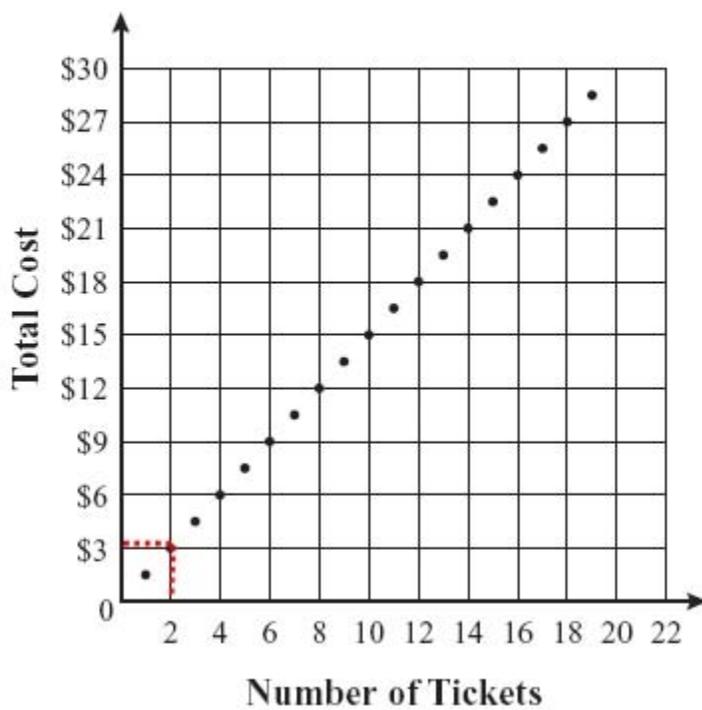
So we need to find the total cost for 2 tickets. Please find "2", which represents 2 tickets are bought, it is circled in pink in the graph below:



[Comment on this hint.](#)

Trace the red dotted line to find the corresponding total cost.

Cost of Museum Tickets Bought



[Comment on this hint](#)

From the graph, we can see the dotted line is pointing to \$3. Type in 3.

[Comment on this hint](#)

Type your answer below:

✖3

Submit Answer

Correct!

So we do the same thing for the other points and we can obtain the table in the end:

Now please use the table above and figure out cost of each ticket.
What is the cost of each ticket?

Number of Tickets	Total Cost (\$)
2	3
4	6
6	9

8	12
10	15
12	18
14	21
16	24
18	27

[Comment on this question](#)

Now we can determine the cost of 1 ticket by using any one pair of information in the table. Try using the row in red.

Number of Tickets	Total Cost (\$)
2	3
4	6
6	9
8	12
10	15
12	18
14	21
16	24
18	27

From this row, we know the total cost of 2 tickets is \$3. How much does one ticket cost?

[Comment on this hint](#)

We should divide \$3 into 2 equal values, so we should $\$3 \div 2$.

[Comment on this hint](#)

$\$3 \div 2 = \1.5 . So D is the right choice, choose D.

[Comment on this hint](#)

Select one:

- A. \$3
- B. \$1
- C. \$6
- D. \$1.5

Submit Answer

Correct!

Now we know each ticket costs \$1.5. If 9 friends go to the museum, which of the following indicates the total cost?

[Comment on this question](#)

We know the cost of each ticket and the number of tickets bought. To calculate the total cost, we should use multiplication (*).

[Comment on this hint](#)

Total Cost = Number of Tickets * Cost of each ticket.

[Comment on this hint](#)

So in our case, Total Cost = $9 * 1.5$ Choose A.

[Comment on this hint](#)

Select one:

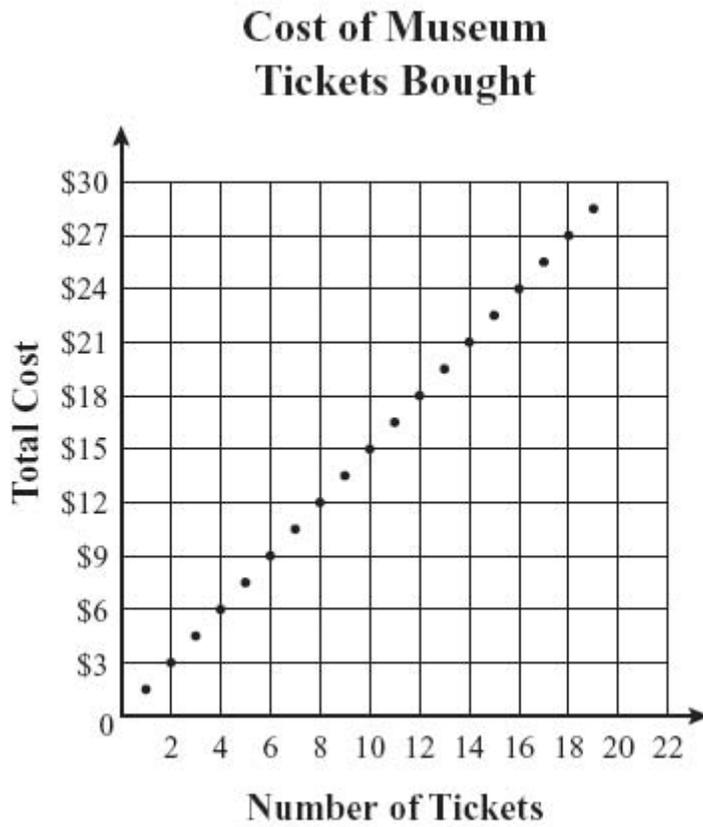
- A. $9 * 1.5$
- B. $9 + 1.5$
- C. $9 - 1.5$
- D. $9 \div 1.5$

Submit Answer

Correct!

[Now try to solve the original problem.](#)

The graph below shows the relationship between the number of museum tickets bought and the total cost of the tickets.



Which of the following represents the total cost of n tickets bought?

[Comment on this question](#)

In the previous question, we found for 9 friends, the expression is $1.5 \cdot 9$, so what about for n friends?

[Comment on this hint](#)

n is a variable, it can represent 5, 8, or 10 friends, etc. No matter what, you can always multiply by \$1.5

[Comment on this hint](#)

so it is $1.5 \cdot n$. Choose D.

[Comment on this hint](#)

Select one:

- A. $3*n$
- B. $1+n$
- C. 1.5
- D. $1.5*n$

Submit Answer

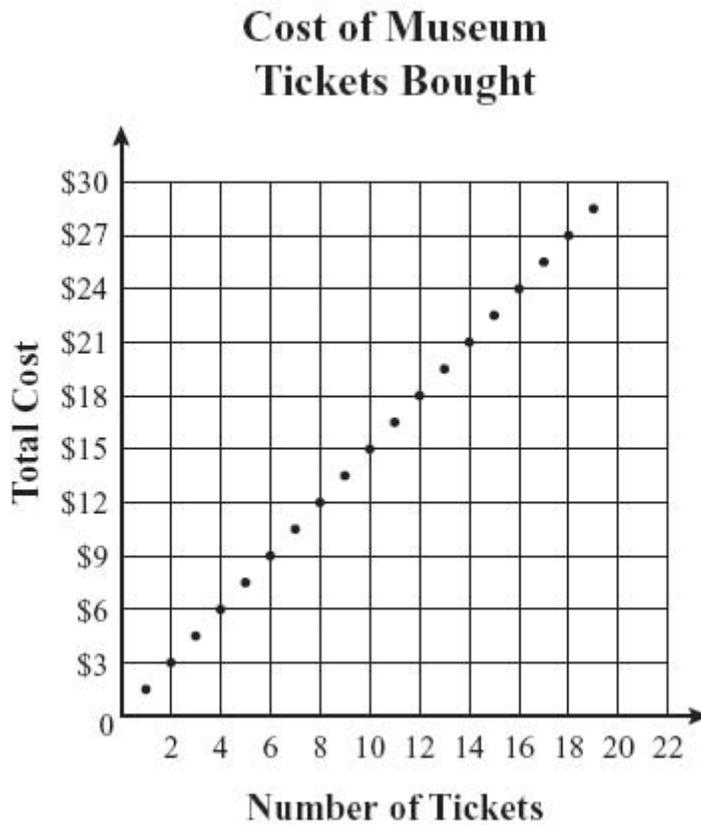
Correct! You are done with this problem!

[Comment on this problem.](#)

Assistment

You are previewing content.

The graph below shows the relationship between the number of museum tickets bought and the total cost of the tickets.



Calvin bought a one-year museum pass for \$45. The pass allows him to visit the museum an unlimited number of times during one year. What is the least number of times Calvin must visit the museum, during one year, in order for his one-year pass to be less expensive than buying a single museum ticket for each visit?

[Comment on this question](#)

Request Help

Select one:

- ⌘ A. 30
 - ⌘ B. 31
 - ⌘ C. 10
 - ⌘ D. 19
- Submit Answer

Let's move on and figure out this problem

To make sure we understand the graph, let's put the information in the graph into a table.

What should be the title in the yellow box?

Number of Tickets	

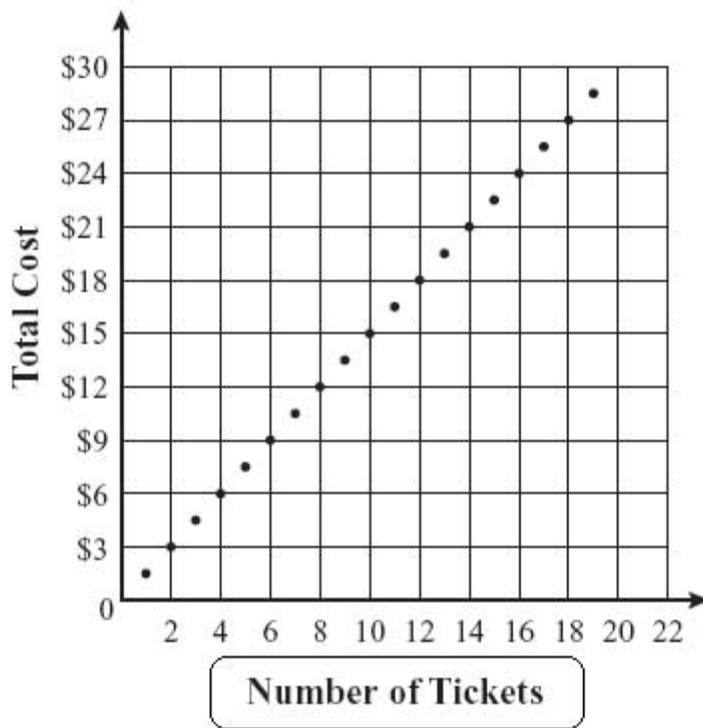
[Comment on this question](#)

The titles in the table come directly from the graph.

[Comment on this hint](#)

The first title comes from the axis labeled "Number of Tickets", which is circled in the graph below:

Cost of Museum Tickets Bought



[Comment on this hint](#)

The title in the yellow box comes from the y-axis, it is "Total Cost", select A, "Total Cost(\$)".

[Comment on this hint](#)

Select one:

- * A. Total cost (\$)
- * B. Average cost (\$)
- * C. Labor cost (\$)
- * D. Cost per ticket (\$)

Submit Answer

Correct!

Let's fill in the table with the information from the graph.

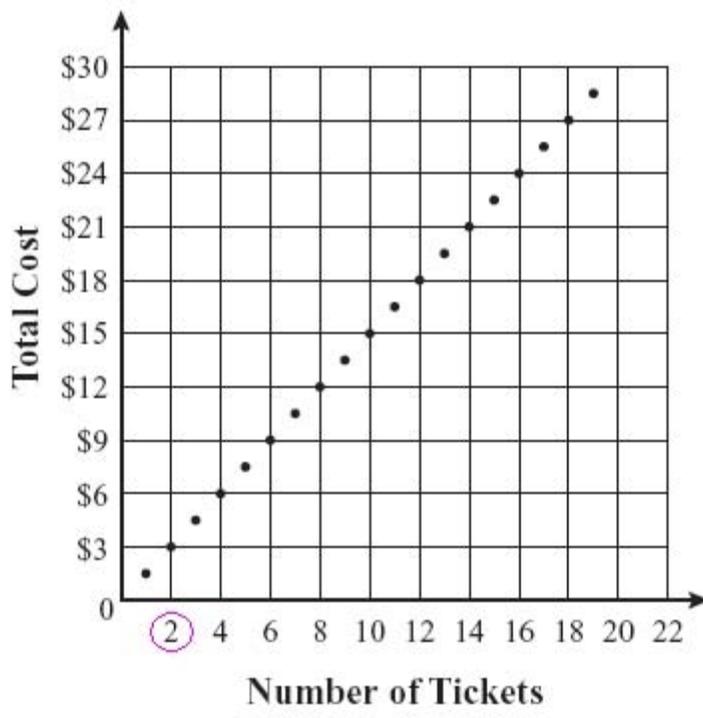
What should be the number in the red cell?

Number of Tickets	Total Cost (\$)
2	

[Comment on this question](#)

So we need to find the total cost for 2 tickets. Please find "2", which represents 2 tickets are bought, it is circled in pink in the graph below:

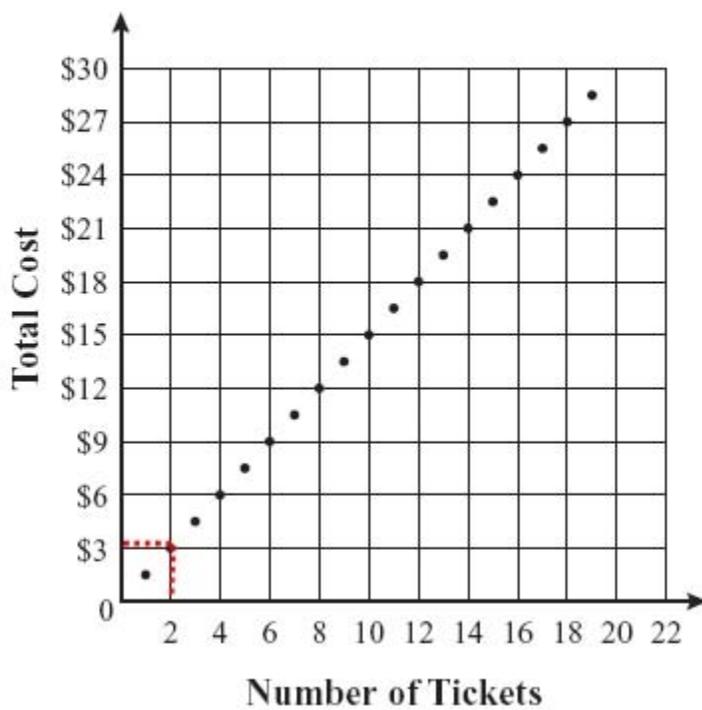
Cost of Museum Tickets Bought



[Comment on this hint](#)

Trace the red dotted line to find the corresponding total cost.

Cost of Museum Tickets Bought



[Comment on this hint](#)

From the graph, we can see the dotted line is pointing to \$3. Type in 3.

[Comment on this hint](#)

Type your answer below:

- 3

Submit Answer

Correct!

So we do the same thing for the other points and we can obtain the table in the end:

Now please use the table above and try to figure out the cost of each ticket.
What is the cost of each ticket?

Number of Tickets	Total Cost (\$)
2	3
4	6
6	9
8	12
10	15

12	18
14	21
16	24
18	27

[Comment on this question.](#)

Now we can determine the cost of 1 ticket by using any one pair of information in the table. Try using the row in red.

Number of Tickets	Total Cost (\$)
2	3
4	6
6	9
8	12
10	15
12	18
14	21
16	24
18	27

From this row, we know the total cost of 2 tickets is \$3. How much does one ticket cost?

[Comment on this hint](#)

We should divide \$3 into 2 equal values, so we should $\$3 \div 2$.

[Comment on this hint](#)

$\$3 \div 2 = \1.5 So D is the right choice, choose D.

[Comment on this hint](#)

Select one:

- A. \$3
- B. \$1
- C. \$6
- D. \$1.5

Submit Answer

Correct!

Now we know each ticket costs \$1.5. If Calvin spent \$45 on tickets, how many tickets can he buy with \$45?

[Comment on this question](#)

We know the total cost is \$45 and each ticket costs \$1.5, we should use $\$45 \div \1.5 to figure out the number of tickets.

[Comment on this hint](#)

$45 \div 1.5 = 450 \div 15 = 30$ Type in 30.

[Comment on this hint](#)

Type your answer below:

- 30

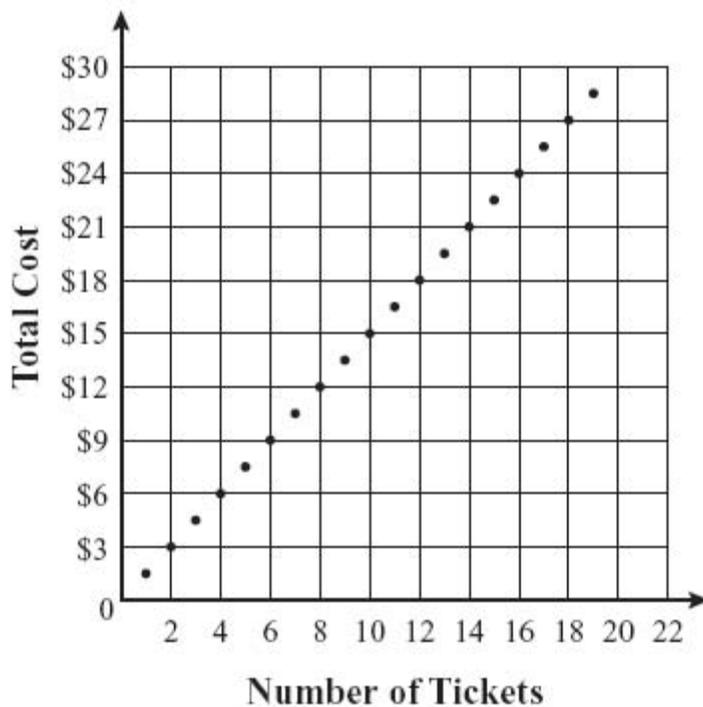
Submit Answer

Correct!

[Now let's look at the problem again, you should be able to solve it now.](#)

The graph below shows the relationship between the number of museum tickets bought and the total cost of the tickets.

Cost of Museum Tickets Bought



Calvin bought a one-year museum pass for \$45. The pass allows him to visit the museum an unlimited number of times during one year. What is the least number of times Calvin must visit the museum, during one year, in order for his one-year pass to be less expensive than buying a single museum ticket for each visit?

[Comment on this question](#)

We know Calvin can make unlimited visits to the museum with this one-year pass, which costs \$45.

If he chose to **buy tickets**, \$45 can allow him to visit the museum 30 times.

[Comment on this hint](#)

In order for the one-year pass to be less expensive than buying a single museum ticket for each visit, he must go to the museum **more than 30 times** in a year. Then what is the smallest number greater than 30 in the choices?

[Comment on this hint](#)

31 is the smallest number greater than 30 in the choices. Please choose B.

[Comment on this hint](#)

Select one:

- A. 30
- B. 31
- C. 10
- D. 19

Submit Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

Assistment #25867

You are previewing content.

What values of Δ and \square make both equations below true?

$$\Delta + 12 = 21$$

$$\square + \Delta = 16$$

[Comment on this question](#)

Request Help

Select one:

B. $\Delta = 9$ and $\square = 7$

C. $\Delta = 9$ and $\square = 8$

A. $\Delta = 8$ and $\square = 8$

D. $\Delta = 9$ and $\square = 6$ Submit

Answer

Let's move on and figure out this problem

If we look at the two equations, the first equation has one unknown. So let's study it first.

Let's figure out what the value of Δ is. From the problem, we know that $\Delta + 12 = 21$. Which

of the following equation is true?

[Comment on this question](#)

We know that the sum of Δ and 12 is 21. The inverse operation of addition is subtraction. Therefore, we should use subtraction. So we can eliminate A and B.

[Comment on this hint](#)

We are doing the inverse operation of +12, $\Delta + 12 = 21$. The inverse of +12 is -12. So it must be C, since C has -12. $\Delta = 21 - 12$.

[Comment on this hint](#)

Select one:

- A. $\Delta = 21 + 12$
- B. $\Delta = 21 - 12$
- C. $\Delta = 21 - 12$
- D. $\Delta = 12 - 21$

Submit Answer

Correct!

OK, we now know $\Delta = 21 - 12$ now, so what is the value of Δ ?

[Comment on this question](#)

If you do not know this fact, start at 21 and count back by 10, and then count back 2 more.

[Comment on this hint](#)

$21 - 10 = 11$, $11 - 2 = 9$.

$\Delta = 21 - 12 = 9$. Type in 9.

[Comment on this hint](#)

Type your answer below:

9

Submit Answer

Correct!

So now we know $\Delta=9$. What would our second equation look like after substituting in Δ ?

[Comment on this question](#)

Let's substitute $\Delta=9$ into second equation $\square + \Delta = 16$. The red portions indicate the substitution.

$$\square + \Delta = 16$$

$$\square + 9 = 16$$

[Comment on this hint](#)

So after substitution, we have $\square + 9 = 16$.

[Comment on this hint](#)

Select one:

- A. $\square + 9 = 16$
- B. $\square + 9 = 16$
- C. $\square - 9 = 16$
- D. $\square * 9 = 16$

Submit Answer Correct! Now let's look at the original problem.

What values of Δ and \square make both equations below true?

$$\Delta + 12 = 21$$

$$\square + \Delta = 16$$

[Comment on this question](#)

We already got $\Delta=9$. And we know that $\square+9 = 16$. Using the previous method, the reverse operation of addition is subtraction, thus, we should use subtraction here.

[Comment on this hint](#)

We know that \square adds 9 equals to 16. In order to figure out the number of \square , we should take 9 out from 16, in another word, subtract 9 from 16.

[Comment on this hint](#)

$\square=16-9=7$. So $\Delta = 9$ and $\square = 7$. Choose B.

[Comment on this hint](#)

Select one:

-
- B. $\Delta = 9$ and $\square = 7$
- C. $\Delta = 9$ and $\square = 8$
- D. $\Delta = 9$ and $\square = 8$

Submit Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

Assistment #23998

You are previewing content.

Sheila started the geometric pattern shown below:

1, 3, 9, 27, ?

If the pattern continues as shown, what is the next number in the sequence?

[Comment on this question](#)

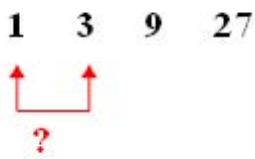
Request Help

Type your answer below:

⌘

Submit Answer

Let's move on and figure out this problem. Start by comparing the first 2 numbers in the pattern. What must be done to the 1 in order to make it a 3?



[Comment on this question](#)

$1+2=3$. So the answer is either B or C.

[Comment on this hint](#)

$1+2=3$ and $1*3=3$. So the answer is: Add 2 or multiply by 3. So it must be B.

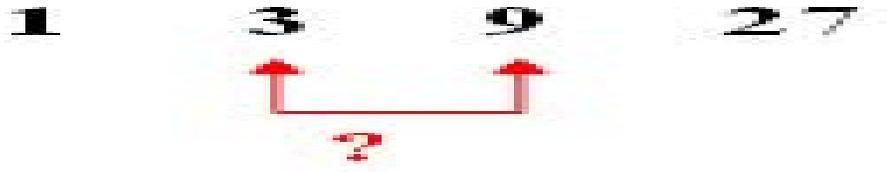
[Comment on this hint](#)

Select one:

- ⌘ A. Add 1 or multiply by 3.
- ⌘ B. Add 2 or multiply by 3
- ⌘ C. Add 2 or multiply by 2.
- ⌘ D. Subtract 2 or multiply by 3.

Submit Answer

Correct! For a pattern to be true, it must work for *all* numbers in the sequence.



[Comment on this question](#)

Start by checking "Add 2 to the previous number", so you have $3+2$.

[Comment on this hint](#)

$3+2=5$. Therefore, adding 2 to each previous number is not the correct pattern.

[Comment on this hint](#)

Now check "Multiply the previous number by 3", so you have $3*3$.

[Comment on this hint](#)

$3*3=9$. So "Multiply the previous number by 3" is the correct answer. Choose A.

[Comment on this hint](#)

Select one:

- A. Multiply the previous number by 3.
- B. Add 2 to the previous number.

Submit Answer

Correct! The pattern is to *multiply* the previous number in the sequence by 3. If the pattern continues, what is the next number in the sequence:

1, 3, 9, 27, ?

[Comment on this question](#)

Start with 27 and apply the rule you found above.

[Comment on this hint](#)

The last number is 27. What is 27×3 ?

[Comment on this hint](#)

$27 \times 3 = 81$. The answer is: **81**

[Comment on this hint](#)

Type your answer below:

- 81

Submit Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

You are previewing content.

The poster below shows the costs at a fall carnival.



Which of the following expressions represents the total cost, in dollars, of 1 admission and r rides, for any number of rides?

[Comment on this question](#)

Request Help

Select one:

- A. $10 + 2r$
- B. $10(r+2)$
- C. $10-2r$
- D. $10+2+r$

Submit Answer

Let's move on and figure out this problem

The question is asking for the total cost for 1 admission and r rides, which of the following expression describes this total cost?

[Comment on this question](#)

Total cost for 1 admission and r rides consists of two separate costs, one is total cost of admission, and the other one is the total cost of rides.

[Comment on this hint](#)

Therefore, in order to calculate the total cost, we should add the total cost of admission and the total cost of rides.

[Comment on this hint](#)

So B is the right choice.

[Comment on this hint](#)

Select one:

- A. Total cost of admission + Total cost of rides
- B. Total cost of admission + Total cost of rides
- C. Total cost of admission * Total cost of rides
- D. Total cost of admission * Cost of one ride

Submit Answer

Correct!

Let's first figure out the total cost of admission.

From the poster, we know that one admission costs \$10.



And from the problem, only 1 admission is needed.

How much does one person pay for admission, in dollars?

[Comment on this question](#)

We know how much each admission costs and how many admissions are needed. In order to figure out the total cost of admission, we should use multiplication.

[Comment on this hint](#)

We also know that one admission cost is 10 and 1 admission is needed.

[Comment on this hint](#)

So the total cost of admission is 1×10 . A is the right choice.

[Comment on this hint](#)

Select one:

- A. 10
- B. 11
- C. 1
- D. 10

Submit Answer

Correct!

Now let's figure out the total cost of rides.

From the poster, we know each ride costs \$2.



Let's suppose you have 5 rides.

Which of the expression describes the total cost, in dollars?

[Comment on this question](#)

We know the cost of each ride and the number of rides needed. In order to figure out the total cost of rides, we should use multiplication.

[Comment on this hint](#)

We also know one ride costs 2 and 5 rides are needed.

[Comment on this hint](#)

So the total cost of rides is 2×5 . C is the correct choice.

[Comment on this hint](#)

Select one:

- A. $2+5$
- B. $5-2$
- C. 2×5
- D. $5 \div 2$

Submit Answer

Correct!

[Now let's look at the original question.](#)

The poster below shows the costs at a fall carnival.



Which of the following expressions represents the total cost, in dollars, of 1 admission and r rides, for any number of rides?

[Comment on this question](#)

We already know that Total cost of 1 admission and r rides = Total cost of admission + Total cost of rides.

[Comment on this hint](#)

We also know the total cost for 1 admission is 10.

[Comment on this hint](#)

And we know for 5 rides, the total cost of rides is $2 \cdot 5$. Here, the question asks for r rides, r is a variable, which can represent any number, such as 5, 10, 15... So the total cost for r rides is $2r$.

[Comment on this hint](#)

There for the total cost of 1 admission and r rides = $10 + 2r$. A is the correct answer. Choose A.

[Comment on this hint](#)

Select one:

- A. $10 + 2r$
- B. $10(r+2)$
- C. $10-2r$
- D. $10+2+r$

Submit

Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

You are previewing content.

For 4 weeks, Ms. Gonzalez's class collected canned food for a food bank.

- ⌘ The class collected 16 cans during the first week.
- ⌘ During each week after the first week, the class collected 12 more cans than they had collected the week before.

Based on the information above, which of the following tables correctly displays the number of cans of food the class collected during each week?

A. **Cans Collected by Ms. Gonzalez's Class**

Week	Number of Cans Collected during the Week
1	16
2	12
3	12
4	12

C. **Cans Collected by Ms. Gonzalez's Class**

Week	Number of Cans Collected during the Week
1	16
2	12
3	24
4	36

B. **Cans Collected by Ms. Gonzalez's Class**

Week	Number of Cans Collected during the Week
1	16
2	28
3	40
4	52

D. **Cans Collected by Ms. Gonzalez's Class**

Week	Number of Cans Collected during the Week
1	16
2	32
3	64
4	128

⌘ B
⌘ C
⌘ D
◆◆⓪ⓧ◆◆ ⓧ◆◆ⓧⓧ□

Let's move on and figure out this problem

Let's understand how to fill in the table first. A blank table looks like this:

Cans Collected by Ms. Gonzalez's Class

Week	Number of Cans Collected during the Week
1	
2	
3	
4	

We already know that during the first week, the class collected 16 cans. In which cell of the table we should put in the number "16"?

[Comment on this question.](#)

To fill in the number of cans collected in the first week, we need to find week 1 first, which is the number 1 in the circled in the following table:

Cans Collected by Ms. Gonzalez's Class

Week	Number of Cans Collected during the Week
①	
2	
3	
4	

[Comment on this hint](#)

The corresponding cell to the "1" in circle under "Number of Cans Collected during the Week" is the cell where we should put the number of cans collected during first week.

[Comment on this hint](#)

That is the yellow cell. Choose A.

[Comment on this hint](#)

Select one:

- A. Yellow cell
- B. Red cell
- C. Blue cell
- D. Green cell

Submit Answer

Correct!

So this is what the table looks like after filling in the number of cans collected during first week:

Cans Collected by Ms. Gonzalez's Class

Week	Number of Cans Collected during the Week
1	16
2	
3	
4	

We know that "During each week after the first week, the class collected 12 more cans than they had collected the week before." How many cans did the class collect during the second week?

[Comment on this question](#)

The class collected 12 more cans in the second week compared to the number of cans they collected during first week, which were 16. So the total number of cans the class collected during the second week should be the sum of 12 cans and 16 cans.

[Comment on this hint](#)

So we should add 16 and 12 together.

[Comment on this hint](#)

$16+12=28$. Type in 28.

[Comment on this hint](#)

Type your answer below:

- 28

Submit Answer

Correct!

Now the table looks like this:

**Cans Collected by
Ms. Gonzalez's Class**

Week	Number of Cans Collected during the Week
1	16
2	28
3	
4	

How many cans did the class collect during the third week?

[Comment on this question.](#)

We know that "During each week after the first week, the class collected 12 more cans than they had collected the week before."

[Comment on this hint](#)

So for the third week, the class collected 12 more cans than they collected during second week, which were 28.

[Comment on this hint](#)

So for the third week, the number of cans collected by the class = $28 + 12 = 40$. Type in 40.

[Comment on this hint](#)

Type your answer below:

- 40

Submit Answer

Correct!

So the table we obtained so far looks like:

**Cans Collected by
Ms. Gonzalez's Class**

Week	Number of Cans Collected during the Week
1	16
2	28
3	40
4	

Now try to fill in the number of cans collected for Week 4.

Which of the following tables correctly displays the number of cans of food the class collected during each week?

A. **Cans Collected by Ms. Gonzalez's Class**

Week	Number of Cans Collected during the Week
1	16
2	12
3	12
4	12

C. **Cans Collected by Ms. Gonzalez's Class**

Week	Number of Cans Collected during the Week
1	16
2	12
3	24
4	36

B. **Cans Collected by Ms. Gonzalez's Class**

Week	Number of Cans Collected during the Week
1	16
2	28
3	40
4	52

D. **Cans Collected by Ms. Gonzalez's Class**

Week	Number of Cans Collected during the Week
1	16
2	32
3	64
4	128

[Comment on this question](#)

Please use the same method above and fill in Week 4.

[Comment on this hint](#)

B is the correct answer. Choose B.

[Comment on this hint](#)

Select one:

- ⌘ A
- ⌘ B
- ⌘ C
- ⌘ D

Submit Answer

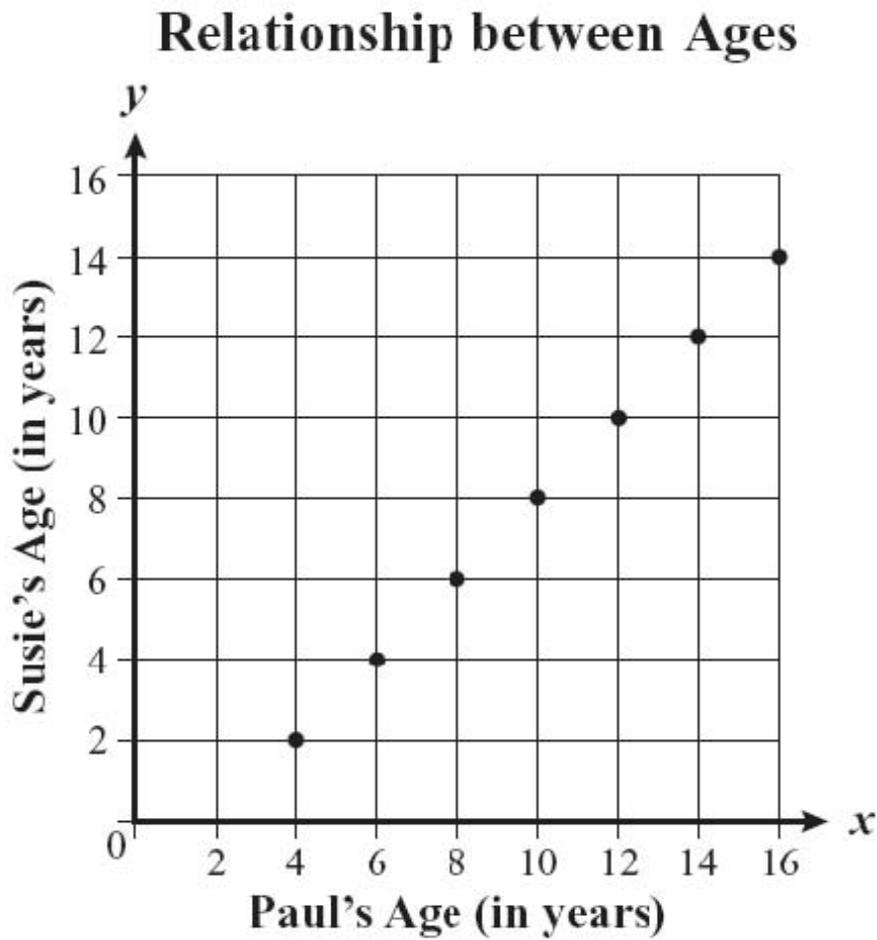
Correct! You are done with this problem!

[Comment on this problem.](#)

Assistment

You are previewing content.

The graph below represents the relationship between Paul's age and Susie's age.



Which of the following best describes the relationship between Paul's age and Susie's age for all the points shown on the graph?

[Comment on this question](#)

[Request Help](#)

Select one:

- A. Susie is twice as old as Paul.
- B. Susie is 2 years older than Paul.

- * C. Susie is half as old as Paul.
- * D. Susie is 2 years younger than Paul.

Submit Answer

Let's move on and figure out this problem

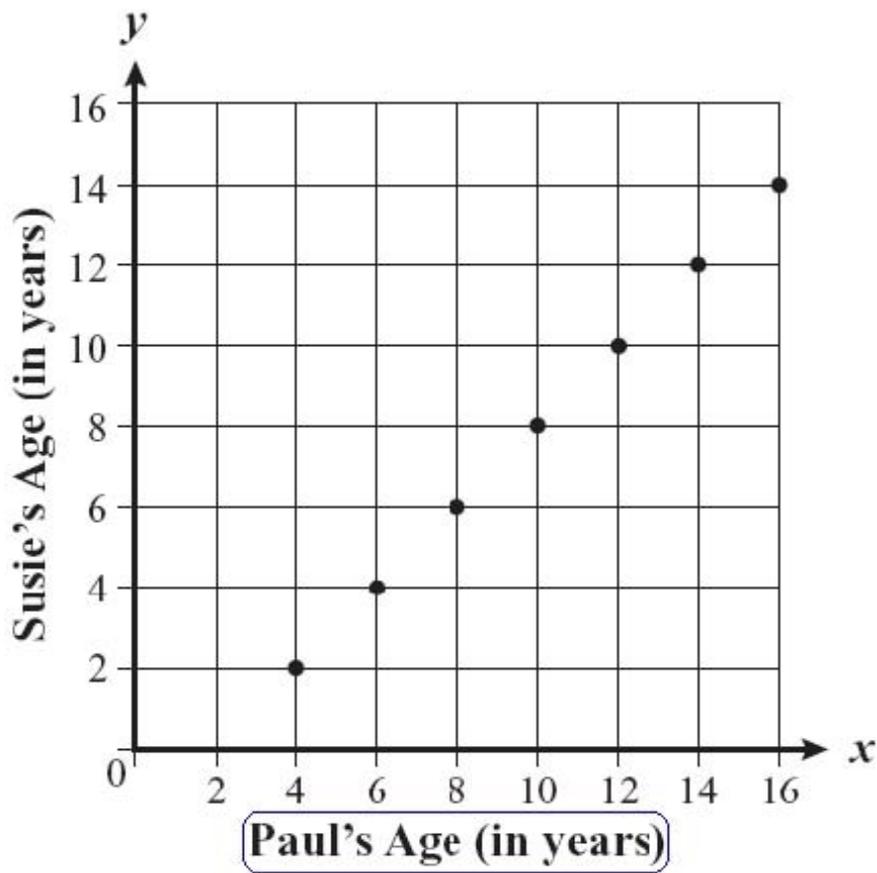
Let's first make sure you can understand the graph, to do this, let's put the information in the graph into a table. What should be the title of the column in red?

Paul's Age(in years)	

[Comment on this question.](#)

We are finding relationships between Paul's Age and Susie's Age. Paul's Age is already in the table and is the title of x-axis, which is circled in blue in the graph below:

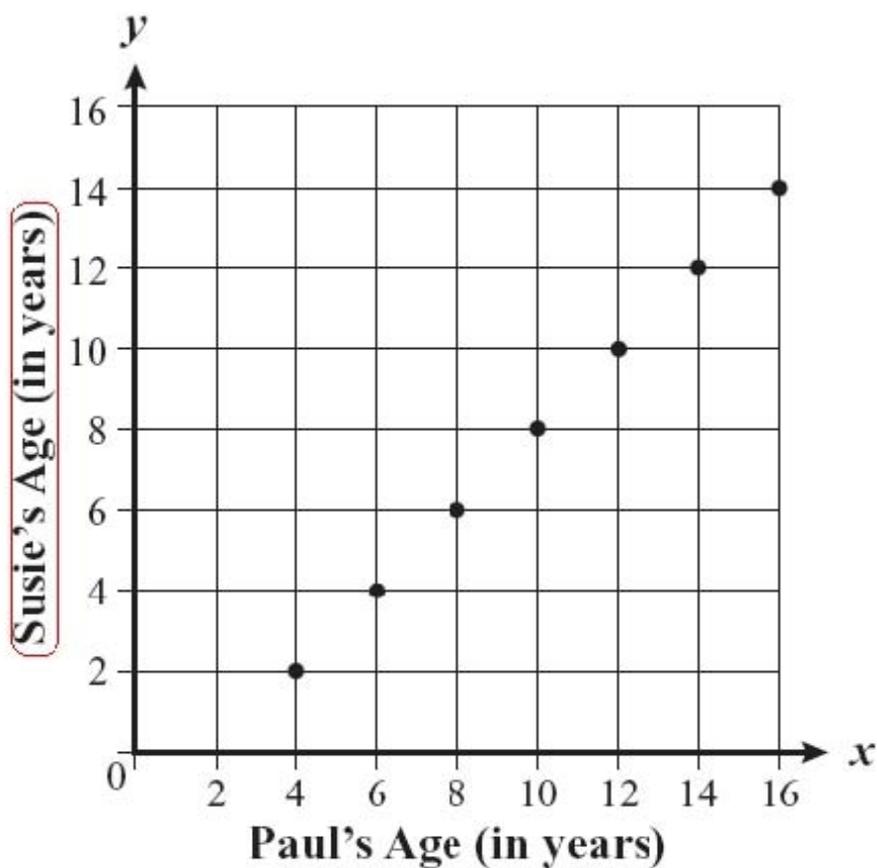
Relationship between Ages



[Comment on this hint](#)

So the title of the column in red should be the title of the other axis on the graph, which is circled in red in the following graph:

Relationship between Ages



[Comment on this hint](#)

The title of the other axis is "Susie's Age". Choose B.

[Comment on this hint](#)

Select one:

- A. Paul's Height(in meter)
- B. Susie's Age(in years)
- C. The Total Age of Paul and Susie(in years)
- D. The Difference Between Paul's and Susie's age(in years)

Submit Answer

Correct!

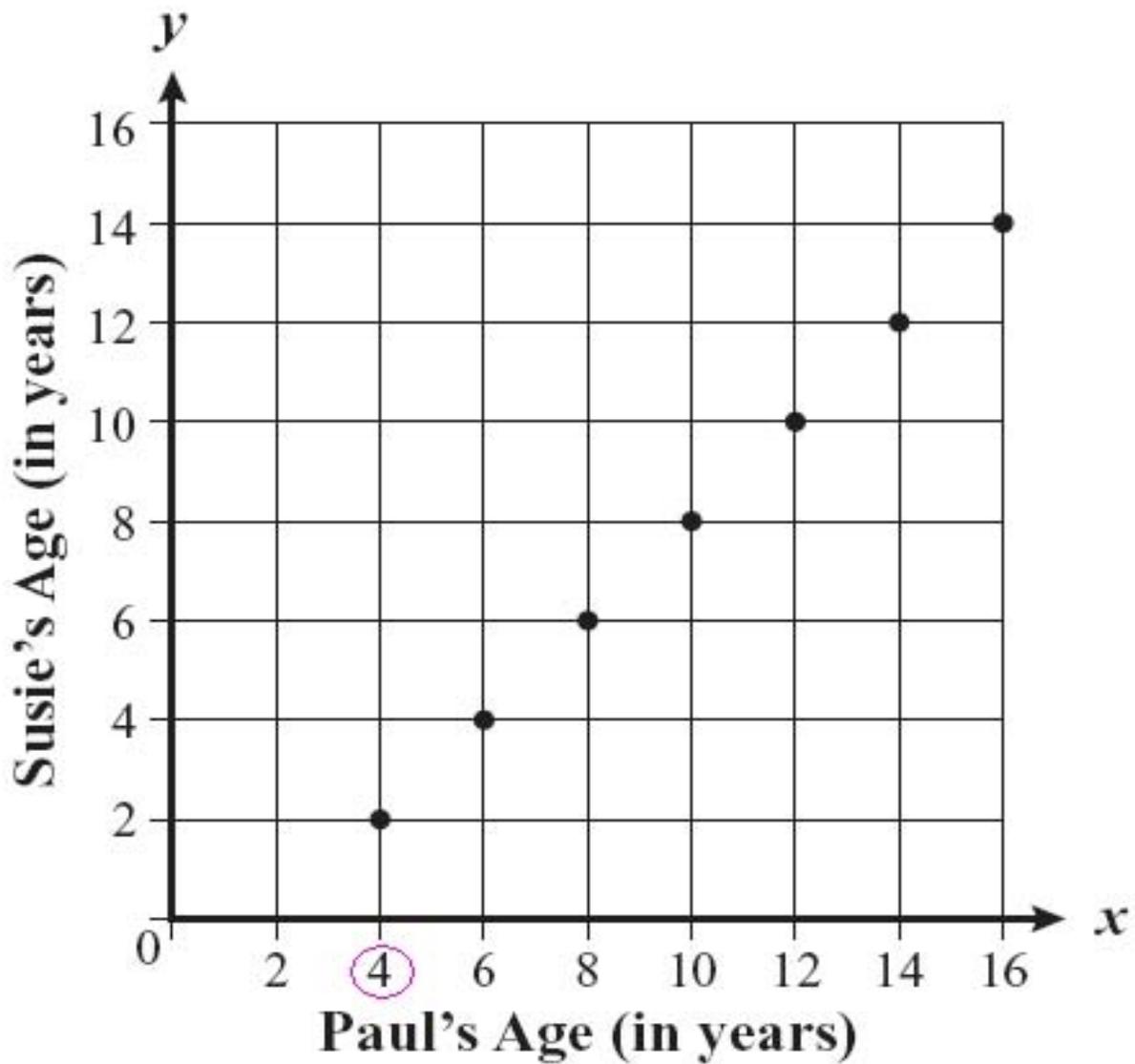
Now let's fill in the table, look at the table below, what should be the number in the cell in yellow?

Paul's Age(in years)	Susie's Age(in years)
4	

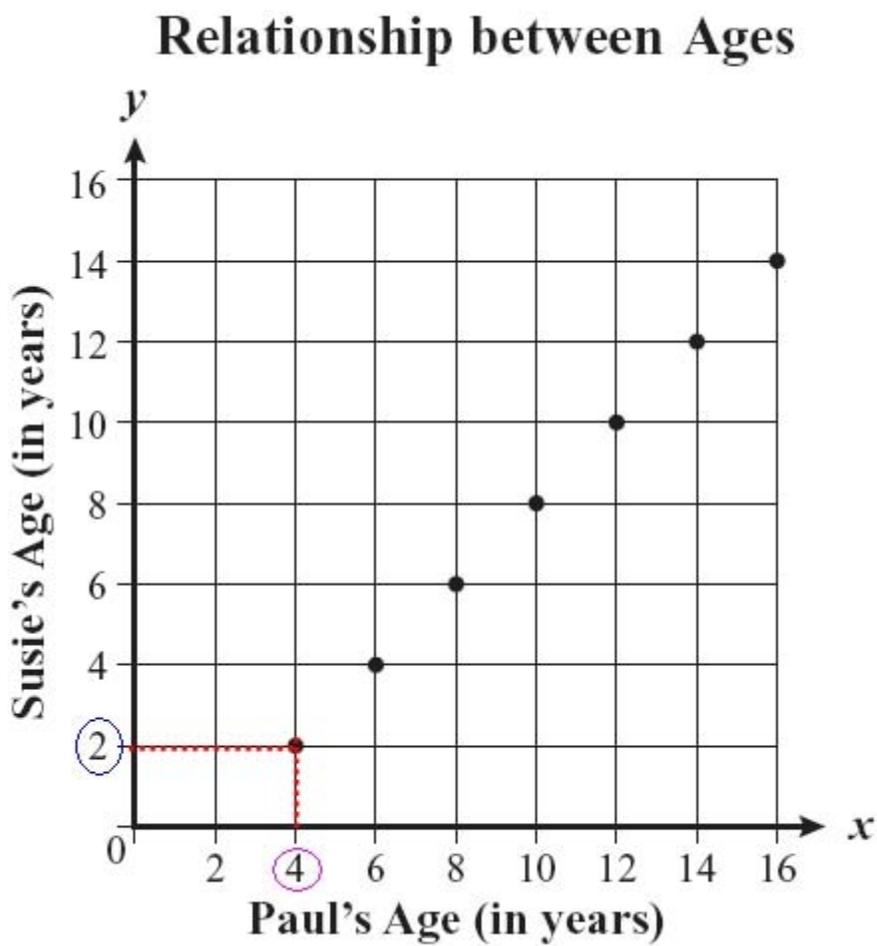
[Comment on this question](#)

From the table, we know we what to find the corresponding Susie's Age when Paul's Age is 4. So please find Paul's Age equals 4, which is circled in pink in the graph below.

Relationship between Ages



Now trace along the red dotted line in the graph below and find the corresponding Susie's Age along the axis labeled "Susie's Age(in years)", which is circled in blue.



[Comment on this hint](#)

The number circled in blue is 2, so Susie is 2 when Paul is 4. Type in 2.

[Comment on this hint](#)

Type your answer below:

*2

Submit Answer

Correct! With the same method we used above, this is the complete table we

1



Paul's Age(in years)	Susie's Age(in years)
4	2
6	4
8	6
10	8
12	10
14	12
16	14

Let's start by checking A in the original problem. A says "Susie is twice as old as Paul", which means "Susie's Age = 2 * Paul's Age". Please substitute the information from the row shaded blue in the table into this equation. Is A the right choice?

[Comment on this question](#)

The row an arrow points to give the information that when Paul is 6, Susie is 4. Let's substitute Paul's Age=6 into the equation, we have Susie's Age=6*2=12.

[Comment on this hint](#)

However, from the information in the table, when Paul's Age=6, Susie's Age =4. So A is not the right choice.

[Comment on this hint](#)

Select one:

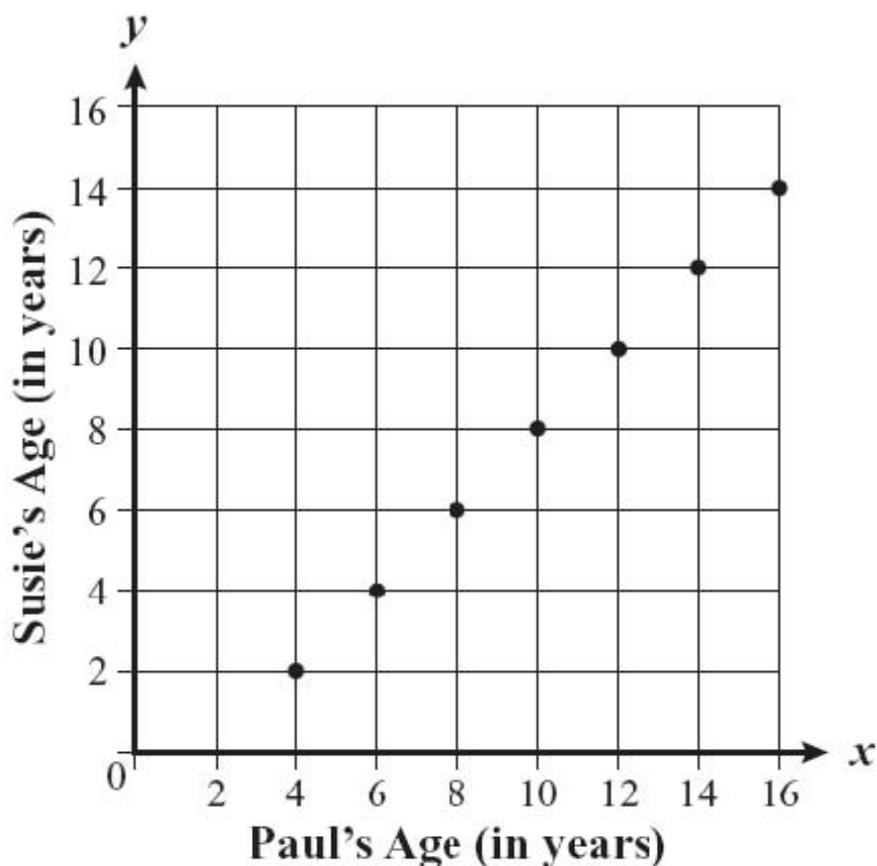
- A. Yes.
- B. No.

Submit Answer

Correct!

[Please check the rest of the answers yourself and find the correct answer.](#)

Relationship between Ages



Which of the following best describes the relationship between Paul's age and Susie's age for all the points shown on the graph?

[Comment on this question](#)

We already eliminated A.

For B, if B was true, when Susie is 4, Paul should be 2. However, from the table we know that Paul is 6 when Susie is 4. So B is incorrect.

[Comment on this hint](#)

We already eliminated A and B.

For C, if C was true, when Susie is 4, Paul should be 8. However, from the table we know that Paul is 6 when Susie is 4. So C is incorrect.

[Comment on this hint](#)

We already eliminated A, B and C.

After checking D, we found that D satisfies all information in the table. So D is the correct answer, choose D.

[Comment on this hint](#)

Select one:

- A. Susie is 2 years younger than Paul.
- B. Susie is 2 years older than Paul.
- C. Susie is half as old as Paul.
- D. Susie is 2 years older than Paul.

Submit Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

Assistment #25974

You are previewing content.

Input (x)	2	5	10	11
Output (y)	5	11	21	23

Which following expression describes the relationship between the input(x) and output(y) in the input-output table above?

[Comment on this question](#)

Request Help

Select one:

- A. $3*x-4=y$
- B. $x*x=y$
- C. $x+3=y$
- D. $2*x+1=y$

Submit Answer

Let's move on and figure out this problem

Let's attack this problem by checking the choices.

First let's make sure you know how to read the table. What is the output y value for input x value 2, which is circled in the table below?

[Comment on this question](#)

We should notice that the title of each row is marked on the left of the table, which are highlighted in the

Input (x)	2	5	10	11
Output (y)	5	11	21	23

[Comment on this hint](#)

So for the input value 2 in circle, the corresponding value of y output should be at the same column but in the second row. Please see the table below, pay attention to the blue circle.

Input (x)	2	5	10	11
Output (y)	5	11	21	23

[Comment on this hint](#)

The output value is 5 for input value 2. Type in 5.

[Comment on this hint](#)

Type your answer below:

- 5

Submit Answer

Correct!

Let's substitute $x=2$ into the equation in choice A, what do we have for y?

[Comment on this question](#)

Let's do the substitution. The expression becomes $2*3-4=y$.

[Comment on this hint](#)

let's start by $2*3$:

$$2*3 -4=y \quad 6$$
$$-4=y$$

[Comment on this hint](#)

$$2*3 -4=y \quad 6$$
$$-4=y \quad 2=y$$

Type in 2.

[Comment on this hint](#)

Type your answer below:

2

Submit Answer That is not correct, try again.

Correct!

But from the table, we can see when $x=2$, $y=5$. Therefore, A is incorrect.

Let's now substitute $x=2$ into the equation in choice B. What do we have for y ?

[Comment on this question](#)

Let's do the substitution. The expression becomes $2*2=y$.

[Comment on this hint](#)

$$2*2 =y \quad 4$$
$$=y$$

Type in 4.

[Comment on this hint](#)

Type your answer below:

⌘4

Submit Answer

Correct!

But from the table, we can see when $x=2$, $y=5$. Therefore, B is incorrect as well. So far we have eliminated both A and B. Please use the same method and check the rest of the choices.

Input (x)	2	5	10	11
Output (y)	5	11	21	23

Which following expression describes the relationship between the input(x) and output(y) in the input-output table above?

[Comment on this question](#)

For C, after substitution, we get $5=5$, but let's check it with another group of data from the table.

[Comment on this hint](#)

Let's use $x=5$, $y=11$. After substitution, we have $8=11$, which is incorrect. Eliminate C.

[Comment on this hint](#)

After checking D with each group of data from the table, we conclude D is correct. Choose D.

[Comment on this hint](#)

Select one:

-
- B. $x*x=y$ (We already eliminated this one, too)
- C. $x+3=y$
- D. $2*x+1=y$ (We already eliminated this one)

Submit Answer

Correct!

You are done with this problem!

[Comment on this problem](#)

Assistment

Assistment #25975

You are previewing content.

What is the value of the expression below when $\triangle=6$?

$$2 + \frac{\triangle}{3}$$

[Comment on this question](#)

Request Help

Type your answer below:

•

Submit Answer

Let's move on and figure out this problem

Let's do this problem step by step. First let's substitute $\triangle=6$ into the expression.

We will have

$$2 + \frac{6}{3}$$

What is the first calculation we should take to do this problem?

[Comment on this question](#)

Think about order of operation. Which operation we need to take first when both + and \div exist.

[Comment on this hint](#)

We should take \div First.

[Comment on this hint](#)

Remember, $\frac{6}{3}$
means 6
 $\div 3$. So B is
[Comment on this hint](#) the right
choice.

Select one:

- A. $6 \div 2$
- B. $6 \div 3$
- C. $2 \div 3$
- D. $2 + 6$

Submit Answer

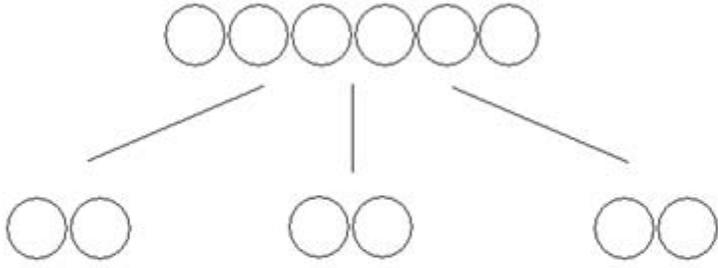
Correct!

What is the value of red portion?

$$2 + \frac{6}{3}$$

[Comment on this question](#)

Imagine we have 6 items; we are dividing them into three equal piles, how many items are there in one pile?



[Comment on this hint](#)

There are 2 items in each pile, so $6 \div 3 = 2$. Type in 2.

[Comment on this hint](#)

Type your answer below:

2

Submit Answer

Correct!

So the expression becomes:

$$2 + \frac{6}{3}$$

What is the result of the expression in the circle?

[Comment on this question](#)

$2+2 = \circ\circ+\circ\circ$ count the circles.

[Comment on this hint](#)

$2+2=4$. Type in 4.

[Comment on this hint](#)

Type your answer below:

⌘4

Submit Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

Assistment #25976

You are previewing content.

If $\triangle=4$ and $\square=5$, what is the value of the expression below?

$$3(\triangle)+6(\square)$$

[Comment on this question](#)

Request Help

Select one:

- A. 9
- B. 18
- C. 39
- D. 42

Submit Answer Let's move on and figure out

this problem Let's do this problem step by

step.

First, let's plug in the numbers. Which expression is correct after substituting \triangle and \square ?

[Comment on this question](#)

[Comment on this hint](#)

OK, the expression we get after substitution is $3(4)+6(5)$.

Remember, when we see a number before (), that means the number is multiplying by the expression inside the ().

[Comment on this hint](#)

So the correct expression should be $3*4+6*5$. Choose B.

[Comment on this hint](#)

Select one:

- A. $3+4+6*5$
- B. $3*4+6*5$
- C. $3\div 4+6\div 5$
- D. $3+4+6-5$

Submit Answer

Correct!

So we know the expression becomes $3*4+6*5$. Now what is operation we should take first to do the problem?

[Comment on this question](#)

Think about the order of operation. Which operation we should take first when both multiplication and + are present?

[Comment on this hint](#)

We should take multiplication first, but in this case there are two multiplications present, what does the order of operation say about this?

[Comment on this hint](#)

When more than one multiplications are present, we should calculate the one on the left first.

[Comment on this hint](#)

So $3*4$ is the right choice. Choose C.

[Comment on this hint](#)

Select one:

- ⌘ A. 4+6
- ⌘ B. 6*5
- ⌘ C. 3*4
- ⌘ D. 4+5

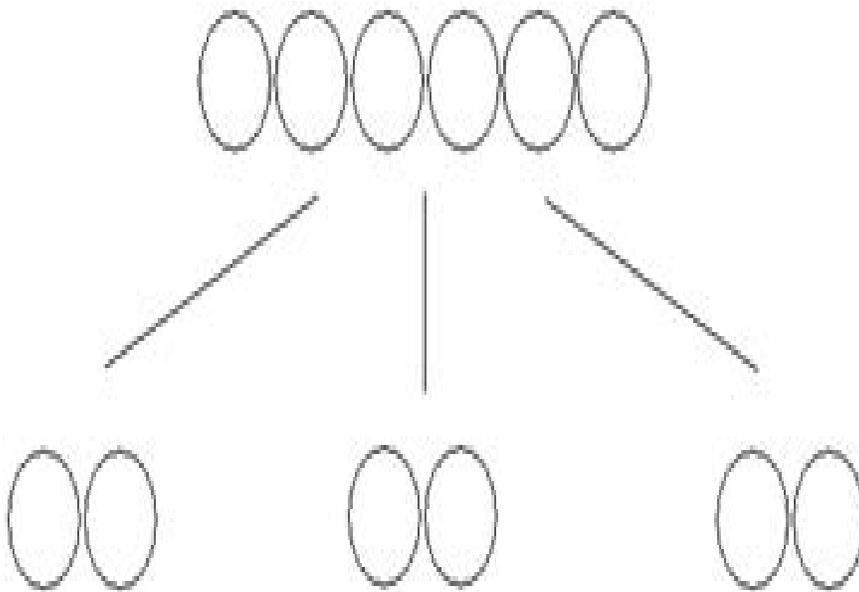
Submit Answer

Correct!

What is the result of $3*4$?

[Comment on this question](#)

Imagine we have 4 piles of items; each has 3 items in it. What is the total number of items?



Now the expression becomes:

$$3*4 + 6*5$$

$$12 + 6*5$$

Please use the method we used above and solve the problem, what is the final value of the expression?

[Comment on this question](#)

Using the same method, we should calculate $6*5$ next.

[Comment on this hint](#)

After calculation, the expression becomes:

$$3*4 + 6*5$$

$$12 + 6*5$$

$$12 + 30$$

Now calculate $12+30$.

[Comment on this hint](#)

$12+30=42$. Choose D.

[Comment on this hint](#)

Select one:

- A. 9
- B. 18
- C. 39
- D. 42

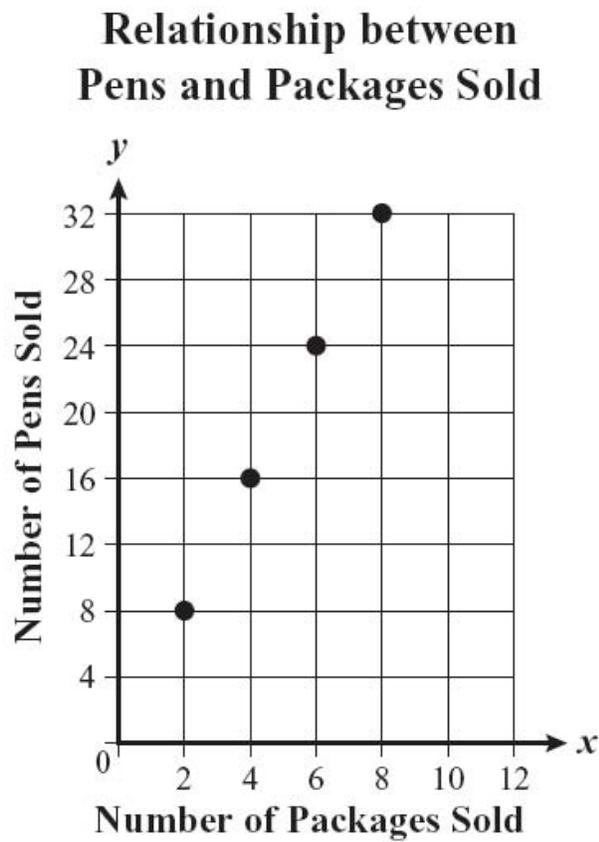
Submit Answer

Correct! You are done with this problem!

[Comment on this problem](#)

You are previewing content.

A store sells packages of pens. Each package contains the same number of pens. The graph below displays the relationship between the total number of packages sold and the total number of pens sold.



What is the total number of pens in each package?

[Comment on this question](#)

Request Help

Type your answer below:

⌘

Submit Answer

Let's move on and figure out this problem

Let's first make sure you can read the graph, to do this, let's put the information in the graph into a table. What should be the

title of the column in red?

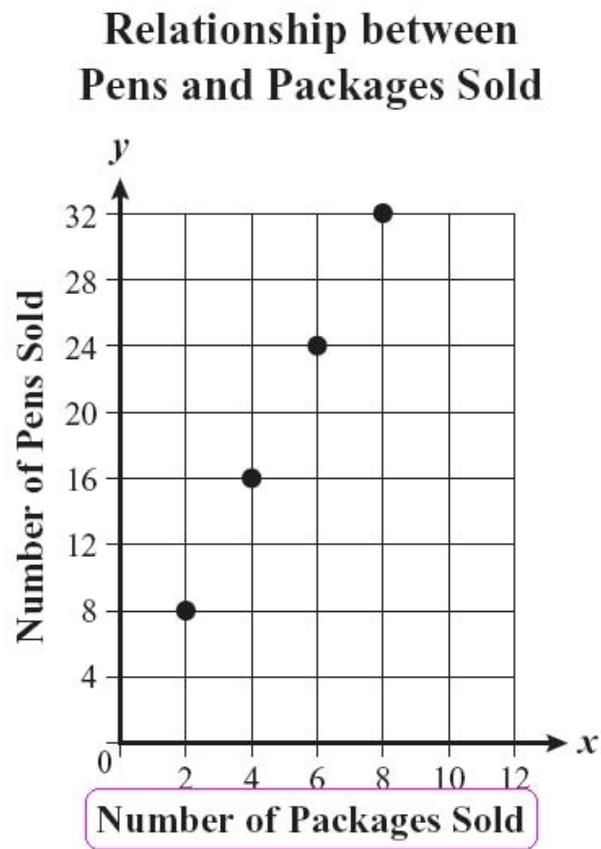
Number of Packages Sold	

[Comment on this question](#)

The table should represent the relationship between the two quantities in the graph.

[Comment on this hint](#)

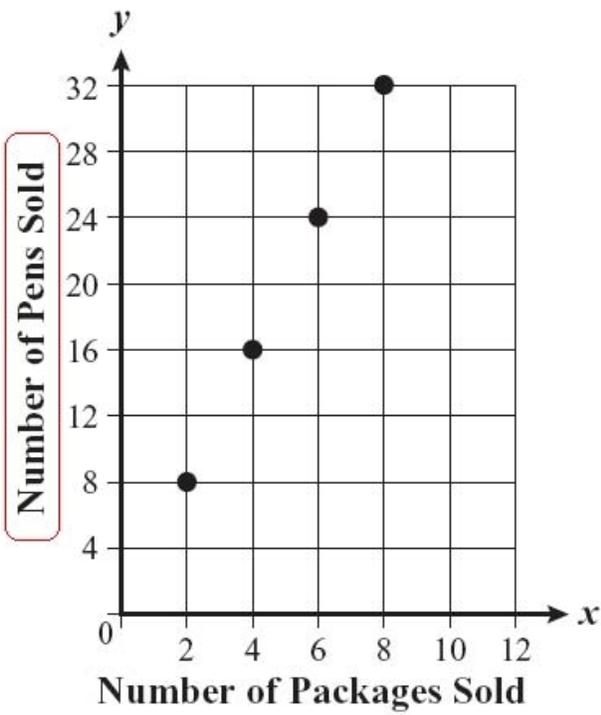
The title along x-axis is "Number of Packages Sold"(circled in pink in the picture below), which is already put into the table.



[Comment on this hint](#)

The title for the column in red should be the title along y-axis, which is circled in red in the picture below.

Relationship between Pens and Packages Sold



[Comment on this hint](#)

The title for the column in red is "Number of Pens Sold".

[Comment on this hint](#)

Select one:

- ~~Number of Packages Sold.~~
- Total Cost of Pens.
- Cost per Package.

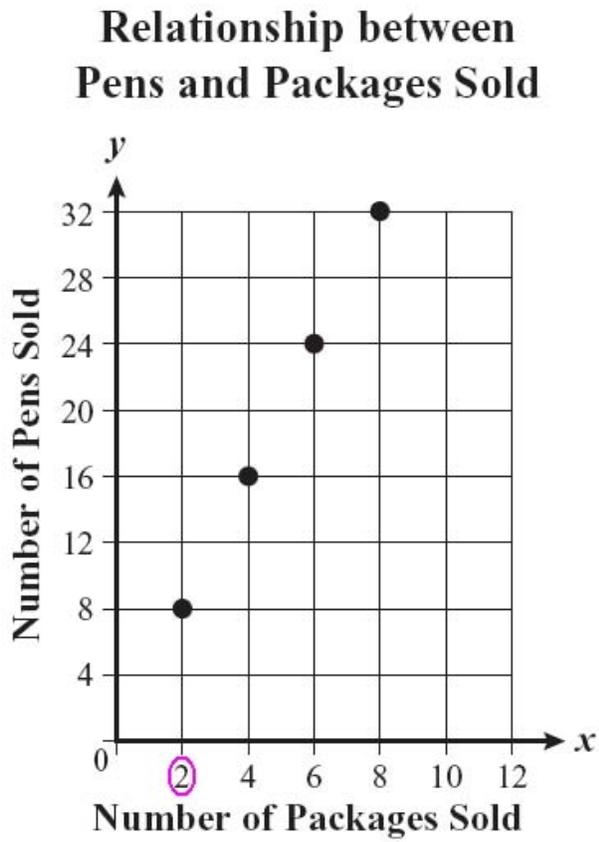
Submit Answer Correct!

Now let's fill in the table.

Number of Packages Sold	Number of Pens Sold
2	

[Comment on this question](#)

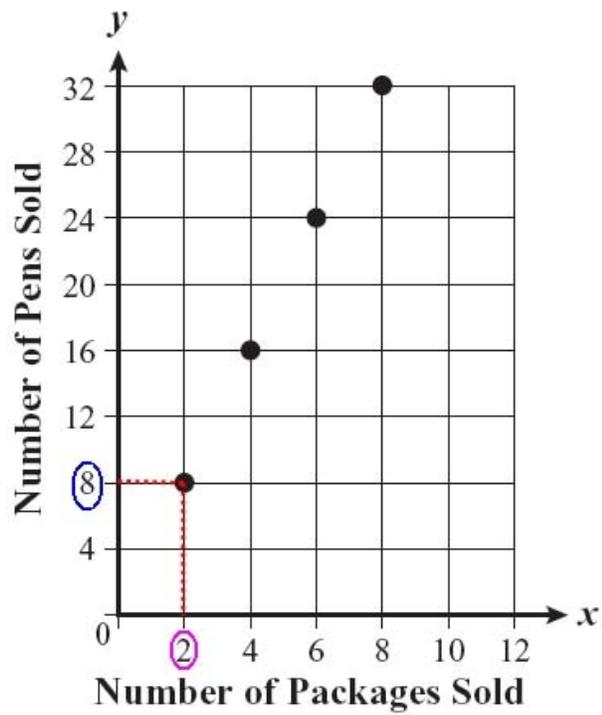
From the table, we know we what to find the corresponding number of pens sold when number of packages sold is 2. So please find number of packages sold equals 2, which is circled in pink in the graph below:



[Comment on this hint](#)

Now trace along the red dotted line in the graph below and find the corresponding number of pens sold along the axis labeled "Number of Pens Sold", which is circled in blue.

Relationship between Pens and Packages Sold



[Comment on this hint](#)

The number circled in blue is 8. Type in 8.

[Comment on this hint](#)

Type your answer below:

- 8

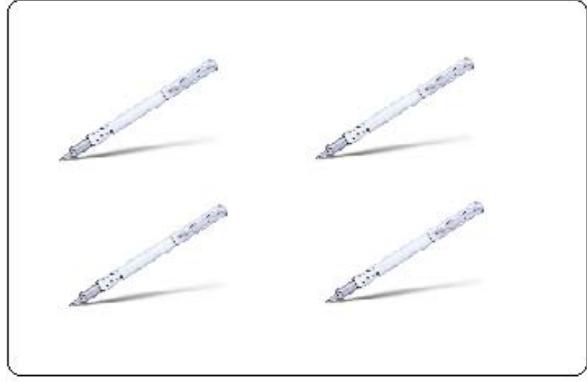
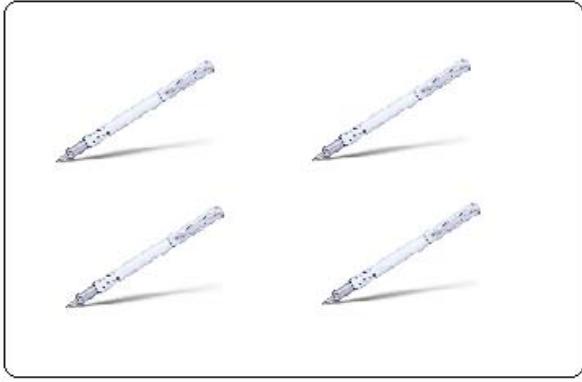
Submit Answer

Correct!

OK, let's use the first row in the table to calculate the number of pens in each package.

	Number of Packages Sold	Number of Pens Sold
⇒	2	8
	4	16
	6	24
	8	32

So we know there are 8 pens in 2 packages. Please look at the graph below. How many pens are there in one package?



[Comment on this hint](#)

Count the number of pens in one package. The correct answer is 4. Type in 4.

[Comment on this hint](#)

Type your answer below:

• 4

Submit Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

You are previewing content.

Prawal wrote the equation below on a card.

$$\triangle \div 2 = 3$$

If Prawal's equation is true, which of the following is also true?

[Comment on this question](#)

Request Help

Select one:

A. $\triangle = 2 - 3$

B. $\triangle = 3 \div 2$

C. $\triangle = 3 + 2$

D. $\triangle = 3 * 2$

Submit Answer

Let's move on and figure out this problem

To make sense of this number sentence, let's put it into a situation.

Assume we have \triangle number of items in a pile, what does the following equation mean?

$$\triangle \div 2 = 3$$

[Comment on this question](#)

Look at the equation again, we have \triangle , which is something, and then we have to divide.

[Comment on this hint](#)

Since 2 comes after the division sign (\div), so we are dividing what is in \triangle into 2 small piles. Please choose C.

[Comment on this hint](#)

Select one:

- A. Taking 2 items out of the pile and the number of remaining items is 3.
- B. Taking 3 items out of the pile and the number of remaining items is 2.
- C. Dividing the items into 2 small piles and each pile has 3 items in it.
- D. There are only 3 items in a pile.

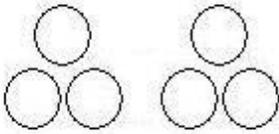
Submit Answer

Correct!

So now we have divided what's in the \triangle into 2 piles, each having 3 items. How can we determine what is in the \triangle ?

[Comment on this question](#)

Look at the picture below:



How would we find how many items we have?

[Comment on this hint](#)

We can see from the picture, to figure out the number of total items, we have to put 2 piles, each has 3 items.

[Comment on this hint](#)

Select one:

- ⌘ A. Putting together 2 piles, each has 3 items.
- ⌘ B. Putting together 2 piles, one has 2 items, and the other one has 3 items.
- ⌘ C. Taking 2 items out of a pile of 3 items.
- ⌘ D. Taking 3 items out of a pile of 2 items.

Submit Answer

Correct!

Now please try to do the original question again.

Prawal wrote the equation below on a card.

$$\triangle \div 2 = 3$$

If Prawal's equation is true, which of the following is also true?

[Comment on this question](#)

We already know that the \triangle consists of 2 piles, each has 3 items in it.

[Comment on this hint](#)

So we are adding $3 + 3$.

[Comment on this hint](#)

We know repeated addition is the same as multiplication. So $3 + 3 = 3 * 2$.

[Comment on this hint](#)

So $\triangle = 3 * 2$. Choose D.

[Comment on this hint](#)

Select one:

⌘

⌘ B. $\triangle = 3 \div 2$

⌘ C. $\triangle = 3 + 2$

⌘ A. $\triangle = 2 - 3$

D. $\triangle = 3 * 2$ Submit

Answer

Correct! You are done with this problem!

[Comment on this problem.](#)

13 Appendix D: Worked Example Assistments

Assistment

You are previewing content.

What is the value of the expression below when $\square = 3$?

$$2(\square) + 5$$

[Comment on this question](#)

Request Help

Type your answer below (mathematical expression):

•

Submit Answer

Let's move on and figure out this problem

[Let us look at the solution for a problem similar to the one above.](#)

What is the value of the expression below when $\square = 5$?

$$3(\square) + 10$$

Solution to this problem:

$3(\square)$ means 3 times \square . Also notice that $\square = 5$. So,

we need to substitute $\square = 5$ in the equation.

So,

$$(\square) + 10 = 3 * \square +$$

$$10 = 3 * 5 + 10$$

Now, we follow the 'PE (MD) (AS)' rule.

Parenthesis, Exponents, Multiplication and Division (from left to right), Addition and Subtraction (from left to right).

$$3 * 5 + 10$$

has a multiplication and an addition to do. Multiplication comes before addition in PE (MD)(AS) So do multiplication first and then addition.

This would give you

$$3 * 5 + 10 =$$

$$15 + 10 = 25$$

Hence, when $\square = 5$, the value of the given expression is 25.

[Comment on this question](#)

Select one:

- I have read the example and now I am ready to try again.

Submit Answer Correct! [Now try the original problem again.](#)

[You may look back at the worked example if that helps you.](#)

What is the value of the expression below when $\square = 3$?

$$2(\square) + 5$$

[Comment on this question](#)

[Request Help](#)

Type your answer below (mathematical expression):

•

[Submit Answer](#)

Assistment

You are previewing content.

Lucinda earns \$20 each week. She spends \$5 each week and saves the rest. The table below shows the total amount that she saved at the end of each week for 4 weeks.

Lucinda's Savings at the End of Each Week

Week	1	2	3	4
Total Amount Saved	\$15	\$30	\$45	\$60

Lucinda continues to save at the same rate. What will be Lucinda's total amount saved at the end of 7 weeks?

[Comment on this question](#)

[Request Help](#)

Type your answer below (mathematical expression):

⌘

Submit Answer

Let's move on and figure out this problem

[Let's look at the solution for a problem similar to the one above:](#)

Maggie gets \$10 each week as allowance. She spends \$2 on candies and saves the rest to buy a new bike. The table below shows the amount that she saved at the end of each week for 4 weeks.

Maggie's savings at the end of each week

Week	1	2	3	4
Total Amount Saved	\$8	\$16	\$24	\$32

Maggie continues to save at the same rate.

What will be Maggie's total amount saved at the end of 7 weeks?

Solution to this problem:

The question says Maggie gets \$10 each week. Out of the \$10 she spends \$2 and saves the rest. So, the amount she saves each week is the amount she gets minus the amount she spends which is: $10 - 2$

You can also look at the table and see that for 1 week she saved \$8.

Maggie's savings at the end of each week

Week	1	2	3	4
Total Amount Saved	\$8	\$16	\$24	\$32

We want to know how much she saves in 7 weeks. We can do that by filling out the table. Let us start by finding how much she saves in 5 weeks and fill in the orange box in the table below.

Maggie's savings at the end of each week

Week	1	2	3	4	5	6	7
Total Amount Saved	\$8	\$16	\$24	\$32			

Notice the pattern for each one week added we add on \$8.

Maggie's savings at the end of each week

Week	1	→ ⁺¹	2	→ ⁺¹	3	→ ⁺¹	4	→ ⁺¹	5	→ ⁺¹	6	→ ⁺¹	7
Total Amount Saved	\$8		\$16		\$24		\$32						
		→ ₊₈		→ ₊₈		→ ₊₈		→ ₊₈					

We need to add \$8 to \$32 to get the next value.

$\$32 + \$8 = \$40$ Thus by week 5 Maggie saves

\$40.

Maggie's savings at the end of each week

Week	1	→ ⁺¹	2	→ ⁺¹	3	→ ⁺¹	4	→ ⁺¹	5	→ ⁺¹	6	→ ⁺¹	7
Total Amount Saved	\$8		\$16		\$24		\$32		\$40				
		→ ₊₈		→ ₊₈		→ ₊₈		→ ₊₈					

To find the amount she saves in week 6 we add \$8 to \$40. Thus,

$\$40 + \$8 = \$48$. So by week 6 she saves \$48.

Maggie's savings at the end of each week

Week	1	→ ⁺¹	2	→ ⁺¹	3	→ ⁺¹	4	→ ⁺¹	5	→ ⁺¹	6	→ ⁺¹	7
Total Amount Saved	\$8		\$16		\$24		\$32		\$40		\$48		
		→ ₊₈		→ ₊₈		→ ₊₈		→ ₊₈		→ ₊₈			

$$\$48 + \$8$$

$$= \$56.$$

Maggie's savings at the end of each week

Week	1	2	3	4	5	6	7
Total Amount Saved	\$8	\$16	\$24	\$32	\$40	\$48	\$56

+8 +8 +8 +8 +8 +8

So at the end of 7 weeks, Maggie's total savings will be \$56.

[Comment on this question](#)

Select one:

- I have read the example and now I am ready to try again.

Submit Answer

Correct!

[Now try the original problem again. You may look back at the](#)

[worked example if that helps you.](#)

Lucinda earns \$20 each week. She spends \$5 each week and saves the rest. The table below shows the total amount that she saved at the end of each week for 4 weeks.

Lucinda's Savings at the End of Each Week

Week	1	2	3	4
Total Amount Saved	\$15	\$30	\$45	\$60

Lucinda continues to save at the same rate. What will be Lucinda's total amount saved at the end of 7 weeks?

[Comment on this question](#)

At the end of 7 weeks, Lucinda's total saving will be \$105.

Type in 105.

[Comment on this hint](#)

Type your answer below (mathematical expression):

- 105

Submit Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

You are previewing content.

Lucinda earns \$20 each week. She spends \$5 each week and saves the rest. The table below shows the total amount that she saved at the end of each week for 4 weeks.

Lucinda's Savings at the End of Each Week

Week	1	2	3	4
Total Amount Saved	\$15	\$30	\$45	\$50

Lucinda continues to save at the same rate. How many

weeks will it take for Lucinda to save \$300?

[Comment on this question](#)

Request Help

Type your answer below (mathematical expression):

•

Submit Answer Let's move on and figure

out this problem

[Let's look at the solution for a problem similar to the one above:](#)

Maggie gets \$10 each week as allowance. She spends \$2 on candies and saves the rest. The table below shows the amount that she saved at the end of each week for 4 weeks.

Maggie's savings at the end of each week

Week	1	2	3	4
Total Amount Saved	\$8	\$16	\$24	\$32

How many weeks will it take for Maggie to save \$80?

Solution to this problem:

The question says Maggie gets \$10 each week. Out of the \$10 she spends \$2 and saves the rest. So, the amount she saves each week is the amount she gets minus the amount she spends which is: $10 - 2 = 8$

Thus each week \$8 is added to her savings, which we can see from the table below.

Maggie's savings at the end of each week

Week	1	→ ⁺¹	2	→ ⁺¹	3	→ ⁺¹	4
Total Amount Saved	\$8	→ ₊₈	\$16	→ ₊₈	\$24	→ ₊₈	\$32

So we can fill up the table by adding \$8 to the total amount saved each additional week.

Another way to fill in the table is to see a pattern between the number of weeks and the total savings. Let us try to find a relation between the number of weeks and the total savings.

We need to add \$8 to the total amount saved for each additional week. Thus to find the total amount saved, we need to perform repeated addition. Repeated addition means multiplication.

Thus multiplying \$8 with number of weeks will give the total amount saved.

$$\text{Total Amount Saved} = \$8 * \text{Number of Weeks}$$

Let 'w' represent the number of weeks and 's' represent the total amount saved.

Then we have

$$s = 8 * w$$

Now we need to find the number of weeks that Maggie takes to save \$80.

We replace s by 80 in the equation above. Thus we get, $80 = 8 * w$

To find the number of weeks, w, we divide 80 by 8.

$80 / 8 = 10$. So Lucinda takes 10 weeks to save \$80.

[Comment on this question](#)

Select one:

⌘

I have read the example and now I am ready to try again.

Submit Answer

Correct!

Now try the original problem again. You may look back at the

[worked example if that helps you.](#)

Lucinda earns \$20 each week. She spends \$5 each week and saves the rest. The table below shows the total amount that she saved at the end of each week for 4 weeks.

Lucinda's Savings at the End of Each Week

Week	1	2	3	4
Total Amount Saved	\$15	\$30	\$45	\$50

Lucinda continues to save at the same rate. How many weeks will it take for Lucinda to save \$300?

[Comment on this question](#)

Lucinda will take 20 weeks to save \$300.

Type in 20.

[Comment on this hint](#)

Type your answer below (mathematical expression):

- 20

Submit Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

You are previewing content.

In which of the following tables do the data show a constant rate of change in the total distance traveled during a four-hour trip?

A. Distance Travelled

Time (hours)	Total Distance (miles)
1	50
2	80
3	140
4	230

C. Distance Travelled

Time (hours)	Total Distance (miles)
1	30
2	60
3	120
4	240

B. Distance Travelled

Time (hours)	Total Distance (miles)
1	60
2	120
3	150
4	165

D. Distance Travelled

Time (hours)	Total Distance (miles)
1	50
2	100
3	150
4	200

[Comment on this question](#)

Request Help

Select one:

- A. Table A
- B. Table B
- C. Table C
- D. Table D

Submit Answer Let's move on and figure out

Let's look at the solution for a problem similar to the one above:
this problem

In which of the following tables do the data show a constant rate of change in the total distance traveled during a four-hour trip?

A. Distance Travelled

Time (hours)	Total Distance (miles)
1	20
2	40
3	50
4	70

C. Distance Travelled

Time (hours)	Total Distance (miles)
1	20
2	30
3	60
4	80

B. Distance Travelled

Time (hours)	Total Distance (miles)
1	20
2	20
3	40
4	60

D. Distance Travelled

Time (hours)	Total Distance (miles)
1	20
2	40
3	60
4	80

Solution:

The question says: "A **constant rate of change** in the total distance traveled during a four-hour trip" This means that each hour the distance changes by the same amount. For each additional hour, the distance added is the same.

Now let us look at table A to see if it has a constant rate of change.

According to the table, the change in distance going from hour 1 to hour 2 is

40-20 20

And the change in distance going from hour 2 to hour 3 is

50-40=10

A. Distance Travelled

Time (hours)	Total Distance (miles)
1	20
2	40
3	50
4	70

$40-20=20$
 $50-40=10$

For option A, the change in distance is **not the same**. Thus, A does not have a constant rate of change.

A. Distance Travelled

Time (hours)	Total Distance (miles)
1	20
2	40
3	50
4	70

$40-20=20$
 $50-40=10$

C. Distance Travelled

Time (hours)	Total Distance (miles)
1	20
2	30
3	60
4	80

B. Distance Travelled

Time (hours)	Total Distance (miles)
1	20
2	20
3	40
4	60

D. Distance Travelled

Time (hours)	Total Distance (miles)
1	20
2	40
3	60
4	80

We can use the same steps shown above to check the remaining options.

Look at table B.

According to the table, the change in distance going from hour 1 to hour 2 is

20-20=0

And the change in distance going from hour 2 to hour 3 is

40-20=20

B. Distance Travelled

Time (hours)	Total Distance (miles)
1	20
2	20
3	40
4	60

Annotations for the table:

- Between row 1 and row 2: $20 - 20 = 0$
- Between row 2 and row 3: $40 - 20 = 20$

Thus, Table B does not have a constant rate of change.

Look at table C.

According to the table, the change in distance going from hour 1 to hour 2 is

30-20=10

And the change in distance going from hour 2 to hour 3 is

60-30=30

C. Distance Travelled

Time (hours)	Total Distance (miles)
1	20
2	30
3	60
4	80

$30 - 20 = 10$

$60 - 30 = 30$

Thus, Table C does not have a constant rate of change.

Look at table D.

According to the table, the change in distance going from hour 1 to hour 2 is

$$40 - 20 = 20$$

And the change in distance going from hour 2 to hour 3 is

$$60 - 40 = 20$$

D. Distance Travelled

Time (hours)	Total Distance (miles)
1	20
2	40
3	60
4	80

$40 - 20 = 20$

$60 - 40 = 20$

A. Distance Travelled

Time (hours)	Total Distance (miles)	
1	20	$40-20=20$
2	40	
3	50	$50-40=10$
4	70	

C. Distance Travelled

Time (hours)	Total Distance (miles)	
1	20	$30-20=10$
2	30	
3	60	$60-30=30$
4	80	

B. Distance Travelled

Time (hours)	Total Distance (miles)	
1	20	$20-20=0$
2	20	
3	40	$40-20=20$
4	60	

D. Distance Travelled

Time (hours)	Total Distance (miles)	
1	20	$40-20=20$
2	40	
3	60	$60-40=20$
4	80	

Thus table D shows a constant rate of change in the total distance traveled during a four-hour trip.

[Comment on this question](#)

Select one:

- I have read the example and now I am ready to try again.

Submit Answer

Correct!

Now try the original problem again. You may look back at the worked example if that helps you.

In which of the following tables do the data show a constant rate of change in the total distance traveled during a four-hour trip?

A. Distance Travelled

Time (hours)	Total Distance (miles)
1	50
2	80
3	140
4	230

C. Distance Travelled

Time (hours)	Total Distance (miles)
1	30
2	60
3	120
4	240

B. Distance Travelled

Time (hours)	Total Distance (miles)
1	60
2	120
3	150
4	165

D. Distance Travelled

Time (hours)	Total Distance (miles)
1	50
2	100
3	150
4	200

[Comment on this question](#)

Table D shows a constant rate of change in the total distance traveled during a four-hour trip.

Select option D.

[Comment on this hint](#)

Select one:

- A. Table A
- B. Table B
- C. Table C
- D. Table D

Submit Answer

Correct! You are done with this problem!

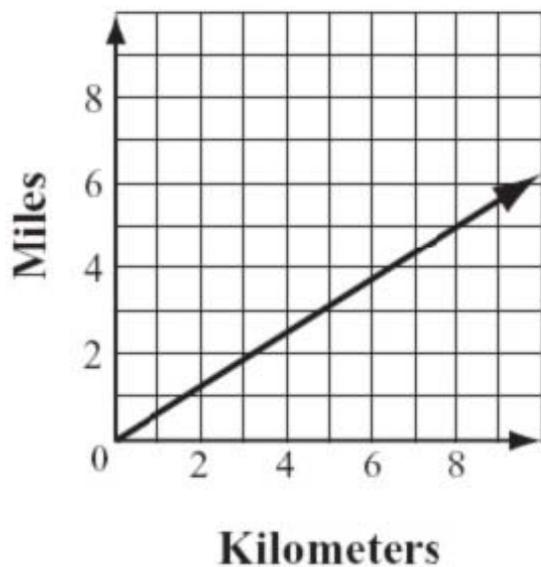
[Comment on this problem](#)

Assistment

You are previewing content.

The graph below shows the relationship between distance measured in kilometers and distance measured in miles.

Measures of Distance



Which of the following is closest to the number of miles that is equivalent to 4 kilometers?

[Comment on this question](#)

[Request Help](#)

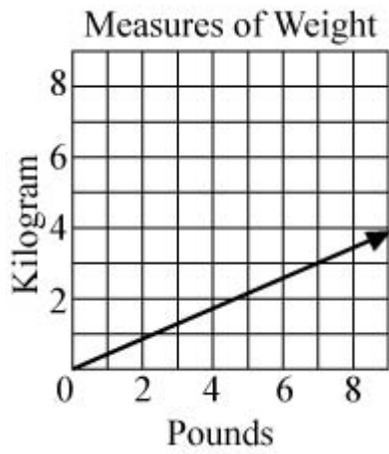
Select one:

- A. 1.5 miles
- B. 2.5 miles
- C. 5.8 miles
- D. 6.2 miles

Submit Answer Let's move on and figure out

Let's problem the solution for a problem similar to the one above:

The graph below shows the relationship between weight measured in pounds and weight measured in kilograms.

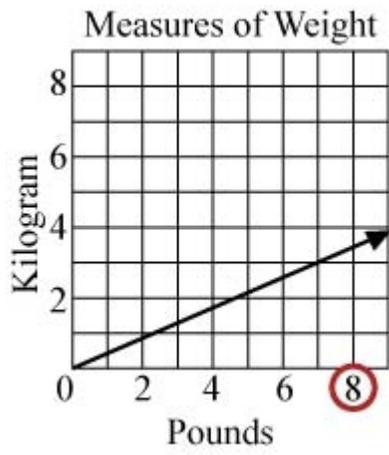


Which of the following is closest to the weight in kilograms that is equivalent to 8 pounds?

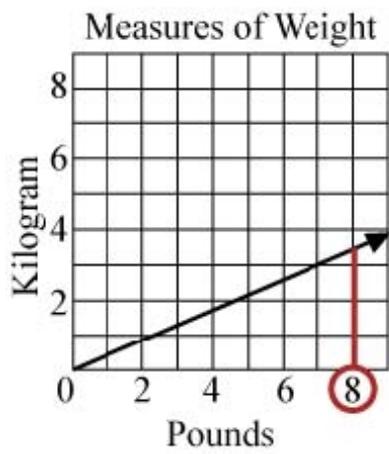
- A. 1.4 kilograms
- B. 2.6 kilograms
- C. 3.6 kilograms
- D. 4 kilograms

Solution:

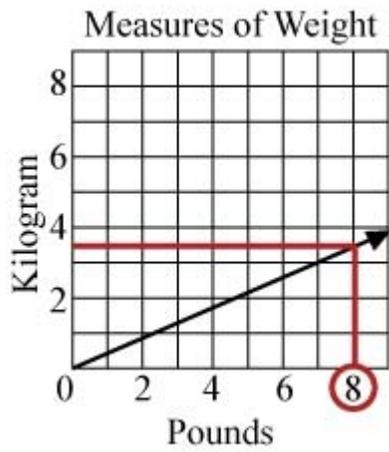
In order to find the weight in kilograms equivalent to 8 pounds, we need to first look at the number 8 on the axis labeled pounds.



Next we draw a straight line starting at the number 8 on the pound axis going up to meet the black line.



From the point where we meet the black line we draw a horizontal line going towards the axis labelled kilogram.



The point at which the red horizontal line meets the axis labeled kilogram is the weight in kilograms equivalent to 8 pounds.

The line meets the axis labeled kilogram at a point between numbers 3 and 4. If we look at our options, we have 3.6 kilograms as an option. Thus the weight in kilograms equivalent to 8 pounds is 3.6 kilograms.

[Comment on this question](#)

Select one:

⌘

I have read the example and now I am ready to try again.

Submit Answer

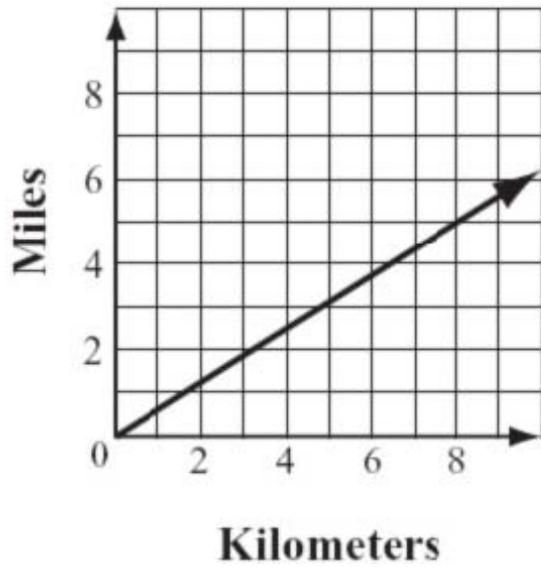
Correct!

[Now try the original problem again. You may look back at the](#)

[worked example if that helps you.](#)

The graph below shows the relationship between distance measured in kilometers and distance measured in miles.

Measures of Distance



Which of the following is closest to the number of miles that is equivalent to 4 kilometers?

[Comment on this question.](#)

The number of miles that is equivalent to 4 kilometers is 2.5 miles.

Select option B.

[Comment on this hint.](#)

- Select one:
- A. 1.5 miles
 - B. 2.5 miles
 - C. 5.8 miles
 - D. 6.2 miles

Submit Answer

Correct! You are done with this problem!

[Comment on this problem.](#)

Assistment

You are previewing content.

What is the value of n that makes the equation below true? $n /$

$$3 = 12$$

[Comment on this question](#)

Request Help

Type your answer below (mathematical expression):

•

Submit Answer

Let's move on and figure out this problem

[Let's look at the solution for a problem similar to the one above:](#)

What is the value of z that makes the equation below true? $z /$

$$5 = 4$$

Solution to this problem:

Let us take an example to understand this number sentence.

Let us say that we have z number of apples. In the equation

we are dividing the **total number of apples**.

$$\textcircled{z / 5} = 4$$

5 comes after the division sign, so we divide z into 5 piles. The z apples divided by 5 equals 4. This means that the **total apples** are divided into 5 piles each containing 4 apples.



Now to find the total number of apples z , we put them together. To put the apples together simply means to add the apples in each pile together. $4 + 4 + 4 + 4 + 4$



$4 + 4 + 4 + 4 + 4 = 20$ Thus the value of z that makes the given

equation true is **20**.

[Comment on this question](#)

Select one:

⌘

I have read the example and now I am ready to try again.

Submit Answer

Correct!

[Now try the original problem again. You may look back at the worked example if that helps you.](#)

What is the value of n that makes the equation below true? $n /$

$$3 = 12$$

[Comment on this question](#)

The value of n that will make the given equation true is 36.

Type in 36.

[Comment on this hint](#)

Type your answer below (mathematical expression):

*36

Submit Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

You are previewing content.

The cost for labor at a car repair center is shown in the table below.

Hours	Total Cost
1	\$ 60
2	\$ 120
3	\$ 180
4	\$ 240

Based on the data in the table, which of the following expressions represent the total cost, in dollars, of a repair that requires h hours of labor?

[Comment on this question](#)

Request Help

Select one:

- A. $h + 60$
- B. $h - 60$
- C. $h * 60$
- D. $h / 60$

Submit Answer

Let's move on and figure out this problem

[Let's look at the solution for a problem similar to the one above:](#)

The cost for playing video games at a game station is shown in the table below.

Hours	Total Cost
1	\$ 5
2	\$ 10
3	\$ 15
4	\$ 20

Based on the data in the table, which of the following expressions represent the total cost, in dollars, of playing a game for h hours?

- A. $h + 5$
- B. $h - 5$
- C. $h * 5$
- D. $h / 5$

Solution:

Let us look at one expression at a time and try to find the expression that works.

Option A has the expression: $h + 5$

According to this expression, the total cost, in dollars, of playing a game for 1 hour is: $1 + 5 = 6$

Thus option A says that the total cost, in dollars, of playing a game for 1 hour is 6.

But the table shows that the total cost for one hour is 5 dollars.

Cost for Playing	
Hours	Total Cost
1	\$ 5
2	\$ 10
3	\$ 15
4	\$ 20

Thus expression A is not correct.

Now let us look at option B.

Option B has the expression: h

$- 5$

According to this expression, the total cost, in dollars, of playing a game for 1 hour is: $1 -$

$5 = -4$

Thus option A says that the total cost, in dollars, of playing a game for 1 hour is negative. So option B is not correct as well.

Thus we know that option A and B do not represent the total cost.

Check option C.

Option C has the expression: h

$* 5$

According to this expression, the total cost, in dollars, of playing a game for 1 hour is:

$$1 * 5 = 5$$

This is the value in the table.

Cost for Playing	
Hours	Total Cost
1	\$ 5
2	\$ 10
3	\$ 15
4	\$ 20

Let us find the total cost for 2 hours using option C. We have, 2

$$* 5 = 10$$

This is the value in the table.

Cost for Playing	
Hours	Total Cost
1	\$ 5
2	\$ 10
3	\$ 15
4	\$ 20

So, far option C looks correct.

We have to check option D as well in order to get the right option. So check option D.

Option D is :

h / 5.

According to this expression, the total cost, in dollars, of playing a game for 1 hour is: $\frac{1}{5}$

This value is a fraction. But the total cost for playing 1 hour in the table is not a fraction.

Thus option D is not correct.

Thus option C represents the total cost, in dollars, of a repair that requires h hours of labor.

[Comment on this question](#)

Select one:

⌘

I have read the example and now I am ready to try again.

Submit Answer

Correct!

[Now try the original problem again. You may look back at the worked example if that helps you.](#)

The cost for labor at a car repair center is shown in the table below.

Hours	Total Cost
1	\$ 60
2	\$ 120
3	\$ 180
4	\$ 240

Based on the data in the table, which of the following expressions represent the total cost, in dollars, of a repair that requires h hours of labor?

[Comment on this question](#)

Expression C represents the total cost, in dollars, of a repair that requires h hours of labor.

Select option C.

[Comment on this hint](#)

Select one:

- A. $h + 60$
- B. $h - 60$
- C. $h * 60$
- D. $h / 60$

Submit

Answer

Correct! You are done with this problem!

[Comment on this problem](#)

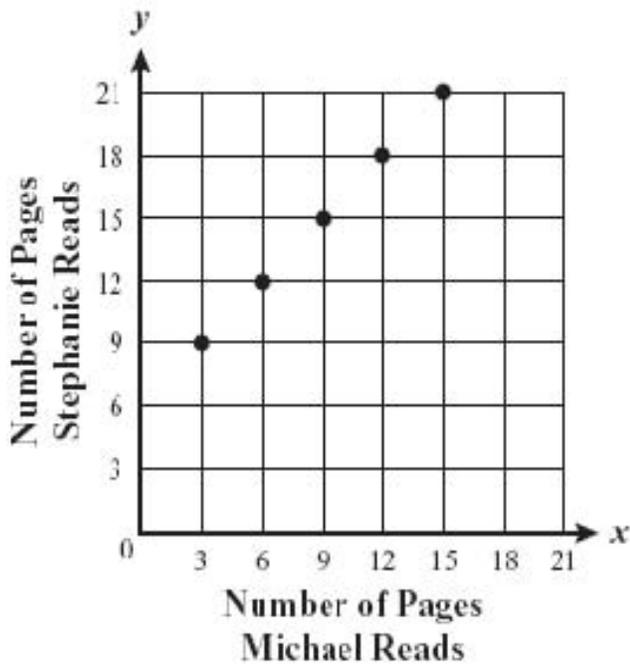
Assistment

You are previewing content.

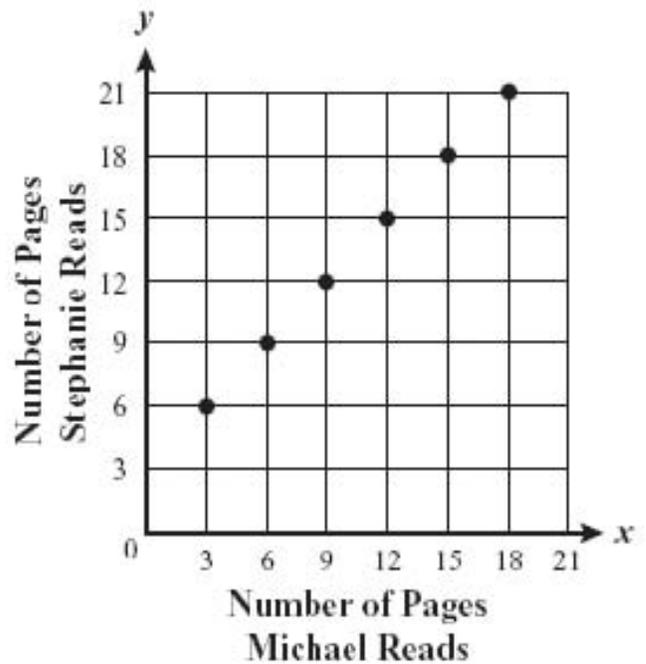
Each night, Stephanie reads 3 more pages of her book than Michael reads of his book.

Which of the following graphs correctly represents the relationship between the number of pages Stephanie reads each night and the number of pages Michael reads each night?

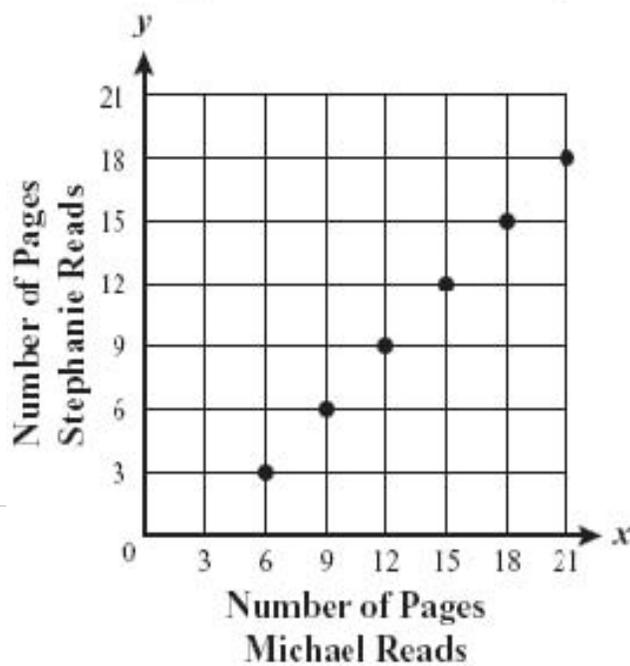
A. Pages Read Each Night



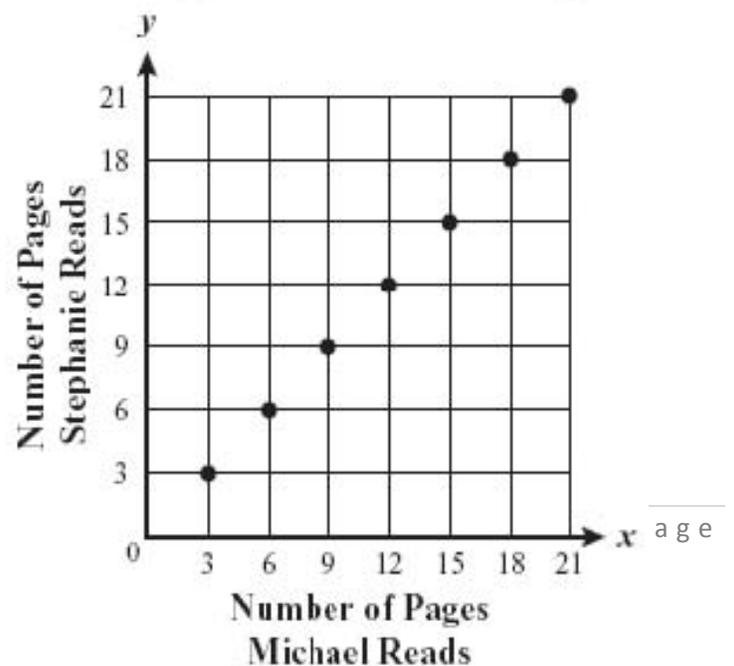
C. Pages Read Each Night



B. Pages Read Each Night



D. Pages Read Each Night



Select one:

- A
- B
- C
- D

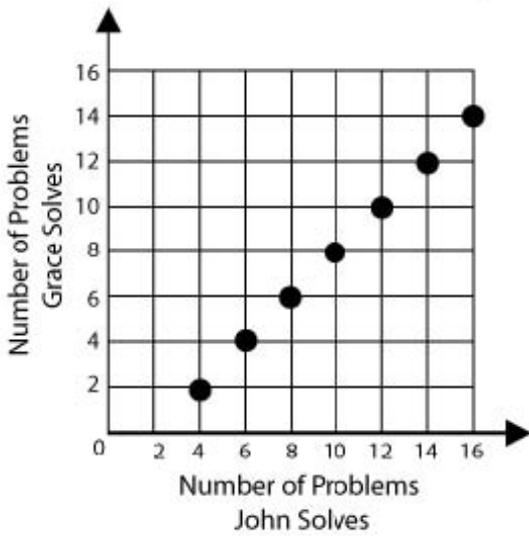
Submit Answer

Let's move on and figure out this problem

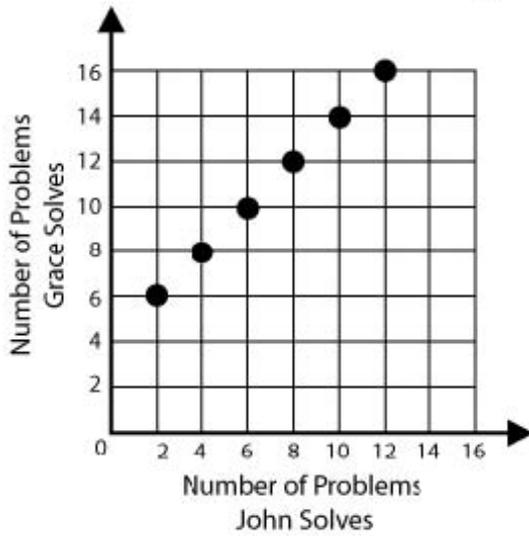
Let's look at the solution for a problem similar to the one above:

Each day, Grace solves 2 more problems of her book than John solves of his book. Which of the following graphs correctly represents the relationship between the number of problems Grace solves each day and the number of problems John solves each day?

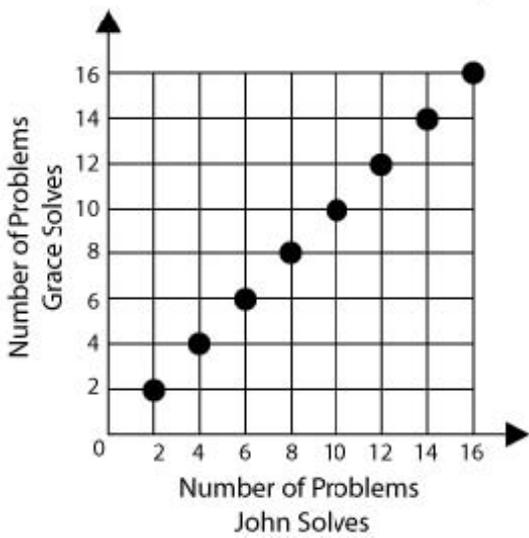
A. Problems Solved Each Day



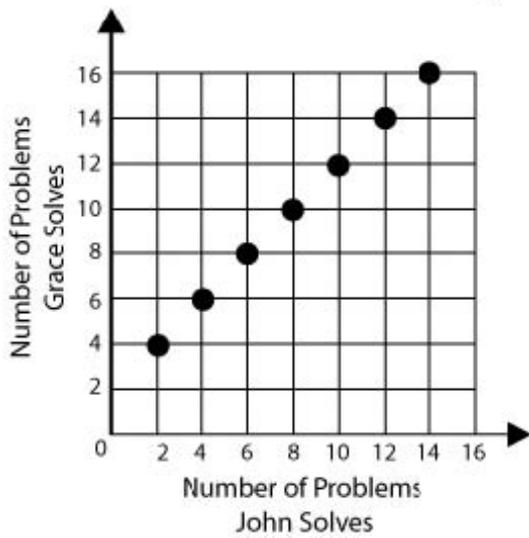
C. Problems Solved Each Day



B. Problems Solved Each Day



D. Problems Solved Each Day



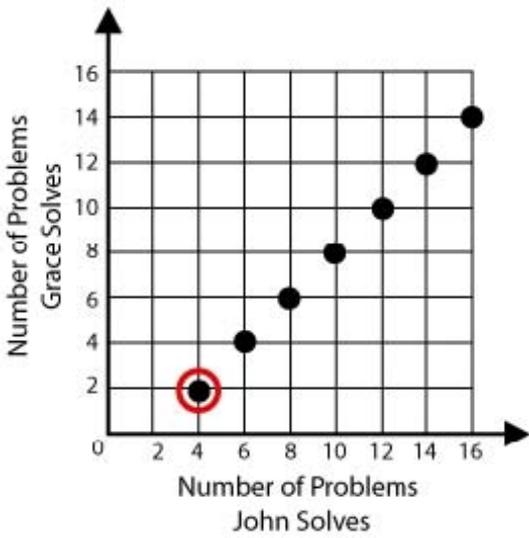
Solution:

To find the right graph that correctly represents the relationship between the number of problems Grace solves each day and the number of problems John solves each day we check one graph at a time.

We first check for graph A.

Look at the circled dot in graph A which is shown below.

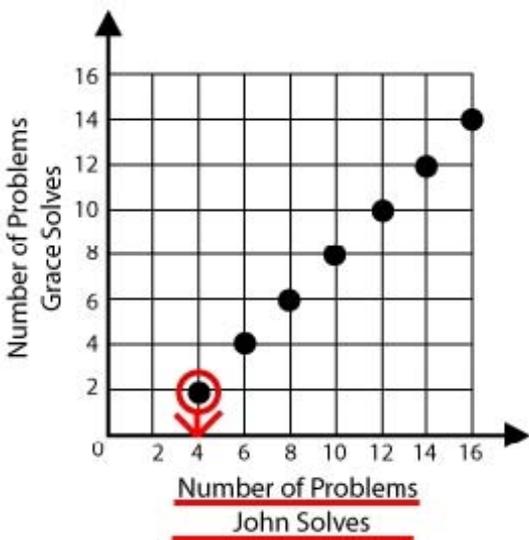
A. Problems Solved Each Day



We can find the number of problems solved by John represented by this dot. To do so we have to look at the axis that is labeled "Number of Problems John Solves".

If we draw a straight line starting at the dot and all the way to the bottom, it will give us the number of problems solved by John.

A. Problems Solved Each Day



The red line intersects the bottom number line at 4, which must be the number of problems solved by John.

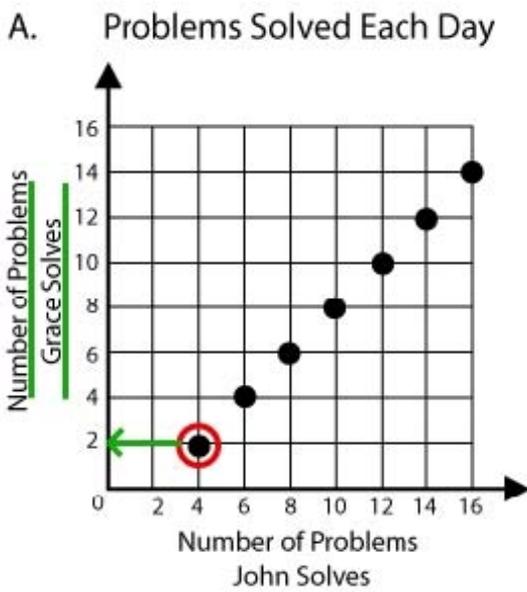
The circled dot tells us that John solved 4 problems.

Now let us try to find the number of problems solved by Grace.

We need to find the number of problems solved by Grace represented by the dot. So

we have to look at the axis that is labeled "Number of Problems Grace Solves".

If we draw a straight line starting at the dot and all the way across to the side, it will give us the number of problems solved by Grace.



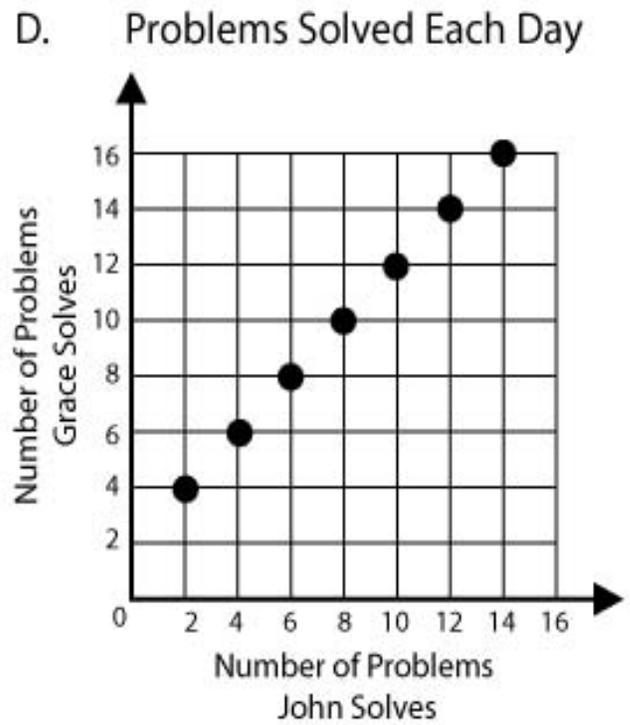
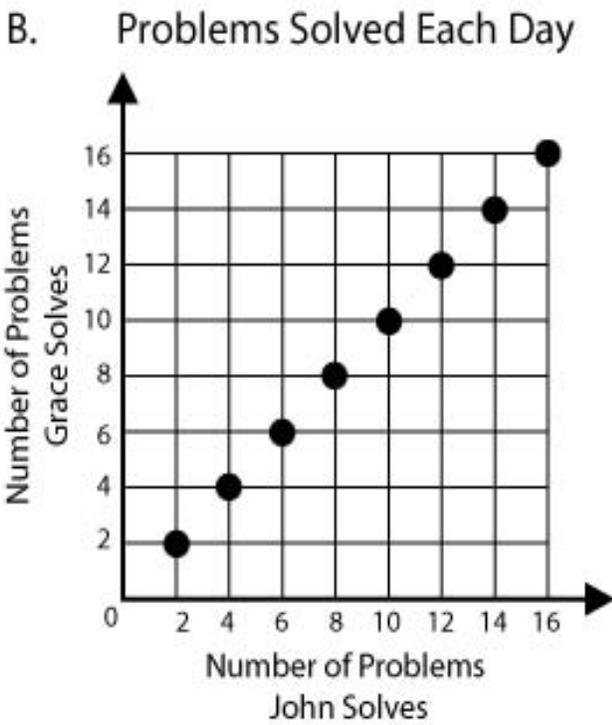
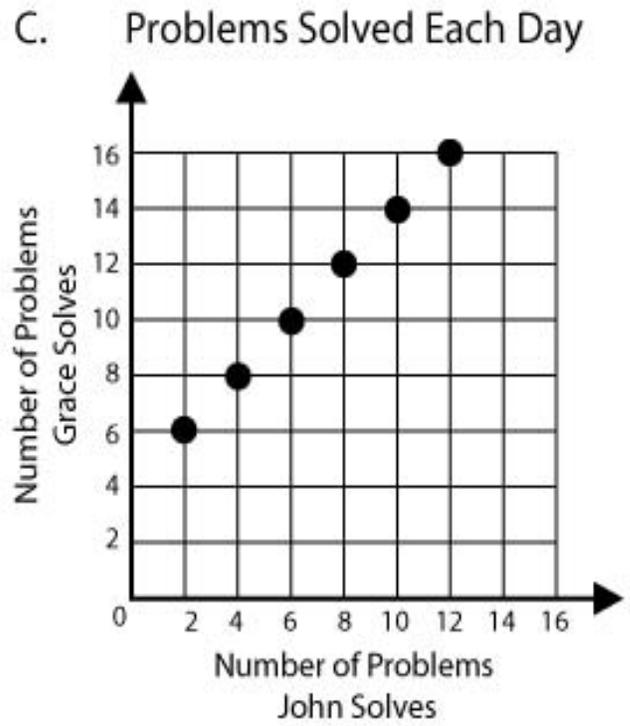
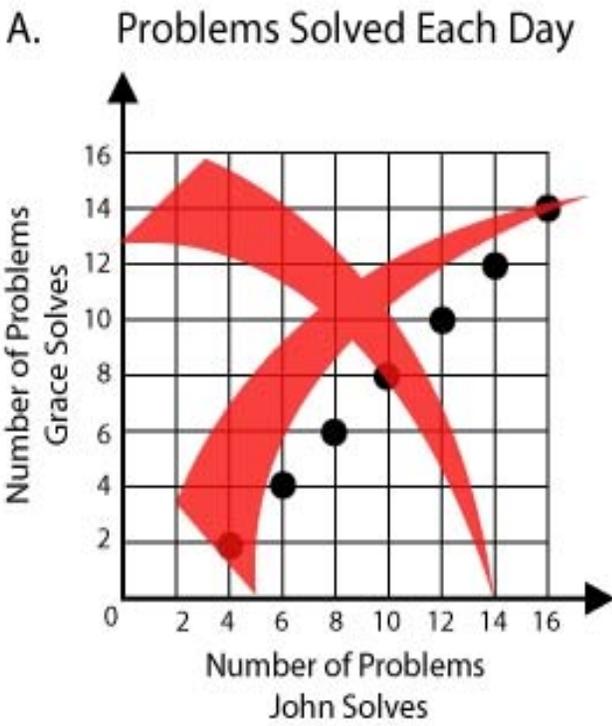
The green line intersects the side number line at 2, which must be the number of problems solved by Grace.

So from the lowest dot of option A we can see that when John solved 4 problems, Grace solved 2 problems.

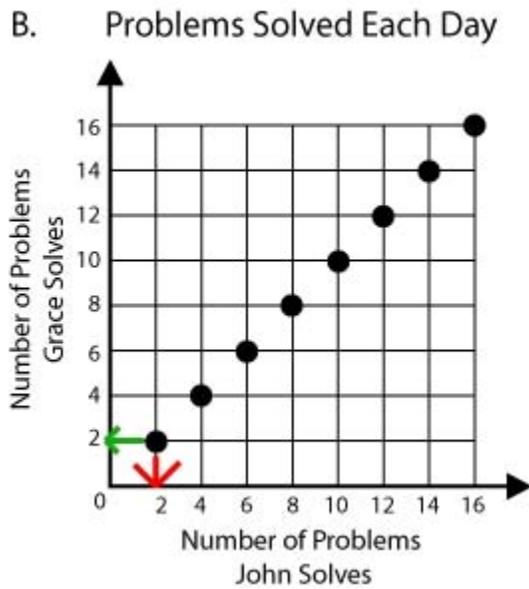
4-2 = 2

According to graph A, John solves 2 more problems than Grace does.

But the question says that each day Grace solves 2 problems more than John does, so option A is not the answer.



We first need to draw two lines from the lowest dots, one going to the bottom and the other to the side.



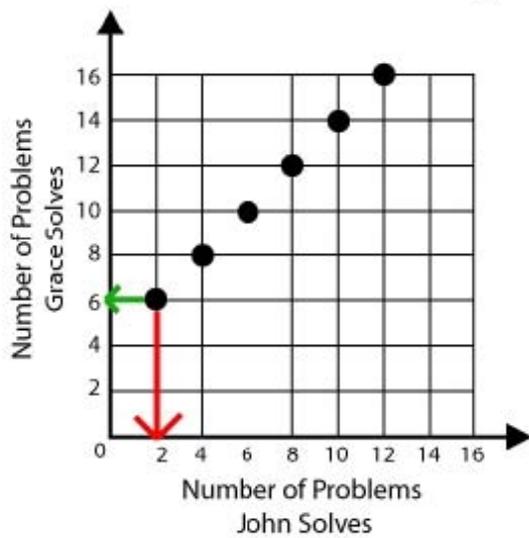
From the graph above we can see that both John and Grace solved 2 problems each.

Thus graph B does not represent the relation as well.

[Let us check option C.](#)

We again have to draw the two lines from the lowest dot.

C. Problems Solved Each Day



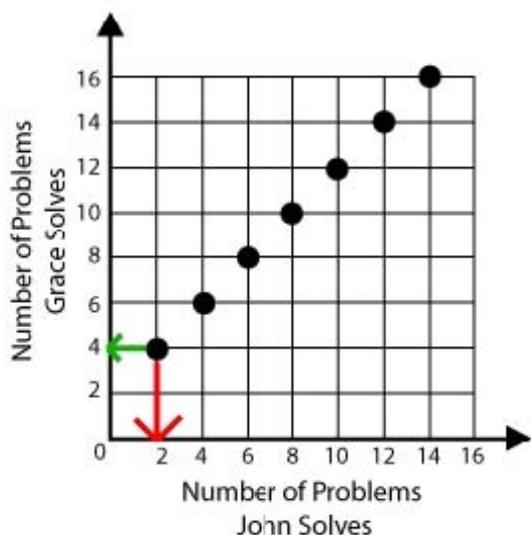
When we draw two lines from the dot, one going straight down and the other to the right, we see that Grace solves 6 problems when John solves 2 pages.

Thus graph C does not represent the relation as well.

Finally, let us check option D.

We again have to draw the two lines from the lowest dot.

D. Problems Solved Each Day



From the graph above we can see that Grace solves 4 problems when John solves 2 problems that is Grace solved 2 more problems of her book than John solved of his book.

So option D correctly represents the relationship between the number of problems Grace solves each day and the number of problems John solves each day.

[Comment on this question](#)

Select one:

- I have read the example and now I am ready to try again.

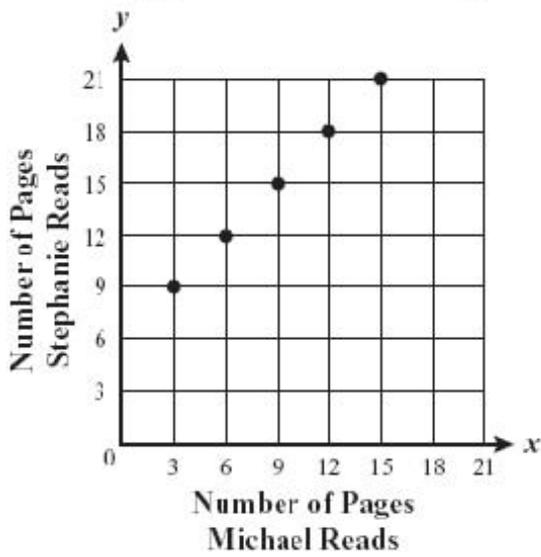
Submit Answer

Correct!

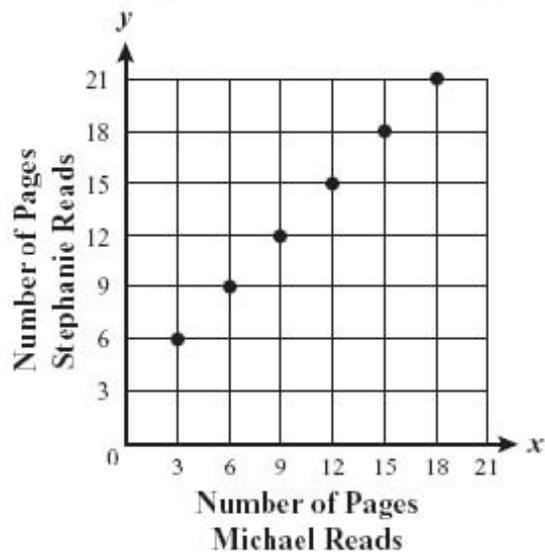
[Now try the original problem again. You may look back at the worked example if that helps you.](#)

Each night, Stephanie reads 3 more pages of her book than Michael reads of his book. Which of the following graphs correctly represents the relationship between the number of pages Stephanie reads each night and the number of pages Michael reads each night?

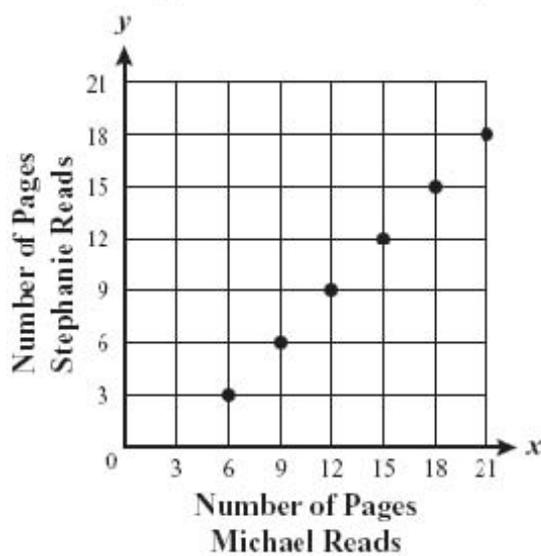
A. Pages Read Each Night



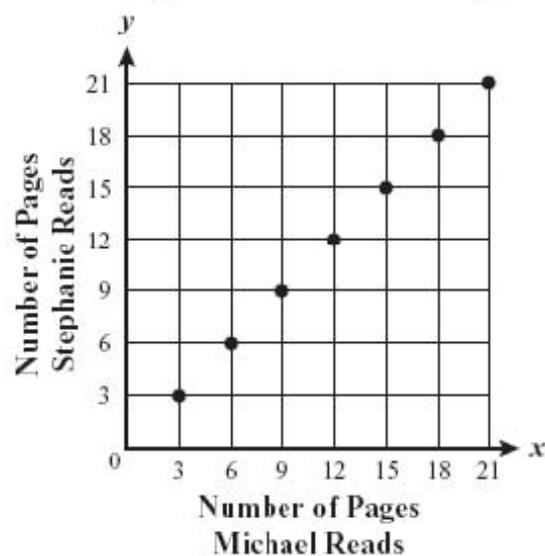
C. Pages Read Each Night



B. Pages Read Each Night



D. Pages Read Each Night



[Comment on this question](#)

Graph C correctly represents the relationship between the number of pages Stephanie reads each night and the number of pages Michael reads each night.

Select C.

[Comment on this hint](#)

Select one:

- A
- B



D Submit Answer Correct! You
are done with this problem!

[Comment on this problem](#)

Assistment

You are previewing content.

A comet passed by Earth in the year 1835. It passes by Earth every 60 years.

Based on this information, in which of the following years can the comet be expected to pass by Earth?

[Comment on this question](#)

Request Help

Select one: A. 2035

⌘

B. 2060

⌘

C. 2075

⌘

D. 2080

Submit Answer

Let's move on and figure out this problem

[Let's look at the solution for a problem similar to the one above:](#)

Year 2004 was a leap year. A leap year occurs every 4 years. Based on this information, which of the following years is a leap year?

A. 2007

B. 2011

C. 2014

D. 2016

Solution:

The question says that a leap year occurs every 4 years. The question also says that year 2004 was a leap year.

Now let us try to find the next year which is a leap year.

"A leap year occurs every 4 years", this statement means that once we have a leap year, it takes another 4 years for a leap year to occur.

Year 2004 was a leap year. So, if it takes 4 MORE years for leap year to occur again, then the next year it will occur is 4 added to 2004.

$$2004 + 4 = 2008.$$

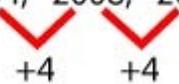
Thus the next leap year will occur in 2008.

Leap Years: 2004, 2008


Let us use this method of addition to answer the given question.

The next year which will be a leap year is, 4 added to 2008.

$$2008 + 4 = 2012$$

Leap Years: 2004, 2008, 2012


We do not have 2012 as an option so we will have to look at the next year that will be a leap year.

$$\text{Add 4 to 2012 } 2012 + 4 = 2016$$

Leap Years: 2004, 2008, 2012, 2016


We do have 2016 as an option. It is option D. This is the year which is a leap year.

[Comment on this question](#)

Select one:

⌘

I have read the example and now I am ready to try again.

Submit Answer

Correct!

Now try the original problem again. You may look back at the worked example if that helps you.

A comet passed by Earth in the year 1835. It passes by Earth every 60 years. Based on this information, in which of the following years can the comet be expected to pass by Earth?

[Comment on this question](#)

2075 is the year when the comet can be expected to pass by earth.

Select C.

[Comment on this hint](#)

Select one: A. 2035

⌘

B. 2060

⌘

C. 2075

⌘

D. 2080

Submit Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

Assistment #26276

You are previewing content.

Which of the following could be the rule used to create the number pattern shown below? 250

130, 70, 40, 25

[Comment on this question](#)

Request Help

Select one:

- A. Subtract 120.
- B. Subtract 10; then divide the result by 2.
- C. Divide by 2.
- D. Divide by 2; then add 5 to the result.

Submit Answer

Let's move on and figure out this problem

[Let's look at the solution for a problem similar to the one above:](#)

Which of the following could be the rule used to create the number pattern shown below? 216

56, 16, 6

- A. Subtract 160.
- B. Subtract 4; then divide the result by 4.
- C. Divide by 4; then add 2 to the result.
- D. Divide by 4.

Solution:

[Let us look at one rule at a time and try to find the rule that works.](#)

The first rule says, "**Subtract 160**". The first number in the sequence is 216.

According to the rule the next number in the sequence is $216 - 160 = 56$

So far "Subtract 160" works. So according to the "Subtract 160" rule we have,

$$\begin{array}{c} 216, 56 \\ \swarrow \searrow \\ (216-160) \end{array}$$

The third number in the sequence according to the rule of subtracting 160 is : 56

$$- 160 = -104$$

So from the rule of subtracting 160, -104 is the third number in the sequence.

$$\begin{array}{c} 216, 56, -104 \\ \swarrow \searrow \quad \swarrow \searrow \\ -160 \quad -160 \end{array}$$

But -104 is not the third term in our given sequence so rule A is not the correct rule.

Rule B says "Subtract 4; then divide the result by 4". According to this rule the 2nd term is:

$$\begin{array}{l} (216-4) /4 = 212 \\ /4 = 53 \end{array}$$

53 is not the second number in the given sequence. Thus option B is also not the right rule.

Rule C says to divide by 4, then add 2 to the result.

According to rule C, the second number in the sequence should be:

$$(216/4) + 2 = 54 + 2 = 56$$

This is the second option in the sequence.

216, **56**, 16, 6

The third term according to this rule is :

$$(56/4) + 2 = 14 + 2 = 16$$

This is the third term in the sequence.

216, 56, **16**, 6

So far rule C seems correct. Let us check rule D as well to make sure rule C is correct.

Rule D says "Divide by 4". According to

this rule the second term is:

= 54 But 54 is not the second number in our sequence.

Thus rule C is the correct rule used to create the given number pattern.

[Comment on this question](#)

Select one:

- ⌘ I have read the example and now I am ready to try again.

Submit Answer

Correct!

Now try the original problem again. You may look back at the worked example if that helps you.

Which of the following could be the rule used to create the number pattern shown below?

250, 130, 70, 40, 25

[Comment on this question](#)

The rule used to create the given number pattern is "Divide by 2; then add 5 to the result".

Select option D.

[Comment on this hint](#)

Select one:

- ⌘ A. Subtract 120.
- ⌘ B. Subtract 10; then divide the result by 2.
- ⌘ C. Divide by 2.
- ⌘ D. Divide by 2; then add 5 to the result.

Submit Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

You are previewing content.

Karen purchased a new camera for \$60. She also purchased 5 rolls of film.

The total cost of the camera and the rolls of film was \$90. Karen's purchase is represented by the equation below. In the equation, f stands for the cost of each roll of film.

$$5f + 60 = 90$$

What was the cost of each roll of film that Karen purchased?

[Comment on this question](#)

Request Help

Type your answer below (mathematical expression):

*

Submit Answer

Let's move on and figure out this problem

[Let's look at the solution for a problem similar to the one above:](#)

Simond purchased a new play-station for \$100. He also purchased 4 game CDs.

The total cost of the game and the CDs was \$200. Simond's purchase is represented by the equation below. In the equation, f stands for the cost of each CD.

$$4f + 100 = 200$$

What was the cost of each CD that Simond purchased?

Solution:

Let us first try to find out the amount Simond spends to buy CDs.

Simond spends \$100 out of \$200 on the play-station and the rest on CDs. So

to find the amount he spends on CDs we need to subtract 100 from 200.

$$200-100 = 100.$$

So he spends \$100 on cds.

Now, we know that Simond spends \$100 on CDs and that he buys a total of 4 CDs.

Let us try to find the cost of each CD.

Simond bought 4 CDs for \$100. So if f represents the cost of each CD,

we add f 4 times to get \$100.

$$f + f + f + f = 100$$

We need to find a number that when added 4 times to itself gives us 100. This number can be found by dividing 100 by 4.

$$100 \div 4 = 25.$$

So, \$25 must be the cost of each CD.

[Comment on this question](#)

Select one:

⌘  I have read the example and now I am ready to try again.

Submit Answer

Correct!

Karen purchased a new camera for \$60. She also purchased 5 rolls of film.

The total cost of the camera and the rolls of film was \$90. Karen's purchase is represented by the equation below. In the equation, f stands for the cost of each roll of film.

$$5f + 60 = 90$$

What was the cost of each roll of film that Karen purchased?

[Comment on this question](#)

The cost of each roll of film is \$6.

Type in 6.

[Comment on this hint](#)

Type your answer below (mathematical expression):

- 6

Submit Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

You are previewing content.

What is the value of the expression below when $\Delta = 3$?

$$4(\Delta) - 5$$

[Comment on this question](#)

Request Help

Type your answer below (mathematical expression):

•

Submit Answer

Let's move on and figure out this problem

Let's look at the solution for a problem similar to the one above:

What is the value of the expression below when $\Delta = 3$?

$$3(\Delta) + 10$$

Solution

$3(\Delta)$ means 3 times Δ . Also notice that $\Delta = 3$. So,

we need to substitute $\Delta = 3$ in the equation.

So,

$$3(\Delta) + 10 = 3 *$$

$$\Delta + 10 = 3 * 3 +$$

$$10$$

Now, we follow the 'PE (MD) (AS)' rule.

Parenthesis, Exponents, Multiplication and Division (from left to right), Addition and Subtraction (from left to right).

$$3 * 3 + 10$$

has a multiplication and an addition. Multiplication

comes before addition in PE (MD)(AS) So do

multiplication first and then addition.

This would give you

$$\begin{aligned} 3 * 3 + 10 &= 9 \\ + 10 &= 19 \end{aligned}$$

Hence, when $\Delta = 3$, the value of the given expression is 19.

[Comment on this question](#)

Select one:

- I have read the example and now I am ready to try again.

Submit Answer

Correct!

Now try the original problem again. You may look back at the worked example if that helps you.

What is the value of the expression below when $\Delta = 3$?

$$4(\Delta) - 5$$

[Comment on this question](#)

The value of the expression when $\Delta = 3$ is 7.

Type in 7.

[Comment on this hint](#)

Type your answer below (mathematical expression):

⌘7

Submit Answer

Correct! You are done with this problem!

[Comment on this problem.](#)

Assistment

You are previewing content.

If $\Delta = 3$, what is the value of the expression below? (6

$$+ \Delta) \div 2$$

[Comment on this question](#)

Request Help

Type your answer below (mathematical expression):

•

Submit Answer

Let's move on and figure out this problem

Let's look at the solution for a problem similar to the one above:

What is the value of the expression below when $\Delta = 5$?

$$(3 * \Delta) / 10$$

Solution

Notice that $\Delta = 5$. So, we need to substitute $\Delta = 5$

in the equation.

So,

$$(3 * \Delta) / 10 = (3 * 5) / 10$$

Now, we follow the 'PE (MD) (AS)' rule. **P**arenthesis, **E**xponents, **M**ultiplication and **D**ivision (from left to right), **A**ddition and **S**ubtraction (from

left to right).

$$(3 * 5) / 10$$

has a **multiplication** inside a **Parenthesis** and a **Division**. **Parenthesis** comes before Division in **PE (MD)(AS)** So do **multiplication** inside the **Parenthesis** first and then **division**.

This would give you

$$(3 * 5) / 10 =$$

$$15 / 10 = 1.5$$

Hence, when $\Delta = 5$, the value of the given expression is 1.5.

[Comment on this question](#)

Select one:

- I have read the example and now I am ready to try again.

Submit Answer

Correct!

Now try the original problem again. You may look back at the worked example if that helps you.

If $\Delta = 3$, what is the value of the expression below? (6

$$+ \Delta) \div 2$$

[Comment on this question](#)

The value of the given expression when $\Delta = 3$ is 4.5.

Type in 4.5.

[Comment on this hint](#)

Type your answer below (mathematical expression):

⌘4.5

Submit Answer

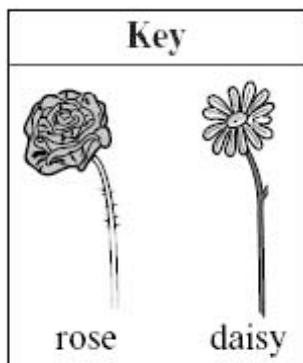
Correct! You are done with this problem!

[Comment on this problem.](#)

Assistment

You are previewing content.

A flower shop sells the two flower arrangements shown below.



Each rose has the same price, and each daisy has the same price. What is the price of one rose?

[Comment on this question](#)

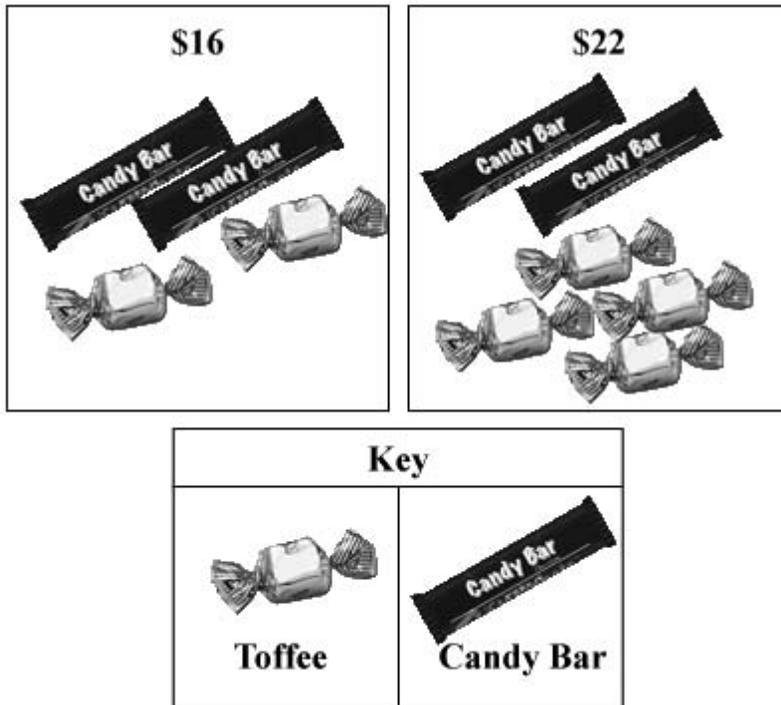
Request Help

Type your answer below (mathematical expression):

Submit Answer Let's move on and figure

out this problem

Let's look at the solution for a problem similar to the one above:



Each **candy bar** has the same price, and each **toffee** has the same price. What is the price of **one toffee**?

Solution

The **second arrangement** has a higher cost than the **first arrangement**, so there is some difference between the two arrangements.

This is how a **toffee** looks like,



Toffee

This is how a candy bar looks like,



Candy Bar

Let us count the number of both candy bars and toffees in both arrangements.

The first arrangement has 2 candy bars and 2 toffees while the second arrangement has 2 candy bars and 4 toffees.

Both arrangements have the same number of candy bars. The second arrangement has 2 more toffees than the first arrangement. Also, the price of the second arrangement is more than the price of the first arrangement.

So the price of the two toffees equal: Price of second arrangement - Price of first arrangement

The price of the two toffees is

$$22 - 16 = 6$$

Thus we know that 2 toffees cost \$6.

The price of one toffee is \$6 divided by 2.

=3

Hence the price of one toffee is \$2.

[Comment on this question](#)

Select one:

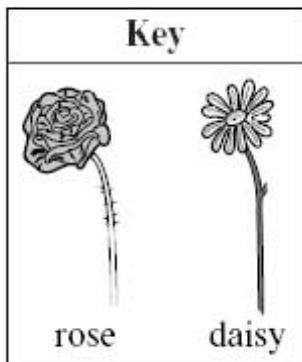
- I have read the example and now I am ready to try again.

Submit Answer

Correct!

[Now try the original problem again. You may look back at the worked example if that helps you.](#)

A flower shop sells the two flower arrangements shown below.



Each rose has the same price, and each daisy has the same price. What is the price of one rose?

[Comment on this question](#)

The price of one rose is \$6.

Type in 6.

[Comment on this hint](#)

Type your answer below (mathematical expression):

⌘6

Submit Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

You are previewing content.

Which of the following is a possible rule for the input-output table shown below?

Input 1 2 3 4 5
Output 3 5 7 9 11

[Comment on this question](#)

[Request Help](#)

Select one:

- A. The output is 2 plus the input.
- B. The output is 3 times the input.
- C. The output is 0.5 less than half the input.
- D. The output is 1 more than twice the input.

[Submit Answer](#)

Let's move on and figure out this problem

Let's look at the solution for a problem similar to the one above:

Which of the following is a possible rule for the input-output table shown below?

Input 2 4 6 8 10
Output 3 5 7 9 11

- A. The output is 2 plus the input.
- B. The output is 2 times the input.
- C. The output is 1 less than twice the input.
- D. The output is 1 more than the input.

Solution

[Let us look at one rule at a time and try to find the rule that works.](#)

The first rule says, "Output is 2 plus the input". The input of the first column is 2.

According to this rule the output is given by, $2+2=4$ But in the table 4 is not the output of the first input, so rule A is not the correct rule.

Let us look at the second rule. Rule B says that the output is 2 times the input.

The first input is 2. According to this rule the output is, $2 * 3 = 6$ This is not the output in the table for the first input. So, rule B is not correct.

Rule C says that the output is 1 less than twice the input; that is,

$$\text{output} = (\text{Input} * 2) - 1.$$

The first input is 2 so, $\text{Output} = 2 * 2 - 1$ $\text{Output} = 4$

$- 1$ $\text{Output} = 3$ This is the output in the table for the

first input.

Let us check for the second input which is 4. The

output for the 2nd input according to this rule is

$4 \cdot 2 - 1 = 8 - 1 = 7$ According to rule C, the output for the second input is 7. But this is not the value in the table. So, rule C is not correct.

So far we found that options A, B and C are not the correct rule. Let us check if the last rule, rule D, is correct.

Rule D says that **the output is 1 more than input.**

The first input is 2. So the output is $2 + 1 = 3$ This is the output in the table for the first input.

Check for the second input to see if the rule is correct.

The second input is 4. $4 + 1 = 5$. This is also the output in the table for the second input.

So, rule D is the rule for the input-output table.

[Comment on this question.](#)

Select one:

⌘

I have read the example and now I am ready to try again. Submit

Answer

Correct!

Now try the original problem again. You may look back at the [worked example](#) if that helps you.

Which of the following is a possible rule for the input-output table shown below?

Input	1	2	3	4	5	Output
	3	5	7	9	11	

[Comment on this question](#)

Rule D is the rule for the input-output table shown above.

Thus select option D.

[Comment on this hint](#)

- Select one:
- A. The output is 2 plus the input.
 - B. The output is 3 times the input.
 - C. The output is 0.5 less than half the input.
 - D. The output is 1 more than twice the input.

Submit Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

You are previewing content.

In which of the following tables does each pair of numbers (x, y) satisfy the equation shown below? $x + 6 = y$

Table A

x	y
1	7
2	9
3	9

Table C

x	y
1	7
2	8
3	9

Table B

x	y
1	6
2	8
3	10

Table D

x	y
1	5
2	4
3	3

[Comment on this question](#)

Request Help

Select one:

- A. Table A
- B. Table B
- C. Table C
- D. Table D

Submit Answer

Let's move on and figure out this problem

[Let's look at the solution for a problem similar to the one above:](#)

In which of the following tables does each pair of numbers (x, y) satisfy the equation shown below? $x * 2 = y$

$x * 2 = y$

Table A

x	y
1	3
2	6
3	9

Table C

x	y
1	2
2	3
3	4

Table B

x	y
1	2
2	4
3	6

Table D

x	y
1	5
2	4
3	3

Solution:

All the tables have 1, 2 and 3 for x. So we need to check for

$x=1$, $x=2$ and $x=3$, in the equation $x * 2 = y$

Let us start with $x = 1$. Putting $x = 1$

in the equation we get, $1 * 2 = 2$

So, when $x = 1$, $y = 2$. Tables B and C have this x and y value, while tables A and D do not. So tables A and D do not satisfy the equation.

x	y
1	3
2	6
3	9

x	y
1	2
2	3
3	4

x	y
1	2
2	4
3	6

x	y
1	5
2	4
3	3

One of tables B and C satisfies the equation.

Let us find the value of y when x=2.

Putting x=2 in the equation we get, 2

* $2 = 4$ So, when x=2, y=4.

We crossed out A and D. Out of the remaining two options, B and C, only option B has the right value of y for x=2.

x	y
1	3
2	6
3	9

x	y
1	2
2	3
3	4

x	y
1	2
2	4
3	6

x	y
1	5
2	4
3	3

Thus, table B satisfies the given equation.

[Comment on this question](#)

Select one:

- I have read the example and now I am ready to try again.

Submit Answer

Correct!

[Now try the original problem again. You may look back at the worked example if that helps you.](#)

In which of the following tables does each pair of numbers (x, y) satisfy the equation shown below? $x + 6 = y$

Table A

x	y
1	7
2	9
3	9

Table C

x	y
1	7
2	8
3	9

Table B

x	y
1	6
2	8
3	10

Table D

x	y
1	5
2	4
3	3

[Comment on this question](#)

The pair of numbers (x, y) in table C satisfy the given equation.

Select option C.

[Comment on this hint](#)

- Select one:
- A. Table A
 - B. Table B
 - C. Table C
 - D. Table D

Submit Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

You are previewing content.

What is the solution to the equation shown below?

$$2x - 4 = 12$$

[Comment on this question](#)

Request Help

- Select one:
- A. 4
 - B. 8
 - C. 12
 - D. 16

Submit Answer

Let's move on and figure out this problem

[Let's look at the solution for a problem similar to the one above:](#)

What is the solution to the equation shown below? 3

$$+ 4x = 23$$

- A. 1
- B. 3
- C. 5
- D. 7

Solution:

[Let us plug in one option at a time in the given equation and try to find the solution.](#)

Option A has $x = 1$.

The given equation is

$$3 + 4x = 23$$

Replacing the x in the left side of the above equation with 1 we get,

$$\begin{aligned} 3 + 4 * 1 &= 3 + \\ 4 &= 7 \end{aligned}$$

Thus when $x = 1$, the left side of the equation is equal to 7 which is not equal to 23, so $x = 1$ is not the solution to the equation.

Let us now check for $x = 3$.

Replacing the x in the left side of the given equation with 3 we get,

$$\begin{aligned} 3 + 4 * 3 &= 3 + 12 \\ &= 15 \end{aligned}$$

Thus when $x = 3$, the left side of the equation is equal to 15 which is not equal to 23, so $x = 3$ is not the solution to the equation.

Next we check for $x = 5$

When we put $x = 5$ on the left side we get,

$$\begin{aligned} 3 + 4 * 5 &= 3 + 20 \\ &= 23 \end{aligned}$$

Thus when $x = 5$, the left side of the equation is equal to 23 which is the number on the right side of the equation. So, $x = 5$ is a solution for the given equation.

We need to check all the options so check for $x = 7$.

Replacing the x in the left side of the given equation with 7 we get,

$$3 + 4 * 7 = 3 + 28 \\ = 31$$

When $x = 7$, the left side of the equation is equal to 31 which is not equal to 23, so $x=7$ is not the solution to the equation.

Hence the solution to the given equation is option C where $x = 5$.

[Comment on this question](#)

Select one:

- I have read the example and now I am ready to try again.

Submit Answer

Correct!

Now try the original problem again. You may look back at the worked example if that helps you.

What is the solution to the equation shown below?

$$2x - 4 = 12$$

[Comment on this question](#)

The solution to the given equation is $x=8$.

Select option B.

[Comment on this hint](#)

- Select one:
- A. 4
 - B. 8
 - C. 12
 - D. 16

Submit Answer

Correct! You are done with this problem!

[Comment on this problem.](#)

Assistment

You are previewing content.

If $h - 6 = 10$, which of the following is true?

[Comment on this question](#)

Request Help

Select one:

$h = 10 + 6$

$h = 10 - 6$

$h = 10 * 6$

$h = 10 \div 6$

Submit Answer

Let's move on and figure out this problem

[Let's look at the solution for a problem similar to the one above:](#)

If $y + 3 = 5$, which of the following is true?

A. $y = 5 + 3$

B. $y = 5 - 3$ (Correct)

C. $y = 5 * 3$

D. $y = 5 \div 3$

Solution:

We can use our understanding of fact families to solve this problem.

We know from fact families that when

$8 - 6 = 2$, The following are also true:

$$8 - 2 = 6$$

$$6 + 2 = 8$$

The given equation is

$$y + 3 = 5$$

Thus from fact families,

$$y = 5 - 3 \text{ is also true.}$$

So option B is true.

[Comment on this question](#)

Select one:

⌘

I have read the example and now I am ready to try again.

Submit Answer

Correct!

[Now try the original problem again. You may look back at the worked example if that helps you.](#)

If $h - 6 = 10$, which of the following is true?

[Comment on this question](#)

From our knowledge of fact families we can see option A is also true.

Select option A.

[Comment on this hint](#)

Select one:

⌘

⌘

A. $h = 10 + 6$

B. $h = 10 - 6$

⌘

⌘ C. $h = 10 * 6$

D. $h = 10 \div 6$ Submit

Answer

Correct! You are done with this problem!

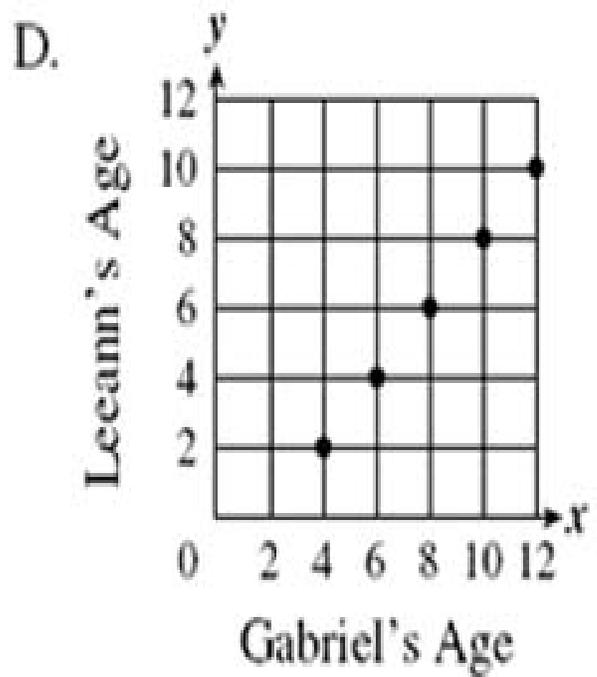
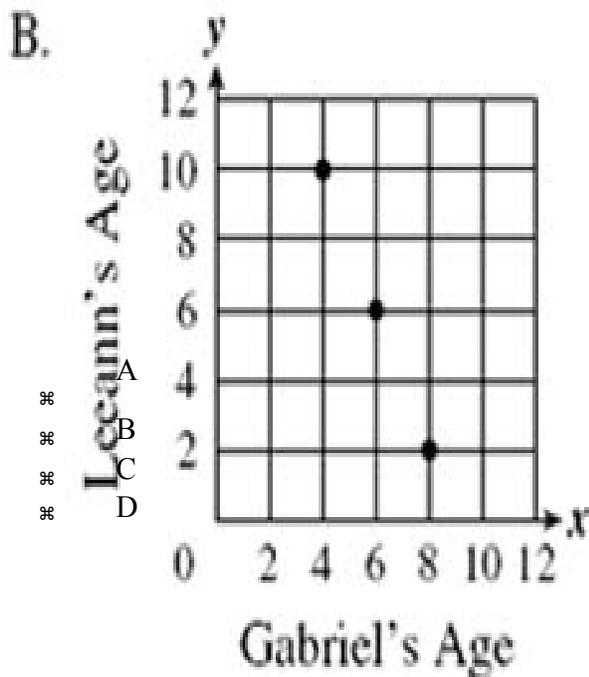
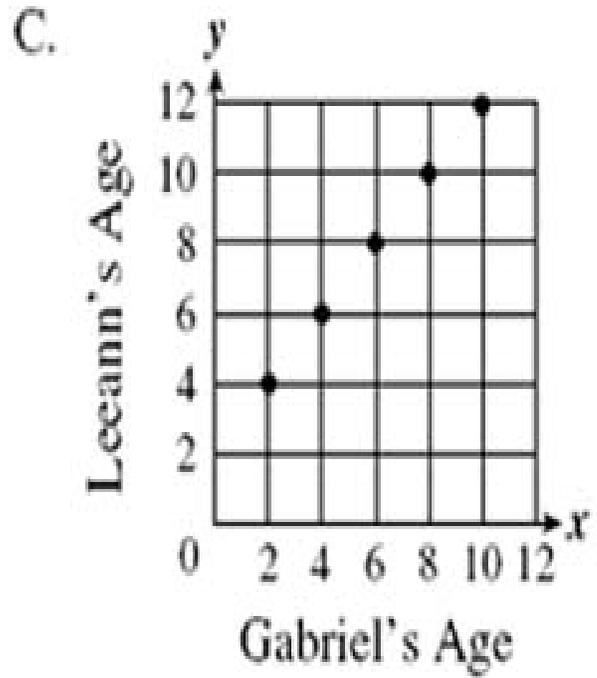
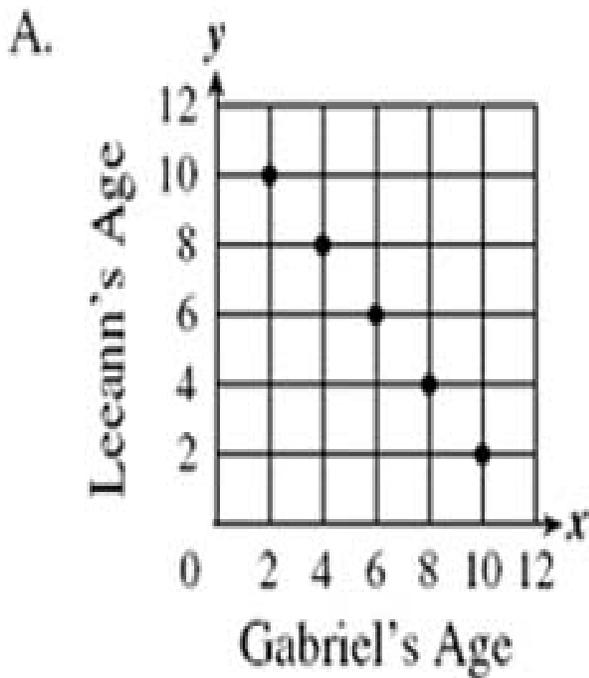
[Comment on this problem](#)

Assistment

You are previewing content.

Gabriel is 2 years older than his sister, Leeann.

Which of the following graphs correctly represents the relationship between Gabriel's age and Leeann's age, in years?



⌋
A
B
C
D

Submit Answer

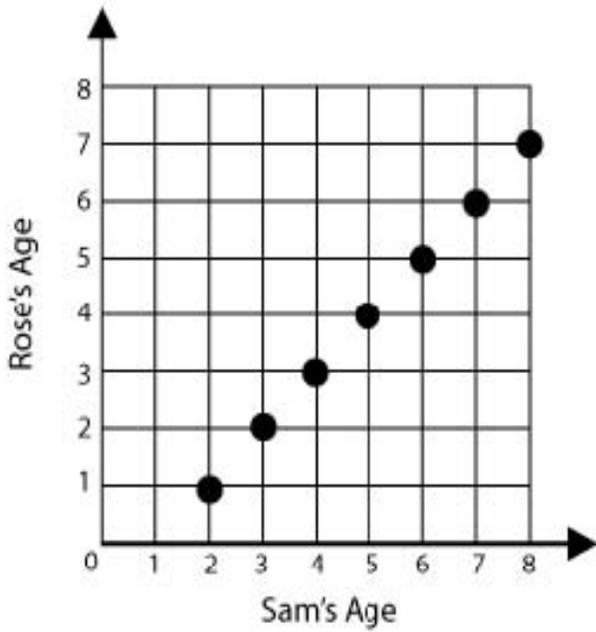
Let's move on and figure out this problem

Let's look at the solution for a problem similar to the one above:

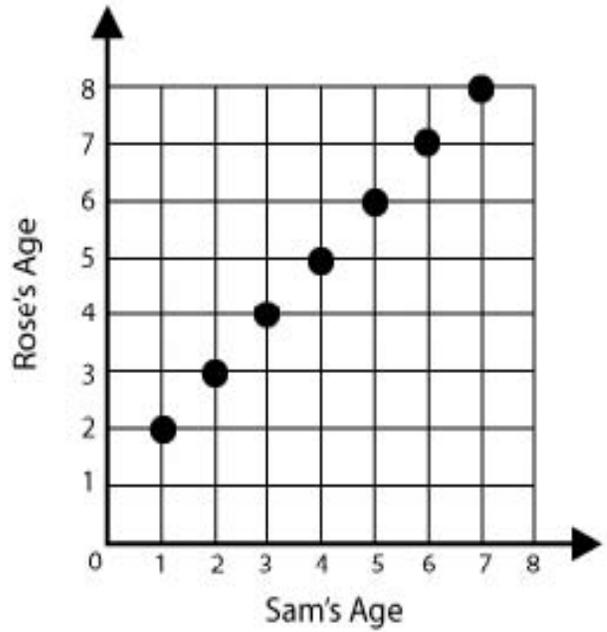
Rose is 3 years older than Sam.

Which of the following graphs correctly represents the relationship between Rose's age and Sam's age, in years?

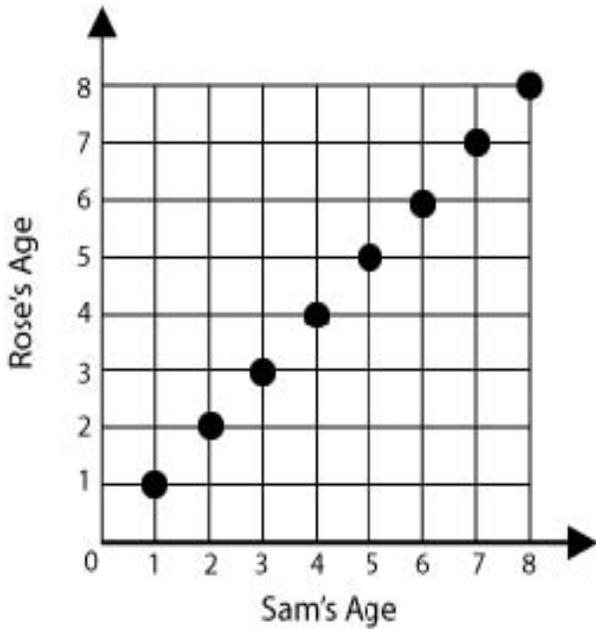
A.



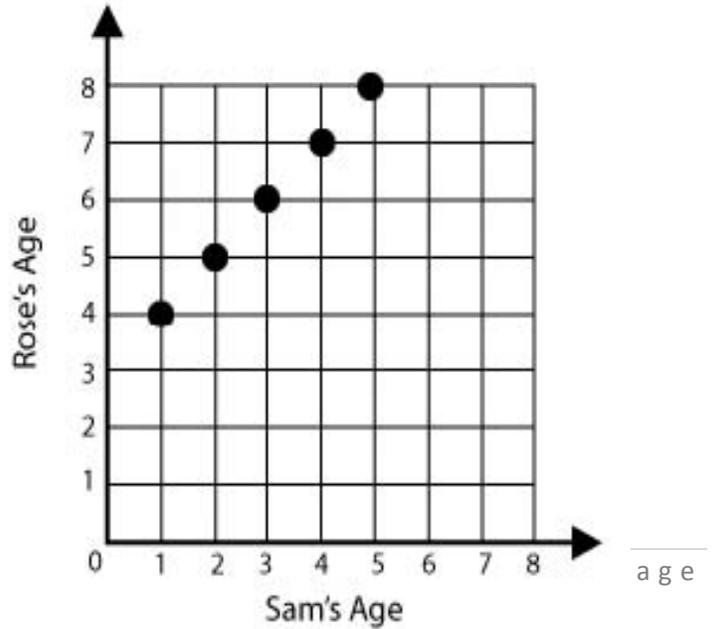
C.



B.



D.



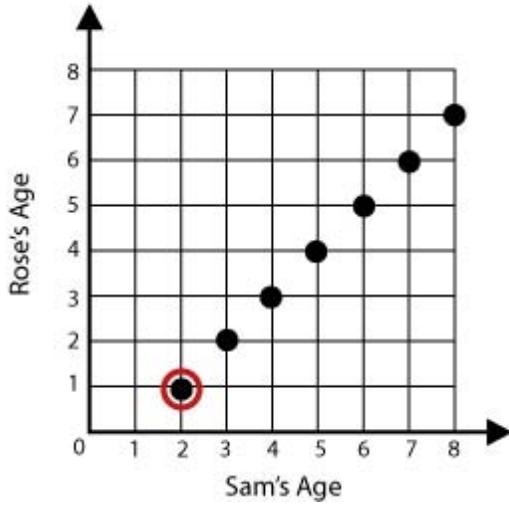
age

To find the right graph that correctly represents the relationship between Rose's age and Sam's age we check one graph at a time.

We first check for graph A. Look at the circled dot in graph

A which is shown below.

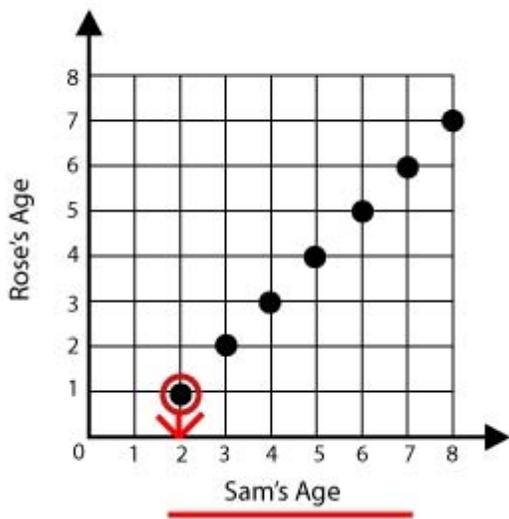
A.



We can find Sam's age represented by this dot.

To do so we have to look at the axis that is labeled "Sam's Age". If we draw a straight line starting at the dot and all the way to the bottom, it will give us Sam's age.

A.

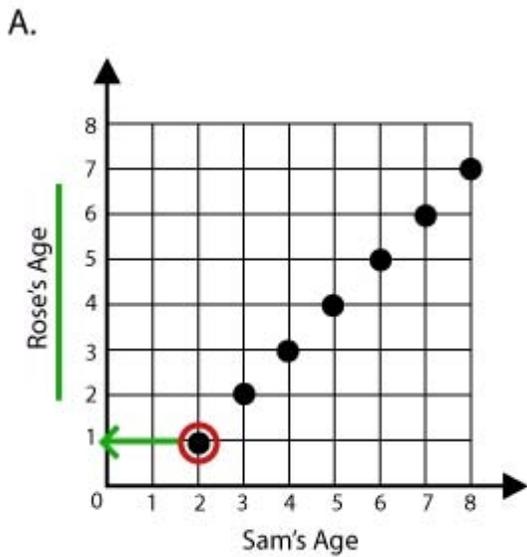


The red line intersects the bottom number line at 2, which must be Sam's age.

The circled dot tells us that Sam's age is 2. Now let us try to find the corresponding age of Rose.

We need to find Rose's age represented by the dot. So we have to look at the axis that is labeled "Rose's Age".

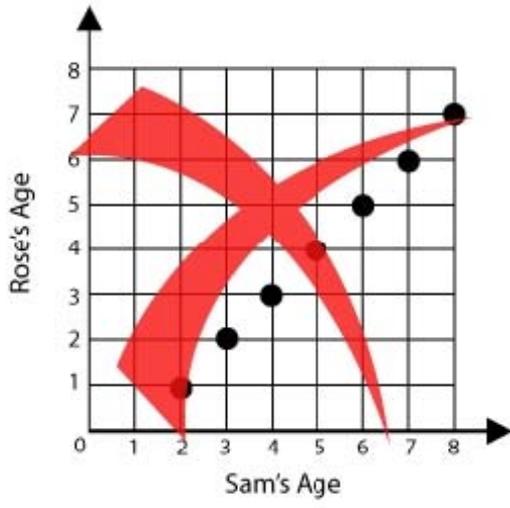
If we draw a straight line starting at the dot and all the way across to the side, it will give us Rose's age.



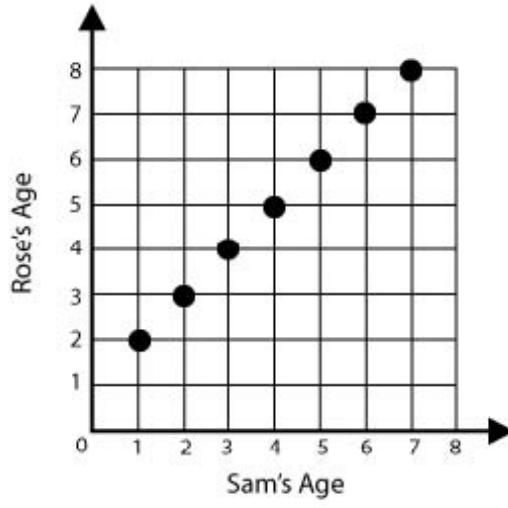
The green line intersects the side number line at 1, which must be Rose's age. So from the lowest dot of option A we can see that when Rose is 1 year old, Sam is 2 years older.

According to graph A, Sam is older than rose. But the question says that Rose is 3 years older than Sam, so option A is not the answer.

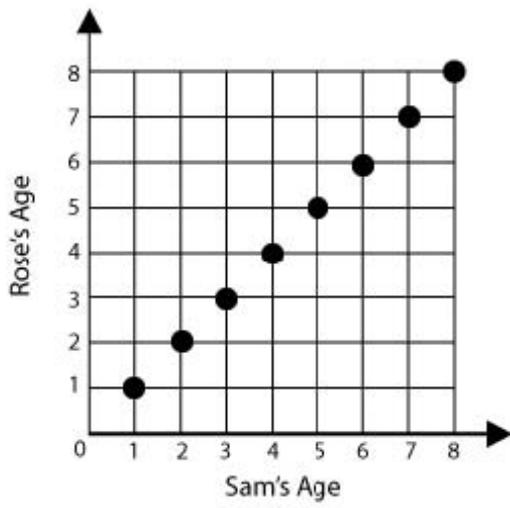
A.



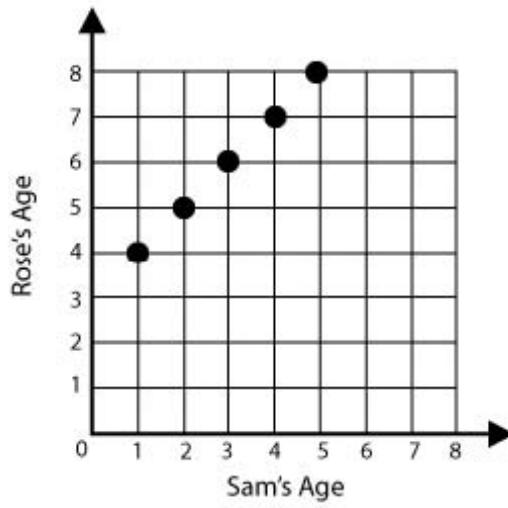
C.



B.

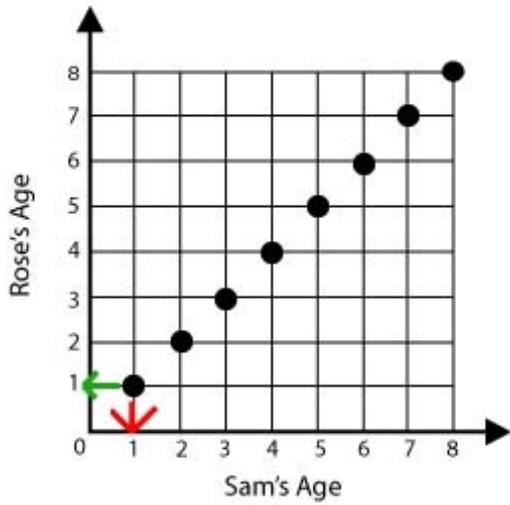


D.



We now look at graph B. We first need to draw two lines from the lowest dots, one going to the bottom and the other to the side.

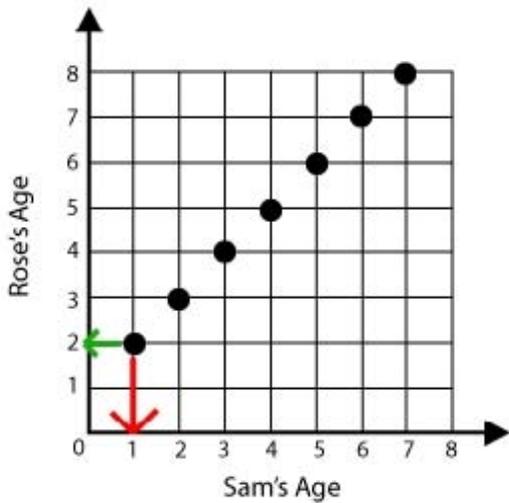
B.



From the graph above we can see that both Sam and Rose have the same age. Thus graph B does not represent the relation as well.

Let us check option C. We again have to draw the two lines from the lowest dot.

C.



When we draw two lines from the dot, one going straight down and the other to the right, we see that Rose is 2 years old when Sam is 1 year old.

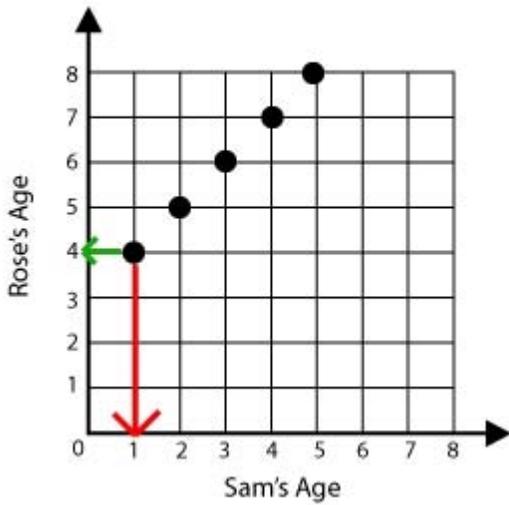
The difference in their age is,

$2 - 1 = 1$ year

So according to the graph above, Rose is 1 year older than Sam, but the relation of the question says that Rose is 3 years older than Sam. Thus graph C does not represent the relation as well.

Finally, let us check option D. We again have to draw the two lines from the lowest dot.

D.



From the graph above we can see that Rose is 4 years old when Sam is 1 year old.

The difference in their age is, $4 - 1 = 3$ years According to the graph above Rose is 3 years older than Sam.

So option D correctly represents the relationship between Rose's and Sam age.

[Comment on this question](#)

Select one:

- I have read the example and now I am ready to try again. Submit

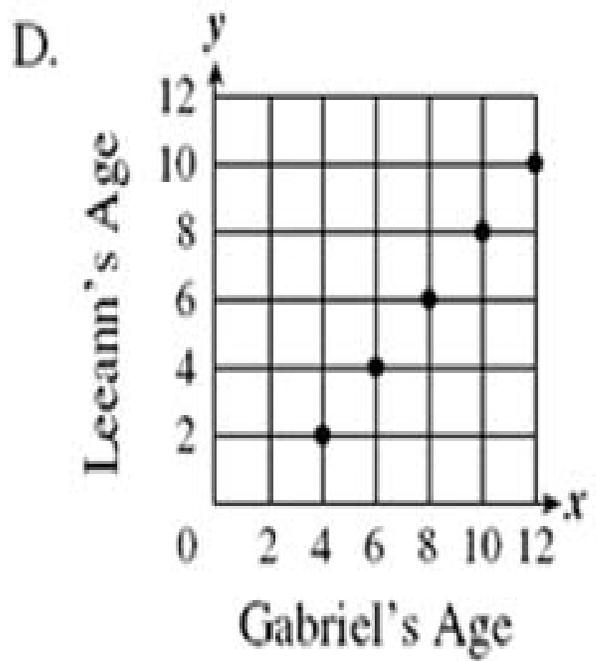
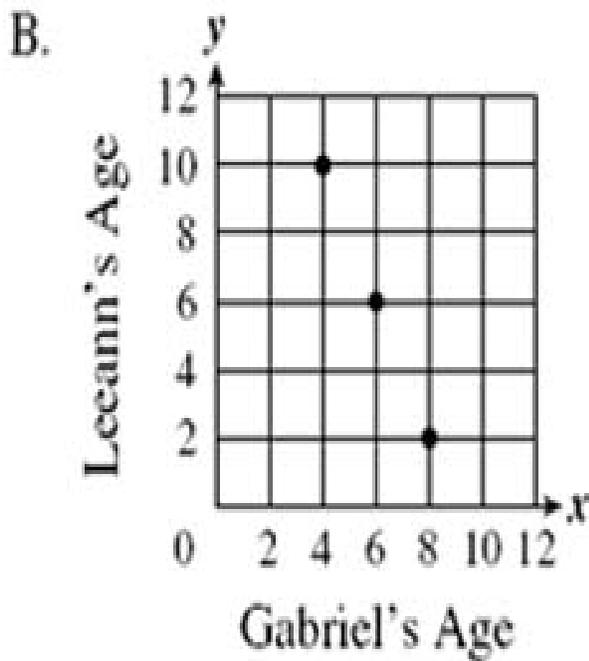
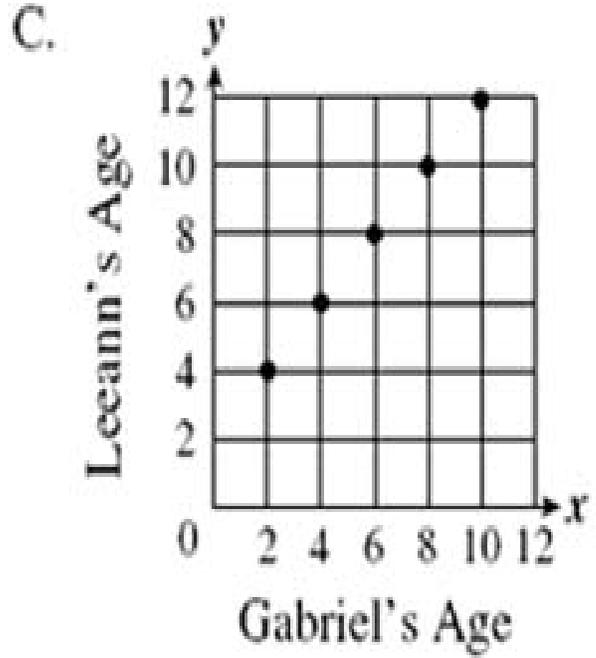
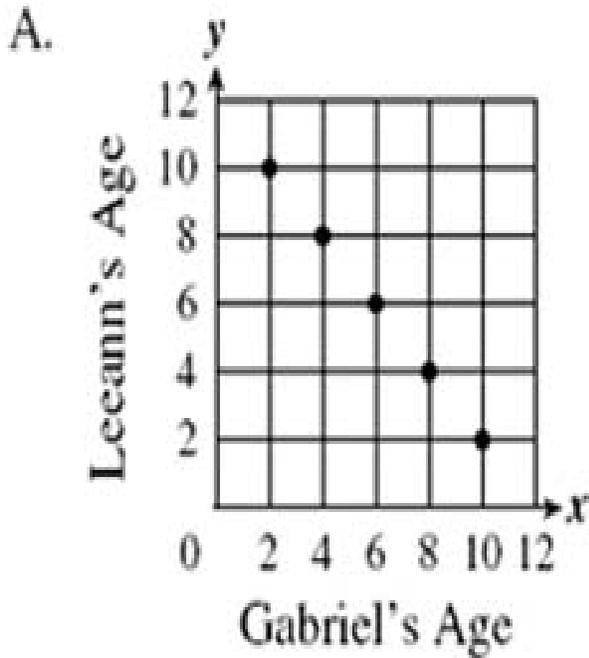
Answer

Correct!

Now try the original problem again. You may look back at the worked example if that helps you.

Gabriel is 2 years older than his sister, Leeann.

Which of the following graphs correctly represents the relationship between Gabriel's age and Leeann's age, in years?



- ⌘ A
- ⌘ B
- ⌘ C
- ⌘ D

Submit Answer

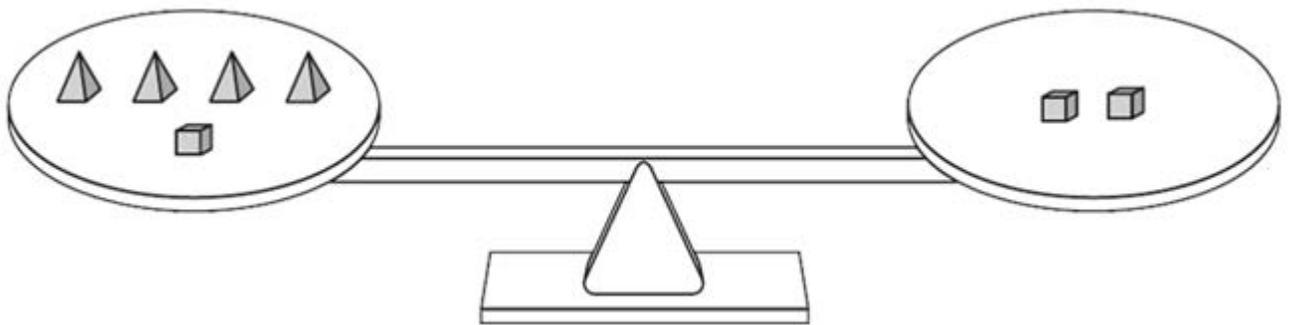
Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

You are previewing content.

The picture below shows a balanced scale.



How many pyramids balance 1 cube?

[Comment on this question](#)

[Request Help](#)

Type your answer below (mathematical expression):

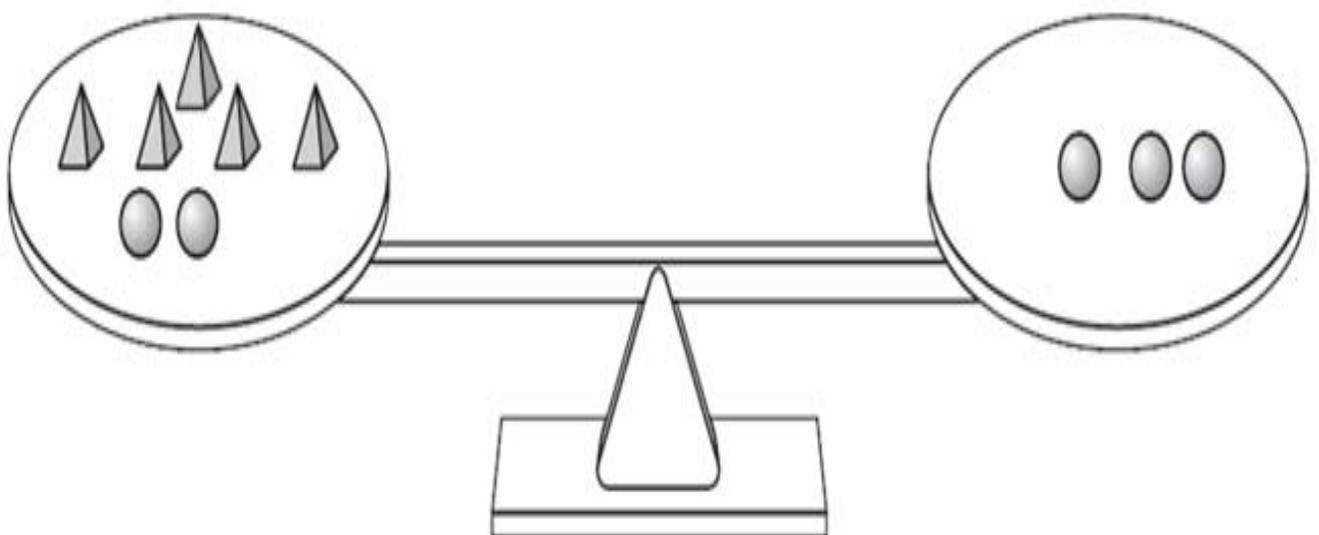
*

Submit Answer

Let's move on and figure out this problem

Let's look at the solution for a problem similar to the one above:

The picture below shows a balanced scale.



How many pyramids balance 1 sphere?

Solution:

This is how a sphere looks like:

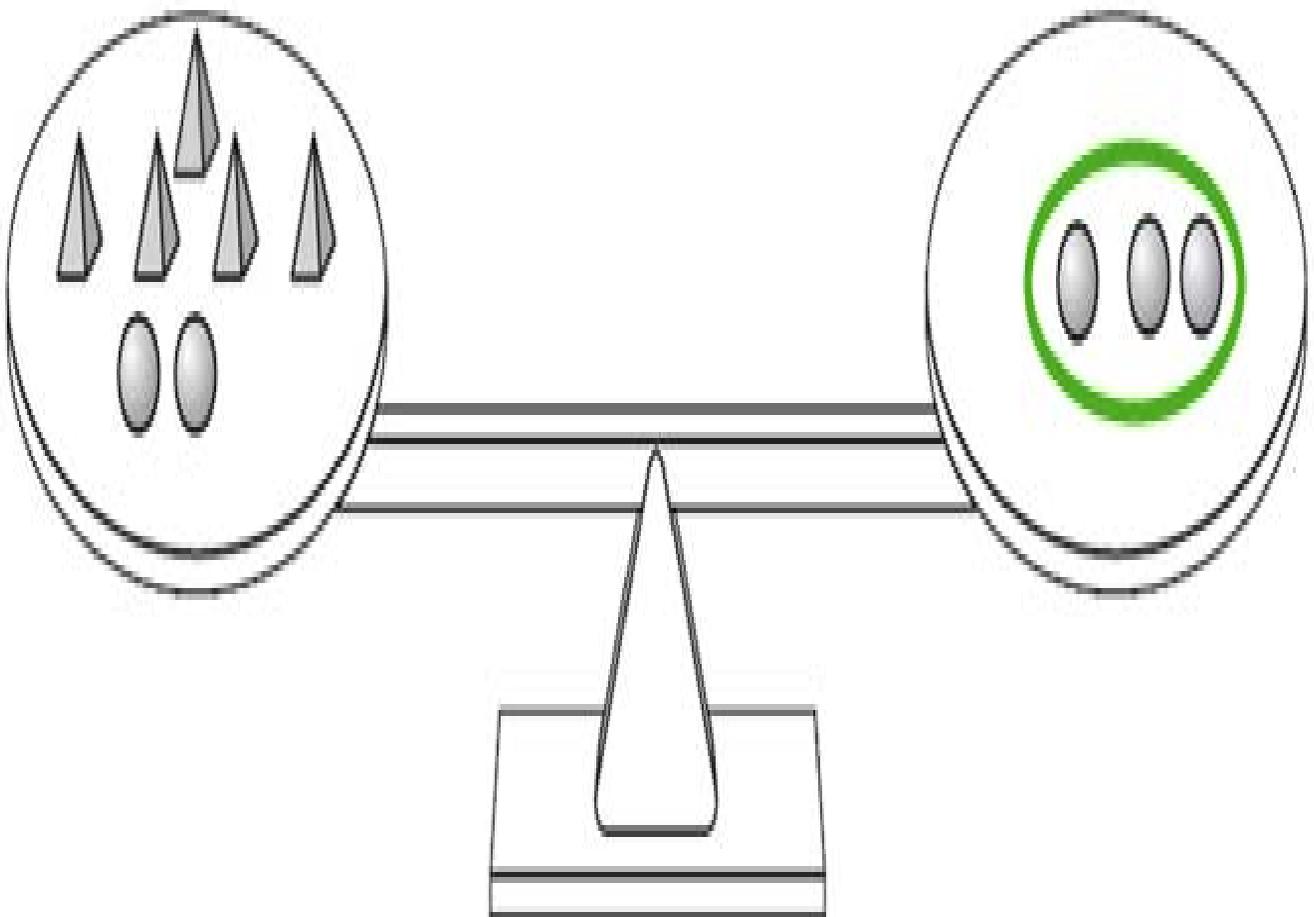


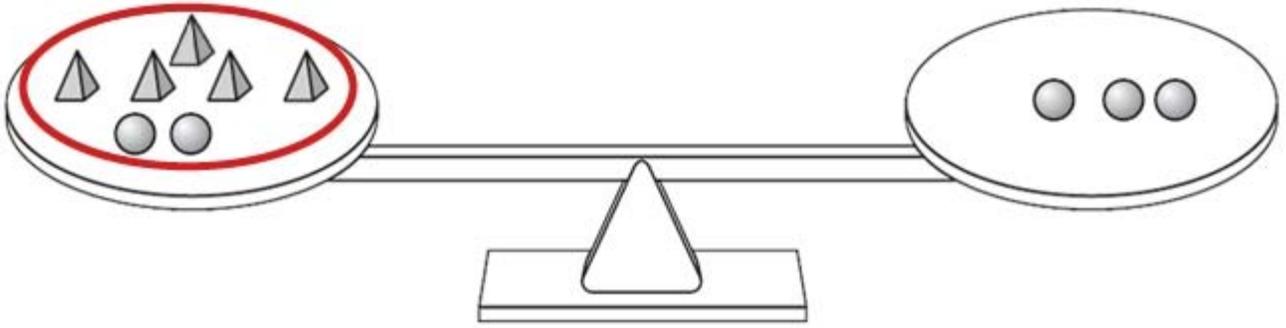
This is how a pyramid looks like:



Let us first count the number of spheres and pyramids on the right side.

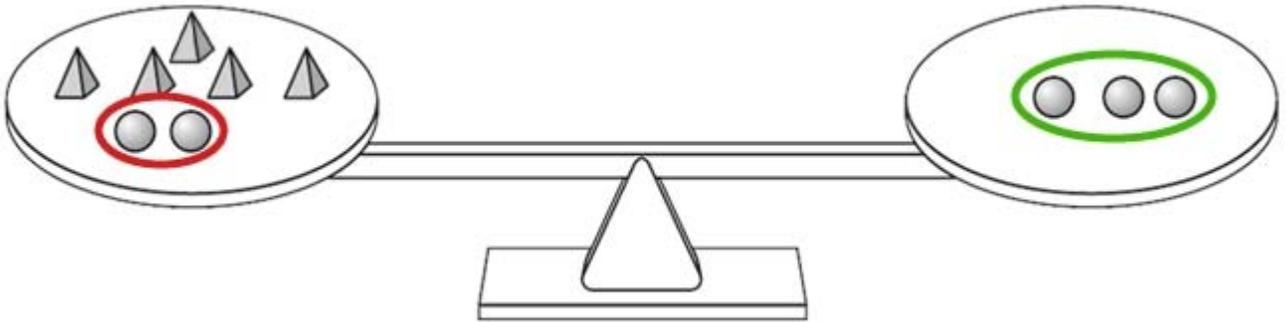
The right side has no pyramids and 3 spheres.





The left side has both pyramids and spheres while the right side has only spheres.

Thus spheres are common between the two sides.

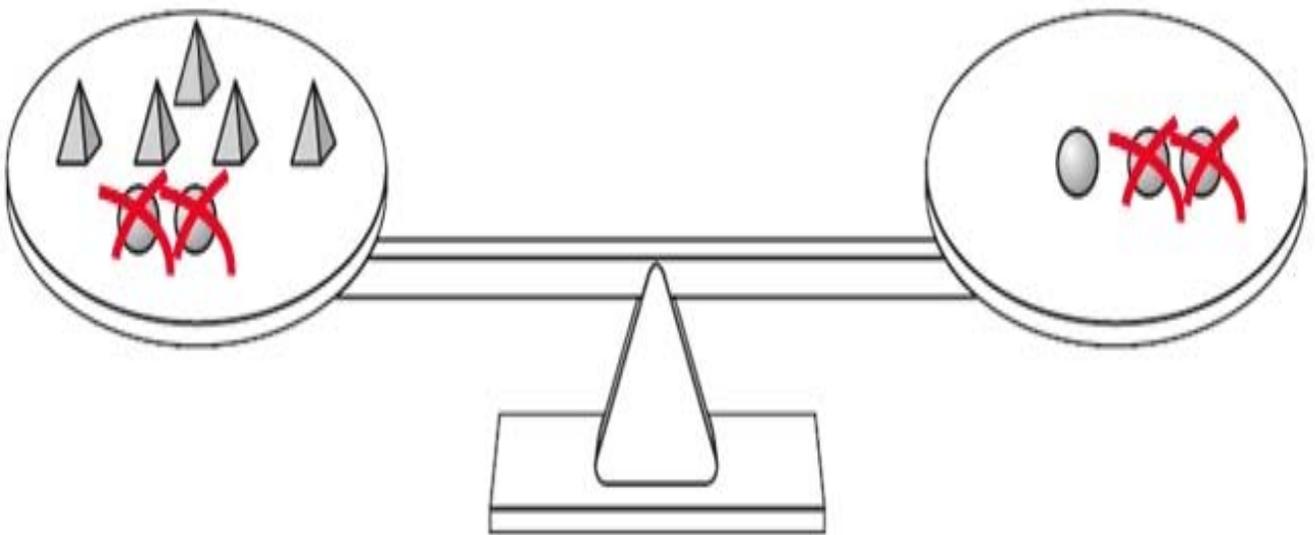


The left side has 2 spheres while the right side has 3 spheres.

Thus, 2 spheres are common between the two sides.

Now we know that in the scale the two sides have 2 spheres in common. So

removing the 2 spheres from both sides still keeps the scale balanced.



When we remove 2 spheres from each side we are left with 5 pyramids on the left and a sphere on the right.

Thus 5 pyramids balance 1 sphere.

[Comment on this question](#)

Select one:

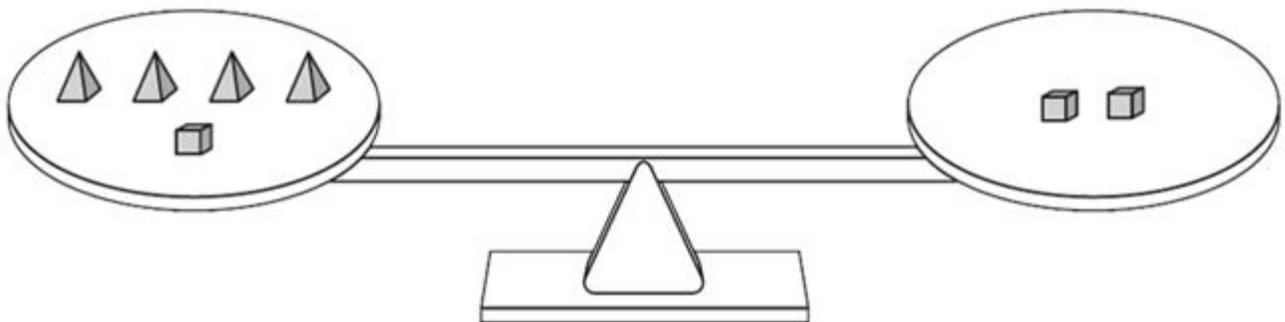
- I have read the example and now I am ready to try again.

Submit Answer

Correct!

Now try the original problem again. You may look back at the worked example if that helps you.

The picture below shows a balanced scale.



How many pyramids balance 1 cube?

[Comment on this question](#)

4 pyramids balance 1 sphere.

Type in 4.

[Comment on this hint](#)

Type your answer below (mathematical expression):

Submit Answer

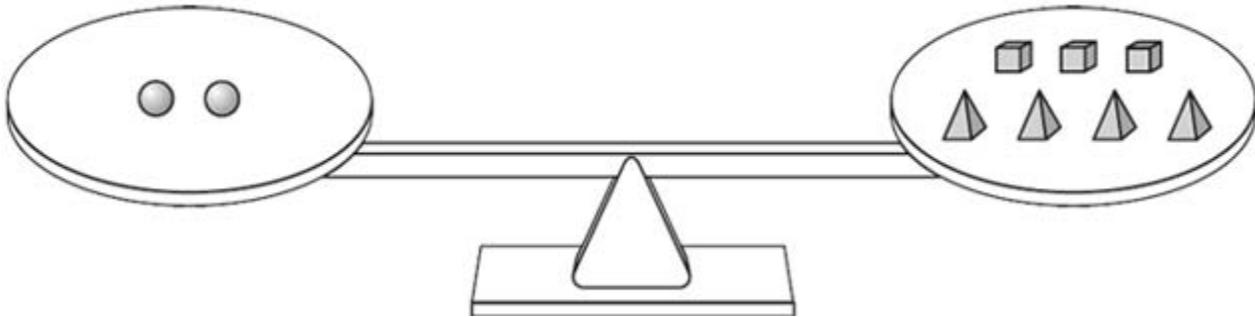
Correct! You are done with this problem!

[Comment on this problem.](#)

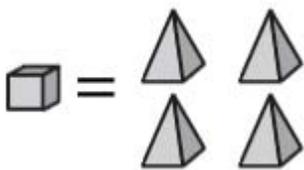
Assistment

You are previewing content.

The picture below shows a balanced scale.



4 pyramids balance 1 cube.



How many pyramids balance 1 sphere?

[Comment on this question](#)

[Request Help](#)

Type your answer below (mathematical expression):

⌘

Submit Answer Let's move on and figure

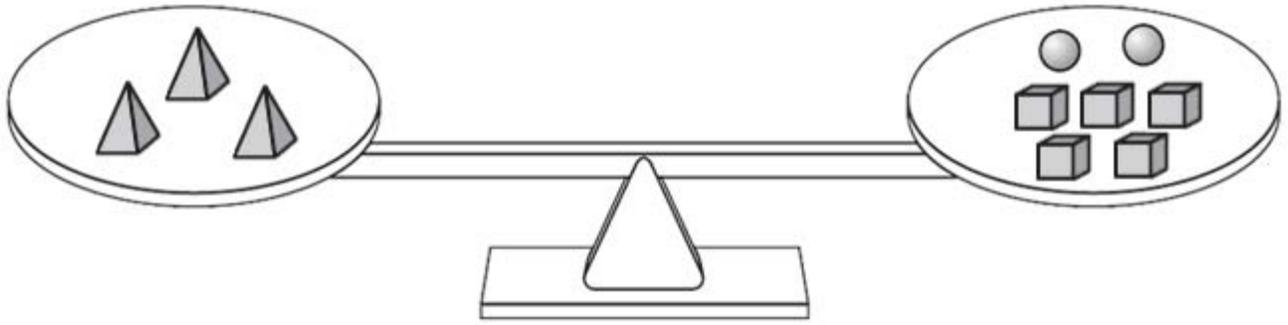
out this problem

[Let's look at the solution for a problem similar to the one above:](#)

The picture below shows a balanced scale.

<http://assistment3.cs.wpi.edu/build/preview/assistment/26381>

5/14/2008



2 cubes balance 1 sphere.



How many cubes balance 1 pyramid?

Solution:

Let us first identify the objects on the balance pans.

This is how a pyramid looks like:



This is how a cube looks like:



This is how a sphere looks like:



Let us count the objects on each side of the balance.

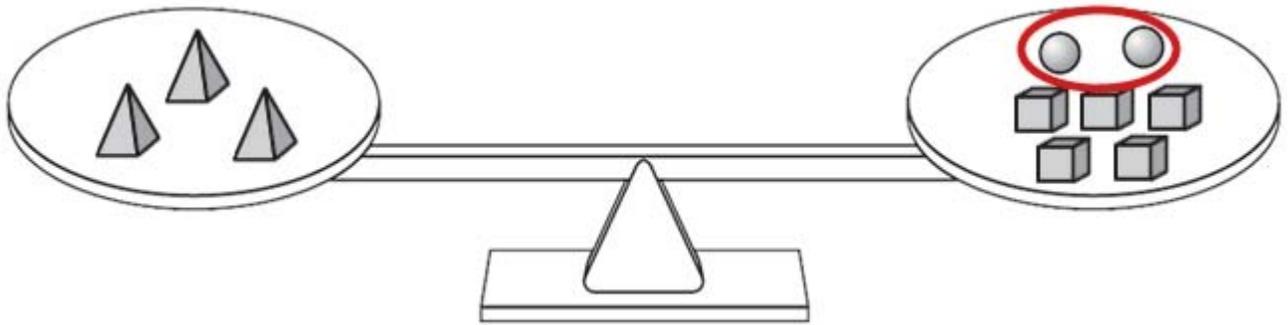
From the picture we can see that the left side has 3 pyramids while the right side has 2 spheres and 5 cubes.

Now we know that, the 3 pyramids on the left side are balanced by 2 spheres and 5 cubes on the right side.

Also we know that 1 sphere is balanced by 2 cubes.

Let us try to replace the spheres on the right side of the balance with cubes.

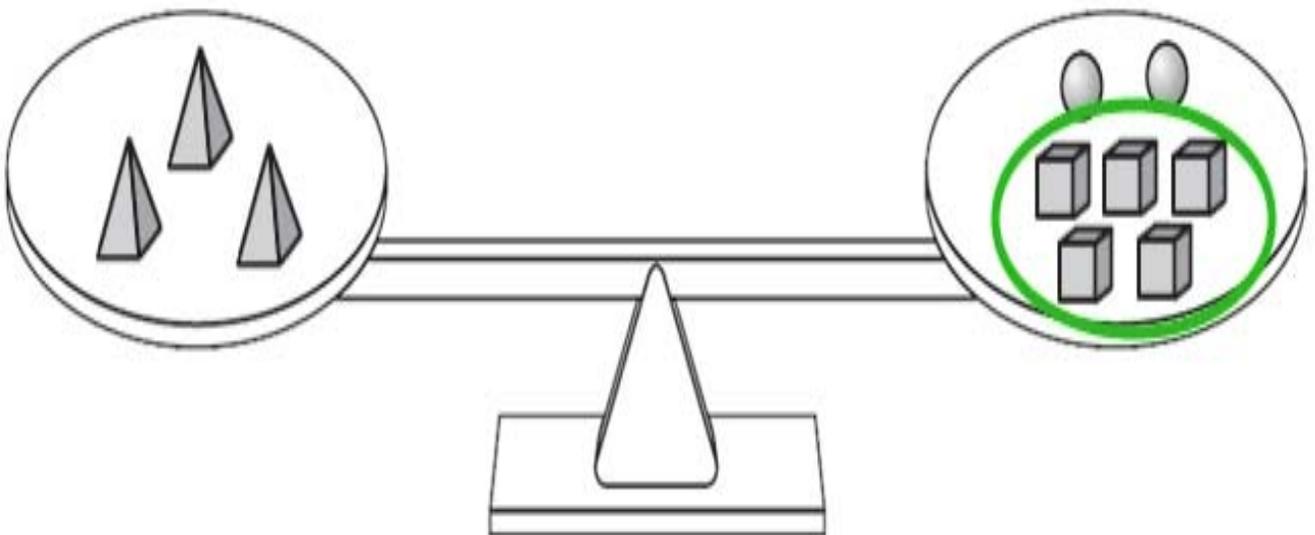
There are 2 spheres on the right.



2 cubes balance 1 sphere so we need to replace the 2 spheres by :

$2 \times 2 = 4$ cubes.

We have 5 original cubes on the right side.

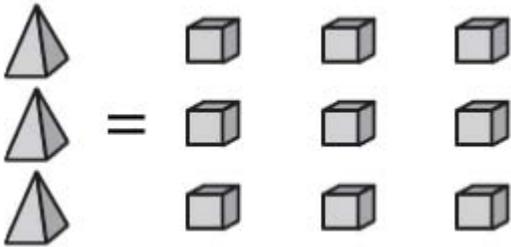


So total number of cubes required to balance the 3 pyramids is:

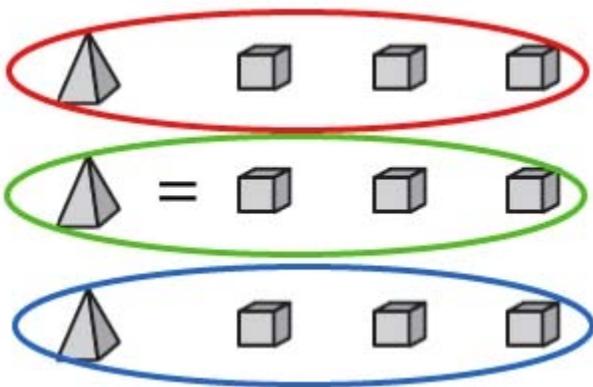
$$5+4=9$$

So, 9 cubes balance 3

pyramids.



So 1 pyramid is balanced by 9/3 cubes.



$$9/3=3.$$

Thus 3 cubes balance 1 pyramid.

[Comment on this question](#)

Select one:

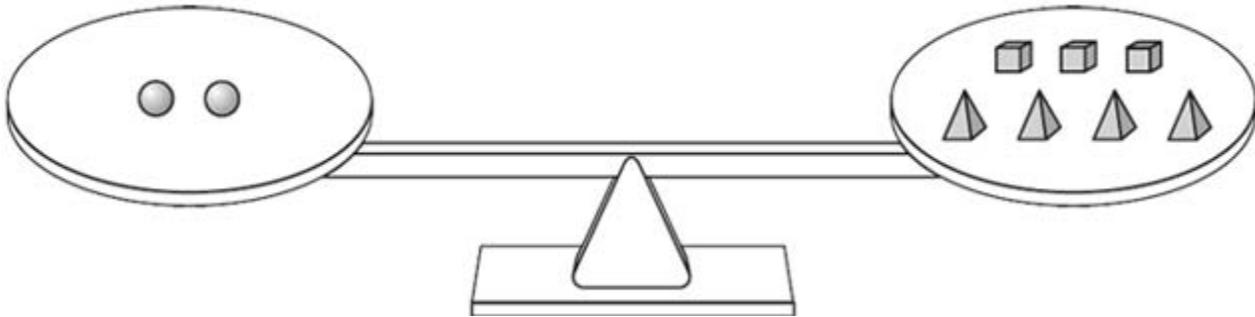
- I have read the example and now I am ready to try again. Submit

Answer

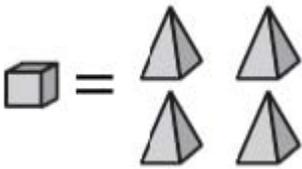
Correct!

Now try the original problem again. You may look back at the worked example if that helps you.

The picture below shows a balanced scale.



4 pyramids balance 1 cube.



How many pyramids balance 1 sphere?

[Comment on this question](#)

8 pyramids balance 1 sphere.

Type in 8.

[Comment on this hint](#)

Type your answer below (mathematical expression):

*8

Submit Answer

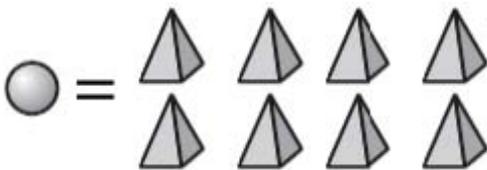
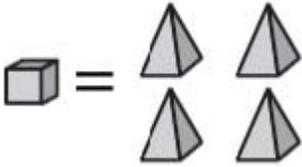
Correct! You are done with this problem!

[Comment on this problem.](#)

Assistment

You are previewing content.

The weight of 1 cube is equal to the weight of 4 pyramids while the weight of 1 sphere is equal to the weight of 8 pyramids.



Which weighs more, 3 spheres or 5 cubes?

[Comment on this question](#)

[Request Help](#)

Select one:

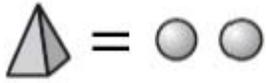
- 3 Spheres
- 5 Cubes
- Cannot tell

[Submit Answer](#)

Let's move on and figure out this problem

[Let's look at the solution for a problem similar to the one above:](#)

The weight of 1 pyramid is equal to the weight of 2 spheres while the weight of 1 cube is equal to the weight of 3 spheres.

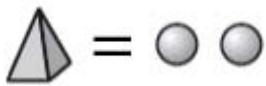


Which weighs more, 4 pyramids or 3 cubes?

Solution:

To compare the pyramids and cubes we can convert each one to spheres. Let us start with the pyramids.

Weight of 1 pyramid = weight of 2 spheres.



Weight of 4 pyramids = weight of $4 * 2$ spheres. 4

$* 2 = 8$ Thus 4 pyramids is equivalent to 8 spheres.

Next, let us convert cubes to spheres.

Weight of 1 cube = weight of 3 spheres.



Weight of 3 cubes = weight of $3 * 3$ spheres. 3

$* 3 = 9$

Thus 3 cubes is equivalent to 9 spheres.

Now let us compare the 4 pyramids with the 3 cubes.

Weight of 4 pyramids = weight of 8 spheres.

Weight of 3 cubes = weight of 9 spheres.

Number 9 is greater than number 8.

Thus 3 cubes weigh more than 4 pyramids.

[Comment on this question.](#)

Select one:

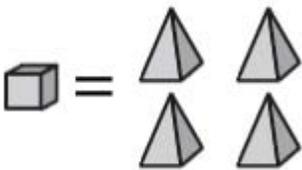
⌘

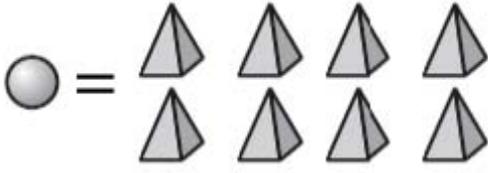
I have read the example and now I am ready to try again.

Submit Answer Correct! [Now try the original problem again.](#)

[You may look back at the worked example if that helps you.](#)

The weight of 1 cube is equal to the weight of 4 pyramids while the weight of 1 sphere is equal to the weight of 8 pyramids.





Which weighs more, 3 spheres or 5 cubes?

[Comment on this question](#)

3 spheres weigh more than 5 cubes.

Select option A.

[Comment on this hint](#)

- Select one:*
- A. 3 Spheres
 - B. 5 Cubes
 - Cannot tell

Submit Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

You are previewing content.

What number should be between 35 and 61 in the following arithmetic progression? 35,

____, 61, 74, 87

[Comment on this question](#)

Request Help

Type your answer below (mathematical expression):

•

Submit Answer

Let's move on and figure out this problem

[Let's look at the solution for a problem similar to the one above:](#)

What number should be between 5 and 11 in the following arithmetic progression? 5,

____, 11, 14, 17

Solution:

In order to find the missing number, we need to first find a pattern between the numbers.

We can start by comparing the last 2 numbers in the pattern. Let us find the difference between the two numbers and see if the difference carries on.

The last two numbers are 14 and 17. $17 - 14 = 3$

The difference between the last two terms is 3.

Let us confirm that subtracting 3 from the number is the pattern we have for the arithmetic progression.

Let us subtract 3 from 14. $14 - 3 = 11$ This is the number that occurs before 14.

Thus the rule of subtract 3 works.

To find the number that occurs between 5 and 11, we need to subtract 3 from 11. 11

$- 3 = 8$.

Thus 8 is the required missing number.

[Comment on this question](#)

Select one:

⌘

I have read the example and now I am ready to try again.

Submit Answer

Correct!

Now try the original problem again. You may look back at the worked example if that helps you.

What number should be between 35 and 61 in the following arithmetic progression? 35

____, 61, 74, 87

[Comment on this question](#)

48 should be between 35 and 61.

Type in 48.

[Comment on this hint](#)

Type your answer below (mathematical expression):

⌘48

Submit Answer

Correct! You are done with this problem!

[Comment on this problem.](#)

Assistment

You are previewing content.

Which of the following could be the rule used to create the number pattern shown below? 93,

45, 21, 9, 3

[Comment on this question](#)

Request Help

Select one:

- A. Subtract 48.
- B. Divide by 2.
- C. Divide by 3 then add 13
- Subtract 3 then divide the result by 2.

Submit Answer

Let's move on and figure out this problem

Let's look at the solution for a problem similar to the one above:

Which of the following could be the rule used to create the number pattern shown below? 48,

21, 12, 9, 8

- A. Divide by 2 then subtract 3.
- B. Add 10.
- C. Divide by 3 then add 5.
- D. Subtract 27.

Solution:

Let us look at one rule at a time and try to find the rule that works.

The first rule says, "Divide by 2 then subtract 3". The first number in the sequence is 48.

According to the rule the next number in the sequence is $48 / 2 = 24$ $24 - 3 = 21$ So far

"Divide by 2 then subtract 3" works. So according to the "Divide by 2 then subtract 3" rule we have,

$$\begin{array}{cc} 48, & 21 \\ \swarrow & \searrow \\ (48 / 2) - 3 & \end{array}$$

The third number in the sequence according to the rule is : 21

$$/ 2 = 10.5$$

$10.5 - 3 = 7.5$ So from the rule of "Divide by 2 then subtract 3", 7.5 is the third number in the sequence.

$$\begin{array}{ccc} 48, & 21, & 7.5 \\ \swarrow & \searrow & \swarrow & \searrow \\ (48 / 2) - 3 & & (48 / 2) - 3 & \end{array}$$

But 7.5 is not the third term in our given sequence so rule A is not the correct rule.

Rule B says "Add 10". According to this rule the 2nd term is: 48

$$+ 10 = 58$$

58 is not the second number in the given sequence.

Thus option B is also not the right rule.

Rule C says to **divide by 3, and then add 5 to the result**. According to rule C, the second number in the sequence should be: $(48 / 3) + 5 = 16 + 5 = 21$ This is the second option in the sequence.

48, **21**, 12, 9, 8

The third term according to this rule is :

$(21 / 3) + 5 = 7 + 5 = 12$ This is the third term in the sequence.

48, 21, **12**, 9, 8

So far rule C seems correct. Let us check rule D as well to make sure rule C is correct.

Rule D says "**Subtract 27**". According to this rule the second term is: $48 - 27 =$

21 21 is the second number in our sequence. So far "**Subtract 27**" works. So

according to the "**Subtract 27**" rule we have,

$$\begin{array}{cc} 48, & 21 \\ \searrow & \swarrow \\ (48 - 27) \end{array}$$

The third number in the sequence according to the rule is : $21 - 27 = -6$ So

from the rule of "Subtract 27", -6 is the third number in the sequence.

$$\begin{array}{ccc} 48, & 21, & -6 \\ \searrow & \swarrow & \searrow \\ (48 - 27) & (21 - 27) \end{array}$$

But -6 is not the third term in our given sequence so rule D is not the correct rule.

Thus rule C is the correct rule used to create the given number pattern.

[Comment on this question](#)

Select one:

- I have read the example and now I am ready to try again.

Submit Answer

Correct!

Now try the original problem again. You may look back at the worked example if that helps you.

Which of the following could be the rule used to create the number pattern shown below? 93

45, 21, 9, 3

[Comment on this question](#)

Rule D is used to create the given number pattern.

Select D.

600 | Page

[Comment on this hint](#)

Select one:

- A. Subtract 48.
- B. Divide by 2.
- C. Divide by 3 then add 13.
- D. Subtract 3 then divide the result by 2.

Submit Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

You are previewing content.

What does m equal in this equation?

$3m + 2 = 17$ Note : $3m$ means 3 times

m .

[Comment on Problem #33618](#)

Request Help

Type your answer below (mathematical expression):

⌘

Submit Answer

Let's move on and figure out this problem

Let's look at the solution for a problem similar to the one in the red box above:

What does d equal in this equation?

$4d + 5 = 29$ Note : $4d$ means 4 times

d .

Solution:

!! Remember that " $4d$ " means " 4 times d " or " 4 multiplied to d " or $4 * d$!!

This question can be understood as: When

5 is added to $4d$, it will become 29 .

Another way to understand it is:

$4d$ is 5 less than 29.

24 is 5 less than 29. So, $4d = 24$

which means $4 * d = 24$.

Now remember following fact families: If $3 * 6 = 18$ Then $3 = 18 \div 6$ and $6 = 18 \div 3$

Here we have, $4 * d = 24$

So, using the fact family,

$d = 24 \div 4$ $d = 6$

Therefore $d = 6$ in the expression $4d + 5 = 29$.

[Comment on Problem #33619](#)

Select one:

⌘

I have read the example and now I am ready to try again.

Submit Answer

Correct!

Now try the original problem again. You may look back at the worked example if that helps you.

What does m equal in this equation? $3m + 2 = 17$

Note : $3m$ means 3 times m .

604 | Page

<http://assistment3.cs.wpi.edu/build/preview/assistment/26259>

Do your best; if you cannot get the answer select hint to get the answer so you can go on.

[Comment on Problem #33620](#)

$m = 5$ in the expression $3m + 2 = 17$.

Type in 5.

[Comment on Hint #27149](#)

Type your answer below (mathematical expression):

*5

Submit Answer

Correct! You are done with this problem!

[Comment on Assistent #26259](#)

Assistment

You are previewing content.

Which can be used to find the missing number in the number sentence below?

$$3 * \square = 39$$

[Comment on Problem #33621](#)

[Request Help](#)

Select one:

- $3 \div 39$
- $3 * 39$
- $39 \div 3$
- $39 - 3$

Submit Answer Let's move on and figure out

this problem

Let's look at the solution for a problem similar to the one in the red box above:

$4 * \triangle = 28$ Which operation can be used to find the missing number in the number sentence below?

- A. $4 \div 28$
- B. $28 \div 4$
- C. $28 * 3$
- D. $28 - 4$

Solution:

Remember the general fact family that:

$$\text{If } 5 * 6 = 30$$

$$\text{Then } 30 \div 6 = 5$$

$$\text{And } 30 \div 5 = 6$$

Here we have $4 * \triangle = 28$

Following the fact family,

Therefore $\triangle = 28 \div 4$

Hence, option B, $28 \div 4$ can be used to find the missing number.

[Comment on Problem #33622](#)

Select one:

- I have read the example and now I am ready to try again.

Submit Answer Correct! **Now try the original problem again. You may look back at the worked example if that helps you.**

Which can be used to find the missing number in the number sentence below?

$$3 * \square = 39$$

Do your best; if you cannot get the answer select hint to get the answer so you can go on.

[Comment on Problem #33623](#)

$39 \div 3$ can be used to find the missing number.

Select $39 \div 3$

[Comment on Hint #27150](#)

Select one:

- $3 \div 39$
- $3 * 39$
- $39 \div 3$
- $39 - 3$

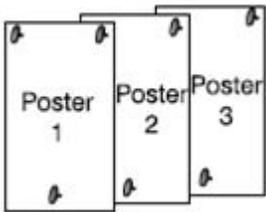
Submit Answer

Correct! You are done with this problem!

[Comment on Assistentment #26260](#)

Assistment

You are previewing content.



Ethan hung 12 posters in one row on his wall using tacks as shown in the picture above. Ethan used 3 tacks for the first poster. He used 2 tacks for each additional poster. How many tacks will he need to hang all 12 posters?

[Comment on Problem #33855](#)

Request Help

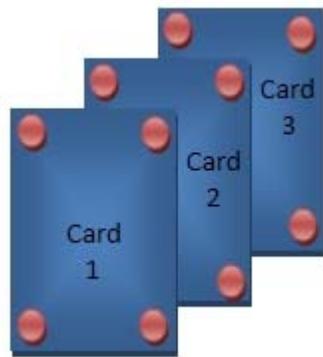
Type your answer below (mathematical expression):

•

Submit Answer Let's move on and figure

out this problem

Let's look at the solution for a problem similar to the one in the red box above:



Ben kept 9 cards in one column on his table as shown in the picture above and marked the visible corners. He marked four corners of the first card. He marked three corners of each additional card. How many marks will he make if he marked all visible corners of 9 cards?

Solution

Lets start by re-reading the text to find out how many cards have 4 marks; pay close attention to the part highlighted in red.

Ben kept 9 cards in one column on his table as shown in the picture above and marked the visible corners. **He marked four corners of the first card.** He marked three corners of each additional card. How many marks will he make if he marked all visible corners of 9 cards?

Therefore Ben had **1 card with 4 markers.**

Lets again re-read the text to find out how many cards have 3 marks; pay close attention to the part highlighted in red.

Ben kept 9 cards in one column on his table as shown in the picture above and marked the visible corners. He marked four corners of the first card. **He marked three corners of each additional card.** How many marks will he make if he marked all visible corners of 9 cards?

Therefore Ben had **3 marks in each of the remaining 8 cards.**

Total marks in those 8 cards = $8 \times 3 = 24$

Therefore,

Total marks in 9 cards = Total marks in the first card + Total marks in 8 cards = 4 + 24 = 28

Therefore Ben would make 28 marks if he marked all visible corners of 9 cards.

[Comment on Problem #33856](#)

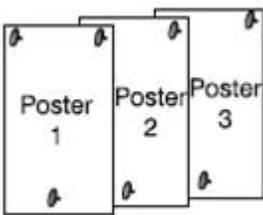
Select one:

- I have read the example and now I am ready to try again.

Submit Answer

Correct!

Now try the original problem again. You may look back at the worked example if that helps you.



Ethan hung 12 posters in one row on his wall using tacks as shown in the picture above. Ethan used 3 tacks for the first poster. He used 2 tacks for each additional poster. How many tacks will he need to hang all 12 posters?

Do your best; if you cannot get the answer select hint to get the answer so you can go on.

[Comment on Problem #33857](#)

Ethan will need 25 tacks to hang al l12 posters.

Select 25.

[Comment on Hint #27439](#)

Type your answer below (mathematical expression):

⌘25

Submit Answer

Correct! You are done with this problem!

[Comment on Assistentment #26328](#)

Assistment

You are previewing content.

Ralph gets on his bike at 10 A.M. and rides towards his friend's house 9 miles away. At 10:12 A.M. he has ridden 3 miles. If he keeps going at the same rate, when will he arrive at his friend's house?

[Comment on Problem #34011](#)

Request Help

Select one:

- 10:21 A.M.
- 10:24 A.M.
- 10:36 A.M.
- 10:48 A.M.

Submit Answer Let's move on and figure out

this problem

Let's look at the solution for a problem similar to the one in the red box above:

James gets on his bike at 2 P.M. and rides towards his friend's house 16 miles away. At 2:10 P.M. he has ridden 4 miles. If he keeps going at the same rate, when will he arrive at his friend's house?

Solution

Realize that "going in the same rate" means "covering equal distance in equal time intervals".

Now find the time that James takes to cover 4 miles.

For this first find the start time from the highlighted part of the question below.

James gets on his bike at 2 P.M. and rides towards his friend's house 16 miles away. At 2:10 P.M. he has ridden 4 miles. If he keeps going at the same rate, when will he arrive at his friend's house?

Therefore James started at 2 P.M.

Then find when does James cover 4 miles from the highlighted part of the question below.

James gets on his bike at 2 P.M. and rides towards his friend's house 16 miles away. At 2:10 P.M. he has ridden 4 miles. If he keeps going at the same rate, when will he arrive at his friend's house?

Therefore James covered 4 miles at 2:10 P.M.

2:10 P.M. is 10 minutes past 2 P.M.

Therefore Ralph took 10 minutes to cover 4 miles.

Now notice that the total distance that James has to cover from the highlighted part of the question below.

James gets on his bike at 2 P.M. and rides towards his friend's house 16 miles away. At 2:10 P.M. he has ridden 4 miles. If he keeps going at the same rate, when will he arrive at his friend's house?

Therefore James needs to cover 16 miles.

Let's make a table now.

James covered 4 miles in 10 minutes.

Since he is covering equal distance in same interval of time, in next 10 minutes he will cover another 4 miles.

This would give the following table:

Distance Covered	Time	Clock Time
4 miles	10 minutes	2:10 P.M.
8 miles	$10 + 10 = 20$ minutes	2:20 P.M.
12 miles	$20 + 10 = 30$ minutes	2:30 P.M.
16 miles	$30 + 10 = 40$ minutes	2:40 P.M.

So James takes 40 minutes to cover 16 miles which means he will arrive at his friend's house at 2:40 P.M.

Hence James will arrive at his friend's house at 2:40 P.M.

[Comment on Problem #34018](#)

Select one:

- I have read the example and now I am ready to try again.

Submit Answer

Correct!

Now try the original problem again. You may look back at the worked example if that helps you.

Ralph gets on his bike at 10 A.M. and rides towards his friend's house 9 miles away. At 10:12 A.M. he has ridden 3 miles. If he keeps going at the same rate, when will he arrive at his friend's house?

Do your best; if you cannot get the answer select hint to get the answer so you can go on.

[Comment on Problem #34019](#)

Ralph will arrive at his friend's house at 10:36 A.M.

Select 10:36 A.M.

[Comment on Hint #27784](#)

Select one:

-
- 10:24 A.M.
- 10:36 A.M.
- 10:21 A.M.

10:48 A.M. Submit

Answer

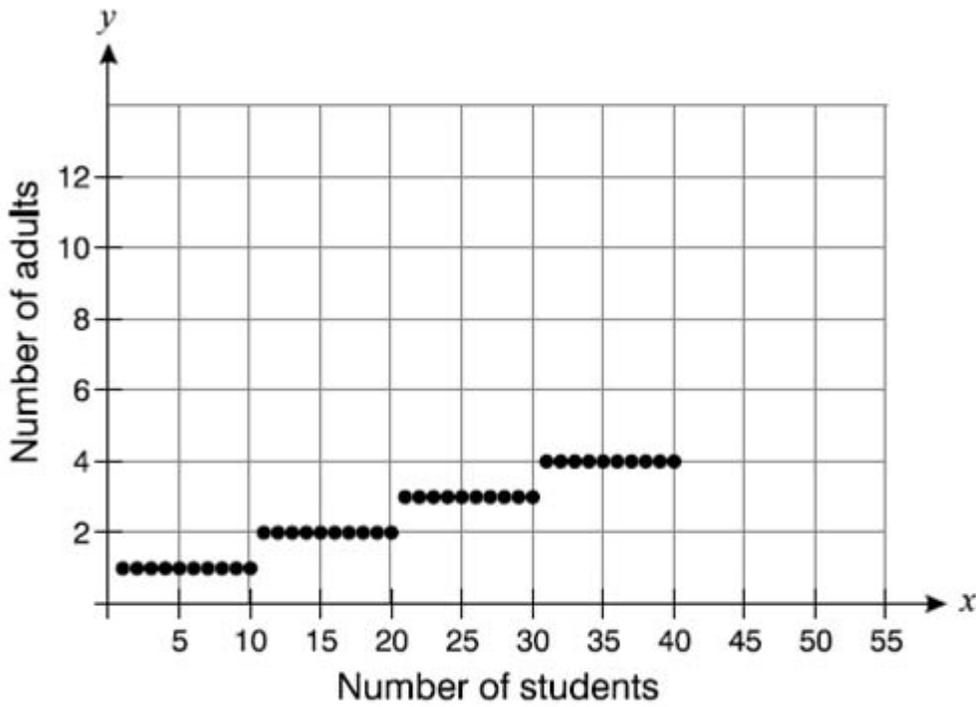
Correct! You are done with this problem!

[Comment on Assistentment #26373](#)

Assistment

You are previewing content.

Use the graph below to answer this question.



The graph shows how many adults are needed to go on a field trip, based on the number of students going. If the relationship shown by the graph continues, how many adults are needed if 52 students are going on a field trip?

[Comment on Problem #34012](#)

Request Help

Type your answer below (mathematical expression):

•

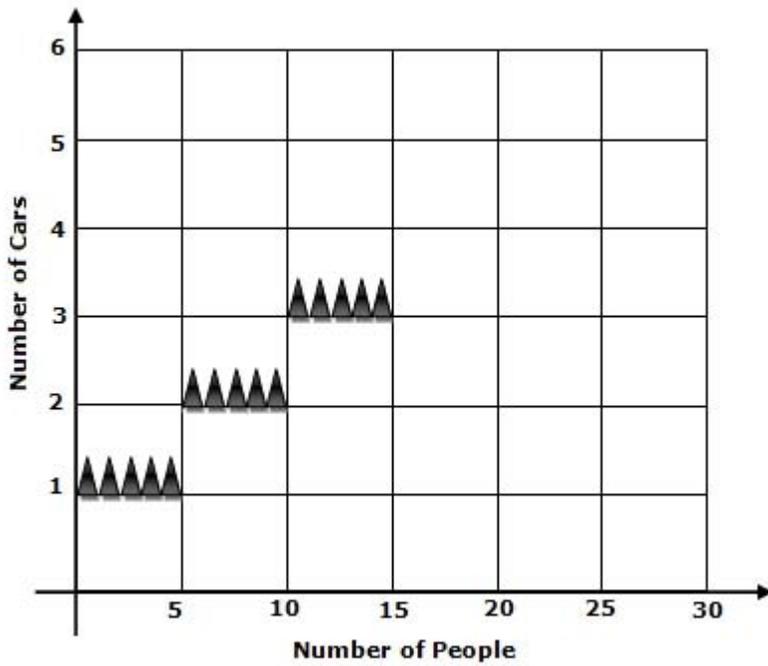
Submit Answer Let's move on and figure

out this problem

<http://assistment3.cs.wpi.edu/build/preview/assistment/26374>

Let's look at the solution for a problem similar to the one in the red box above:

Use the graph below to answer this question.



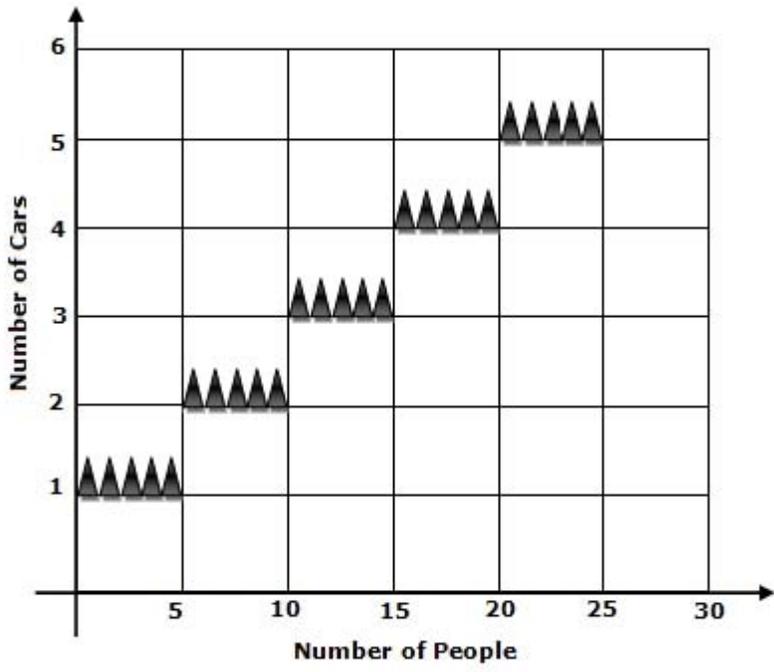
The graph shows how many cars are needed to go on a field trip, based on the number of people going. If the relationship shown by the graph continues, how many cars are needed if 24 people are going on a field trip?

Solution

There are not enough markers in the given graph.

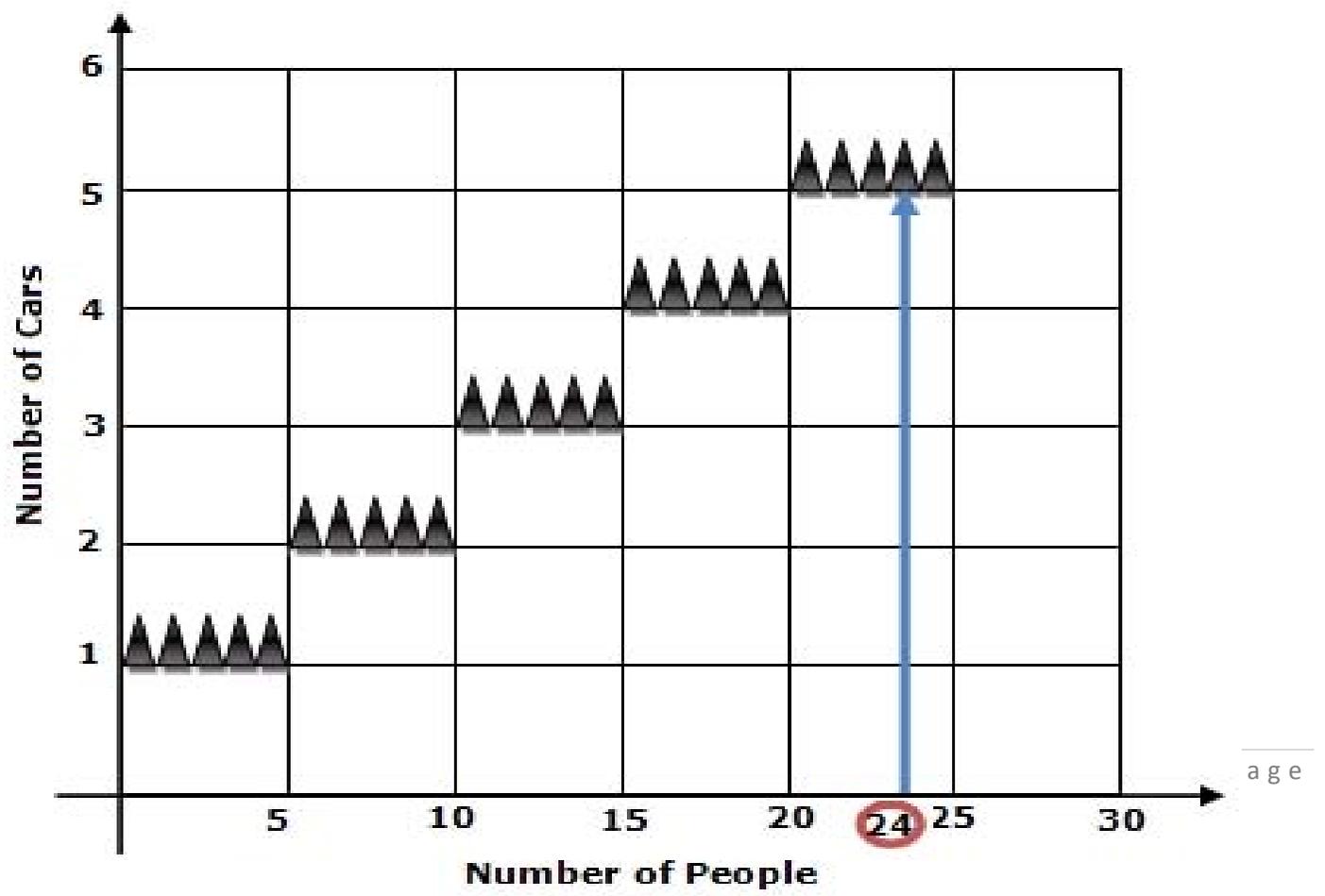
First of all markers have to be added properly.

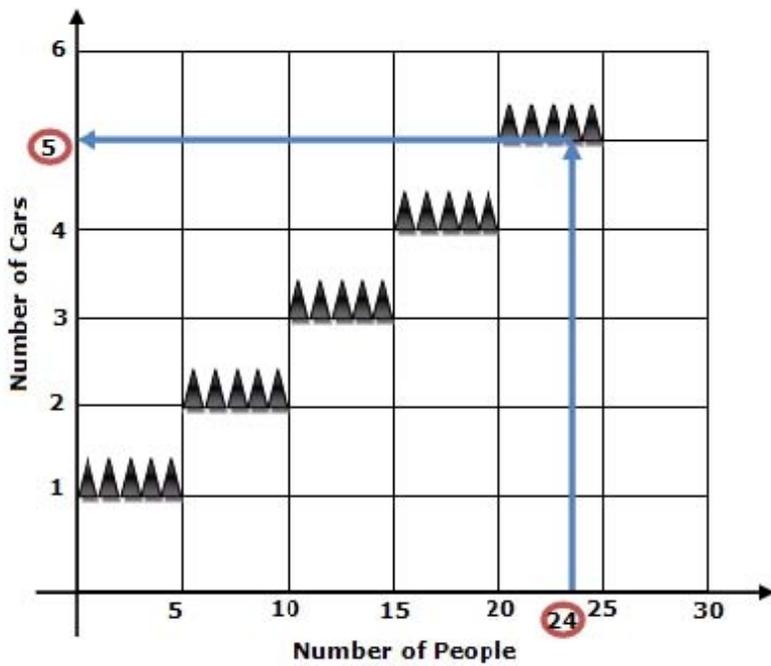
The graph with added markers would look like:



Now draw a vertical line from 24 in the "Number of People" axis to the marker in the graph.

Then draw a horizontal line from the marker you reached to the "Number of cars" axis.





The number you have reached now is the number of cars needed.

Hence 6 cars are needed if 24 people are going on a field trip.

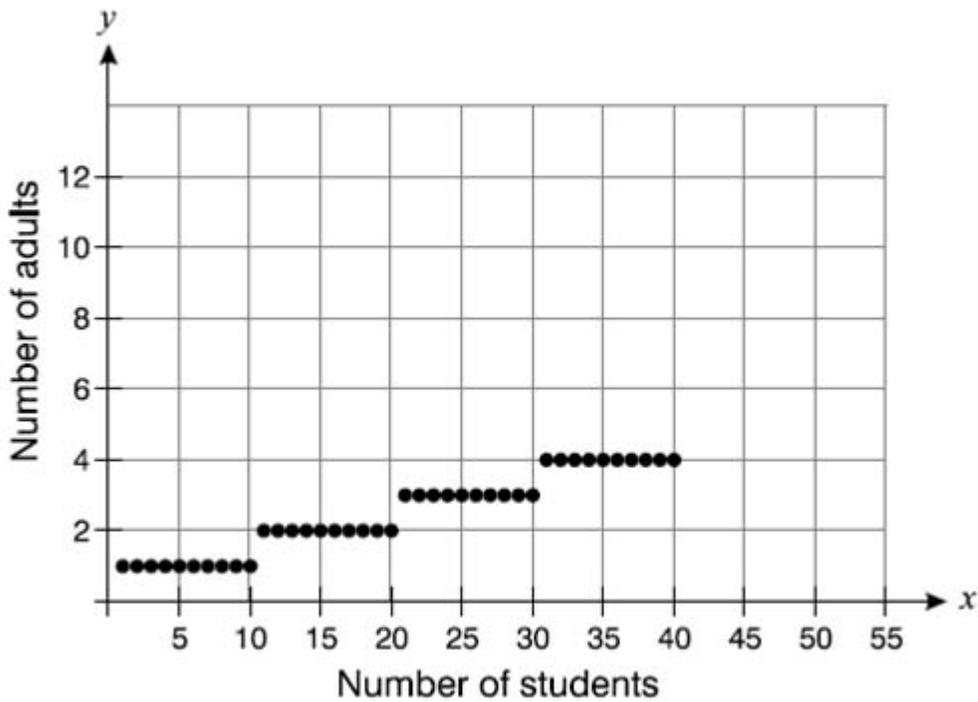
[Comment on Problem #34016.](#)

Select one:

- ⌘ I have read the example and now I am ready to try again.

Submit Answer Correct! **Now try the original problem again. You may look back at the worked example if that helps you.**

Use the graph below to answer this question.



The graph shows how many adults are needed to go on a field trip, based on the number of students going. If the relationship shown by the graph continues, how many adults are needed if 52 students are going on a field trip?

Do your best; if you cannot get the answer select hint to get the answer so you can go on.

[Comment on Problem #34017](#)

They will need 6 adults for 52 children. Type in 6.

[Comment on Hint #28000](#)

Type your answer below (mathematical expression):

⌘6

Submit Answer

Correct! You are done with this problem!

[Comment on Assistentment #26374](#)

Assistment

You are previewing content.

Use the picture below to answer this question.



Marion wants to rent a canoe to go out on a lake. The cost is \$2.00 plus \$1.50 for each hour.

Using numbers, symbols, and the variable n , write an expression for how much it would cost to rent the canoe for n hours.

[Comment on Problem #34013](#)

Request Help

Type your answer below (mathematical expression):

•

Submit Answer Let's move on and figure

out this problem

Let's look at the solution for a problem similar to the one in the red box above:

James wants to rent a bike to go out on a day tour. The cost is \$3.00 plus \$0.50 for each hour.

629 | Page

<http://assistment3.cs.wpi.edu/build/preview/assistment/26375>

3/20/2008

Using numbers, symbols, and the variable h , write an expression for how much it would cost to rent the bike for h hours.

Solution

Note the basic cost from the highlighted part of the question below.

Basic cost is the cost that James has to pay no matter for many hours he rents the bike.

James wants to rent a bike to go out on a day tour. The cost is \$3.00 plus \$0.50 for each hour.

Using numbers, symbols, and the variable h , write an expression for how much it would cost to rent the bike for h hours.

Therefore the basic cost is \$3.00.

Now notice the cost per hour for renting bike from the highlighted part of the question below.

James wants to rent a bike to go out on a day tour. The cost is \$3.00 plus \$0.50 for each hour.

Using numbers, symbols, and the variable h , write an expression for how much it would cost to rent the bike for h hours.

Therefore James has to pay \$0.50 for each hour.

So, if James is going to rent bike for h hours, then he has to pay $h * 0.50$.

Now,

$$\begin{aligned} \text{Total cost} &= \text{Basic Cost} + \text{Cost for } h \text{ hours} \\ &= 3 + h * 0.50 \end{aligned}$$

Therefore it would cost $3 + h * 0.50$ to rent a bike for h hours.

[Comment on Problem #34014.](#)

Select one:

- * I have read the example and now I am ready to try again.

Submit Answer

Correct!

Now try the original problem again. You may look back at the worked example if that helps you.

Use the picture below to answer this question.



Marion wants to rent a canoe to go out on a lake. The cost is \$2.00 plus \$1.50 for each hour.

Using numbers, symbols, and the variable n , write an expression for how much it would cost to rent the canoe for n hours.

Do your best; if you cannot get the answer select hint to get the answer so you can go on.

[Comment on Problem #34015](#)

It would cost $2 + n * 1.5$ to rent the canoe for n hours.

Type in $2 + n * 1.5$

[Comment on Hint #27740](#)

Type your answer below (mathematical expression):

- $2+n*1.5$

Submit Answer

Correct! You are done with this problem!

[Comment on Assistent #26375](#)

Assistment

You are previewing content.

Sara hired her brother James to help her sell lemonade. Sara agreed to pay James \$1.00, plus \$0.10 for each glass of lemonade that he sold. Sara paid James \$3.60. How many glasses of lemonade did James sell?

[Comment on Problem #33194](#)

Request Help

Select one:

- 26
- 36
- 46
- 56

Submit Answer

Let's move on and figure out this problem

Let's look at the solution for a problem similar to the one in the red box above:

John asked Sam to clean his tables. John paid Sam \$5 plus \$0.5 for each table he cleaned. In total John paid Sam \$8.5. How many tables did Sam clean?

Solution

In total Sam got \$8.50. He got \$5 for just agreeing to clean tables.

So, **Payment Sam got by cleaning tables** = **Total payment Sam got** - **Payment Sam got for just agreeing to**

$$\begin{aligned} &\text{clean table} \\ &= \$8.50 - \$5 = \\ & \$3.50 \end{aligned}$$

Sam got \$0.50 for each table he cleaned. Therefore, $\text{Number of tables that Sam cleaned} = \frac{\text{Payment Sam got by cleaning tables}}{\text{Payment for each tables he cleaned}}$

$$= \frac{3.50}{0.5} = 7$$

So Sam cleaned 7 tables.

[Comment on Problem #33195](#)

Select one:

- I have read the example and now I am ready to try again.

Submit Answer

Correct!

Now try the original problem again. You may look back at the worked example if that helps you.

Sara hired her brother James to help her sell lemonade. Sara agreed to pay James \$1.00, plus \$0.10 for each glass of lemonade that he sold. Sara paid James \$3.60. How many glasses of lemonade did James sell?

Do your best; if you cannot get the answer select hint to get the answer so you can go on.

[Comment on Problem #33196](#)

James sold 26 glasses of lemonade.

Select 26.

[Comment on Hint #26524](#)

Select one:

- ⌘ 26
- ⌘ 36
- ⌘ 46
- ⌘ 56

Submit Answer

Correct! You are done with this problem!

[Comment on Assisment #26128](#)

Assistment

You are previewing content.

Maria charges \$5.00 to mow a lawn, plus \$6.00 per hour.

Maria uses the equation $C = 5 + 6h$ to determine C , the amount of money she charges for mowing lawns.

If h represents the number of hours it takes to mow a lawn, how much money(in dollars) will Maria charge if she mows a lawn for 3 hours?

[Comment on Problem #33600](#)

Request Help

Select one:

- 11
- 14
- 21
- 23 Submit

Answer

Let's move on and figure out this problem

Let's look at the solution for a problem similar to the one in the red box above:

A car repair garage is charges each costumer \$10 for the inspection and \$9 for each replaced part. The garage uses the equation $F = 10 + 9n$ to determine F , the fee it charges the customer. If n represents the number of parts replaced, how much fee will the garage charge if it replaced 4 parts.

Solution:

Notice that F is the fee and is determined by the equation $F = 10 + 9n$.

Also notice that n is the number of parts and the garage replaced 4 parts.

Therefore $n = 4$.

Now substitute n with 4 in the fee equation $F = 10 + 9n$.

This would give you $F = 10 + 9 * 4$

Now just follow **PE(MD)(AS)**:

Parenthesis, **E**xponents, **M**ultiplication and **D**ivision (from left to right), **A**ddition and **S**ubtraction (from left to right).

$F = 10 + 9 * 4$ has a **multiplication** and an **addition** to do.

Hence, do the **multiplication** first. F

$$= 10 + 9 * 4 \quad F = 10 + 36 \quad F = 46$$

Therefore the garage will charge \$46.

[Comment on Problem #33613](#)

Select one:

⌘

I have read the example and now I am ready to try again.

Submit Answer

Correct!

Now try the original problem again. You may look back at the worked example if that helps you.

Maria charges \$5.00 to mow a lawn, plus \$6.00 per hour. Maria uses the equation $C = 5 + 6h$ to determine C , the amount of money she charges for mowing lawns. If h represents the number of hours it takes to mow a lawn, how much money (in dollars) will Maria charge if she mows a lawn for 3 hours?

Do your best; if you cannot get the answer select hint to get the answer so you can go on.

[Comment on Problem #33614](#)

Maria will charge \$23.

Type in 23.

[Comment on Hint #27147](#)

Select one:

-
-
- 14
- 23

Submit Answer Correct! You are done with this problem!

[Comment on Assistentment #26252](#)

Assistment

You are previewing content.

Shani saved three times as much money as Bill. If Bill saved d dollars, which expression shows how much money Shani saved?

[Comment on Problem #33615](#)

Request Help

Select one:

- $3d$
- $d \div 3$
- $d + 3$
- $d - 3$

Submit Answer

Let's move on and figure out this problem

Let's look at the solution for a problem similar to the one in the red box above:

John cycled four times as much as Sam. If Sam cycled s miles, how many miles did John cycle?

Solution:

!! Remember that "8 times b" means "8 multiplied to b" or $8 * b$ or $8b$!!

Sam cycled s miles. John cycled four times as much as Sam cycled.

Therefore John cycled $4 * s$ or $4s$ miles.

Therefore John cycled $4s$ miles.

[Comment on Problem #33616](#)

Select one:

- I have read the example and now I am ready to try again.

Submit Answer

Correct!

Now try the original problem again. You may look back at the worked example if that helps you.

Shani saved three times as much money as Bill. If Bill saved d dollars, which expression shows how much money Shani saved?

Do your best; if you cannot get the answer select hint to get the answer so you can go on.

[Comment on Problem #33617.](#)

Shani saved $3d$ dollars.

Select $3d$.

[Comment on Hint #27148.](#)

Select one:

-
-
- $d \div 3$
- $d + 3$

$d - 3$ Submit Answer Correct!

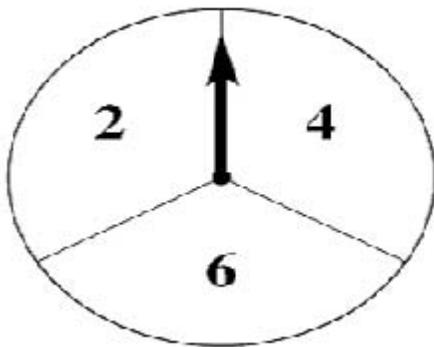
You are done with this problem!

[Comment on Assistentment #26258](#)

Assistment

You are previewing content.

Ramon is going to spin the arrow on the spinner twice and add the results.



What is the **most likely** sum of the two spins?

[Comment on Problem #33624](#)

Request Help

Select one:

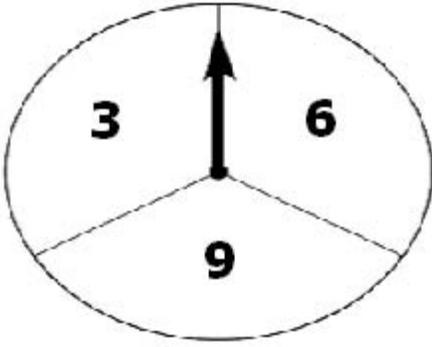
- 6
- 8
- 10
- 12

Submit Answer Let's move on and figure out

this problem

Let's look at the solution for a problem similar to the one in the red box above:

Matt is going to spin the arrow on the spinner twice and add the results.



What is the **most likely** sum of the two spins?

Solution:

In the first attempt the arrow might spin on any of the number 3, 6 or 9.

Let's say the arrow spins on 3 in the first attempt. Now in second attempt arrow might spin on 3 or 6 or 9. So likely sum could be $3 + 3 = 6$ or $3 + 6 = 9$ or $3 + 9 = 12$

Now suppose arrow spins on 6 in the first attempt. Now in second attempt arrow might spin on 3 or 6 or 9. So likely sum could be $6 + 3 = 9$ or $6 + 6 = 12$ or $6 + 9 = 15$

Again suppose arrow spins on 9 in the first attempt. Now in second attempt arrow might spin on 3 or 6 or 9. So likely sum could be $9 + 3 = 12$ or $9 + 6 = 15$ or $9 + 9 = 18$

See all the possible sum values shown in red color above. You can see that 12 repeats the highest number of times; it repeats 3 times.

Hence 12 is the more likely sum of the two spins.

[Comment on Problem #33625](#)

Select one:

⌘

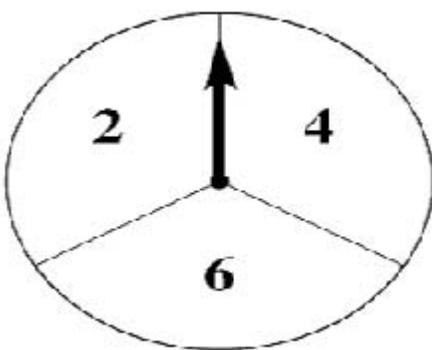
I have read the example and now I am ready to try again.

Submit Answer

Correct!

Now try the original problem again. You may look back at the worked example if that helps you.

Ramon is going to spin the arrow on the spinner twice and add the results.



What is the **most likely** sum of the two spins?

Do your best; if you cannot get the answer select hint to get the answer so you can go on.

[Comment on Problem #33626](#)

8 is the most likely sum of the two spins.

Select 8.

[Comment on Hint #27151](#)

Select one: 6
 6
 8
 10
 12

Submit Answer

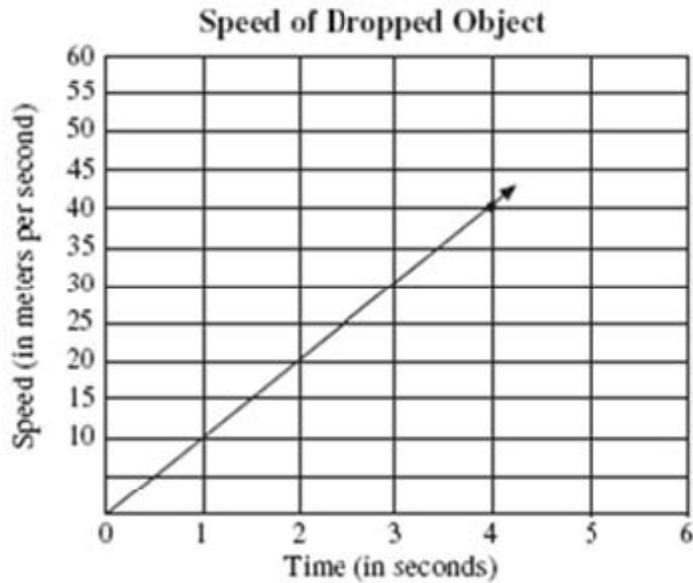
Correct! You are done with this problem!

[Comment on Assistentment #26261](#)

Assistment

You are previewing content.

The graph below shows the speed of the dropped object over time.



Based on the graph, what will be the approximate speed of the dropped object after 5 seconds?

[Comment on Problem #33627](#)

[Request Help](#)

Select one:

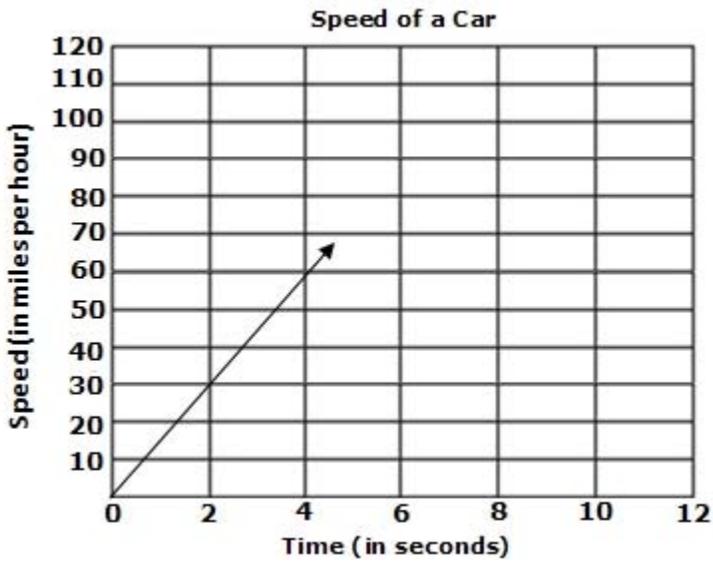
- 5 meters per second
- 25 meters per second
- 50 meters per second
- 75 meters per second

Submit Answer Let's move on and figure out

this problem

[Let's look at the solution for a problem similar to the one in the red box above:](#)

The graph below shows the speed of an accelerating car over time.

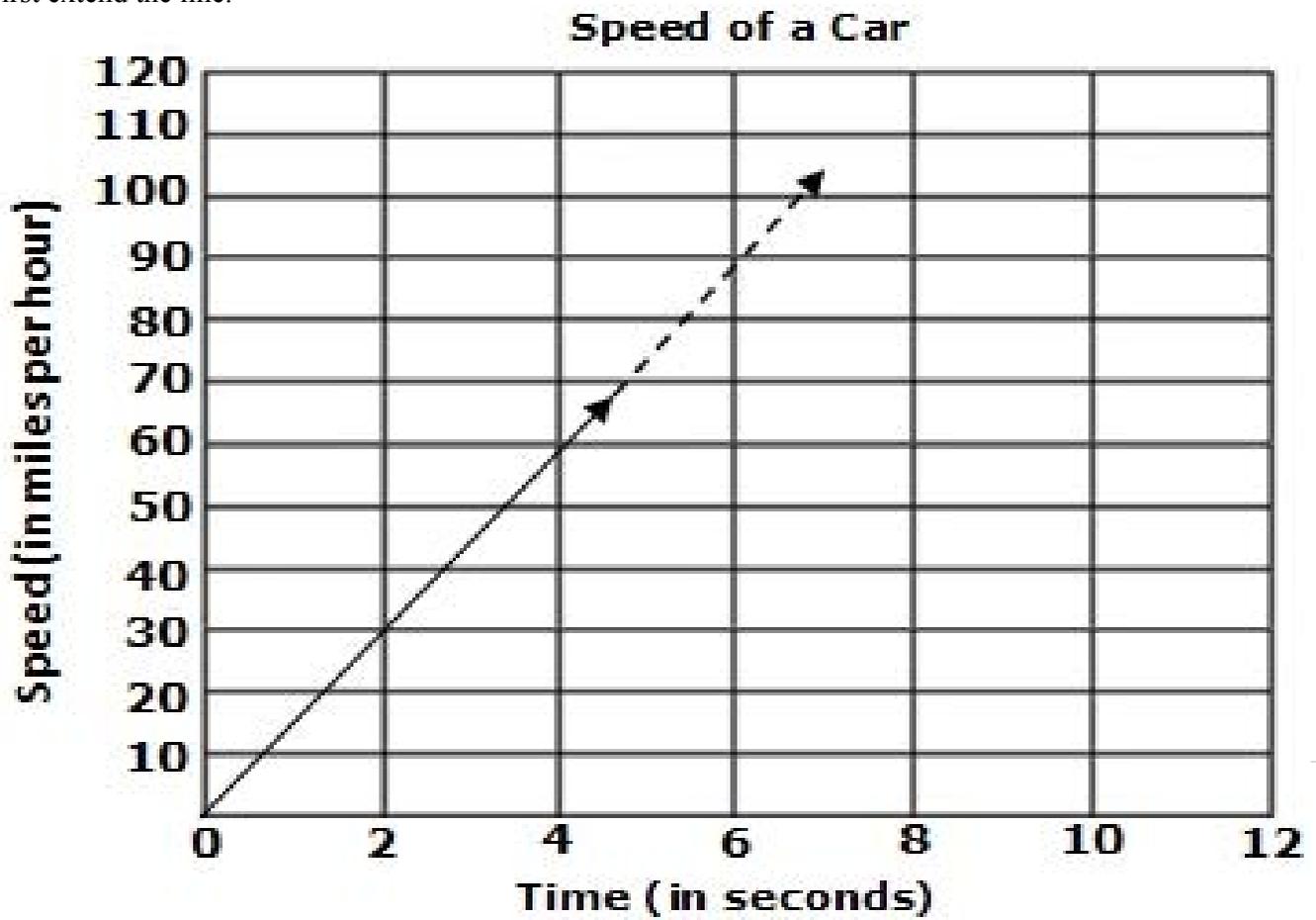


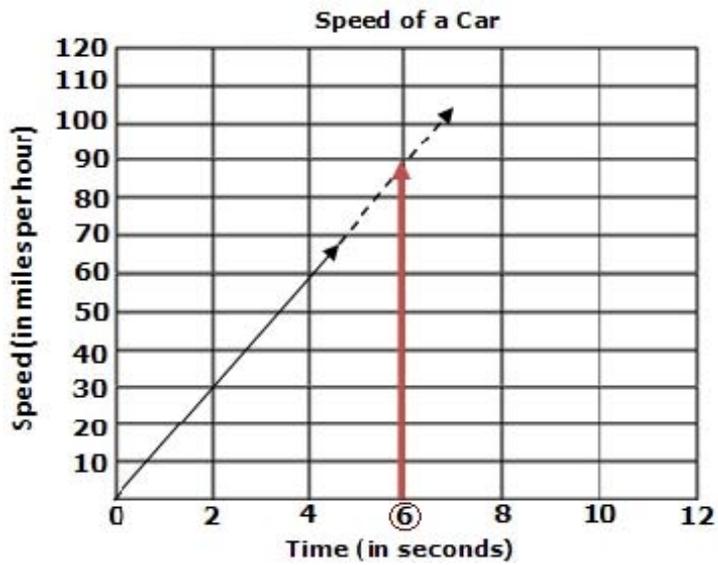
Based on the graph, what will be the approximate speed of the car object after 6 seconds?

Solution:

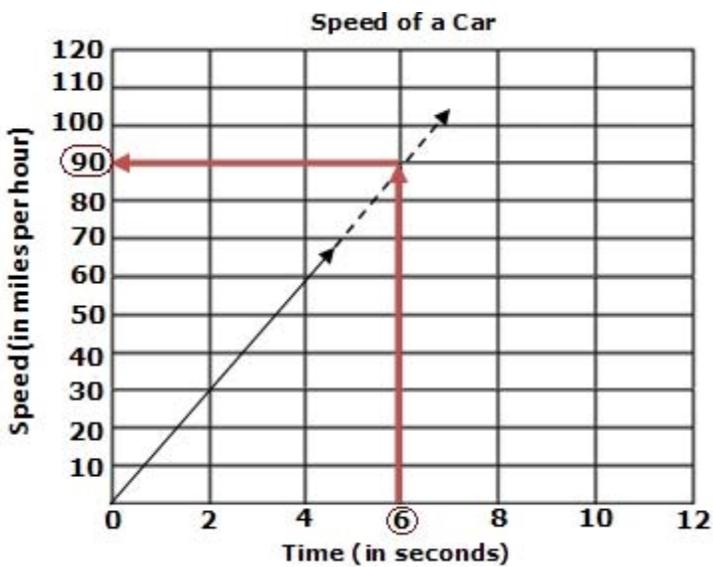
The line in the graph is not long enough.

First extend the line.





From the point where the vertical line meets the extended line the graph, draw a horizontal line towards the speed axis.



From the above graph you can see that the horizontal line ends at 90 in the speed axis.

Therefore, after 6 seconds, the speed of the accelerating car would be 90 miles per hour.

The answer is 90.

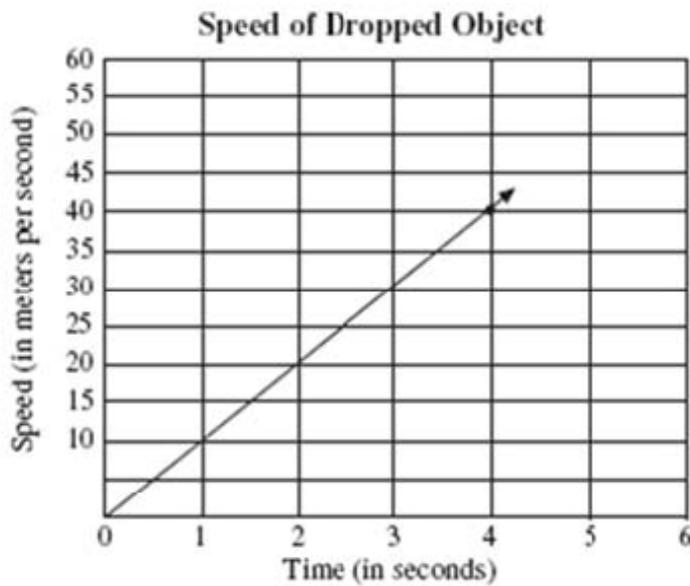
[Comment on Problem #33628](#)

Select one:

- I have read the example and now I am ready to try again.

Submit Answer Correct! **Now try the original problem again. You may look back at the worked example if that helps you.**

The graph below shows the speed of the dropped object over time.



Based on the graph, what will be the approximate speed of the dropped object after 5 seconds?

Do your best; if you cannot get the answer select hint to get the answer so you can go on.

[Comment on Problem #33629](#)

The speed of the dropped object would be 50 meters per second.

Select 50 meters per second.

[Comment on Hint #27152](#)

Select one:

- ⌘ 5 meters per second
- ⌘ 25 meters per second
- ⌘ 50 meters per second
- ⌘ 75 meters per second

Submit Answer

Correct! You are done with this problem!

[Comment on Assistent #26262](#)

Assistment

You are previewing content.

According to the pattern shown in the table below, what is the value of y when x is 12?

x	y
5	25
10	50
12	?
17	85

[Comment on Problem #33634](#)

[Request Help](#)

Type your answer below (mathematical expression):

✖

Submit Answer

Let's move on and figure out this problem

Let's look at the solution for a problem similar to the one in the red box above:

According to the pattern shown in the table below, what is the value of y when x is 9 ?

x	y
3	9
6	18
9	?
12	36

Solution:

We have to find an equation that relates x and y.

Let's take first set of values, where $x = 3$ and $y = 9$.

It seems $3^2 = 9 = y$ and $3 * 3 = 9 = y$ which means $x^2 = y$ and $x * 3 = y$ respectively.

Now let's take second set of values where $x = 6$ and $y = 18$. 6^2

$= 36$ (not equal to y) and $6 * 3 = 18 = y$.

So $x^2 = y$ is not the correct equation.

But $x * 3 = y$ is still true.

Now let's check if the fourth set of values also satisfies $x * 3 = y$, where $x = 12$ and $y = 36$. $x * 3 = 12 * 3 = 36 = y$ (Hooray!! It satisfies all set of values!!)

Hence $x * 3 = y$ is the correct equation.

So for the third set of values let's substitute x with 9 and find the value of y .

$$x * 3 = 9 * 3 = 27 = y$$

Therefore when $x = 9$, $y = 27$.

The answer is 27.

[Comment on Problem #33636](#)

Select one:

⌘

I have read the example and now I am ready to try again.

Submit Answer

Correct!

Now try the original problem again. You may look back at the worked example if that helps you.

According to the pattern shown in the table below, what is the value of y when x is 12?

x	y
5	25
10	50
12	?
17	85

Do your best; if you cannot get the answer select hint to get the answer so you can go on.

[Comment on Problem #33637](#)

When $x = 12$, $y = 60$.

Type in 60.

[Comment on Hint #27156](#)

Type your answer below (mathematical expression):

- 60

Submit Answer

Correct! You are done with this problem!

[Comment on Assistentment #26265](#)

Assistment

You are previewing content.

What value of p makes the equation below true?

$$3p + 1 = 13 \text{ Note : } 3p \text{ means } 3 \text{ times } p.$$

[Comment on Problem #33638](#)

Request Help

Type your answer below (mathematical expression):

•

Submit Answer

Let's move on and figure out this problem

Let's look at the solution for a problem similar to the one in the red box above:

What value of d makes the equation below true?

$$4d + 5 = 25 \text{ Note : } 4d \text{ means } 4 \text{ times } d.$$

Solution:

Lets break this problem into parts. First we can find what number goes in the blue box below.

$$\boxed{} + 5 = 25$$

Realize that the number in the box is 5 less than 25.

20 is 5 less than 25.

Hence the number in the box is 20.

Let's look at the numbers in the box now.

We had $4d + 5 = 25$

Now we have $20 + 5 = 25$

So $4d = 20$

!! Remember that "4d " means "4 times d" or "4 multiplied to d" or $4 * d$!!

So $4 * d = 20$

Using the fact family:

$$d = 20 \div 4$$

$$d = 5$$

Therefore the expression $4d + 5 = 25$ is true when $d = 5$.

[Comment on Problem #33639](#)

Select one:

⌘

I have read the example and now I am ready to try again.

Submit Answer

Correct!

Now try the original problem again. You may look back at the worked example if that helps you.

What value of p makes the equation below true?

661 | Page

<http://assistment3.cs.wpi.edu/build/preview/assistment/26266>

$3p + 1 = 13$ Note : $3p$ means

3 times p .

Do your best; if you cannot get the answer select hint to get the answer so you can go on.

[Comment on Problem #33640](#)

$3p + 1 = 13$ is true when $p = 4$.

Type in 4.

[Comment on Hint #27157](#)

Type your answer below (mathematical expression):

⌘4

Submit Answer

Correct! You are done with this problem!

[Comment on Assistentment #26266](#)

Assistment

You are previewing content.

Cai bought popcorn for herself and 2 friends, plus a drink only for herself. The popcorn cost \$2 for each person, and the total cost for Cai's purchase was \$7.50. If d is the cost of a drink, which equation below could be used to determine the cost of Cai's drink?

[Comment on Problem #33791](#)

[Request Help](#)

Select one:

- $2 + d = \$7.50$
- $2 + 2d = \$7.50$
- $3(2) + d = \$7.50$
- $3(2) + 3d = \$7.50$

[Submit Answer](#)

Let's move on and figure out this problem

Let's look at the solution for a problem similar to the one in the red box above:

Michelle bought coffees for herself and 2 friends, plus a chocolate only for herself. The coffee cost \$4 for each person, and the total cost for Michelle's purchase was \$12.50. If p is the cost of a chocolate, write an equation that could be used to determine the cost of Michelle's chocolate?

Solution

First, figure out the total number of coffees and chocolates that Michelle bought.

Read the colored portion of the question below.

Michelle bought **coffees for herself and 2 friends**, **plus a chocolate only for herself**. The coffee cost \$4 for each person, and the total cost for Michelle's purchase was \$12.50. If p is the cost of a chocolate, write an equation that could be used to determine the cost of Michelle's chocolate?

Notice that Michelle bought 3 coffees and 1 chocolate.

Now figure out how much does 1 coffee and 1 chocolate cost.

Read the colored portion of the question below.

Michelle bought coffees for herself and 2 friends, plus a chocolate only for herself. The coffee cost \$4 for each person, and the total cost for Michelle's purchase was \$12.50. If p is the cost of a chocolate, write an equation that could be used to determine the cost of Michelle's chocolate?

Notice that each coffee costs \$4.00 and each chocolate costs p dollars.

So if Michelle bought 3 coffees, she would spend $3 * 4$ for coffees.

Similarly if she bought only one chocolate she would spend p dollars for a chocolate.

So Michelle spent $(3*4 + p)$ dollars in total.

The question says total cost for Michelle's purchase was 12.50 dollars.

Therefore, $3*4 + p = 12.50$

Note that $3 * 4$ can also be written as $3(4)$.

Hence $3(4) + p = 12.50$ could be used to determine the cost of Michelle's chocolate.

[Comment on Problem #33792](#)

Select one:

- I have read the example and now I am ready to try again.

Submit Answer

Correct!

Now try the original problem again. You may look back at the worked example if that helps you.

Cai bought popcorn for herself and 2 friends, plus a drink only for herself. The popcorn cost \$2 for each person, and the total cost for Cai's purchase was \$7.50. If d is the cost of a drink, which equation below could be used to determine the cost of Cai's drink?

Do your best; if you cannot get the answer select hint to get the answer so you can go on.

[Comment on Problem #33793](#)

$3(2) + d = \$7.50$ can be used to determine the cost of Cai's drink.

Select $3(2) + d = \$7.50$

[Comment on Hint #27350](#)

Select one:

-
- $2 + 2d = \$7.50$
- $3(2) + d = \$7.50$
- $2 + d = \$7.50$
- $3(2) + 3d = \$7.50$ Submit

Answer Correct! You are done

with this problem!

[Comment on Assistentment #26309](#)

Assistment

You are previewing content.

A booth at the State Fair is offering pony rides for children. The table below shows the relationship between the number of rides a child takes and the cost of the rides.

Pony Rides	
Number	Cost
1	\$2.00
2	\$2.50
3	\$3.00
4	\$3.50
10	?

If the pattern continues in the same way, what is the cost for 10 rides? (Don't write \$ symbol)

[Comment on Problem #33795](#)

Request Help

Type your answer below (mathematical expression):

•

Submit Answer Let's move on and figure

out this problem

Let's look at the solution for a problem similar to the one in the red box above:

A booth at Central Park is offering bike rides for children. The table below shows the relationship between the number of rides a child takes and the cost of the rides.

Bike Rides	
------------	--

Number	Cost
1	\$3.00
2	\$5.00
3	\$7.00
4	\$9.00
10	?

If the pattern continues in the same way, what is the cost for 10 rides? (Don't write \$ symbol)

Solution

First try to understand the pattern in the table.

Try to find out how much more money should a child spend for each ride. In other words what goes in the blue box on this table.

Bike Rides	
Number	Cost
1	\$3.00
2	\$5.00
3	\$7.00
4	\$9.00



\$2.00 goes in the blue box above. Therefore for each additional ride the child has to pay \$2.00 more as shown below.

Bike Rides	
Number	Cost
1	\$3.00
2	\$5.00
3	\$7.00
4	\$9.00

Now complete the table by adding \$2 for each additional ride.

The completed table would look like the following.

Bike	Rides
Number	Cost
1	\$3.00
2	\$5.00
3	\$7.00
4	\$9.00
5	\$11.00
6	\$13.00
7	\$15.00
8	\$17.00
9	\$19.00
10	\$21.00

From the highlighted part in the table we can see that the cost for 10 rides is 21.

Hence the cost of 10 rides is 21.

[Comment on Problem #33796](#)

Select one:

- I have read the example and now I am ready to try again.

Submit Answer Correct! **Now try the original problem again. You may look back at the worked example if that helps you.**

A booth at the State Fair is offering pony rides for children. The table below shows the relationship between the number of rides a child takes and the cost of the rides.

Pony Rides	
Number	Cost
1	\$2.00
2	\$2.50
3	\$3.00
4	\$3.50
10	?

If the pattern continues in the same way, what is the cost for 10 rides? (Don't write \$ symbol)

Do your best; if you cannot get the answer select hint to get the answer so you can go on.

[Comment on Problem #33797](#)

The cost of 10 rides is \$6.50.

Type in 6.50

[Comment on Hint #27570](#)

Type your answer below (mathematical expression):

- 6.5

Submit Answer

Correct! You are done with this problem!

[Comment on Assistentment #26310](#)

Assistment

You are previewing content.

A booth at the State Fair is offering pony rides for children. The table below shows the relationship between the number of rides a child takes and the cost of the rides.

Pony Rides	
Number	Cost
1	\$2.00
2	\$2.50
3	\$3.00
4	\$3.50
?	\$5.50

Francie had \$5.50 to spend. What is the **greatest** number of rides she could take?

[Comment on Problem #33798](#)

Request Help

Type your answer below (mathematical expression):

✖

Submit Answer

Let's move on and figure out this problem

Let's look at the solution for a problem similar to the one in the red box above:

A booth at Central Park is offering bike rides for children. The table below shows the relationship between the number of rides a child takes and the cost of the rides.

Bike Rides	
Number	Cost
1	\$3.00

2	\$5.00
3	\$7.00
4	\$9.00
?	\$15.00

Matt had \$15.00 to spend. What is the greatest number of rides he could take?

Solution

First try to understand the pattern in the table.

Try to find out how much more money should a child spend for each ride. In other words what goes in the blue box on this table.

Bike Rides	
Number	Cost
1	\$3.00
2	\$5.00
3	\$7.00
4	\$9.00

\$2.00 goes in the blue box above. Therefore for each additional ride the child has to pay \$2.00 more as shown below.

Bike Rides	
Number	Cost
1	\$3.00
2	\$5.00
3	\$7.00
4	\$9.00

Now, complete the table by adding \$2 for each additional ride until you get \$15 as cost.

The completed table would like the following.

Bike Rides	
Number	Cost
1	\$3.00
2	\$5.00
3	\$7.00
4	\$9.00
5	\$11.00
6	\$13.00
7	\$15.00

From the highlighted part in the table, we can see that Matt could at most have 7 rides with \$15.

Hence the greatest number of rides that Matt could take is 7.

[Comment on Problem #33799](#)

Select one:

- ⌘ I have read the example and now I am ready to try again.

Submit Answer Correct! **Now try the original problem again. You may look back at the worked example if that helps you.**

A booth at the State Fair is offering pony rides for children. The table below shows the relationship between the number of rides a child takes and the cost of the rides.

Pony Rides	
Number	Cost

1	\$2.00
2	\$2.50
3	\$3.00
4	\$3.50
?	\$5.50

Francie had \$5.50 to spend. What is the **greatest** number of rides she could take?

Do your best; if you cannot get the answer select hint to get the answer so you can go on.

[Comment on Problem #33800](#)

The greatest number of rides that Francie can take is 8.

Type in 8.

[Comment on Hint #27352](#)

Type your answer below (mathematical expression):

⌘8

Submit Answer

Correct! You are done with this problem!

[Comment on Assistent #26311](#)

Assistment

You are previewing content.

A booth at the State Fair is offering pony rides for children. The table below shows the relationship between the number of rides a child takes and the cost of the rides.

Pony Rides	
Number	Cost
1	\$2.00
2	\$2.50
3	\$3.00
4	\$3.50

Write an expression using n to show the cost of n rides.

(Use * for multiplication)

[Comment on Problem #33802](#)

[Request Help](#)

Type your answer below (mathematical expression):

•

Submit Answer Let's move on and figure

out this problem

Let's look at the solution for a problem similar to the one in the red box above:

A booth at Central Park is offering bike rides for children. The table below shows the relationship between the number of rides a child takes and the cost of the rides.

Bike Rides	
Number	Cost
1	\$3.00
2	\$5.00
3	\$7.00
4	\$9.00

Write an expression using n to show the cost of n rides.

(Use * for multiplication)

Solution

First try to understand the pattern in the table.

Notice that the number of rides is increasing by 1 in each row.

Bike Rides	
Number	Cost
1	\$3.00
2	\$5.00
3	\$7.00
4	\$9.00

+ 1 = 2
 + 1 = 3
 + 1 = 4

+ \$2.00 = \$5.00
 + \$2.00 = \$7.00
 + \$2.00 = \$9.00

But the cost of first ride is \$3.00!!

It's because it includes **entrance fee** as well.

Since the cost of a ride is \$2.00, **the entrance fee** = \$3.00 - \$2.00 = \$1.00

Now,

Total Cost = **Entrance Fee** + Cost of n rides

Let's first find the cost of n rides.

1 ride costs \$2.00
Therefore n rides cost $n * \$2.00$

Therefore,
Total Cost = **Entrance Fee** + Cost of n rides
= $1.00 + n * 2.00$

Hence the cost of n rides is $1 + n * 2$.

[Comment on Problem #33803](#)

Select one:

- * I have read the example and now I am ready to try again.

Submit Answer

Correct!

Now try the original problem again. You may look back at the worked example if that helps you.

A booth at the State Fair is offering pony rides for children. The table below shows the relationship between the number of rides a child takes and the cost of the rides.

Pony Rides	
Number	Cost
1	\$2.00
2	\$2.50
3	\$3.00
4	\$3.50

Write an expression using n to show the cost of n rides.

(Use * for multiplication)

Do your best; if you cannot get the answer select hint to get the answer so you can go on.

[Comment on Problem #33804](#)

The cost of n rides is $1.5+0.5*n$.

Type in $1.5 + 0.5 * n$

[Comment on Hint #27353](#)

Type your answer below (mathematical expression):

⌘1.5+n*0.5

Submit Answer

Correct! You are done with this problem!

[Comment on Assistentment #26313](#)

Assistment

You are previewing content.

Admission to the Basketball Hall of Fame in Springfield is \$5.00 per student. A group of students bought admission tickets. One student spent an extra \$9.00 for a poster. The total amount they spent was \$34.00. How many students were in the group?

[Comment on Problem #33811](#)

Request Help

Type your answer below (mathematical expression):

⌘

Submit Answer

Let's move on and figure out this problem

Let's look at the solution for a problem similar to the one in the red box above:

Admission to the Harrington Auditorium in Worcester is \$10.00 per student. A group of students bought admission tickets. One student spent an extra \$15.00 for a poster. The total amount they spent was \$55.00. How many students were in the group?

Solution

Let's suppose that the first student is the one who spent an extra \$15.00 for the poster.

Then

Total money spent by the first student = Cost of admission + Cost of a poster = \$10.00 + \$15.00 = \$25.00

Let's start making table now.

Number of Students	Cost
1	25.00
2	?

Now let's find the total cost if there were 2 students in the group.

We know, now additional students in the group would have to pay for admission only.

Therefore the cost would increase by the amount of admission fee which is \$10.00.

Therefore if there are 2 students in the group:

Number of Students	Cost
1	\$25.00
2	$\$25.00 + \$10.00 = \$35.00$
3	?

Total cost is not yet \$55.00. That means there were more students in the group.

We would continue filling the table until we get \$55 in the cost column.

The completed table would like:

When the number of students in the group is 4, the total cost is \$55.00.

Number of Students	Cost
1	\$25.00
2	\$25.00 + \$10.00 = \$35.00

3	$\$35.00 + \$10.00 = \$45.00$
4	$\$45.00 + \$10.00 = \$55.00$

Therefore there were 4 students in the group.

[Comment on Problem #33812](#)

Select one:

- I have read the example and now I am ready to try again.

Submit Answer Correct! **Now try the original problem again. You may look back at the worked example if that helps you.**

Admission to the Basketball Hall of Fame in Springfield is \$5.00 per student. A group of students bought admission tickets. One student spent an extra \$9.00 for a poster. The total amount they spent was \$34.00. How many students were in the group?

Do your best; if you cannot get the answer select hint to get the answer so you can go on.

[Comment on Problem #33813](#)

There were 5 students in the group.

Select 5.

[Comment on Hint #27354](#)

Type your answer below (mathematical expression):

- 5

Submit Answer

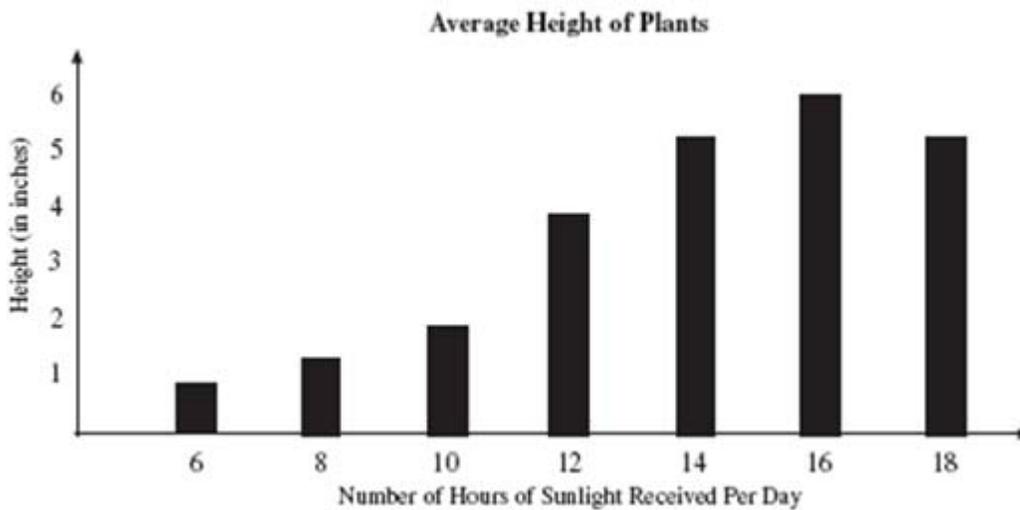
Correct! You are done with this problem!

[Comment on Assisment #26314](#)

Assistment

You are previewing content.

The graph below shows the average height of plants based on a specific number of hours of sunlight received daily.



According to the graph, which of the following is a true statement?

[Comment on Problem #33849](#)

[Request Help](#)

Select one:

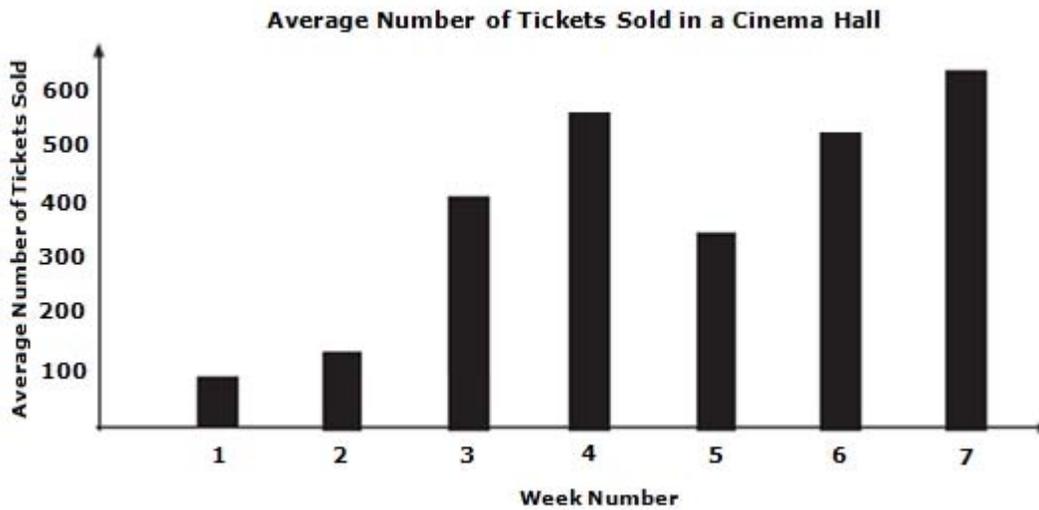
- The plants grow taller as the number of hours of sunlight the plants receive increases.
- The average height of the plants cannot be taller than 3 inches with less than 18 hours of sunlight per day.
- The average height of the plants is taller with 16 hours of sunlight per day than with 14 hours of sunlight per day.
- The average height of the plants is taller with 12 hours of sunlight per day than with 14 hours of sunlight per day.

[Submit Answer](#)

Let's move on and figure out this problem

[Let's look at the solution for a problem similar to the one in the red box above:](#)

The graph below shows the average number of tickets sold in the first seven weeks of a year by a cinema hall.



According to the graph, which of the following is a true statement?

- A. The number of tickets sold increases as the weeks in a year progresses.
- B. The average number of tickets sold was not more than 500 for first 5 weeks.
- C. The average number of tickets sold was more for the third week than the fourth week.
- D. The average number of tickets sold was more for the seventh week than the fourth week.

Solution

Let's check all the given options one by one.

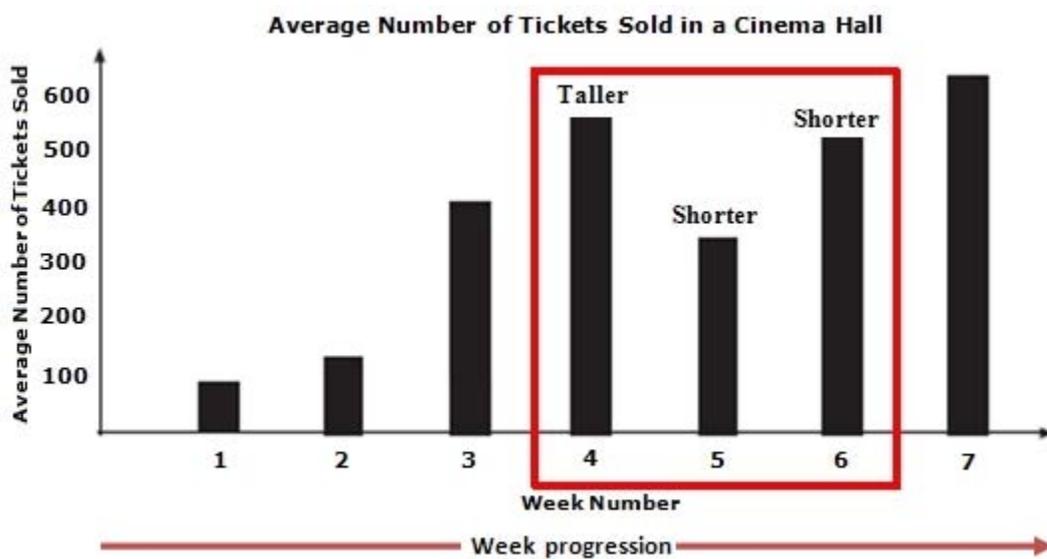
Notice that the height of the bar corresponds to the average number of tickets sold.

Let's check option A first.

It says "The number of tickets sold increases as the weeks in a year progresses."

That means the height of the bar should increase as the number of weeks increases.

Note: We can see the progression of the week by looking at the axis for week number at the bottom of the graph.



It's definitely not the case here. The bars in the fifth and sixth weeks are smaller than the bar in the fourth week.

So the average number of tickets sold **does not** increase as the number of weeks in a year progresses.

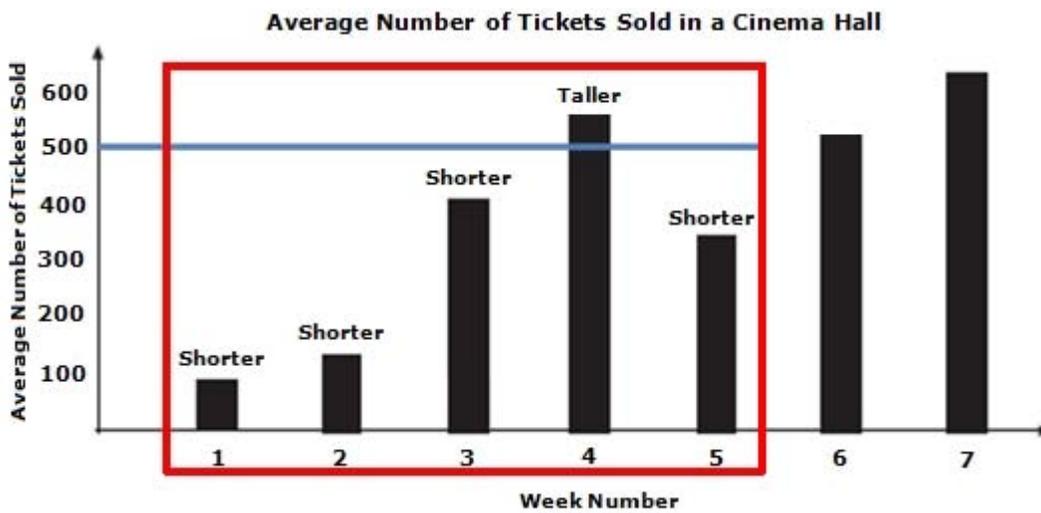
So A is FALSE.

Let's check option B now.

It says **"The average number of tickets sold was not more than 500 for first 5 weeks."**

Look at the first five bars. Draw a horizontal line from 500 in the average number of tickets sold axis.

The option says no bars are taller than 500. That means no bars are above the horizontal blue line drawn from 500 in the number of tickets sold axis as shown in the picture below.

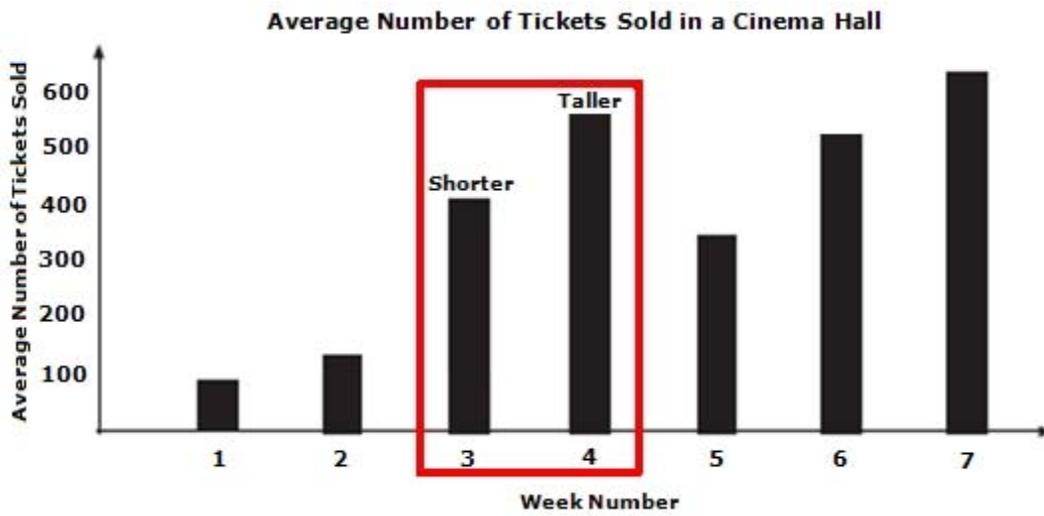


It's definitely not the case here. The bar in the fourth week is taller than 500.

So option B is also FALSE.

Let's check option C now. It says **"The average number of tickets sold was more for third week than the fourth week."**

That means the bar in the third week is taller than the bar in the fourth week.



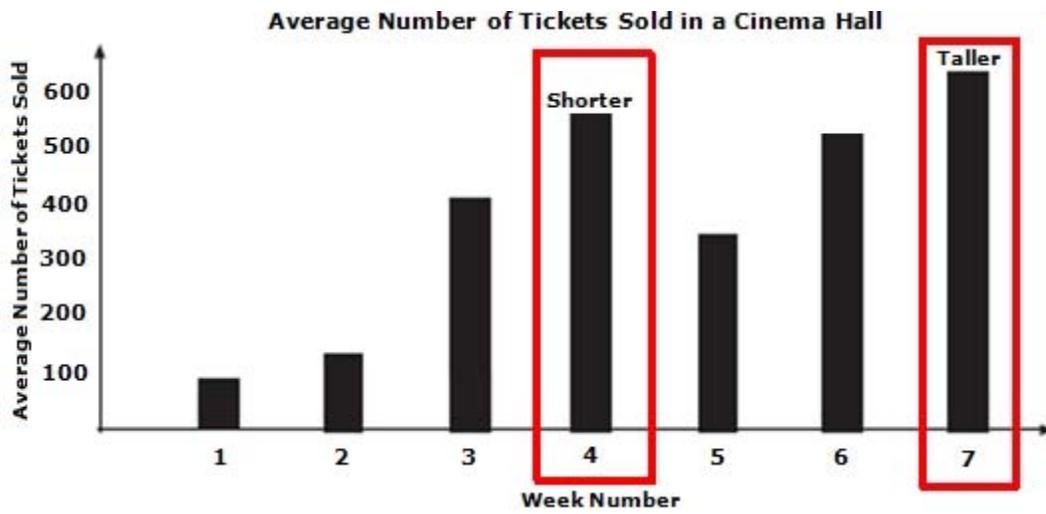
No it's not the case. The bar in the third week is not taller than the bar in the fourth week.

So option C is also FALSE.

Now we know option D must be true.

But let's check that as well.

It says "**The average number of tickets sold was more for seventh week than the fourth week.**" It means the bar in the seventh week is taller than the bar in the fourth week.



Oh! it is. The bar in the seventh week is in fact taller than the bar in the fourth week.

So option D is the TRUE statement.

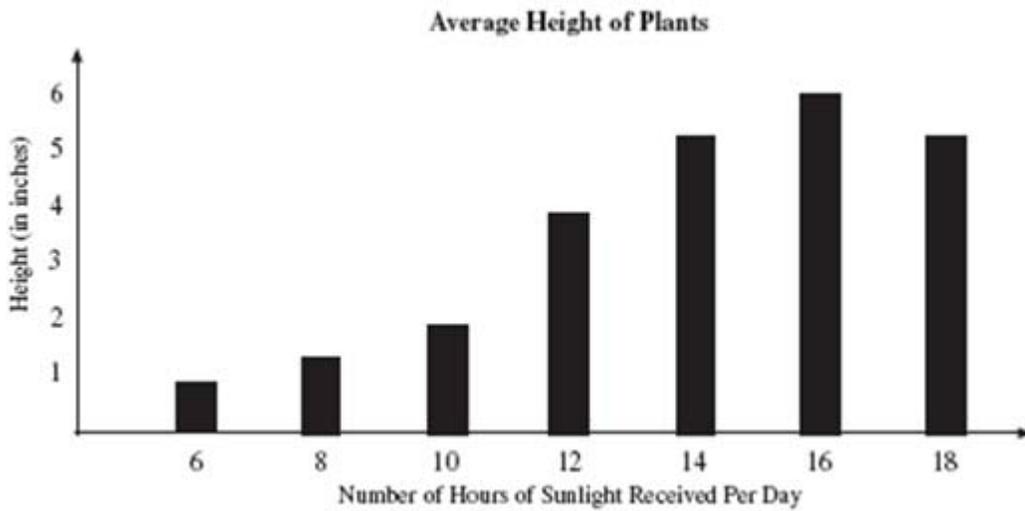
[Comment on Problem #33850](#)

Select one:

- I have read the example and now I am ready to try again.

Submit Answer Correct! **Now try the original problem again. You may look back at the worked example if that helps you.**

The graph below shows the average height of plants based on a specific number of hours of sunlight received daily.



According to the graph, which of the following is a true statement?

Do your best; if you cannot get the answer select hint to get the answer so you can go on.

[Comment on Problem #33851](#)

The fourth option "The average height of the plants is taller with 16 hours of sunlight per day than with 14 hours of sunlight per day." is the only true statement.

Select it.

[Comment on Hint #27436](#)

Select one:

- The average height of the plants cannot be taller than 6 inches with less than 16 hours of sunlight per day.
- The average height of the plants is taller with 12 hours of sunlight per day than with 14 hours of sunlight per day.
- The average height of the plants is taller with 16 hours of sunlight per day than with 14 hours of sunlight per day.

Submit Answer

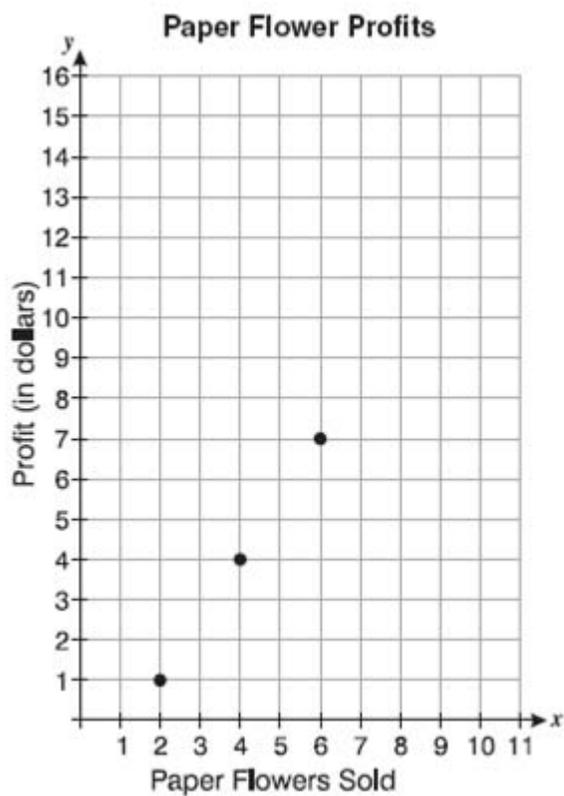
Correct! You are done with this problem!

[Comment on Assisment #26326](#)

Assistment

You are previewing content.

A local charity group made paper flowers for a craft fair. The graph below shows their profit based on the number of flowers sold.



If the relationship shown by the graph continues, what would the profit be if the group sold 10 flowers?

[Comment on Problem #33852](#)

Request Help

Type your answer below (mathematical expression):

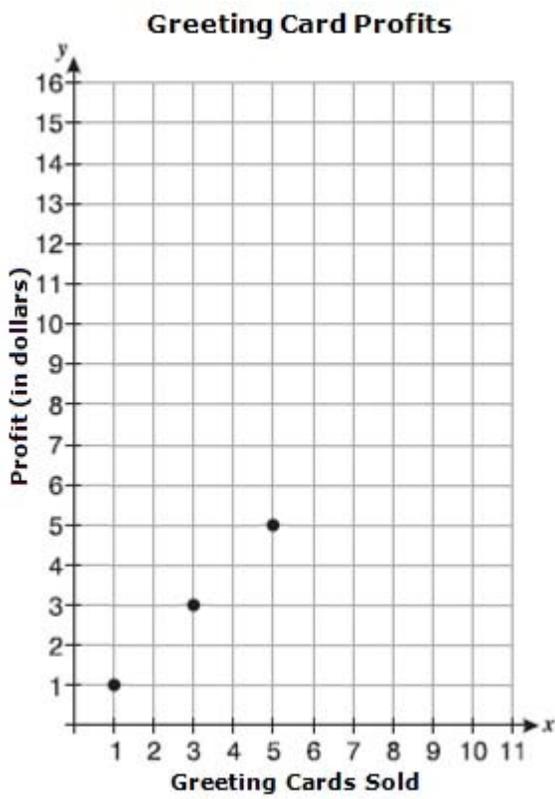
⌘

Submit Answer

Let's move on and figure out this problem

Let's look at the solution for a problem similar to the one in the red box above:

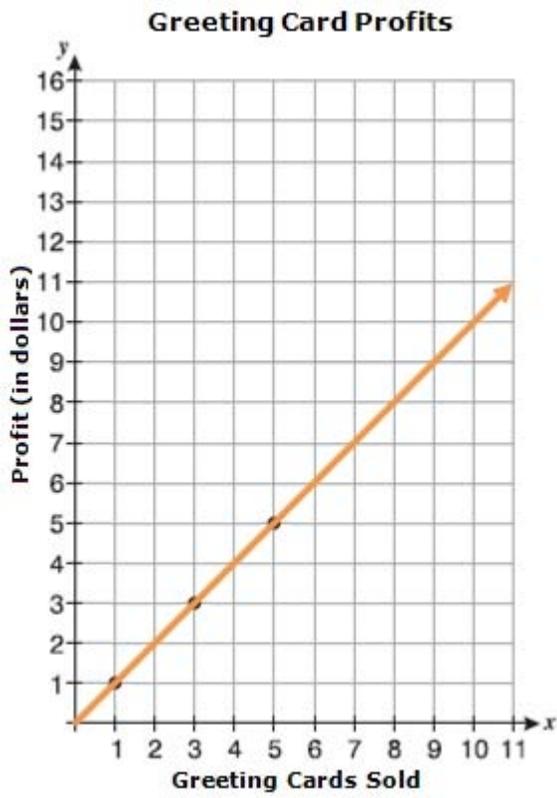
A local charity group made greeting cards for a craft fair. The graph below shows their profit based on the number of cards sold.



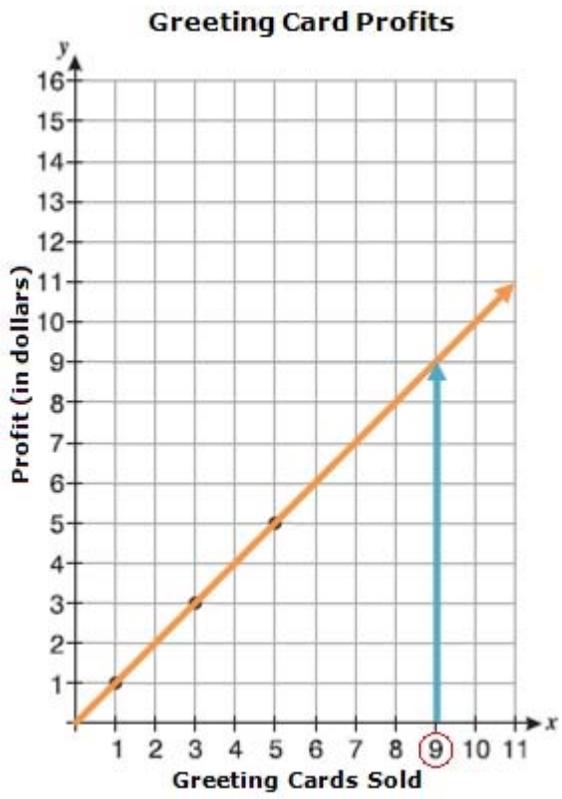
If the relationship shown by the graph continues, what would the profit be if the group sold 9 greeting cards?

Solution

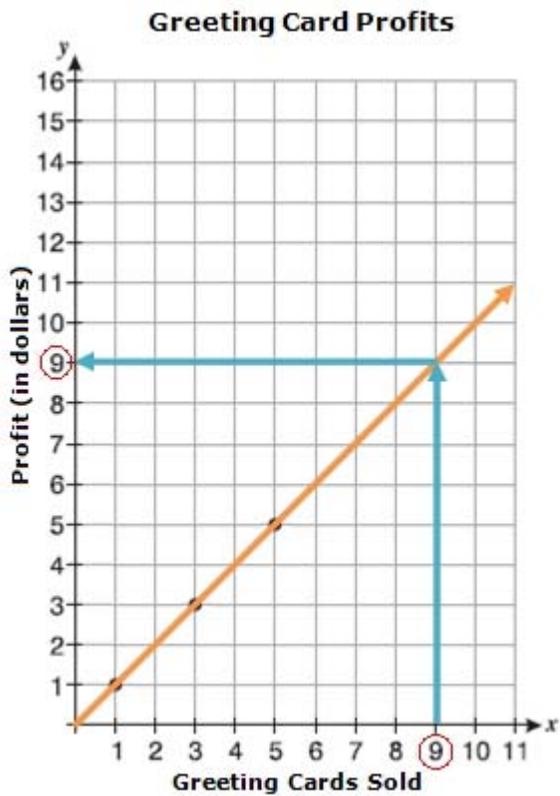
First draw a straight line joining all given points. It will give you the relation between greeting cards sold and profit made.



We want to find the profit made when 9 greeting cards are sold. So draw a vertical line from 9 in the greeting cards sold axis to the orange line.



Now draw a horizontal line from the point you reached in the orange line towards the Profit (in dollars) axis.



The number you reached in the Profit (in dollars) axis is the profit made.

So if the group sold 9 greeting cards, they made 9 dollars profit.

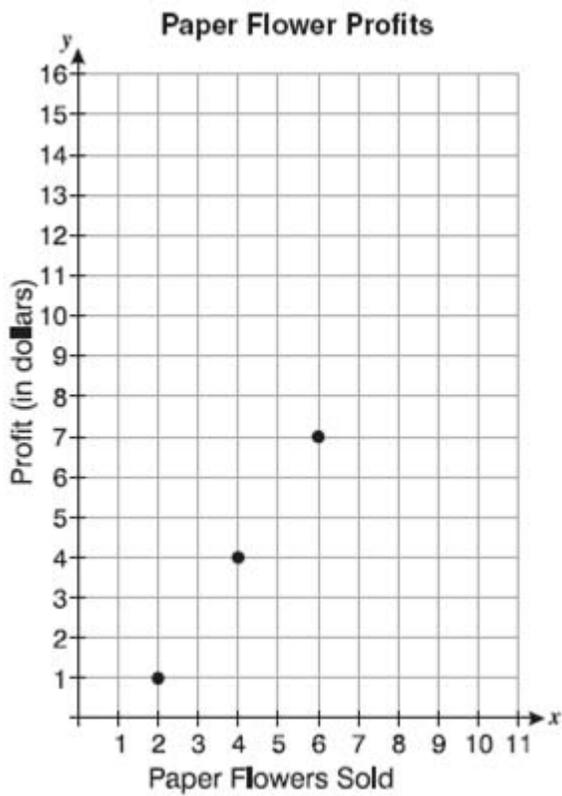
[Comment on Problem #33853](#)

Select one:

- I have read the example and now I am ready to try again.

Submit Answer Correct! **Now try the original problem again. You may look back at the worked example if that helps you.**

A local charity group made paper flowers for a craft fair. The graph below shows their profit based on the number of flowers sold.



If the relationship shown by the graph continues, what would the profit be if the group sold 10 flowers?

Do your best; if you cannot get the answer select hint to get the answer so you can go on.

[Comment on Problem #33854](#)

If the group sold 10 flowers it would make 13 dollars profit.

Type in 13.

[Comment on Hint #27437](#)

Type your answer below (mathematical expression):

⌘13

Submit Answer

Correct! You are done with this problem!

[Comment on Assistentment #26327](#)

Assistment

You are previewing content.

What is the value of the expression below when $x = 16$?

$$2x + 15$$

[Comment on Problem #33185](#)

Request Help

Type your answer below (mathematical expression):

•

Submit Answer

Let's move on and figure out this problem

Let's look at the solution for a problem similar to the one in the red box above:

What is the value of the expression below when $a = 12$? $3a$

$$+ 19$$

Solution

Remember that $3a$ means 3 times a , that is $3 * a$.

Also notice that $a = 12$. Now substitute a with 12.

So,

$$\begin{aligned} 3a + 19 &= 3 * a + 19 \\ &= 3 * 12 + 19 \end{aligned}$$

Now just follow PE (MD) (AS)

Parenthesis, Exponents, Multiplication and Division (from left to right), Addition and Subtraction (from left to right).

$3 * 12 + 19$ has a multiplication and an addition to do.

Multiplication comes before addition in PE (MD)(AS)

So do multiplication first.

This would give you

$$3 * 12 + 19 = 36 + 19 = 55$$

Therefore, the expression $3a + 19$ equals 55 when $a = 12$.

[Comment on Problem #33186](#)

Select one:

- I have read the example and now I am ready to try again.

Submit Answer Correct! **Now try the original problem again. You may look back at the worked example if that helps you.**

What is the value of the expression below when $x = 16$?

$$2x + 15$$

Do your best; if you cannot get the answer select hint to get the answer so you can go on.

[Comment on Problem #33187](#)

The expression $2x + 15$ equals 47 when $x = 16$.

Type in 47.

[Comment on Hint #26518](#)

Type your answer below (mathematical expression):

⌘47

Submit Answer

Correct! You are done with this problem!

[Comment on Assisment #26125](#)

Assistment

You are previewing content.

What is the value of the expression below when $\Delta = 8$?

$$\frac{\Delta}{2} - 2$$

[Comment on Problem #33188](#)

Request Help

Type your answer below (mathematical expression):

✖

Submit Answer

Let's move on and figure out this problem

Let's look at the solution for a problem similar to the one in the red box above:

What is the value of the expression below when $\# = 15$?

$$\frac{\#}{3} - 3$$

Solution

First note that $\# = 15$. Then substitute $\#$ with

15 in the expression.

This would give you $\frac{15}{3} - 3$

Now just follow PE (MD) (AS).

Parenthesis, Exponents, Multiplication and Division (from left to right), Addition and Subtraction (from left to right). The expression has a division and a subtraction to do. Division comes before subtraction in PE(MD)(AS). So you must do the division first.

$$\frac{15}{3} = 15 \div 3 = 5$$

So,

$$\frac{\#}{3} - 3$$

$$= \frac{15}{3} - 3$$

$$= 5 - 3$$

$$= 2$$

The expression equals 2 when # = 15.

[Comment on Problem #33189](#)

Select one:

⌘

I have read the example and now I am ready to try again. Submit

Answer

Correct!

Now try the original problem again. You may look back at the worked example if that helps you.

What is the value of the expression below when $\Delta = 8$?

$$\frac{\Delta}{2} - 2$$

Do your best; if you cannot get the answer select hint to get the answer so you can go on.

[Comment on Problem #33190](#)

$$\frac{\Delta}{2} - 2$$

would equal to 2 when $\Delta = 8$.

Type in 2.

[Comment on Hint #26520](#)

Type your answer below (mathematical expression):

- 2

Submit Answer

Correct! You are done with this problem!

[Comment on Assistentment #26126](#)

Assistment

You are previewing content.

Based on the pattern in the input-output table below, what is the value of y when $x = 4$?

Input (x)	Output (y)
1	7
2	14
3	21
4	?

[Comment on Problem #33191](#)

Request Help

Type your answer below (mathematical expression):

⌘

Submit Answer

Let's move on and figure out this problem

Let's look at the solution for a problem similar to the one in the red box above:

Based on the Quantity-Cost relation shown in the table below, what is the value of y when $x = 10$?

Quantity (x)	Cost (y)
2	6
4	12
6	18
8	24
10	?

Solution

Notice that in each row **quantity** is increasing by 2.

Also notice that in each row **cost** is increasing by 6.

So when $x = 10$, corresponding y should be 6 more than the y just above that row. y just above that row is 24.

Quantity (x)	Cost (y)
2	6
4	12
6	18
8	24
10	?

$2 + 2 = 4$

$4 + 2 = 6$

$6 + 2 = 8$

$8 + 2 = 10$

$6 + 6 = 12$

$12 + 6 = 18$

$18 + 6 = 24$

$24 + 6 = ?$

←

←

←

←

= 30

Therefore when y is 30 when $x = 10$.

The answer is 30.

[Comment on Problem #33192](#)

Select one:

- I have read the example and now I am ready to try again.

Submit Answer Correct! **Now try the original problem again. You may look back at the worked example if that helps you.**

Based on the pattern in the input-output table below, what is the value of y when $x = 4$?

Input (x)	Output (y)
1	7
2	14
3	21
4	?

Do your best; if you cannot get the answer select hint to get the answer so you can go on.

[Comment on Problem #33193](#)

When $x = 4$, $y = 28$.

Type in 28.

[Comment on Hint #26522](#)

Type your answer below (mathematical expression):

- 28

Submit Answer

Correct! You are done with this problem!

[Comment on Assistent #26127](#)

Assistment

You are previewing content.

Which of the following represents the statement "3 times the sum of 2 and 4"?

[Comment on Problem #33630](#)

[Request Help](#)

Select one:

$3 * 2 + 4$

$3 + (2 * 4)$

$3 * 4 + 2$

$3 * (2 + 4)$

Submit Answer

Let's move on and figure out this problem

Let's look at the solution for a problem similar to the one in the red box above:

Which of the following represents the statement "5 times the sum of 7 and 9"?

Solution:

Realize that a **times** b means a **multiplied to** b and hence $a * b$.

Also realize that the **sum of** c and d means c **added with** d and hence $c + d$.

Here we have : 5 **times** the **sum of** 7 and 9 the sum of 7 and

9 means 7 **added with** 9 and hence $7 + 9$.

So

5 times the sum of 7 and 9 = 5 times (7 + 9) 5 times (7 + 9) means 5 multiplied to (7 + 9) and hence $5 * (7 + 9)$.

Therefore $5 * (7 + 9)$ represents "5 times the sum of 7 and 9".

[Comment on Problem #33631](#)

Select one:

⌘

I have read the example and now I am ready to try again.

Submit Answer

Correct!

Now try the original problem again. You may look back at the worked example if that helps you.

Which of the following represents the statement "3 times the sum of 2 and 4"?

Do your best; if you cannot get the answer select hint to get the answer so you can go on.

[Comment on Problem #33632](#)

The statement "3 times the sum of 2 and 4" is represented by $3 * (2 + 4)$.

Select $3 * (2 + 4)$.

[Comment on Hint #27154](#)

Select one:

⌘

⌘

⌘

$3 + (2 * 4)$

⌘

$3 * 2 + 4$

$3 * (2 + 4)$ Submit

Answer Correct!

You are done with this problem!

[Comment on Assistent #26263](#)

Assistment

You are previewing content.

Arnie wrote the number pattern below:

1, 2, 5, 14, 41

If the pattern continues in the same way, which of the following rules can Arnie use to find the next number in the number pattern?

[Comment on Problem #34008](#)

Request Help

Select one:

- A. Add 1
- B. Multiply by 2
- C. Multiply by 2; then add 1
- D. Multiply by 3; then subtract 1

Submit Answer

Let's move on and figure out this problem

Let's look at the solution for a problem similar to the one in the red box above:

Salina wrote the number pattern below:

1, 2, 6, 22, 86,..

If the pattern continues in the same way, which of the following rules can Salina use to find the next number in the number pattern?

A. Add 1

B. Multiply by 2

C. Multiply by 3, then subtract 1

D. Multiply by 4, then subtract 2

Solution

Let us look at one rule at a time and try to find the rule that works.

Rule A says, "Add 1". The first number in the sequence is 1.

According to the rule, the next number in the sequence should be $1 + 1 = 2$.

In fact the second number in the sequence is 2.

Then following the same rule, the third number in the sequence should be $2 + 1 = 3$

But 3 is not the third number in the sequence.

Hence rule A is not the correct rule.

Let's check rule B now.

Rule B says, "Multiply by 2". The first number in the sequence is 1.

According to the rule, the next number in the sequence should be $1 * 2 = 2$.

In fact the second number in the sequence is 2.

Then following the same rule, the third number in the sequence should be $2 * 2 = 4$

But 4 is not the third number in the sequence.

Hence rule B is not the correct rule.

Let's check rule C now.

Rule C says, "Multiply by 3; then subtract 1". The first number in the sequence is 1.

According to the rule, the next number in the sequence should be $(1 * 3) - 1 = 2$.

In fact the second number in the sequence is 2.

Then following the same rule, the third number in the sequence should be $(2 * 3) - 1 = 5$

But 5 is not the third number in the sequence.

Hence rule C is not the correct rule.

Let's check rule D now.

Rule D says, "Multiply by 4; then subtract 2". The first number in the sequence is 1.

According to the rule, the next number in the sequence should be $(1 * 4) - 2 = 2$.

In fact the second number in the sequence is 2.

Then following the same rule, the third number in the sequence should be $(2 * 4) - 2 = 6$

6 is in fact the third number in the sequence.

Follow the same pattern and, you will find that this rule gives all other numbers in the sequence as well. See below. $(6 * 4) - 2 = 22$ $(22 * 4) - 2 = 86$

So, Rule D is the correct Rule.

Hence Salina can use Rule D to find the next number in the number pattern.

[Comment on Problem #34009](#)

Select one:

- I have read the example and now I am ready to try again.

Submit Answer Correct! **Now try the original problem again. You may look back at the worked example if that helps you.**

Arnie wrote the number pattern below:

1, 2, 5, 14, 41

If the pattern continues in the same way, which of the following rules can Arnie use to find the next number in the number pattern?

Do your best; if you cannot get the answer select hint to get the answer so you can go on.

[Comment on Problem #34010](#)

Arnie can multiply the number by 3 and then subtract 1 to get the next number in the sequence.

Select "Multiply by 3; then subtract 1".

[Comment on Hint #27726](#)

Select one:

- A. Add 1
- B. Multiply by 2
- C. Multiply by 2; then add 1
- D. Multiply by 3; then subtract 1

Submit Answer

Correct! You are done with this problem!

[Comment on Assistent #26372](#)

Assistment

You are previewing content.

Kate gave 5 chocolates to each of her friend who attended her birthday party. She gave 5 more chocolates to the first friend who came to her party for being first. She gave 125 chocolates in total, how many of her friends attended her birthday party?

[Comment on this question](#)

Request Help

Type your answer below (mathematical expression):

⌘

Submit Answer

Let's move on and figure out this problem

Let's look at the solution for a problem similar to the one in the red box above:

The music professor gave 2 CDs to all his students who attended the guest artist's concert. He gave 1 more CD to a student who first entered the concert hall. If teacher gave away 61 CDs in total, how many students did attend the concert?

Solution

In total the Professor gave away 61 CDs. The first student got 2 plus 1 more CD, that is, 3 CDs.

Therefore,

$$\begin{aligned} \text{Remaining CDs} &= \text{Total CDs} - \text{CDs got by first student} = \\ 61 - 3 &= 58 \end{aligned}$$

All other students got 2 CDs of these remaining CDs.

Therefore,

$$\begin{aligned}\text{Remaining Students} &= \text{Remaining CDs} \div 2 \\ &= 58 \div 2 = 29\end{aligned}$$

Hence remaining students are 29.

Therefore,

$$\begin{aligned}\text{Total Students} &= \text{First Student} + \text{Remaining Students} \\ &= 1 + 29 = 30\end{aligned}$$

Therefore 30 students attended the concert.

[Comment on this question](#)

Select one:

- I have read the example and now I am ready to try again.

Submit Answer

Correct!

Now try the original problem again. You may look back at the worked example if that helps you.

Kate gave 5 chocolates to each of her friend who attended her birthday party. She gave 5 more chocolates to the first friend who came to her party for being first. She gave 125 chocolates in total, how many of her friends attended her birthday party?

Do your best; if you cannot get the answer select hint to get the answer so you can go on.

[Comment on this question](#)

24 of Kate's friends attended her birthday party. Type in 24.

[Comment on this hint](#)

Type your answer below (mathematical expression):

- 24

Submit Answer

Correct! You are done with this problem!

[Comment on this problem](#)

You are previewing content.

What does m equal to in this equation?

$$3m + 2 = 17$$

[Comment on this question](#)

Request Help

Type your answer below:

• _____

Submit Answer

Let's move on and figure out this problem

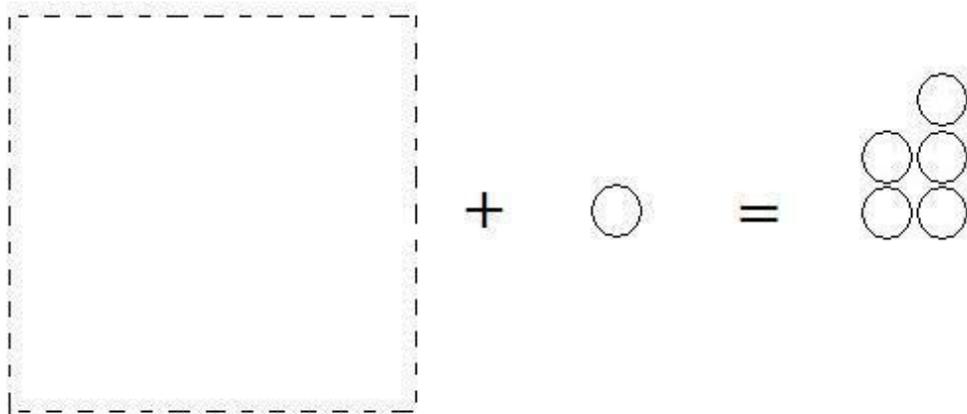
[Let's look at the solution for a problem similar to the one above:](#)

What does m equal to in this equation?

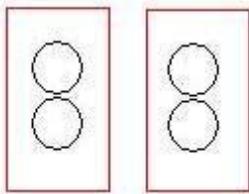
$$2m + 1 = 5$$

Solution to the Problem:

Let's first regard $2m$ as a pile of circles. From the equation, we know that we can obtain in total 5 circles by adding 1 additional circle to this pile. Please have a look at the following picture. $2m$ is the blank box. How many circles need to be in the blank box to keep the equation true?



After counting the circles, it's not difficult to find out that there should be 4 circles in the blank. So we know that $2m = 4$. Remember $2m = 2 * m = m + m$, which means that if we break the 4 circles into 2 equal parts, each part should have m circles in it. Please look at the picture below, which shows the result of dividing 4 circles into 2 parts.



From the picture, we can see each part has 2 circles in it. So the value of m is 2.

[Comment on this question](#)

Select one:

- I have read the example and now I am ready to try again.

Submit Answer

Correct!

What does m equal to in this equation?

$$3m + 2 = 17$$

[Comment on this question](#)

The correct answer is 5. Type in 5, please.

[Comment on this hint](#)

Type your answer below:

- 5

Submit Answer

Correct! You are done with this problem!

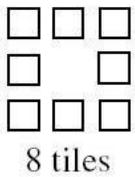
[Comment on this problem](#)

Assistment

You are previewing content.

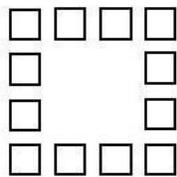
The first four figures in a pattern are shown below.

Figure 1



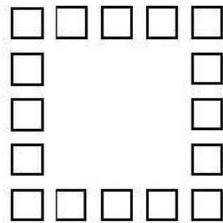
8 tiles

Figure 2



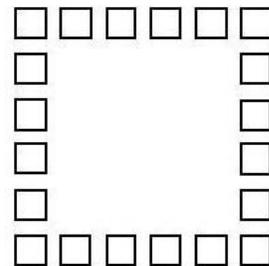
12 tiles

Figure 3



16 tiles

Figure 4



20 tiles

How many tiles will be in Figure 7?

[Comment on this question](#)

[Request Help](#)

Type your answer below:

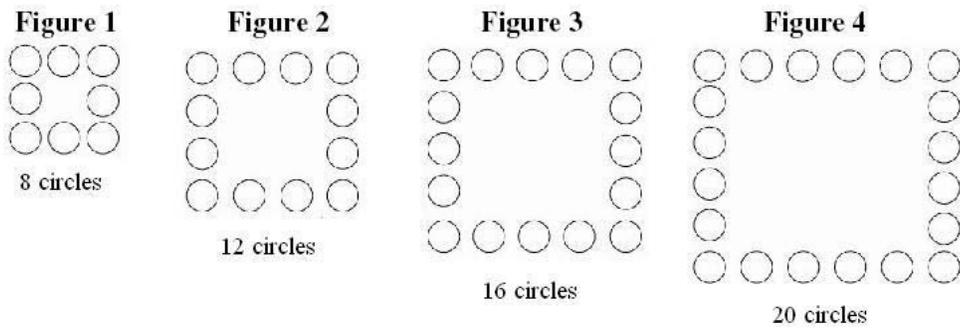
•

Submit Answer Let's move on and figure

out this problem

[Let's look at the solution for a problem similar to the one above:](#)

The first four figures in a pattern are shown below.

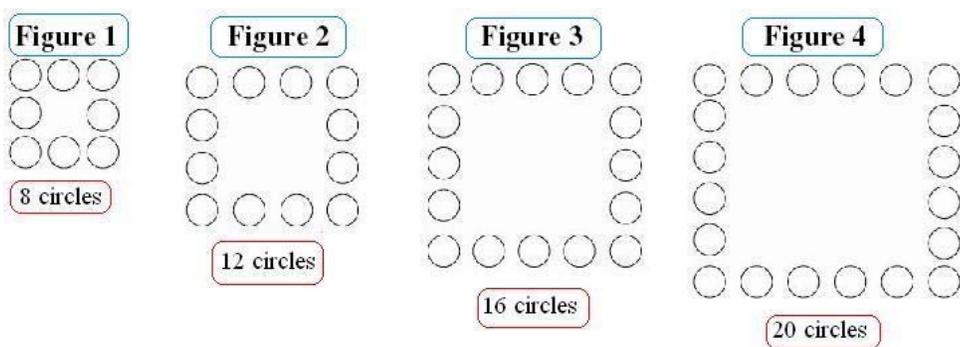


How many circles will be in Figure 6?

Solution to this problem:

In order to find the pattern, let's put the information from the picture into a table.

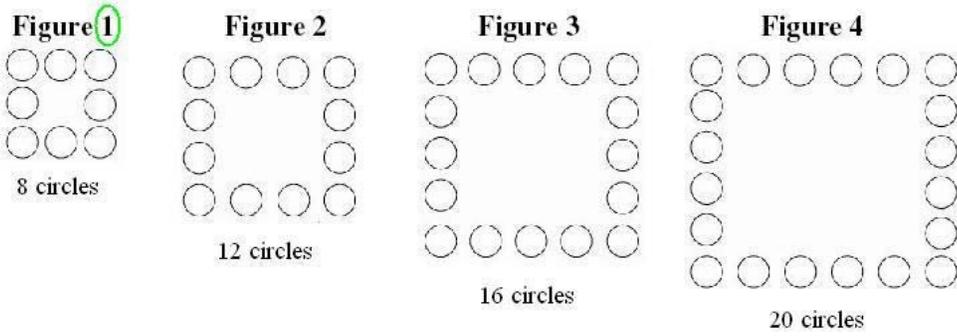
Since the two obvious categories of numbers we can find in the picture are "Figure Number" and "Number of Circles", which are circled in blue and red in the picture below, respectively.



So, let's use "Figure Number" and "Number of Circles" as titles for columns in the table. We can have the following table:

Figure Number	Number of Circles

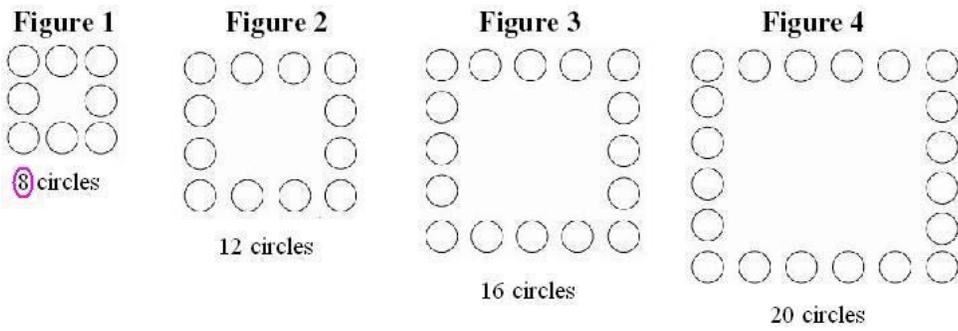
To fill in the table, let's use the first figure in the picture as an example. Notice that the "1" circled in green in the following picture will be a figure number we can put into the table.



The table we have so far is:

Figure Number	Number of Circles
1	

Now in order to find the corresponding "Number of Circles" to this "Figure 1", we need to look at the same figure and find its number of circles, which is circled in pink in the following picture.



So let's put 8 into the table. We can obtain the following table.

Figure Number	Number of Circles
1	8

After using the same method for the other figures, we can have the final table:

Figure Number	Number of Circles
1	8
2	12
3	16
4	20

Now we can look at the pattern in the table. Notice that the y value increase by 4 tiles for each new figure. So we can just extend our table and fill it in until we get to figure 6.

Now let's find the pattern.

	Figure Number	Number of Circles	
+1 ↓	1	8	↓ +4
+1 ↓	2	12	↓ +4
+1 ↓	3	16	↓ +4
+1 ↓	4	20	↓ +4
+1 ↓	5	24	↓ +4
+1 ↓	6	28	↓ +4

Therefore, there are 28 circles in Figure 6.

[Comment on this question](#)

Select one:

- ⌘ I have read the example and now I am ready to try again.

Submit Answer

Correct!

The first four figures in a pattern are shown below.

Figure 1

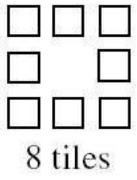


Figure 2

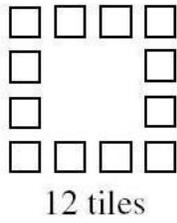


Figure 3

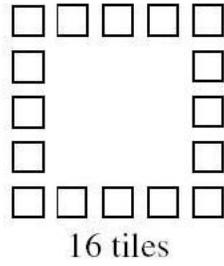
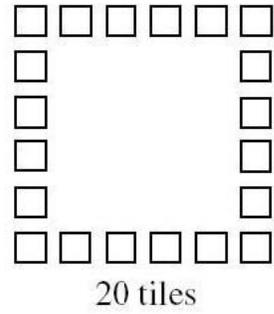


Figure 4



How many tiles will be in Figure 7?

[Comment on this question](#)

There will be 32 tiles. Type in 32.

[Comment on this hint](#)

Type your answer below:

- 32

Submit Answer

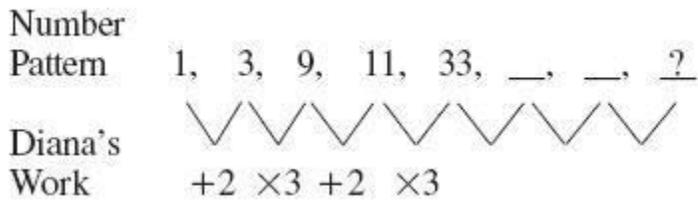
Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

You are previewing content.

Diana made the diagram below to find the next term in a number pattern.



What should Diana write as the eighth term in the number pattern?

[Comment on this question](#)

Request Help

Type your answer below:

•

Submit Answer Let's move on and figure

out this problem

[Let's look at the solution for a problem similar to the one above:](#)

Dan made the diagram below to find the next term in a number pattern.

Number	
Pattern	1, 2, 4, 5, 10, <u> </u> , <u>?</u>
Dan's	
Work	+1 ×2 +1 ×2

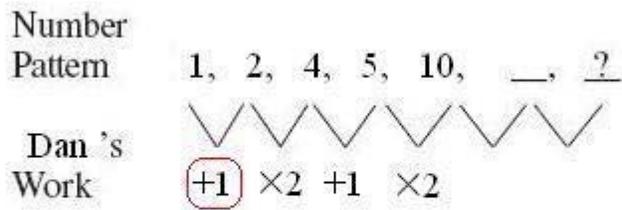
What should Dan write as the seventh term in the number pattern?

Solution to this problem:

Let's first try to understand the number pattern.

Now, look at the first two numbers in the pattern, which are 1 and 2. And from Dan's note, which is circled in red in the following diagram, the relationship between these two numbers is:

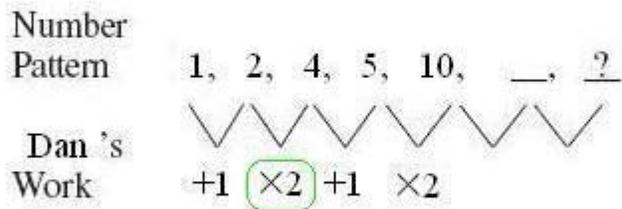
$$1 + 1 = 2$$



Now, let's look at the relationship between the second and third numbers in the pattern, which are 2 and 4.

According to Dan's work, the relationship between these two numbers is (please pay attention to green circles):

$$2 \times 2 = 4$$



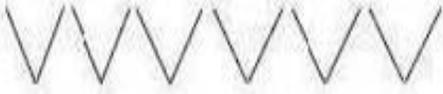
And the following numbers in the pattern is obtained using the method above. Notice that we need to switch between + 1 and * 2 to find the next term in the number pattern. Therefore, the two operations to find the seventh number in the pattern should be + 1 and * 2. And then we can fill them into Dan's note,

obtaining the following diagram:

Number	
Pattern	1, 2, 4, 5, 10, <u> </u> , <u>?</u>
	
Dan's	
Work	+1 ×2 +1 ×2 +1 ×2

So the sixth term is

$$10 + 1 = 11$$

Number	
Pattern	1, 2, 4, 5, 10, <u>11</u> , <u>?</u>
	
Dan's	
Work	+1 ×2 +1 ×2 +1 ×2

$11 * 2 = 22$



Number Pattern	1, 2, 4, 5, 10, <u>11</u> , <u>22</u>
Dan's Work	 +1 ×2 +1 ×2 +1 ×2

Therefore, the seventh term is 22.

[Comment on this question.](#)

Select one:

- I have read the example and now I am ready to try again.

Submit Answer

Correct!

1

Number Pattern	1, 3, 9, 11, 33, —, —, <u>?</u>
Diana's Work	 +2 ×3 +2 ×3

[Comment on this question](#)

The correct answer is 107. Please enter 107.

[Comment on this hint](#)

Type your answer below:

- 107

Submit Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

You are previewing content.

Marty began a pattern with the number 3. He obtained all of the other terms in the pattern by multiplying the previous term by 2 or by 3 alternately as shown below.

3, 6, 18, 36, 108, 216, . . .

What is the next term in Marty's pattern?

[Comment on this question](#)

Request Help

Type your answer below:

⌘

Submit Answer Let's move on and figure

out this problem

Let's look at the solution for a problem similar to the one above:

John began a pattern with the number 1. He obtained all of the other terms in the pattern by multiplying the previous term by 2 or by 3 alternately as shown below.

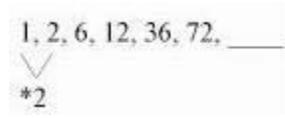
1, 2, 6, 12, 36, 72, _____

What is the next term in John's pattern?

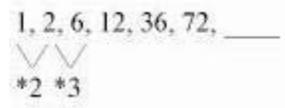
Solution to this problem:

Let's understand his pattern to find the answer to this problem.

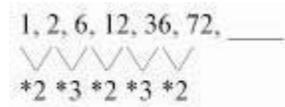
First, let's find the relationship between the first two terms in the pattern, 1 and 2. Since John is only using *2 or *3 as his operations. Therefore, we can easily find this time, he uses *2, since $1 * 2 = 2$. Let's mark this on the pattern.



Then let's take a look at the second and third terms in the pattern, 2 and 6. Since $2 * 3 = 6$, we can conclude this time he uses *3. Let's mark this on the pattern, again.

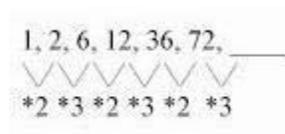


If we continue finding the relationship between terms in the pattern, we can have the following notes:



Now we can easily see what he means by obtaining "all of the other terms in the pattern by multiplying the previous term by 2 or by 3 alternately".

Therefore, we can easily get how to get the next term. Since he uses *2 to get 72, to figure out the term after 72, he will use *3.



So the next term will be $72 \cdot 3 = 216$.

1, 2, 6, 12, 36, 72, 216
∨ ∨ ∨ ∨ ∨ ∨
*2 *3 *2 *3 *2 *3

Therefore, the next term is 216.

[Comment on this question](#)

Select one:

- I have read the example and now I am ready to try again.

Submit Answer

Correct!

Marty began a pattern with the number 3. He obtained all of the other terms in the pattern by multiplying the previous term by 2 or by 3 alternately as shown below.

3, 6, 18, 36, 108, 216, . . .

What is the next term in Marty's pattern?

[Comment on this question](#)

The next term is 648. Type in 648.

[Comment on this hint](#)

Type your answer below:

- 648

Submit Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

You are previewing content.

In the equation below, if x has a value of 3, what is the value of y?

$$y = 3x - 1$$

[Comment on this question](#)

Request Help

Type your answer below:

✖

Submit Answer

Let's move on and figure out this problem

[Let's look at the solution for a problem similar to the one above:](#)

In the equation below, if n has a value of 2, what is the value of m?

$$m = 4n - 2$$

Solution to this problem:

Let's substitute n=2 into the formula first, we will have

$$m = 4 * 2 - 2$$

Just follow

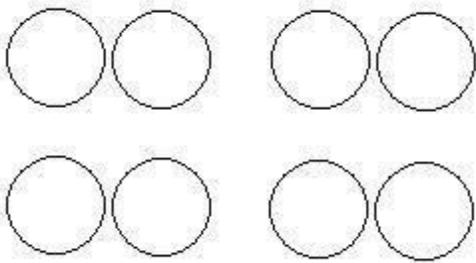
PE (MD) (AS)

Parenthesis, Exponents, Multiplication and Division (from left to right), Addition and Subtraction (from left to right).

We should take the multiplication first, which is the red portion in the formula below: m

$$= 4 * 2 - 2$$

Imagine we have 4 piles, and each has 2 circles in it. How many circles do we have in total?

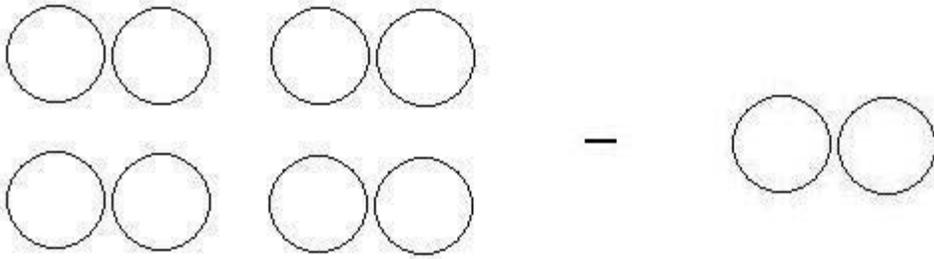


Right, we have 8 circles in total. So $4 * 2 = 8$.

Now the expression becomes

$$m = 8 - 2$$

Now let's calculate $8 - 2$. Let's add two more circles into our picture, how many circles do we have in total?



If you count the circles, you may find out the difference of 8 circles and 2 circles is 6 circles. So $8 - 2 = 6$. Therefore, the original expression becomes:

$$\begin{aligned}m &= 4n - 2m \\ &= 4 * 2 - 2m \\ &= 8 - 2m = 6\end{aligned}$$

Therefore, the value of m is 6.

[Comment on this question.](#)

Select one:

- * I have read the example and now I am ready to try again.

Submit Answer

Correct!

In the equation below, if x has a value of 3, what is the value of y?

$$y = 3x - 1$$

[Comment on this question](#)

The value of y is 8. Type in 8.

[Comment on this hint](#)

Type your answer below:

✖8

Submit Answer

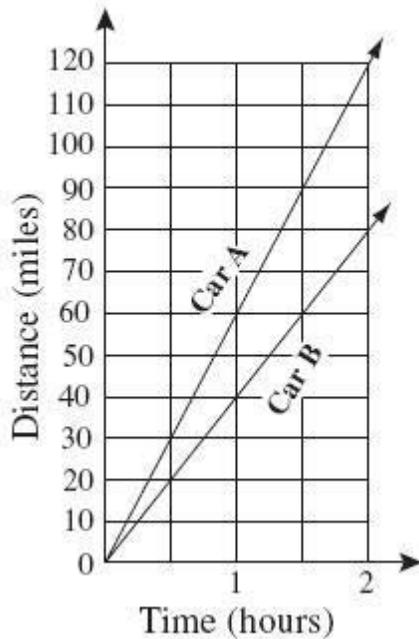
Correct! You are done with this problem!

[Comment on this problem](#)

You are previewing content.

The graph below shows the distance Car A and Car B traveled in two hours on the same road in the same direction.

Distance Traveled in Car



Which of the following statements is true about the difference between the distance traveled by Car A and the distance traveled by Car B as time progresses?

[Comment on this question](#)

[Request Help](#)

Select one:

- A. The difference in the distance between Car A and Car B decreases.
- B. The difference in the distance between Car A and Car B increases.
- C. The difference in distance between Car A and Car B stays the same.
- D. The difference in distance between Car A and Car B is zero.

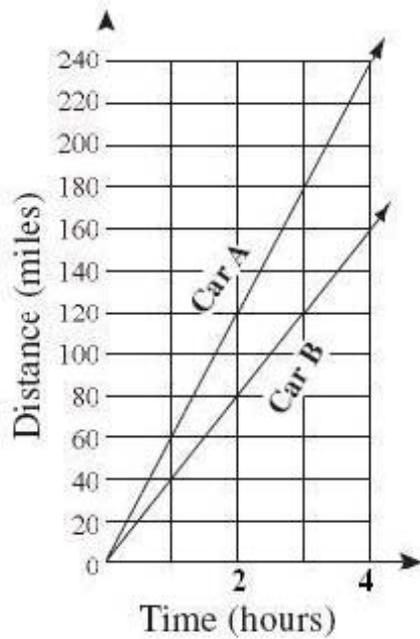
[Submit Answer](#)

Let's move on and figure out this problem

Let's look at the solution for a problem similar to the one above:

The graph below shows the distance Car A and Car B traveled in two hours on the same road in the same direction.

Distance Traveled in Car



Which of the following statements is true about the difference between the distance traveled by Car A and the distance traveled by Car B as time progresses?

- ⌘ A. The difference in the distance between Car A and Car B decreases.
- ⌘ B. The difference in the distance between Car A and Car B increases.
- ⌘ C. The difference in distance between Car A and Car B stays the same.
- ⌘ D. The difference in distance between Car A and Car B is zero.

Solution to this problem:

In order to understand the graph, let's put the information in the graph into a table.

We can see there are two kinds of quantities in the graph, which are "Distance (miles)" and "Time (hours)". Since there are two cars traveling at the same time and we are comparing the distance between these two cars as time progresses, let's have "Distance Car A traveled (miles)" and "Distance Car B traveled (miles)" separated as two quantities.

And we can have the table like this:

Time (hours)	Distance Car A traveled (miles)	Distance Car B traveled (miles)

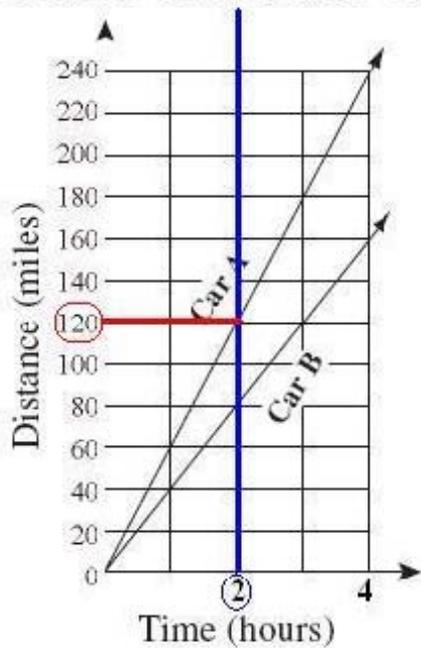
Now let's fill in the table.

From the graph, we find there are only two obvious values along the axis labeled "Time (hours)". So let's start from this axis. Let's put 2 into the table:

Time (hours)	Distance Car A traveled (miles)	Distance Car B traveled (miles)
2		

And now let's find at Time (hours) = 2, what are the values for "Distance Car A traveled (miles)". Let's draw a blue vertical line at 2, which is circled in blue in the graph below.

Distance Traveled in Car



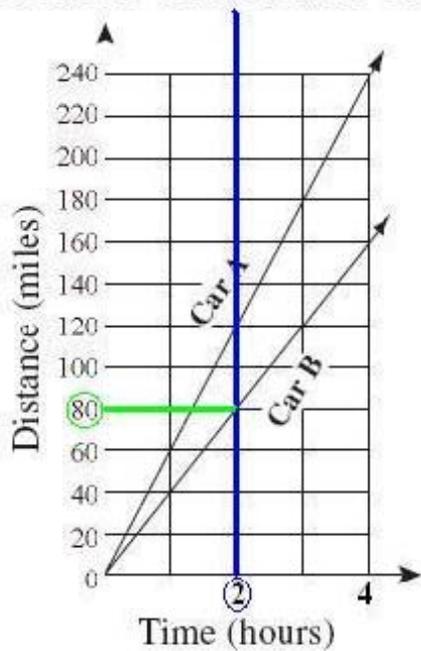
Now notice the intersection of the blue line we drew and the line representing "Car A", let's draw a red horizontal line from this intersection and read off the value on the axis labeled "Distance (miles)" corresponding to this point of intersection. This value is circled in red in the previous graph, which is "120".

Let's put this information into the table. We'll have the following table:

Time (hours)	Distance Car A traveled (miles)	Distance Car B traveled (miles)
2	120	

Now pay attention to the intersection of the blue line we drew and the line representing "Car B", let's draw a green horizontal line from this intersection and read off the value on the axis labeled "Distance (miles)" corresponding to this point of intersection. This value is circled in green in the graph below, which is "80".

Distance Traveled in Car



After putting this information into the table, we will have the following table:

Time (hours)	Distance Car A traveled (miles)	Distance Car B traveled (miles)
2	120	80

After using the same method for Time (hours) = 4, we can obtain the entire table as following:

Time (hours)	Distance Car A traveled (miles)	Distance Car B traveled (miles)
2	120	80
4	240	160

Now let's prepare the difference between Car A and Car B as time progresses.

In order to do this, we need to find the differences between distances of the two cars at different specific times.

First, let's find the distance Car A traveled (miles) and distance Car B traveled (miles) after 2 hours from departure, which are shaded in yellow and purple, respectively.

Time (hours)	Distance Car A traveled (miles)	Distance Car B traveled (miles)
2	120	80
4	240	160

From the table, we know after 2 hours, Distance Car A traveled (miles) = 120 and Distance Car B traveled (miles) = 80.

Let's find the difference between these two values, $120 - 80 = 40$ (miles)

If we do the same thing for Time (hours) = 4, we will know the difference between the two cars after 4 hours from departure is:

$$240 - 160 = 80 \text{ (miles)}$$

OK, since 80 is greater than 40, thus, we can conclude that as time progresses, the difference between these two cars increases. **So B is right choice.**

[Comment on this question](#)

Select one:

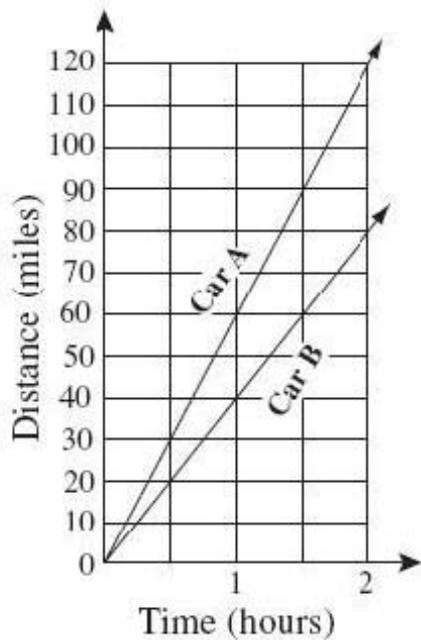
- I have read the example and now I am ready to try again.

Submit Answer

Correct!

The graph below shows the distance Car A and Car B traveled in two hours on the same road in the same direction.

Distance Traveled in Car



Which of the following statements is true about the difference between the distance traveled by Car A and the distance traveled by Car B as time progresses?

[Comment on this question](#)

The difference in the distance between Car A and Car B increases. Select B.

[Comment on this hint](#)

Select one:

-
- B. The difference in the distance between Car A and Car B increases.
- C. The difference in distance between Car A and Car B stays the same.
- A. The difference in the distance between Car A and Car B decreases.

D. The difference in distance between Car A and Car B is zero. Submit

Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

You are previewing content.

In the input-output table below, what will be the value of y when $x = 5$?

Input	Output
x	y
2	5
3	7
4	9
5	?

[Comment on this question](#)

Request Help

Type your answer below:

⌘

Submit Answer Let's move on and figure

out this problem

Let's look at the solution for a problem similar to the one above:

] what will be the value of n when $m = 5$?

Input	Output
m	n
2	3
3	5
4	7
5	?

Solution to this problem:

To solve this problem, we need to find out how output changes as input changes.

Let's have a look at the first two input values, which are highlighted in yellow in the following table. We can see that input increases from 2 to 3. Easily, we know that input increments by + 1. Let's mark this discovery on the side of the table.

	Input	Output
	m	n
	2	3
+ 1 ↓	3	5
	4	7
	5	?

Now let's have a look at the first two output values, which are highlighted in green in the table below. We can see that output increases from 3 to 5. Easily, we know that output increments by + 2. Let's mark this on the side of the table as well.

	Input	Output	
	m	n	
+ 1 ↓	2	3	↓ + 2
	3	5	
	4	7	
	5	?	

Please use the same method above to find the changes for the rest of the values in the table. At the end, we can obtain the table below.

	Input	Output	
	m	n	
+1 ↓	2	3	↓ +2
+1 ↓	3	5	↓ +2
+1 ↓	4	7	↓ +2
	5	?	

Therefore, the value of the unknown value should be $7 + 2$.

$$7 + 2 = 9$$

So output value n is 9 when input value m = 5.

[Comment on this question](#)

Select one:

- ⌘ I have read the example and now I am ready to try again.

Submit Answer

Correct!

In the input-output table below, what will be the value of y when x = 5?

Input	Output
x	y
2	5
3	7
4	9
5	?

[Comment on this question](#)

The correct answer is 11. Please fill in 11.

[Comment on this hint](#)

Type your answer below:

⌘11

Submit Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

You are previewing content.

Agnes earns d dollars for babysitting each week. She also receives an allowance of \$10 per week. The expression below can be used to calculate the amount of money she will have at the end of 5 weeks.

$$(10 + d) * 5$$

What is the amount of money in dollars (\$) Agnes will have at the end of five weeks if $d = \$25$?

[Comment on this question](#)

Request Help

Type your answer below:

•

Submit Answer Let's move on and figure

out this problem

[Let's look at the solution for a problem similar to the one above:](#)

Rasheed earns m dollars for babysitting each week. He also receives an allowance of \$5 per week. The expression below can be used to calculate the amount of money he will have at the end of 4 weeks.

$$(5 + m) * 4$$

What is the amount of money in dollars (\$) Rasheed will have at the end of 4 weeks if $m = \$10$?

Solution to this problem:

After reading the question, you might notice that this problem is essentially a problem of substitution, since the expression for calculating the amount of money he will have at the end of 4 weeks is already given.

Let's plug in $m = 10$ (\$) into the expression, we'll obtain:

$$(5 + 10) * 4$$

Just follow
PE (MD) (AS)
Parenthesis, Exponents, Multiplication and Division (from left to right), Addition and Subtraction (from left to right).

In this case, we should calculate the part in parenthesis first.

$$(5 + 10) * 4$$

The expression becomes:

$$15 * 4$$

Then we need to calculate $15 * 4$, which yields:

$$(5 + 10) * 4$$
$$15 * 4$$

So 60 is right answer. The amount of money Rasheed will have at the end of 4 weeks is 60 (\$).

[Comment on this question](#)

Select one:

- I have read the example and now I am ready to try again.

Submit Answer

Correct!

Agnes earns d dollars for babysitting each week. She also receives an allowance of \$10 per week. The expression below can be used to calculate the amount of money she will have at the end of 5 weeks.

$$(10 + d) * 5$$

What is the amount of money in dollars (\$) Agnes will have at the end of five weeks if $d = \$25$?

[Comment on this question](#)

If Agnes earns \$25 each week she will have \$175 at the end of 5 weeks. Enter 175.

[Comment on this hint](#)

Type your answer below:

- 175

Submit Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

You are previewing content.

Based on the information given in the table shown below, which of the following equations correctly states the relationship between x and y ?

x	y
1	3
2	4
3	5
4	6
5	7

[Comment on this question](#)

Request Help

Select one:

- A. $y = 2x$
- B. $y = x \div 2$
- C. $y = x + 2$
- D. $y = x - 2$

Submit Answer

Let's move on and figure out this problem

[Let's look at the solution for a problem similar to the one above:](#)

Based on the information given in the table shown below, which of the following equations correctly states the relationship between x and y ?

x	y
1	2
2	4
3	6
4	8
5	10

- ⌘ A. $y = x \div 2$
- ⌘ B. $y = x + 2$
- ⌘ C. $y = x - 2$
- ⌘ D. $y = 2x$

Solution to this problem:

Let's use guess and check to solve this problem.

Firstly, pick a pair of data from the table to check the choices. In this example, I will use when $x = 1$, $y = 2$, which are shaded in yellow in the table below.

x	y
1	2
2	4
3	6
4	8
5	10

First, let's check the equation in A, which is $y = x \div 2$.

After substituting $x = 1$ into this equation, we have:

$$y = 1 \div 2 = 0.5$$

From the table, we know that when $x = 1$, $y = 2$, which is different from the y we have using the equation in A. [So A is wrong.](#)

Now, let's check the equation in B, which is $y = x + 2$.

After substituting $x = 1$ into this equation, we have:

$$y = 1 + 2 = 3$$

From the table, we know that when $x = 1$, $y = 2$, which is different from the y we have using the equation in B. [So B is wrong.](#)

Then, let's check the equation in C, which is $y = x - 2$.

After substituting $x = 1$ into this equation, we have:

$$y = 1 - 2 = -1$$

From the table, we know that when $x = 1$, $y = 2$, which is different from the y we have using the equation in C. [So C is wrong.](#)

Finally, let's check the equation in D, which is $y = 2x$.

After substituting $x = 1$ into this equation, we have:

$$y = 2 * 1 = 2$$

From the table, we know that when $x = 1$, $y = 2$. We have a match. And if you use other pairs of data from the data, this equation always holds true.

Therefore, **D** is the correct answer.

[Comment on this question](#)

Select one:

- I have read the example and now I am ready to try again.

Submit Answer

Correct!

Based on the information given in the table shown below, which of the following equations correctly states the relationship between x and y ?

x	y
1	3
2	4
3	5
4	6
5	7

[Comment on this question](#)

The equation $y = x + 2$ correctly states the relationship between x and y . Select C.

[Comment on this hint](#)

Select one:

-
- B. $y = x \div 2$
- C. $y = x + 2$
- A. $y = 2x$

D. $y = x - 2$ Submit

Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

You are previewing content.

What is the value of the expression below when $x=3$?

$$4x + 1$$

[Comment on this question](#)

Request Help

Type your answer below:

✖

Submit Answer

Let's move on and figure out this problem

[Let's look at the solution for a problem similar to the one above:](#)

What is the value of the expression below when $y = 2$

$$5y + 2$$

Solution to this problem:

Let's substitute $y= 2$ into the formula first, we will have

$5 * 2 + 2$

Just follow

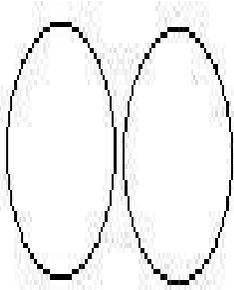
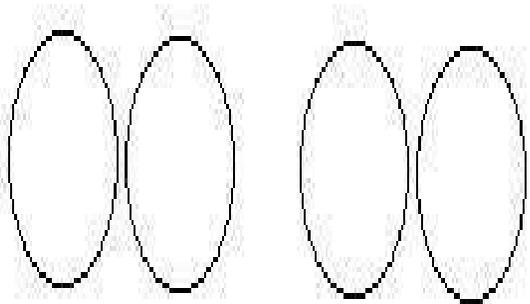
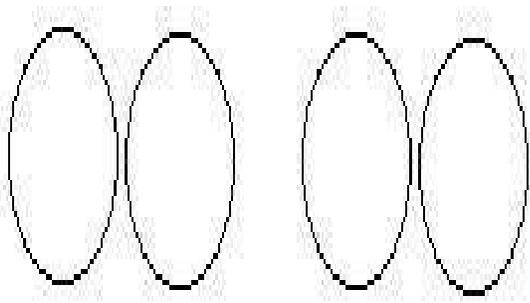
PE (MD) (AS)

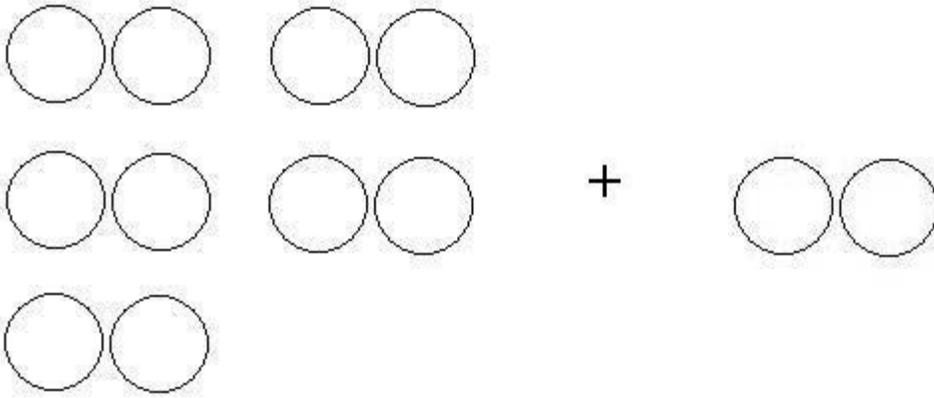
Parenthesis, Exponents, Multiplication and Division (from left to right), Addition and Subtraction (from left to right).

We should take the multiplication first, which is the red portion in the formula below: $5 * 2 + 2$

$2 + 2$

Imagine we have 5 piles, and each has 2 circles in it. How many circles do we have in total?





If you count the circles, you may find out the sum of 10 circles and 2 circles is 12 circles.

So $10 + 2 = 12$

Therefore, the original expression becomes:

$$\begin{aligned} 5y + 2 \cdot 5 &= 2 \cdot 10 + 2 \\ &= 12 \end{aligned}$$

Therefore, the value of the expression is 12.

[Comment on this question](#)

Select one:

- I have read the example and now I am ready to try again.

Submit Answer

Correct!

What is the value of the expression below when $x=3$?

 $4x + 1$

[Comment on this question](#)

The value is 13. Type in 13.

[Comment on this hint](#)

Type your answer below:

- 13

Submit Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

Assistment #26143

You are previewing content.

Charlotta wrote the equation below on a card.

$$\square \div 8 = 5$$

If Charlotta's equation is true, what is the value of \square ?

[Comment on this question](#)

[Request Help](#)

Type your answer below:

✖

Submit Answer Let's move on and figure

out this problem

[Let's look at the solution for a problem similar to the one above:](#)

What is the value of Δ if the following equation is true? Δ

$$\Delta \div 3 = 2$$

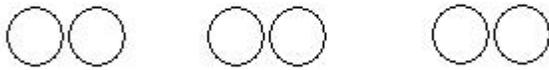
Solution to this problem:

Let's imagine we have Δ number of circles.

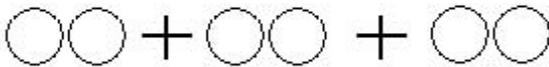
$$\Delta \div 3 = 2$$

The red portion of the equation means we are dividing the circles into 3 piles.

And the green portion of the equation indicates that there are 2 circles in each pile. Please look at the picture below:



In order to find the value of Δ , we need to add up the circles in each pile.



$$\text{So } \Delta = 2 + 2 + 2 = 6.$$

Therefore, the value of Δ makes the equation $\Delta \div 3 = 2$ true is 6.

[Comment on this question.](#)

Select one:

- I have read the example and now I am ready to try again. Submit

Answer

787 | Page

Correct! Charlotta wrote the equation below on

a card.

$$\square \div 8 = 5$$

[If Charlotta's equation](#) is true, what is the value of \square ?

[Comment on this hint](#)

40 is the correct answer, enter 40.

Type your answer below:

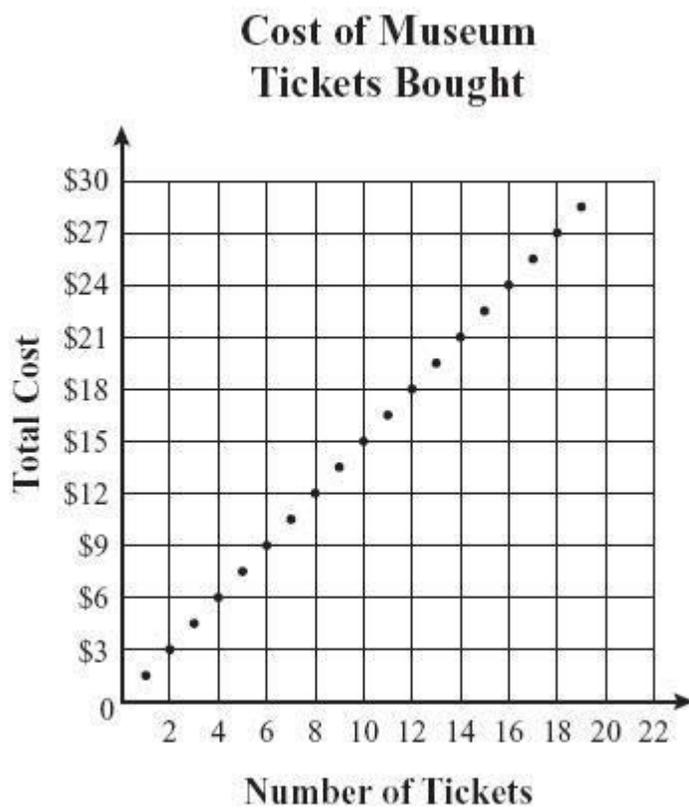
Submit Answer
You are done with this problem!

[Comment on this problem](#)

Assistment

You are previewing content.

The graph below shows the relationship between the number of museum tickets bought and the total cost of the tickets.



What is the greatest number of museum tickets that can be bought for \$21?

[Comment on this question](#)

Request Help

Type your answer below:

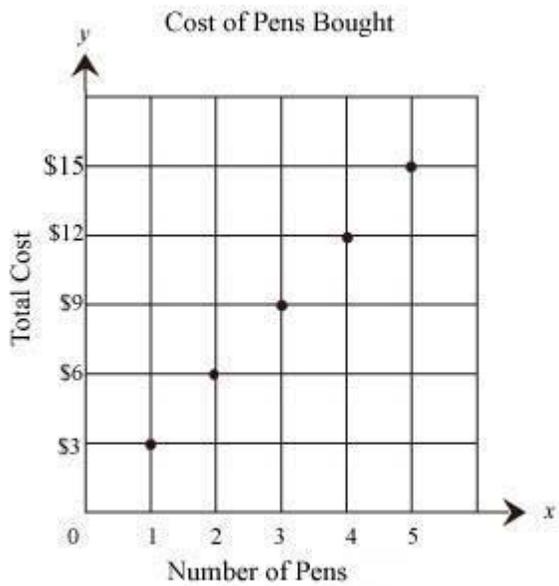
•

Submit Answer

Let's move on and figure out this problem

Let's look at the solution for a problem similar to the one above:

The graph below shows the relationship between the number of pens and the total cost of the pens.

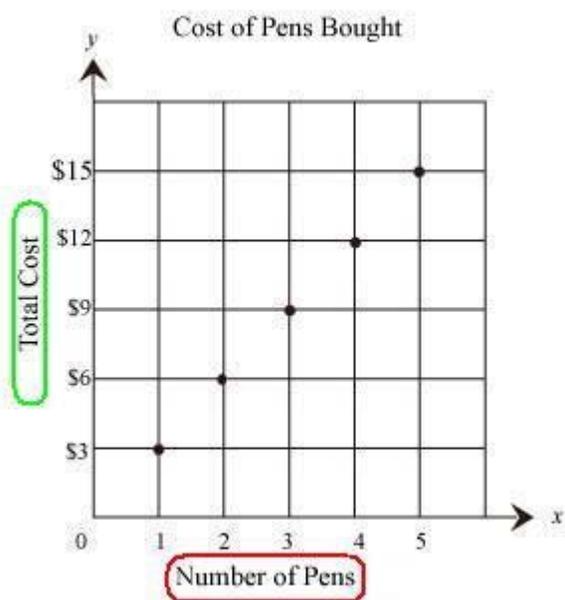


What is the greatest number of pens that can be bought for \$9?

Solution to this problem:

Let's make sure that we understand the graph first. So let's put the information in the picture into a table.

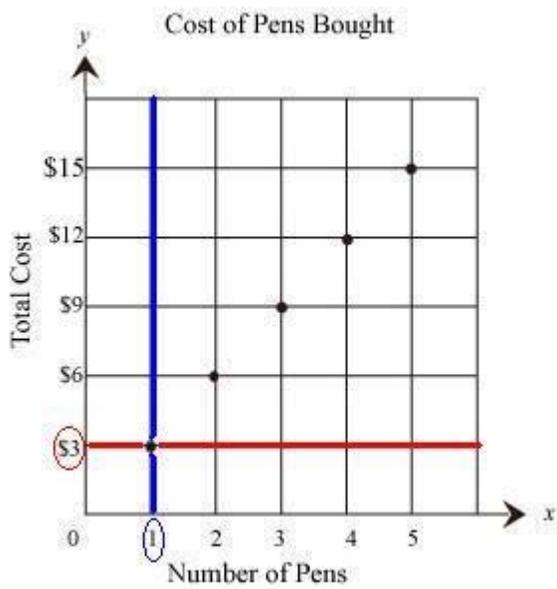
What should be the titles of columns in the table? We know we are using the table to represent the relationship of the two quantities in the graph. Take another look at the graph below, pay attention to the circled contents.



From the graph above, we can see the two quantities are "Number of Pens" and "Total Cost", which should be the titles of the table as well. So we have the blank table below.

Number of Pens	Total Cost (\$)

Now it's time to fill in the table. Let's pick the first point on the left as an example. If we draw a vertical line and a horizontal line from this point, we can find the both corresponding values, number of pens and total cost, from the graph. Look at the graph below, pay attention to the values in circle.



We can see number of pens corresponding to this point is 1 (circled in blue), and total cost corresponding to this point is 3 (circled in red).

So let's put this information into the table, we have the table below.

Number of Pens	Total Cost (\$)
1	3

If we do the same thing to the other points on the graph, we can obtain the complete table below.

Number of Pens	Total Cost (\$)
1	3
2	6
3	9
4	12
5	15

The question asks "what is the greatest number of pens that can be bought for \$9?"

So let's find the row when total cost is \$9 in the table below.

Number of Pens	Total Cost (\$)
1	3
2	6
3	9
4	12
5	15

The row shaded in yellow is when total cost is \$9. From this row, we can see the number of pens we can buy is 3.

Therefore, 3 is the answer.

[Comment on this question](#)

Select one:

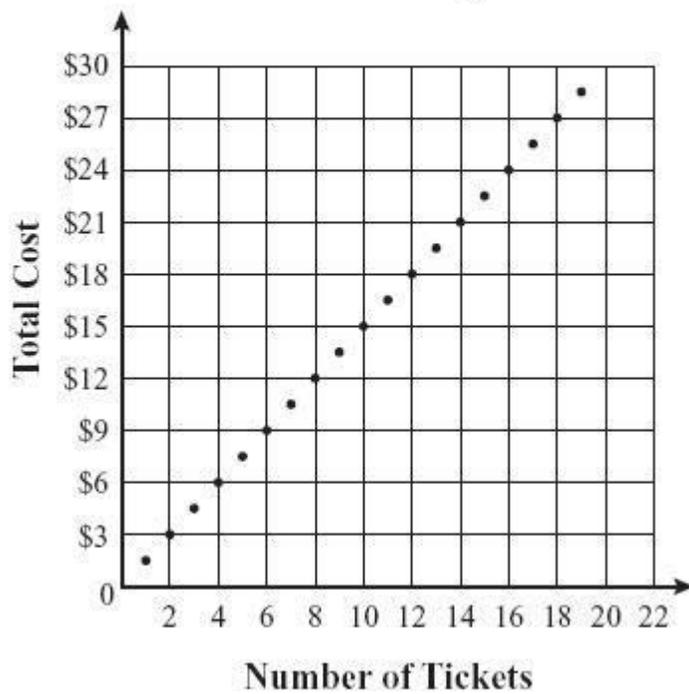
- I have read the example and now I am ready to try again.

Submit Answer

Correct!

The graph below shows the relationship between the number of museum tickets bought and the total cost of the tickets.

Cost of Museum Tickets Bought



What is the greatest number of museum tickets that can be bought for \$21?

[Comment on this question](#)

14 is the correct answer. Type in 14.

[Comment on this hint](#)

Type your answer below:

⌘14

Submit Answer

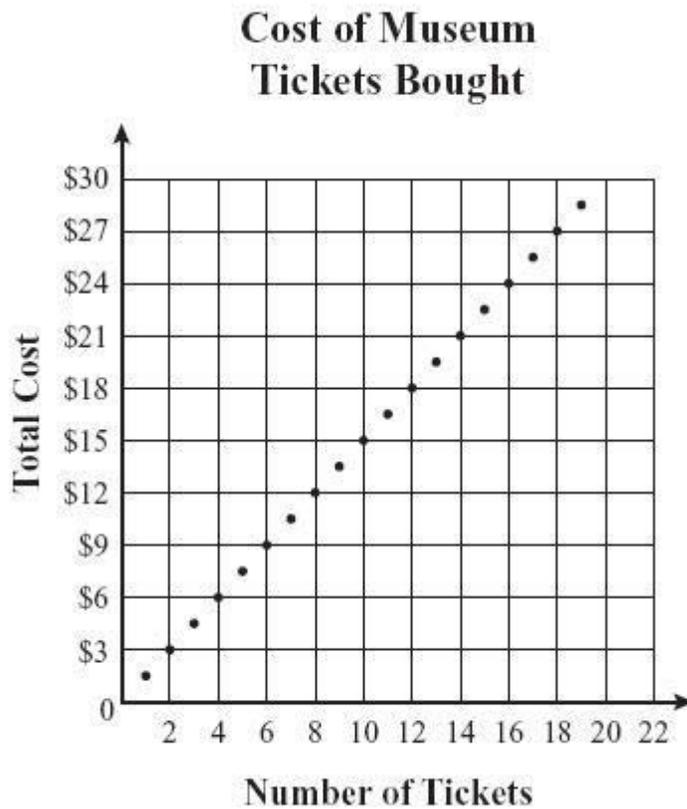
Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

You are previewing content.

The graph below shows the relationship between the number of museum tickets bought and the total cost of the tickets.



What is the cost of 1 museum ticket?

[Comment on this question](#)

Request Help

Select one:

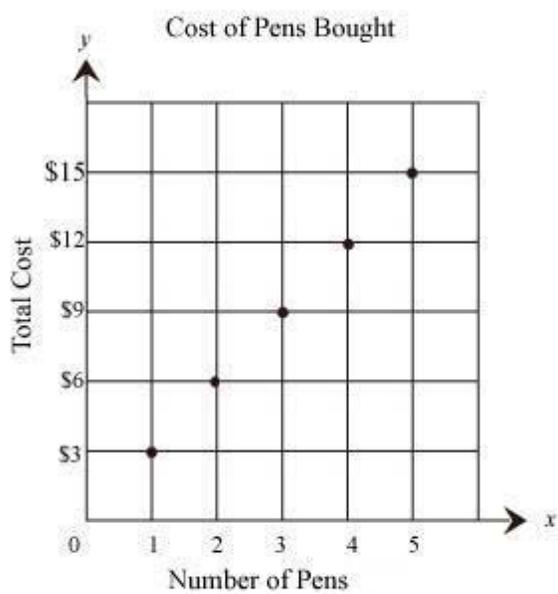
- A. \$1.5
- B. \$2
- C. \$3
- D. \$1

Submit Answer

Let's move on and figure out this problem

Let's look at the solution for a problem similar to the one above:

The graph below shows the relationship between the number of pens and the total cost of the pens.



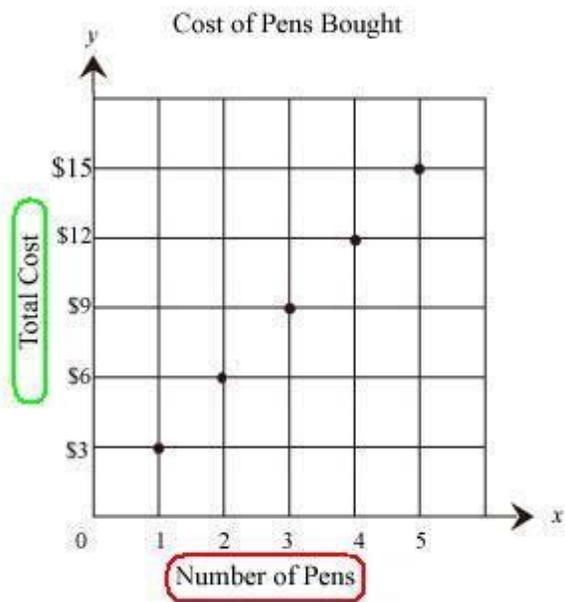
What is the cost of 1 pen?

Solution to this problem:

Let's make sure that we understand the graph first. So let's put the information in the picture into a table.

What should be the titles of columns in the table? We know we are using the table to represent the

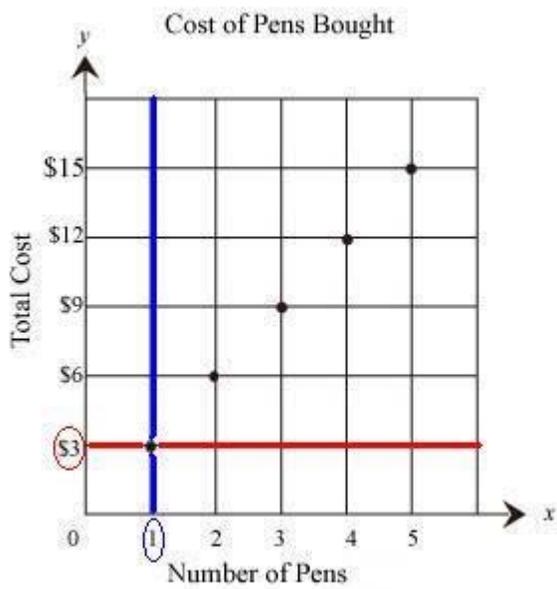
relationship of the two quantities in the graph. Take another look at the graph below, pay attention to the circled contents.



From the graph above, we can see the two quantities are "Number of Pens" and "Total Cost", which should be the titles of the table as well. So we have the blank table below.

Number of Pens	Total Cost (\$)

Now it's time to fill in the table. Let's pick the first point on the left as an example. If we draw a vertical line and a horizontal line from this point, we can find the both corresponding values, number of pens and total cost, from the graph. Look at the graph below, pay attention to the values in circle.



We can see number of pens corresponding to this point is 1 (circled in blue), and total cost corresponding to this point is 3 (circled in red).

So let's put this information into the table, we have the table below.

Number of Pens	Total Cost (\$)
1	3

If we do the same thing to the other points on the graph, we can obtain the complete table below.

Number of Pens	Total Cost (\$)
1	3
2	6
3	9
4	12
5	15

Now let's calculate how much each pen costs

Let's use the first row of the table as an example. You can also use the other rows for this step. The first row tells us that when 1 pen is bought, the total cost is \$3.

So cost of each pen = total cost / number of pens = $\$3 / 1 = \3

So the number of apples in each package is \$3.

[Comment on this question](#)

Select one:

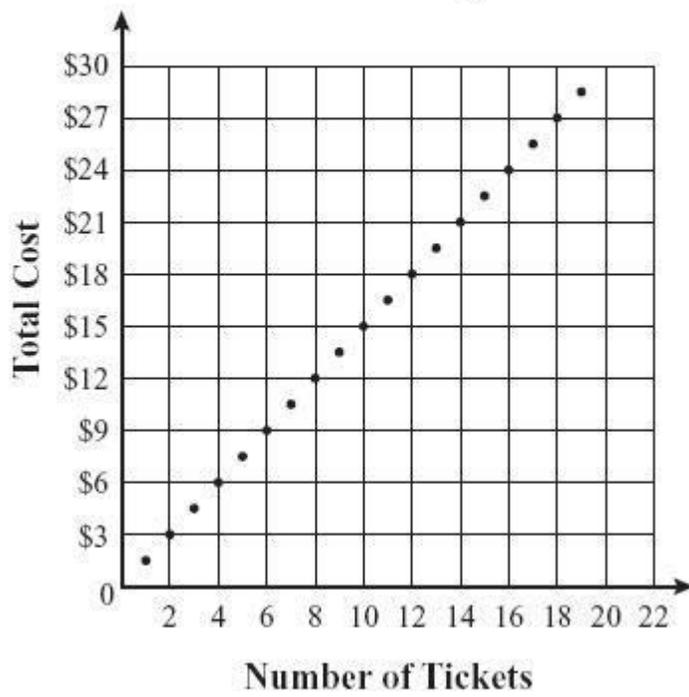
- ⌘ I have read the example and now I am ready to try again.

Submit Answer

Correct!

The graph below shows the relationship between the number of museum tickets bought and the total cost of the tickets.

Cost of Museum Tickets Bought



What is the cost of 1 museum ticket?

[Comment on this question](#)

A is right. Choose A.

[Comment on this hint](#)

Select one:

- A. \$1.5
- B. \$2
- C. \$3
- D. \$1

Submit Answer

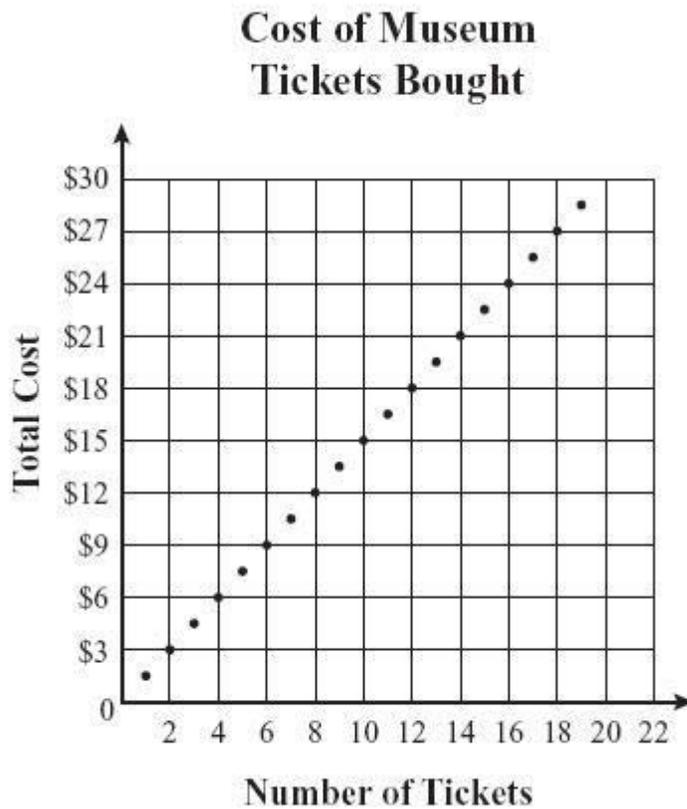
Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

You are previewing content.

The graph below shows the relationship between the number of museum tickets bought and the total cost of the tickets.



Which of the following represents the total cost of n tickets bought?

[Comment on this question](#)

[Request Help](#)

Select one:

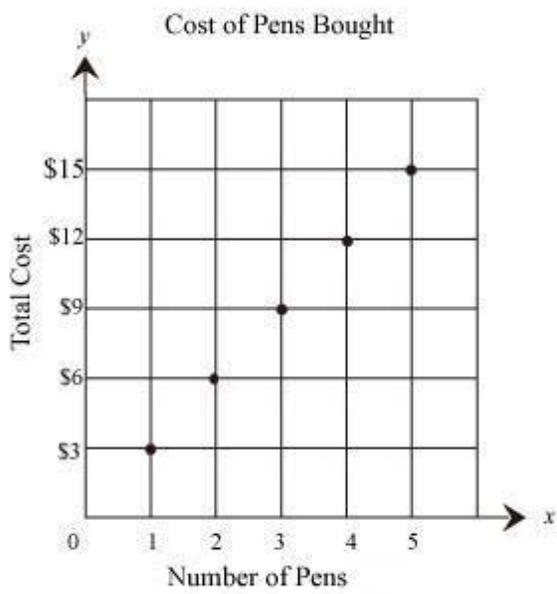
- A. $\$3 \cdot n$
- B. $\$1 + n$
- C. $\$1.5$
- D. $\$1.5 \cdot n$

Submit Answer

Let's move on and figure out this problem

Let's look at the solution for a problem similar to the one above:

The graph below shows the relationship between the number of pens and the total cost of the pens.



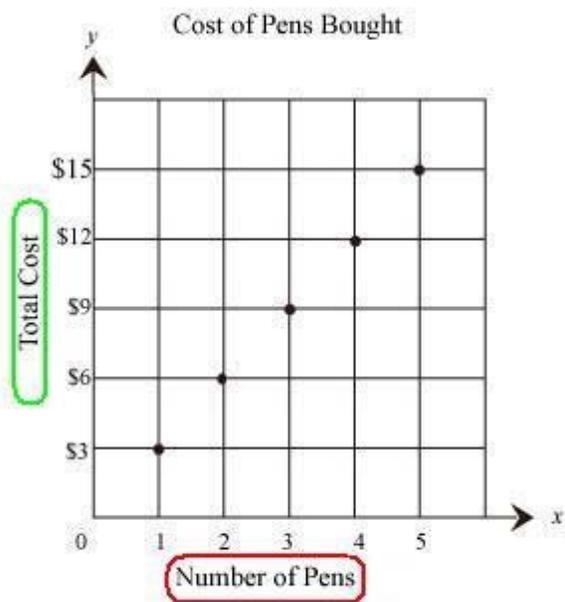
Which of the following represents the total cost of m tickets bought?

- ⌘ A. $\$3 \cdot m$
- ⌘ B. $\$3 + m$
- ⌘ C. $\$1.5$
- ⌘ D. $\$1.5 \cdot m$

Solution to this problem:

Let's make sure that we understand the graph first. So let's put the information in the picture into a table.

What should be the titles of columns in the table? We know we are using the table to represent the relationship of the two quantities in the graph. Take another look at the graph below, pay attention to the circled contents.

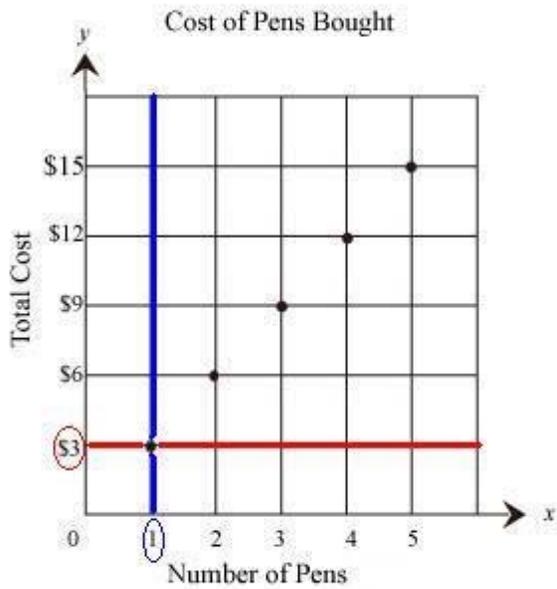


From the graph above, we can see the two quantities are "Number of Pens" and "Total Cost", which should be the titles of the table as well. So we have the blank table below.

Number of Pens	Total Cost (\$)

Now it's time to fill in the table. Let's pick the first point on the left as an example. If we draw a vertical

line and a horizontal line from this point, we can find the both corresponding values, number of pens and total cost, from the graph. Look at the graph below, pay attention to the values in circle.



We can see number of pens corresponding to this point is 1 (circled in blue), and total cost corresponding to this point is 3 (circled in red).

So let's put this information into the table, we have the table below.

Number of Pens	Total Cost (\$)
1	3

If we do the same thing to the other points on the graph, we can obtain the complete table below.

Number of Pens	Total Cost (\$)
1	3
2	6
3	9
4	12
5	15

Now let's calculate how much each pen costs

Let's use the first row of the table as an example. You can also use the other rows for this step. The first row tells us that when 1 pen is bought, the total cost is \$3.

So cost of each pen = total cost / number of pens = $\$3 / 1 = \3

So the number of pens in each package is \$3.

Now let's find the formula for how much each pen costs.

Let's use the last row of the table as an example.

In this row we know that 5 pens cost \$15. Which

formula will calculate 15 if we know 5. Well $3 * 5 = 15$

Lets check this for the second row.

In this row we know that 2 pens cost \$6. Which

formula will calculate 6 if we know 2. Well $3 * 2 = 6$

$$2 = 6$$

So the formula to calculate the total cost is A. $\$3 \cdot m$

[Comment on this question](#)

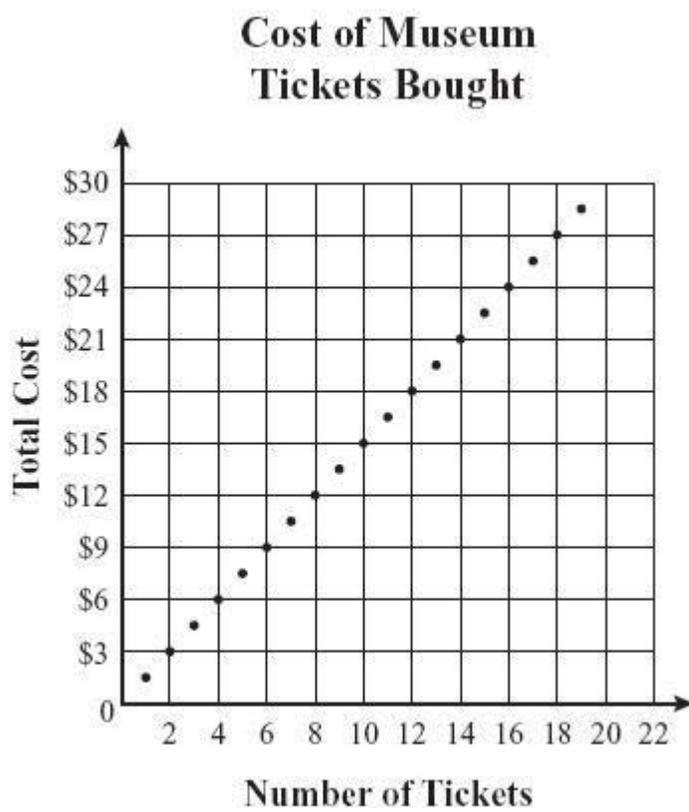
Select one:

- I have read the example and now I am ready to try again.

Submit Answer

Correct!

The graph below shows the relationship between the number of museum tickets bought and the total cost of the tickets.



Which of the following represents the total cost of n tickets bought?

[Comment on this question](#)

The answer is D. $\$1.5 \cdot n$. Select D.

[Comment on this hint](#)

Request Help

Select one:

- A. $3n$
- B. $1+n$
- C. 1.5
- D. $1.5n$

Submit Answer You did not submit an answer; please make sure to select/type an answer.

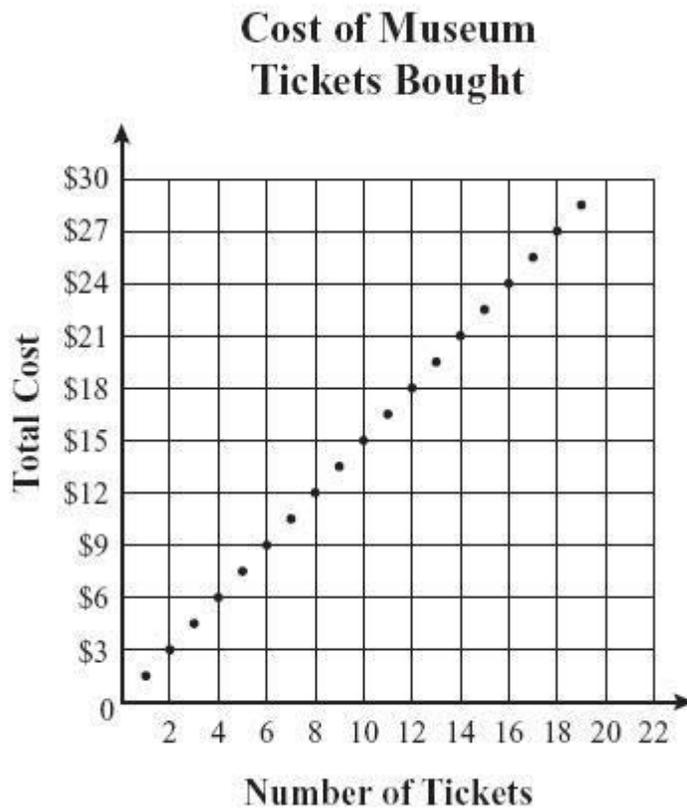
Correct! You are done with this problem!

[Comment on this problem.](#)

Assistment

You are previewing content.

The graph below shows the relationship between the number of museum tickets bought and the total cost of the tickets.



Calvin bought a one-year museum pass for \$45. The pass allows him to visit the museum an unlimited number of times during one year. What is the least number of times Calvin must visit the museum, during one year, in order for his one-year pass to be less expensive than buying a single museum ticket for each visit?

[Comment on this question](#)

Request Help

Select one:

- A. 30
- B. 31

⌘

⌘ C. 10

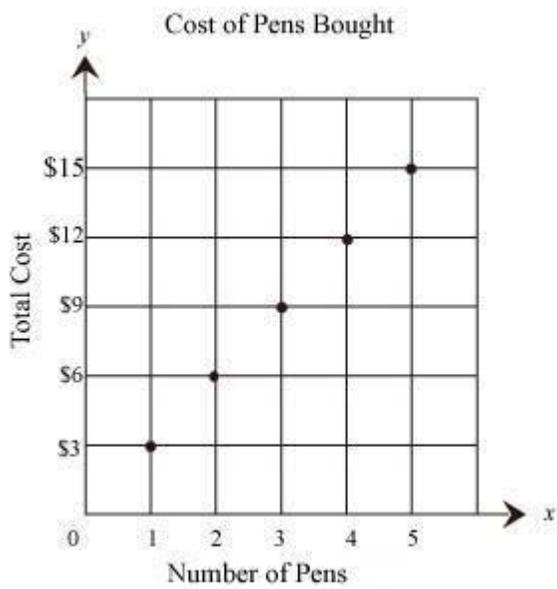
D. 19 Submit

Answer

Let's move on and figure out this problem

Let's look at the solution for a problem similar to the one above:

The graph below shows the relationship between the number of pens and the total cost of the pens.



Fran wants to buy a large box of pens for \$30. How many pens need to be in the box in order for the box to be a better deal than buying pens according to the price on the graph?

⌘ A. 30

⌘ B. 31

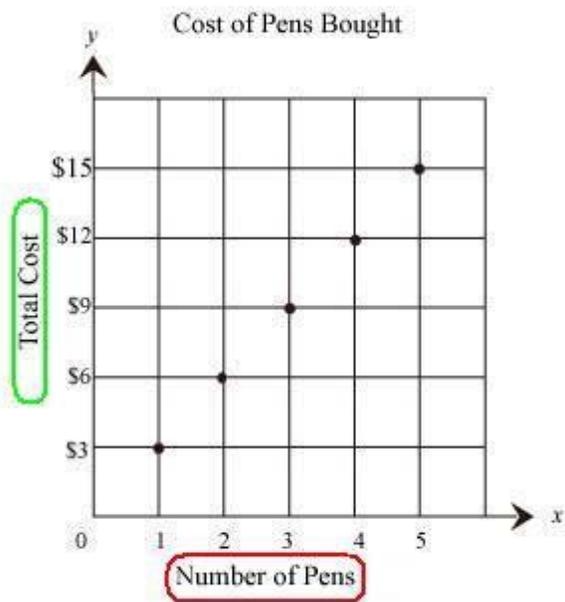
⌘ C. 10

⌘ D. 11

Solution to this problem:

Let's make sure that we understand the graph first. So let's put the information in the picture into a table.

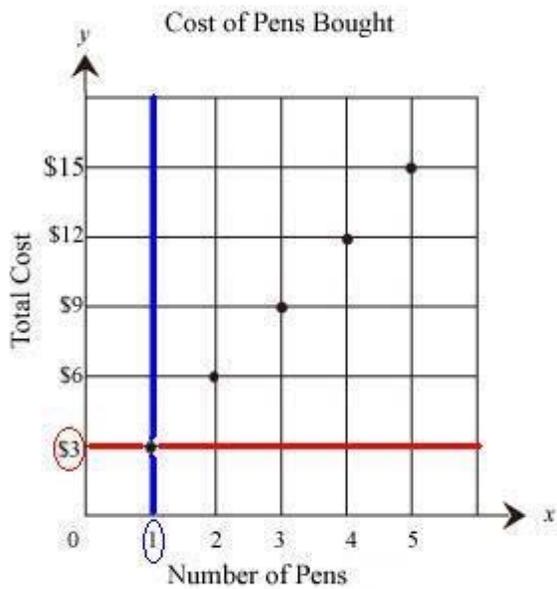
What should be the titles of columns in the table? We know we are using the table to represent the relationship of the two quantities in the graph. Take another look at the graph below, pay attention to the circled contents.



From the graph above, we can see the two quantities are "Number of Pens" and "Total Cost", which should be the titles of the table as well. So we have the blank table below.

Number of Pens	Total Cost (\$)

Now it's time to fill in the table. Let's pick the first point on the left as an example. If we draw a vertical line and a horizontal line from this point, we can find the both corresponding values, number of pens and total cost, from the graph. Look at the graph below, pay attention to the values in circle.



We can see number of pens corresponding to this point is 1 (circled in blue), and total cost corresponding to this point is 3 (circled in red).

So let's put this information into the table, we have the table below.

Number of Pens	Total Cost (\$)
1	3

If we do the same thing to the other points on the graph, we can obtain the complete table below.

Number of Pens	Total Cost (\$)
1	3
2	6
3	9
4	12
5	15

Now let's calculate how much each pen costs

Let's use the third row of the table as an example. You can also use the other rows for this step. The third row tells us that when 3 pens are bought, the total cost is \$9.

So cost of each pen = total cost / number of pens = $\$9 / 3 = \3

So the number of apples in each package is \$3.

The question asks,

"How many pens need to be in the box in order for the box to be a better deal than buying pens according to the price on the graph?"

If Dan spent \$30 on individual pens, how many pens can he buy?

We know each pen costs \$3, in order to figure out how many pen he can buy with \$30, we should use \$30 divided by \$3:

$$30 \div 3 = 10$$

So he can buy 10 pens with \$30.

Therefore, in order for the box to be a better deal than buying pens according to the price on the graph, there must be more than 10 pens in the box.

And 11 is the smallest number greater than 10.

So there should be at least **11** pens in the box in order for the box to be a better deal than buying pens according to the price on the graph.

[Comment on this question](#)

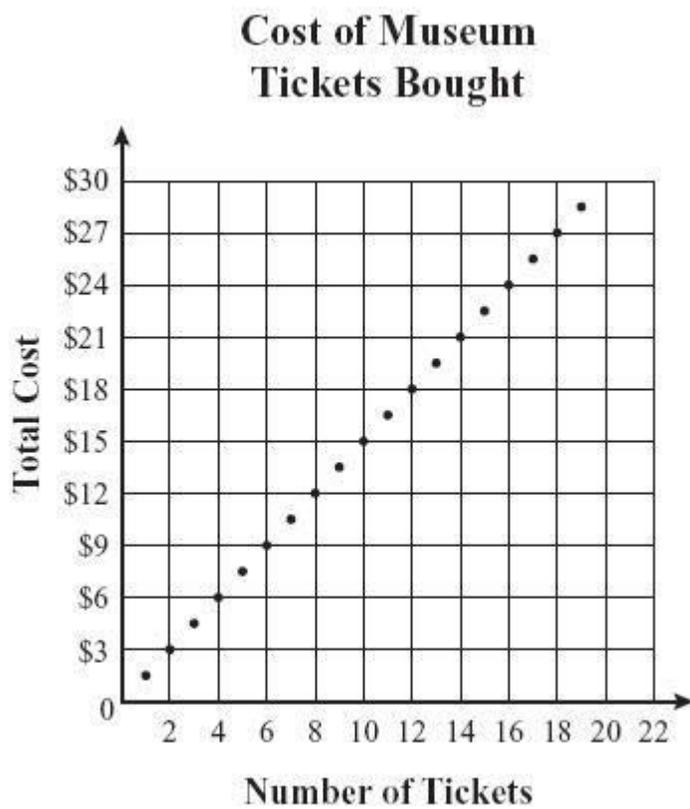
Select one:

- I have read the example and now I am ready to try again.

Submit Answer

Correct!

The graph below shows the relationship between the number of museum tickets bought and the total cost of the tickets.



Calvin bought a one-year museum pass for \$45. The pass allows him to visit the museum an unlimited number of times during one year. What is the least number of times Calvin must visit the museum, during one year, in order for his one-year pass to be less expensive than buying a single museum ticket for each visit?

[Comment on this question](#)

B is the correct answer. Please choose B.

[Comment on this hint](#)

Select one:

- A. 15
- B. 31
- C. 10
- D. 30

Submit Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

You are previewing content.

What values of Δ and \square make both equations below true? Δ

$$+ 12 = 21 \quad \square + \Delta = 16$$

[Comment on this question](#)

Request Help

Select one:

- $\Delta = 8$ and $\square = 8$
- $\Delta = 9$ and $\square = 7$
- $\Delta = 9$ and $\square = 8$
- $\Delta = 9$ and $\square = 6$

Submit Answer

Let's move on and figure out this problem

[Let's look at the solution for a problem similar to the one above:](#)

What values of Δ and \square make both equations below true? Δ

$$+ 5 = 6 \quad \square + \Delta = 3$$

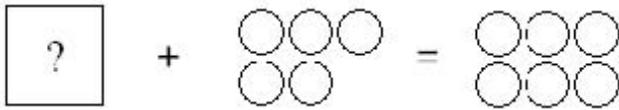
Solution to the Problem:

After looking at the equations, we may notice that 1st equation has Δ in it and 2nd equation has both Δ and \square in it. So we should start by working on the 1st equation:

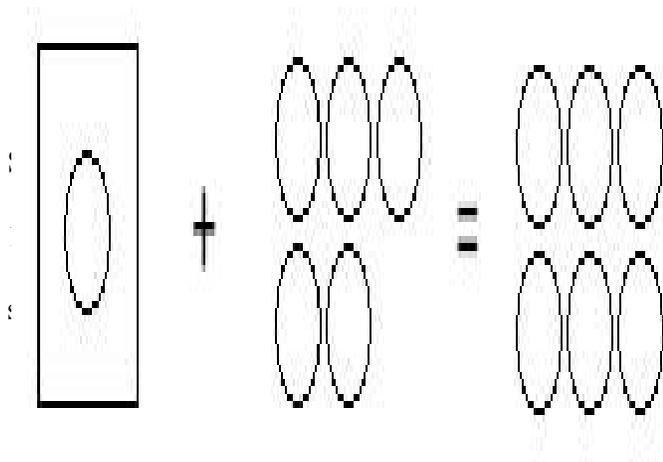
$$\Delta + 5 = 6$$

So the sum of Δ and 5 is 6. Let's imagine we have two piles of circles: one pile has Δ number of circles in it and the other pile has 5 circles in it. The total number of circles in both piles is 6.

To make this easy, take a look at the picture below, how many circles do we need to put in the square to make the equation true?



After counting and thinking, we can easily see that only one circle is needed in the square.



$$\boxed{?} + \bigcirc = \bigcirc\bigcirc\bigcirc$$

We can easily get

$$\boxed{\bigcirc\bigcirc} + \bigcirc = \bigcirc\bigcirc\bigcirc$$

That is $2 + 1 = 3$. So $\square = 2$.

Therefore, the final answer to this question is: $\Delta = 1$ and $\square = 2$.

[Comment on this question.](#)

Select one:

- I have read the example and now I am ready to try again.

Submit Answer

Correct!

What values of Δ and \square make both equations below true? Δ

$$+ 12 = 21 \quad \square + \Delta = 16$$

[Comment on this question](#)

B is the correct answer. Please choose B.

[Comment on this hint](#)

Select one:

-
- B. $\Delta = 9$ and $\square = 7$
- C. $\Delta = 9$ and $\square = 8$
- A. $\Delta = 8$ and $\square = 8$

D. $\Delta = 9$ and $\square = 6$ Submit

Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment You are previewing content. Sheila started the geometric pattern shown below.

1, 3, 9, 27, __?_

If the pattern continues as shown, what is the next term in the pattern?

[Comment on this question](#) [Request Help](#) *Type your answer below:* ⌘ Submit Answer

Let's move on and figure out this problem [Let's look at the solution for a problem similar to the one above:](#)

Jack started the geometric pattern shown below. 1, 2, 4, 8, __?_ If the pattern continues as shown, what is the next term in the pattern?

Solution to this problem:

In order to solve the problem, we need to find out what the pattern is.

Let's look at the first two numbers in the pattern, 1 and 2.

What calculation can we take to obtain 2 from 1? In another word, what can we put in the square of equation below in order to make the equation to be true?

$$1 \boxed{} = 2$$

With our knowledge, we can think of two simple scenarios to fill in the square.

$$1 \boxed{+ 1} = 2$$

1.

$$1 \boxed{* 2} = 2$$

2.

Now, let's look at the relationship between the 2nd term and the 3rd term in the sequence, 2 and 4. With the same method, we need to figure out the content of the square in the equation below.

$$2 \boxed{} = 4$$

Again, two simple scenarios we can think of are:

$$2 \boxed{+ 2} = 4$$

1.

$$2 \boxed{* 2} = 4$$

2.

We can see " *2 " can be used by both pairs of numbers. So let's use *2 to check the next pair of numbers in the pattern. So the number after 4 in the sequence should be $4 * 2 = 8$. Let's find the next number in the sequence, which is circled in red.

$$1, 2, 4, \textcircled{8}, \underline{\quad ?}$$

So our guess is right. The pattern of the sequence is marked in the sequence below.

$$\begin{array}{cccc} 1, & 2, & 4, & 8, & \underline{\quad ?} \\ \vee & \vee & \vee & \vee & \\ *2 & *2 & *2 & *2 & \end{array}$$

So the next term in the sequence should be the result of $8*2$.

$8*2 = 16$. Therefore, the next term in the sequence is 16.

[Comment on this question](#)

Select one:

- I have read the example and now I am ready to try again.

Submit Answer

Correct!

Sheila started the geometric pattern shown below.

1, 3, 9, 27, ?

If the pattern continues as shown, what is the next term in the pattern?

[Comment on this question](#)

~~The correct answer~~ is 81. Please enter 81.

Type your answer below:

- 81

Submit Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

Assistment #26149

You are previewing content.

The poster below shows the costs at a fall carnival.



Which of the following expressions represents the total cost, in dollars, of 1 admission and r rides, for any number of rides?

[Comment on this question](#)

Request Help

Select one:

- A. $10 + 2r$
- B. $10(r+2)$
- C. $10-2r$
- D. $10+2+r$

Submit Answer

Let's move on and figure out this problem

[Let's look at the solution for a problem similar to the one above:](#)

The poster below shows the costs at a spring carnival.



Write an expressions representing the total cost, in dollars, of 1 admission and n rides, for any number of rides?

Solution to this problem:

From the poster, we know that an admission costs 50 dollars, and one ride costs 5 dollars.

Let's assume you alone went to this carnival. So you paid for 1 admission for yourself. And during the carnival, you took **6 rides**. Let's calculate how much you spent in total. Since you only paid for 1 admission and we know 1 admission costs 50 dollars. So the **total amount of money you spent on admissions** is: 50, in dollars.

Now let's figure out how much you spent on rides. You took **6 rides** and each of them costs 5 dollars. In order to calculate the total costs on rides, we should sum them up. **Total costs on rides** = $5 + 5 + 5 + 5 + 5 + 5 = 6 * 5$ So the **total amount of money you spent in spring carnival** = **total cost of admissions** + **total cost of rides**

= $50 + 6*5$ In the problem, it asks for the cost for 1 admission and n rides, n can be any number, such as 3, 4, 6, etc. So the expression for 1 admission and **n rides** is:

$$50 + 5*n, \text{ or } 50 + 5n.$$

[Comment on this question](#)

Select one:

⌘

I have read the example and now I am ready to try again.

Submit Answer

Correct!

The poster below shows the costs at a fall carnival.



Which of the following expressions represents the total cost, in dollars, of 1 admission and r rides, for any number of rides?

[Comment on this question](#)

The correct answer is A. Please choose A.

[Comment on this hint](#)

Select one:

⌘

⌘

B. $10(r+2)$

⌘

C. $10-2r$

⌘

A. $10 + 2r$

D. $10+2+r$ Submit

Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

You are previewing content.

For 4 weeks, Ms. Gonzalez's class collected canned food for a food bank.

- 1 The class collected 16 cans during the first week.
- 2 During each week after the first week, the class collected 12 more cans than they had collected the week before.

Based on the information above, which of the following tables correctly displays the number of cans of food the class collected during each week?

A.

Cans Collected by Ms. Gonzalez's Class

Week	Number of Cans Collected during the Week
1	16
2	12
3	12
4	12

B.

Cans Collected by Ms. Gonzalez's Class

Week	Number of Cans Collected during the Week
1	16
2	12
3	24
4	36

C.

Cans Collected by Ms. Gonzalez's Class

Week	Number of Cans Collected during the Week
1	16
2	28
3	40
4	52

D.

Cans Collected by Ms. Gonzalez's Class

Week	Number of Cans Collected during the Week
1	16
2	32
3	64
4	128

[Comment on this question](#)

Request Help

Select one:

- A
- B
- C
- D Submit

Answer

Let's move on and figure out this problem

[Let's look at the solution for a problem similar to the one above:](#)

For 4 weeks, Mr. Hamilton's class collected canned food for a food bank.

1. The class collected 8 cans during the first week.
2. During each week after the first week, the class collected 2 more cans than they had collected the week before.

Based on the information above, please construct a table that displays the number of cans of food the class collected during each week.

Solution to this problem:

Let's first start by setting up the table.

By reading the problem, we know that Mr. Hamilton's class collects cans every week.

So the table should display the relationship between week number and the number of cans collected during that specific week. Therefore, the blank table should look like the following:

Cans Collected by Mr. Hamilton's Class

Week	Number of Cans Collected during the Week

Now let's fill in the table.

The first clue the problem provided is that:

"The class collected 8 cans during the first week."

From this, we know for week 1, the number of cans collected during the week should be 8. Let's put this information into the table.

Cans Collected by Mr. Hamilton's Class

Week	Number of Cans Collected during the Week
1	8

Then the second clue says,

"During each week after the first week, the class collected 2 more cans than they had collected the week before."

That means for week 2, the class collected 2 more cans than the number of cans they collected during the first week.

What is the number of cans they collected during the first week? Let's look at the table we have now.

Pay attention to the red cell, which has the answer to this question.

Cans Collected by Mr. Hamilton's Class

Week	Number of Cans Collected during the Week
1	8

From the table, we know the number of cans collected during the first week is 8.

So for week 2, the number of can collected is $8 + 2 = 10$. Let's put this information into the table.

Cans Collected by Mr. Hamilton's Class

Week	Number of Cans Collected during the Week
1	8
2	10

Using the same method, we can complete the table and obtaining the following:

Cans Collected by Mr. Hamilton's Class

Week	Number of Cans Collected during the Week
1	8
2	10
3	12
4	14

This is the final table displaying the number of cans collected during each week.

[Comment on this question](#)

Select one:

⌘

I have read the example and now I am ready to try again. Submit

Answer

Correct! For 4 weeks, Ms. Gonzalez's class collected canned food for a food bank.

- 1 The class collected 16 cans during the first week.
- 2 During each week after the first week, the class collected 12 more cans than they had collected the week before.

Based on the information above, which of the following tables correctly displays the number of cans of food the class collected during each week?

A.

Cans Collected by Ms. Gonzalez's Class

Week	Number of Cans Collected during the Week
1	16
2	12
3	12
4	12

B.

Cans Collected by Ms. Gonzalez's Class

Week	Number of Cans Collected during the Week
1	16
2	12
3	24
4	36

C.

Cans Collected by Ms. Gonzalez's Class

Week	Number of Cans Collected during the Week
1	16
2	28
3	40
4	52

D.

Cans Collected by Ms. Gonzalez's Class

Week	Number of Cans Collected during the Week
1	16
2	32
3	64
4	128

[Comment on this question](#)

The correct table is C. Choose C.

[Comment on this hint](#)

Select one:

- A
- B
- C
- D

Submit Answer

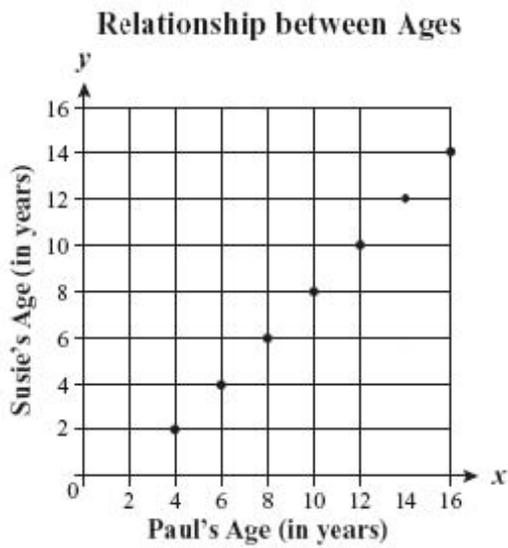
Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

You are previewing content.

The graph below represents the relationship between Paul's age and Susie's age.



Which of the following best describes the relationship between Paul's age and Susie's age for all the points shown on the graph?

[Comment on this question](#)

Request Help

Select one:

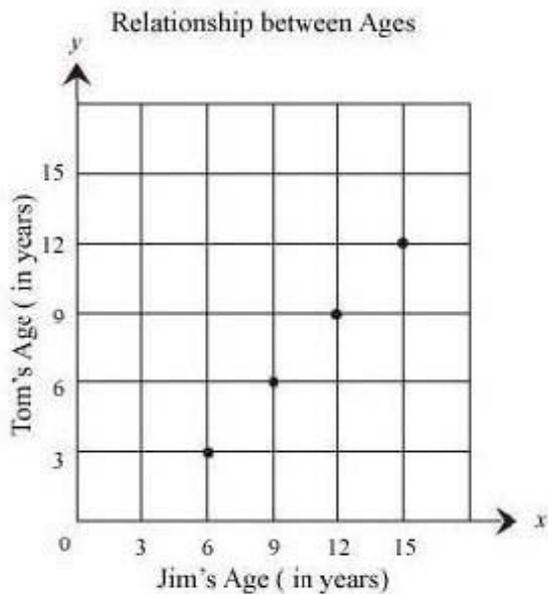
- A. Susie is twice as old as Paul.
- B. Susie is 2 years older than Paul.
- C. Susie is half as old as Paul.
- D. Susie is 2 years younger than Paul.

Submit Answer Let's move on and figure out

this problem

Let's look at the solution for a problem similar to the one above:

The graph below represents the relationship between Jim's age and Tom's age.



Which of the following best describes the relationship between Jim's age and Tom's age for all the points shown on the graph?

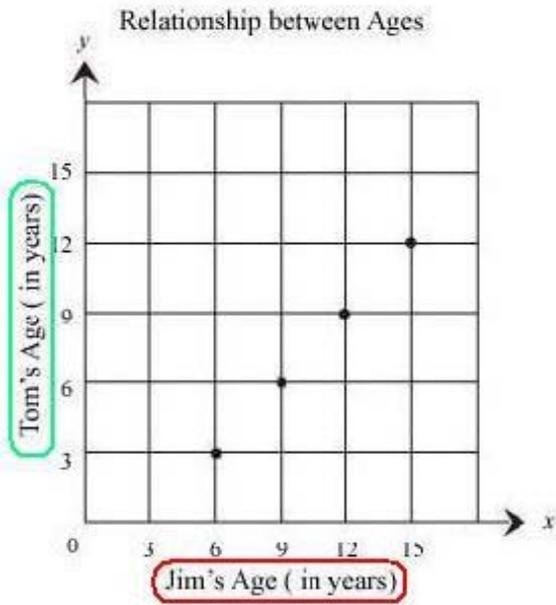
- ⌘ A. Tom is twice as old as Jim.
- ⌘ B. Tom is 3 years older than Jim.
- ⌘ C. Tom is three times as old as Jim.
- ⌘ D. Tom is 3 years younger than Jim.

Solution to this problem:

Let's make sure that we understand the graph first. So let's put the information in the picture into a table.

What should be the titles of columns in the table? We know we are using the table to represent the relationship of the two quantities in the graph. Take another look at the graph below, pay attention to the

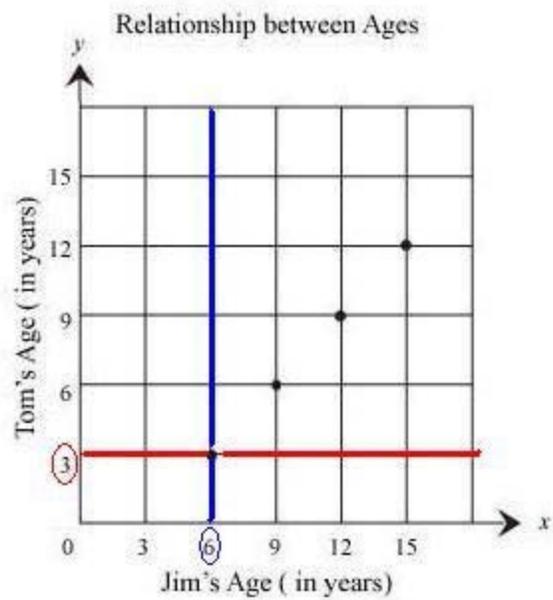
circled contents.



From the graph above, we can see the two quantities are "Jim's Age (in years)" and "Tom's Age (in years)", which should be the titles of the table as well. So we have the blank table below.

Jim's Age (in years)	Tom's Age (in years)

Now it's time to fill in the table. Let's pick the first point on the left as an example. If we draw a vertical line and a horizontal line from this point, we can find the both corresponding values, Jim's age and Tom's age, from the graph. Look at the graph below, pay attention to the values in circle.



We can see Jim's age corresponding to this point is 6 (circled in blue), and Tom's age corresponding to this point is 3 (circled in red).

So let's put this information into the table, we have the table below.

Jim's Age (in years)	Tom's Age (in years)
6	3

If we do the same thing to the other points on the graph, we can obtain the complete table below.

Jim's Age (in years)	Tom's Age (in years)
6	3
9	6
12	9
15	12

Now let's use this table to check the choices in the original problem.

Have a look at the choices again:

- ⌘ A. Tom is twice as old as Jim.
- ⌘ B. Tom is 3 years older than Jim.
- ⌘ C. Tom is three times as old as Jim.
- ⌘ D. Tom is 3 years younger than Jim.

Let's use the first row of the table first, which tells us that when Jim is 6, Tom is 3.

For A, if Tom is twice as old as Jim, then when Jim is 5, Tom should be $6 * 2 = 12$ years old. This is contrary from the information we know. **Thus A is wrong.**

For B, if Tom is 3 years older than Jim, then when Tom is 3, Jim should be $3 - 3 = 0$. This is contrary to the information we know. **Thus B is wrong.**

For C, if Tom is three times as old as Jim, then when Jim is 5, Tom should be $5 / 2 = 2.5$. This is contrary from the information we know. **Thus it is wrong.**

For D, if Tom is 3 years younger than Jim, then when Jim is 6, Tom is $6 - 3 = 3$ years old. This is right. If we check it with the other rows from the table, this statement still holds true. **So D is correct.**

Thus, D is the correct choice; Tom is 3 years younger than Jim.

[Comment on this question](#)

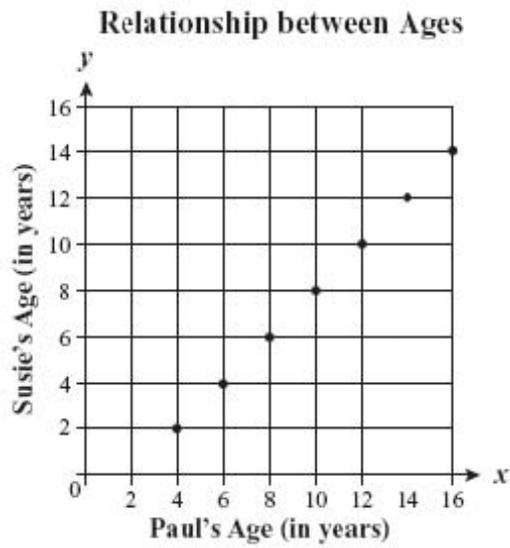
Select one:

- ⌘ I have read the example and now I am ready to try again.

Submit Answer

Correct!

The graph below represents the relationship between Paul's age and Susie's age.



Which of the following best describes the relationship between Paul's age and Susie's age for all the points shown on the graph?

[Comment on this question](#)

D is the right choice. Choose D.

[Comment on this hint](#)

Select one:

- A. Susie is twice as old as Paul.
- B. Susie is 2 years older than Paul.
- C. Susie is half as old as Paul.
- D. Susie is 2 years younger than Paul.

D. Susie is 2 years younger than Paul. Submit

Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

You are previewing content.

Choose the rule that describes the relationship between the input (x) and the output (y) in the input-output table below.

Input (x)	2	5	10	11
Output (y)	5	11	21	23

[Comment on this question](#)

Request Help

Select one:

- A. $x + 3 = y$
- B. $5x - 5 = y$
- C. $2x + 1 = y$
- D. $3x = y$

Submit Answer

Let's move on and figure out this problem

[Let's look at the solution for a problem similar to the one above:](#)

Write a rule that describes the relationship between the input (x) and the output (y) in the input-output table below.

Input (x)	3	4	5	6
Output (y)	11	14	17	20

Solution to this problem:

We need a rule that describes the relationship between **input (x)** and **output (y)**. Therefore, we should analyze the relationship between each pair of x and y. Let's start from the first column on the left, which is shaded yellow in the following table:

Input (x)	3	4	5	6
Output (y)	11	14	17	20

This pair of x and y tells us that: when $x = 3$, $y = 11$.

Let's write out the possible relationships between these two numbers. In another word, what do we need to put into the blank in to make the following equation true:

$$3 \boxed{} = 11$$

With our knowledge, we can have these possible simple relationships for these two numbers:

1. $3 + 8 = 11$
2. $3 * 2 + 5 = 11$
3. $3 * 3 + 2 = 11$
4. $3 * 4 - 1 = 11$
5. $3 * 5 - 4 = 11$
6. $3 * 6 - 7 = 11$

Now let's look at the next pair of x and y, which is shaded in blue in the table below:

So when $x = 4$, $y = 14$.

Input (x)	3	4	5	6
Output (y)	11	14	17	20

Let's write out some simple relationship between these two numbers.

1. $4 + 10 = 14$
2. $4 * 2 + 6 = 14$
3. $4 * 3 + 2 = 14$
4. $4 * 4 - 2 = 14$
5. $4 * 5 - 6 = 14$

Compare these operations with the ones in previous case. We can find out one relationship that they have in common, that is,

1. $3 * 3 + 2 = 11$
2. $4 * 3 + 2 = 14$

So we can have a guess for the relationship between x and y, that is, $x * 3 + 2 = y$.

Now let's test if this relationship is true using the rest of the table.

Look at the column shaded in green in the following table:

Input (x)	3	4	5	6
Output (y)	11	14	17	20

This column tells us that when $x = 5$, $y = 17$. Let's substitute $x = 5$ into $x * 3 + 2 = y$. See if the value of $y = 17$.

$$\begin{aligned} 5 * 3 + 2 &= y \\ 15 + 2 &= y \\ &= 17 \\ &= y \end{aligned}$$

,which corresponds with the y value from the table. **Great !!!!**

Using this method checking the next column still shows us that $x * 3 + 2 = y$ is the right relationship.

So the rule describing the relationship between x and y is: $x * 3 + 2 = y$ or $3x + 2 = y$.

[Comment on this question](#)

Select one:

- I have read the example and now I am ready to try again.

Submit Answer

Correct!

Choose the rule that describes the relationship between the input (x) and the output (y) in the input-output table below.

Input (x)	2	5	10	11
Output (y)	5	11	21	23

[Comment on this question](#)

The correct answer is C. Choose C.

[Comment on this hint](#)

Select one:

-
- B. $5x - 5 = y$
- C. $2x + 1 = y$
- A. $x + 3 = y$

D. $3x = y$ Submit

Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

You are previewing content.

What is the value of the expression below when $\Delta=6$?

$$2 + \frac{\Delta}{3}$$

[Comment on this question](#)

Request Help

Type your answer below:

*

Submit Answer

Let's move on and figure out this problem

[Let's look at the solution for a problem similar to the one above:](#)

What is the value of the expression below when $\Delta=3$?

$$5 + \frac{\Delta}{3}$$

Solution to this problem:

Let's substitute $\Delta=3$ into the formula first, we will have

$$5 + \frac{3}{3}$$

Following the rule below:

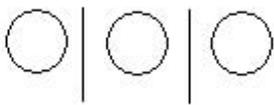
PE (MD) (AS)

Parenthesis, Exponents, Multiplication and Division (from left to right), Addition and Subtraction (from left to right).

We should take the division first, which is the red portion in the formula below:

$$5 + \frac{3}{3}$$

Imagine we have 3 circles, and we divide them into 3 piles, how many circles does one pile have?



From the picture, we know that each pile has one circle. Therefore,

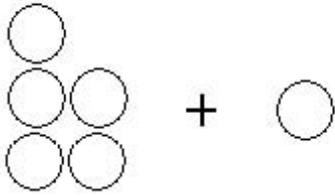
$$5 + \frac{3}{3}$$

Equals to

$$5 + 1$$

Now let's calculate $5 + 1$.

Imagine we have a pile of 5 circles and a pile of 1 circle. If we put them together, how many circles do we have?



If you count the circles, you may find out the sum of 5 circles and 1 circle is 6 circles.

So $5 + 1 = 6$ Therefore, the original expression becomes:

$$\begin{array}{r} 5 + \frac{3}{3} \\ 5 + 1 \\ 6 \end{array}$$

Therefore, the value of the expression is 6.

[Comment on this question](#)

Select one:

- I have read the example and now I am ready to try again.

Submit Answer

Correct!

What is the value of the expression below when $\triangle=6$?

$$2 + \frac{\triangle}{3}$$

[Comment on this question](#)

4 is the value for the expression. Type in 4.

[Comment on this hint](#)

Type your answer below:

⌘4

Submit Answer

Correct! You are done with this problem!

[Comment on this problem.](#)

Assistment You are previewing content. If $\triangle=4$ and $\square=5$, what is the value of the expression below?

$3(\triangle)+6(\square)$ [Comment on this question](#) [Request Help](#) *Type your answer below:* ⌘
Submit Answer

Let's move on and figure out this problem [Let's look at the solution for a problem similar to the one above:](#)

If $\triangle=2$ and $\square=3$, what is the value of the expression below?

$$4(\triangle)+2(\square)$$

Solution to this problem:

First, let's substitute $\triangle=2$ and $\square=3$ into the expression, we have:

$$4(2) + 2(3)$$

According to

PE (MD) (AS)

Parenthesis, Exponents, Multiplication and Division (from left to right), Addition and Subtraction (from left to right).

We know that parenthesis means multiplication. So the expression now is: $4 * 2 + 2 * 3$

$$2 + 2 * 3$$

And we should do $4 * 2$ first.

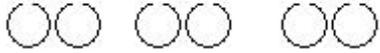
Imagine we have 4 circles in each pile and we are putting them together, how many circles do we have in total? Please have a look at the picture below.



As you can see, there are 8 circles in total. So $4 * 2 = 8$.

Now the expression becomes, $4 * 2 + 2 * 3 = 8 + 2 * 3$ The next step is to calculate $2 * 3$. Imagine we have 2 circles in each pile and we are putting three piles together, what is the total number

of circles?



As you can see, we have 6 circles in total. So $2 * 3 = 6$.

Now the expression is $4 * 2 + 2 * 3 + 2 * 3 + 6$ Now

the last step is to calculate $8 + 6$. $8 + 6 = 14$. Therefore,

the final value of the expression is 14.

[Comment on this question.](#)

Select one:

*

I have read the example and now I am ready to try again.

Submit Answer

Correct!

If $\triangle=4$ and $\square=5$, what is the value of the expression below?

$3(\triangle)+6(\square)$

[Comment on this question.](#)

~~42 is the right answer. Type in 42.~~

Type your answer below:

⌘42

Submit Answer

Correct! You are done with this problem!

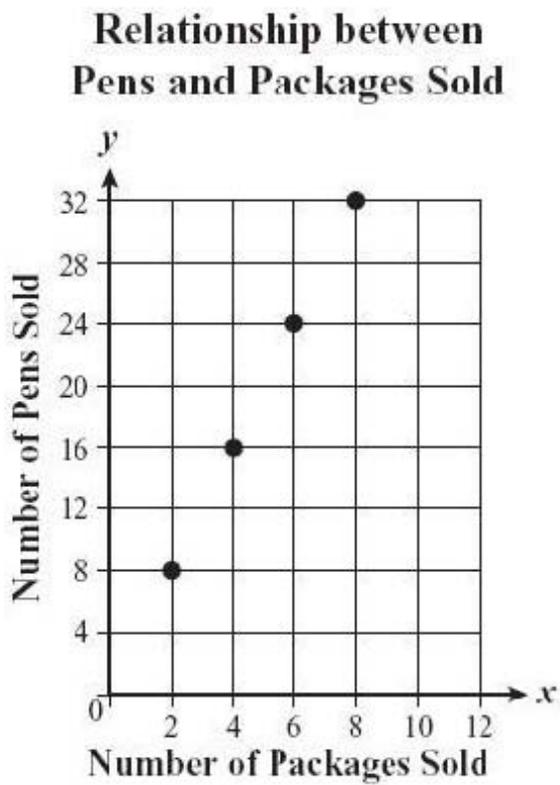
[Comment on this problem.](#)

Assistment

You are previewing content.

A store sells packages of pens. Each package contains the same number of pens.

The graph below displays the relationship between the total number of packages sold and the total number of pens sold.



What is the total number of pens in each package?

[Comment on this question](#)

Request Help

Type your answer below:

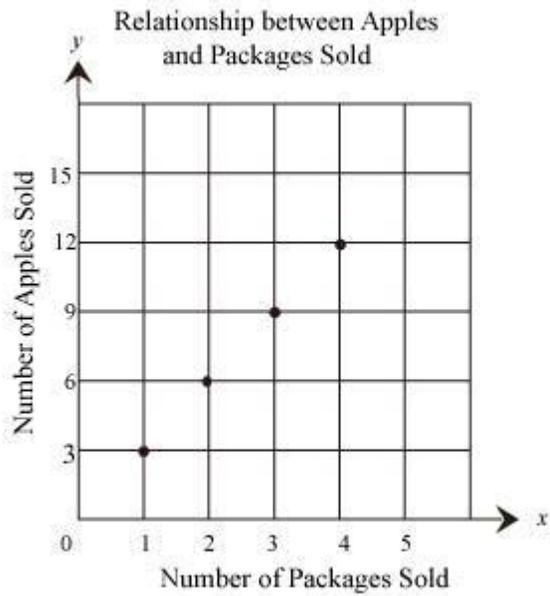
⌘

◆◆○×◆ ◆◆◆◆◆◆

Let's look at the solution for a problem similar to the one above:

A store sells packages of apples. Each package contains the same number of apples.

The graph below displays the relationship between the total number of packages sold and the total number of apples sold.



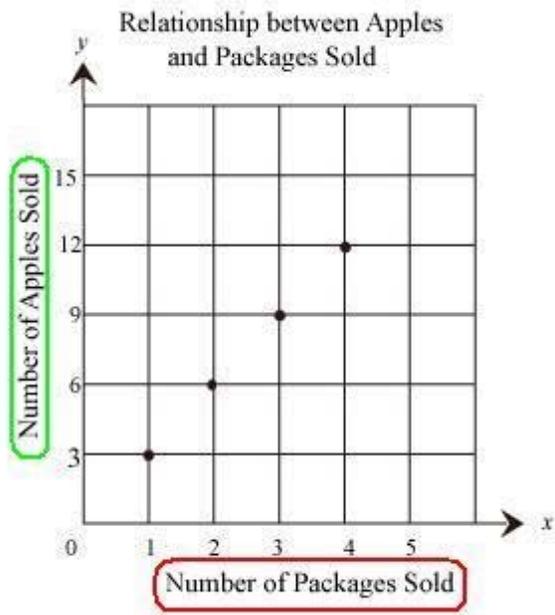
What is the total number of apples in each package?

Solution to this problem:

Let's make sure that we understand the graph first. So let's put the information in the picture into a table.

What should be the titles of columns in the table? We know we are using the table to represent the relationship of the two quantities in the graph. Take another look at the graph below, pay attention to the

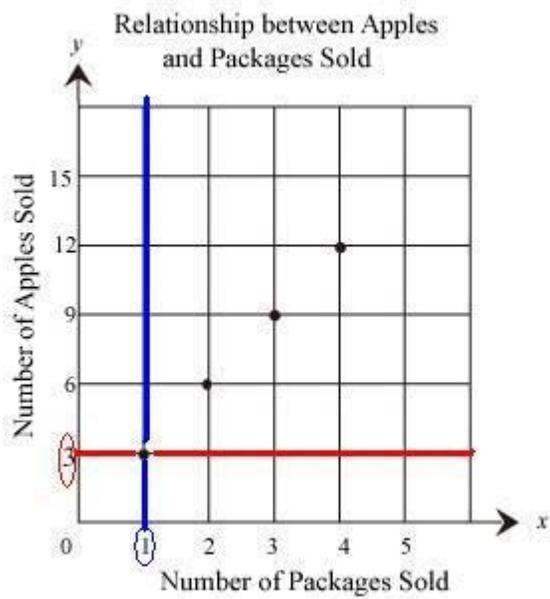
circled contents.



From the graph above, we can see the two quantities are "Number of Packages Sold" and "Number of Apples Sold", which should be the titles of the table as well. So we have the blank table below.

Number of Packages Sold	Number of Apples Sold

Now it's time to fill in the table. Let's pick the first point on the left as an example. If we draw a vertical line and a horizontal line from this point, we can find the both corresponding values, number of packages sold and number of apples sold from the graph. Look at the graph below, pay attention to the values in circle.



We can see number of packages sold corresponding to this point is 1 (circled in blue), and number of apples sold corresponding to this point is 3 (circled in red).

So let's put this information into the table, we have the table below.

Number of Packages Sold	Number of Apples Sold
1	3

If we do the same thing to the other points on the graph, we can obtain the complete table below.

Number of Packages Sold	Number of Apples Sold
1	3
2	6
3	9
4	12

Now let's calculate how many apples each packages has.

Let's use the first row of the table as an example. You can also use the other rows for this step. The first row tells us that when 1 package is sold, the number of apples sold is 3.

So number of apples in each package = number of apples sold / number of packages = $3 / 1 = 3$

So the number of apples in each package is 3.

[Comment on this question](#)

Select one:

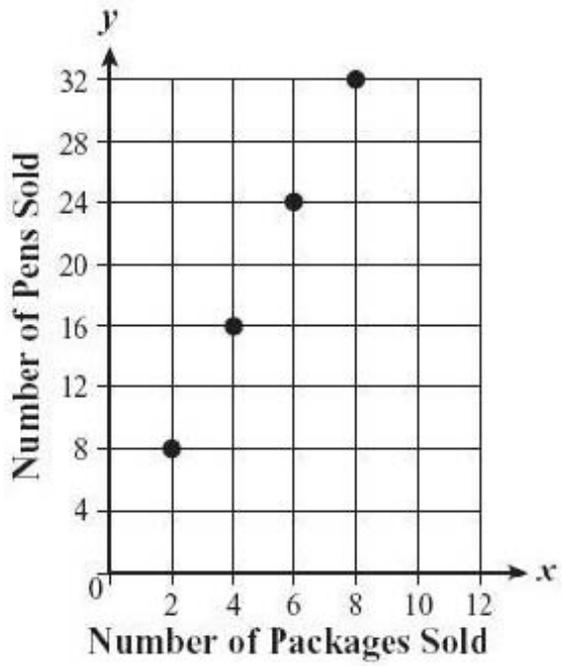
- I have read the example and now I am ready to try again.

Submit Answer

Correct!

A store sells packages of pens. Each package contains the same number of pens. The graph below displays the relationship between the total number of packages sold and the total number of pens sold.

Relationship between Pens and Packages Sold



What is the total number of pens in each package?

[Comment on this question](#)

4 is the correct answer. Type in 4.

[Comment on this hint](#)

Type your answer below:

- 4

Submit Answer

Correct! You are done with this problem!

[Comment on this problem](#)

Assistment

You are previewing content.

Prawal wrote the equation below on a card.

$$\triangle \div 2 = 3$$

If Prawal's equation is true, which of the following is also true?

[Comment on this question](#)

Request Help

Select one:

- ⌘
- ⌘ B. $\triangle = 3 \div 2$
- ⌘ C. $\triangle = 3 + 2$
- ⌘ A. $\triangle = 2 - 3$
- ⌘ D. $\triangle = 3 * 2$ Submit

Answer

Let's move on and figure out this problem

[Let's look at the solution for a problem similar to the one above:](#)

Jack wrote the equation below on a card.

$$\square \div 3 = 4$$

If Jack's equation is true, which of the following is also true?

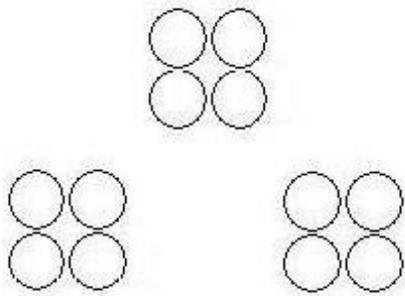
-
- ⌘ A. $\square = 4 - 3$

- ⌘ B. $\square = 4 \div 3$
- ⌘ C. $\square = 4 + 3$
- ⌘ D. $\square = 4 * 3$

Solution to this problem:

Let's look at the equation first, what does $\square \div 3 = 4$ mean?

Since it is clearly a division and 3 comes after the division sign (\div), so we are dividing what is in \square into 3 piles, and there are 4 items in each pile. Look at the picture below, which describes this equation.



So in order to figure out what is in \square , we need to sum the circles up.
The equation for this is:

$$\square = 4 + 4 + 4$$

We know repeated addition can be represented using multiplication.

$$4 + 4 + 4 = 4 * 3$$

Therefore, $\square = 4 * 3$. D is right.

[Comment on this question](#)

Select one:

- I have read the example and now I am ready to try again.

Submit Answer

Correct!

Prawal wrote the equation below on a card.

$$\triangle \div 2 = 3$$

If Prawal's equation is true, which of the following is also true?

[Comment on this question](#)

The true equation is D. Select D.

[Comment on this hint](#)

Select one:

-
-
- B. $\triangle = 3 \div 2$
- C. $\triangle = 2 + 2$
- D. $\triangle = 3 * 2$ Submit

Answer

Correct! You are done with this problem!

[Comment on this problem](#)