Worcester Polytechnic Institute

Evaluating the Effectiveness of the ARRS System

An Interactive Qualifying Project
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By

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Abstract

The ASSISTments system is a web-based tutoring site designed to engage middle and high school students in key course objectives, and to help them excel in these objectives with the use of a space learning based technique. This system is designed to retest students on a timed basis. The goal of this IQP is to test the efficiency of ARRS and prove that ARRS increases retention rate among students. The students were divided by class and then split up randomly into two groups, A and B. Both groups received weekly homework assignments with either group A or B receiving ARRS in each skill. After all relearning assignments were completed; the classes were given different post tests with transfer questions complementing the topics they were given with ARRS.

Contents

Introduction

When thinking about how to assign homework to their students, professors now have a large selection of tools to choose from; many being very different from the traditional pen and paper method. Professors are adding more interactive assignments to their courses to encourage concept retention and to reduce cheating. Mastering Physics is a web-based tutoring system that was created by students at MIT. This system, sponsored by Pearson, was put into effect to reduce cheating and homework copying in physics courses by adding an interactive alternative to pen and paper homework assignments (Aspey, 2010). WebWork is another example of a successful web-based tutoring system that has gained recent popularity. Using pen and paper and printed assignments simply cannot provide the same interactive quality these and other web-based tutoring systems have to offer. An online tutoring system is beneficial to students because there is the opportunity to give virtual rewards for correct answers, offer interactive hints and reassess material taught in the course. With the use of these tutoring systems, professors can be certain that more students are actually retaining material instead of copying the work of other students. This report presents a large-scale experiment conducted to prove the efficiency of the Automatic Reassessment and Relearning System in the ASSISTments web-based tutoring system.

Spacing & Overlearning

It has long been observed that when the material to be learned is spread out and presented to students over several study sessions and after a certain interval of time, known as the retention interval, test performance is seen to improve (Rohrer, 2008). This general improvement of test scores is often known as the “spacing effect”. The spacing effect, is frequently juxtaposed to another type of learning, called “overlearning”, which is traditionally heavily rooted in mathematics education. Overlearning is simply the continued study of material beyond the point at which mastery is considered to have been attained (Rohrer 2008). Frequently, a spacing study is done on a relatively small number of subjects, who are submitted to two or three rounds of being exposed to material and/or reviewing previous material, depending on whether or not they are in the control group (Rohrer 2009). The study usually concludes with the subjects being given a retest on material learned earlier on.

A feature that is frequently a major factor in these studies is the length of the study, and in particular, the time gaps between review sessions and retesting. For many studies, due to matters of convenience, the time gaps are small, sometimes lasting for only seconds, and rarely going beyond a few days (Rohrer, 2009). There have only been a very small number of spacing studies that present mathematical material over significant time periods. This Interactive Qualifying Project is innovative in the fact that mathematical material will be presented over an extended period of time with testing lasting over several months.

In most studies, the subjects are split up into the control group or “massed learners”, and the test group, or the “spaced learners” (Rohrer, 2008). Each group is then subjected to reviewing/learning and eventually retesting over rigidly defined time periods, where all members of a group take place at once. However, because this Interactive Qualifying Project allows students to attempt to master and remaster the material at their own pace, the intervals between reviewing and testing are not necessarily uniform across the student body. This Interactive Qualifying Project potentially offers a relatively rare opportunity to study the spacing effect under the introduction of mathematical material over significant time periods, and non-uniform review and retesting periods. In addition, the setup of this specific study places every student into both the control and test group conditions, making it so all students will experience the spacing effect to the same extent.

The ASSISTments System

The ASSISTments system is a web-based math tutoring site that was built by both graduate and undergraduate students under the guidance of professor Neil Heffernan and other faculty members. One feature of the system is that middle school and high school teachers can give their students the opportunity to complete practice problems for specific skills that may be causing trouble. Teachers can request to get an account on the ASSISTments website, organize their classes and have their students enroll in these classes to access the various assignments distributed by the teacher. The teachers can access a multitude of problem sets, some of which were created by the members of this Interactive Qualifying Project group, whereas the majority of the content was created by Interactive Qualifying Project groups from previous years or other members of the WPI community working with the ASSISTments project. Each problem set in this study contains various math problems based on a specific skill. The problem sets include tutoring directed towards students who need additional help solving the problems. The tutoring either takes the form of a series of hints or a series of scaffolding questions designed to outline the various concepts involved in solving the problem.

The library of problem set material is archived on a wiki page for the ASSISTments system, where anyone can see the various skills for which problem sets have been created and view the types of problems that are contained in each skill. Problems in ASSISTments are broken into two main types: normal assistments and variabilized templates. Normal assistments are simply individual problems written with the numerical values already inserted and with a predefined answer. In contrast, variabilized templates are written in terms of variables which can be defined as a range of integer values, and the answer to the general template can be written as an algebraic combination of the variables.

In ASSISTments, there exists a function for retesting students on a timed basis. This system is called ARRS, or the Automatic Reassessment and Relearning System. If a teacher assigns ARRS to a particular problem set for his/her students, they will first go through a period of skill building. This initial attempt at learning a skill is designed for the student to attain “mastery,” by correctly answering a predetermined number of questions in a row (usually set to three). This can only be accomplished when the student does not use the aid of the tutoring written for each question, as accessing the hints, or otherwise, results in an automatic wrong answer. Once a student attains mastery, they will not see the material in ASSISTments for seven days, until the individual student is notified of their ARRS test. This test contains all skills that the student has been exposed to, provided that a certain amount of time has elapsed since their initial skill building or previous ARRS test on the subject. The ARRS test contains one question from each skill, and if the student answers the question correctly, they are said to have retained mastery. At this point, the student will wait again, this time for a longer period, before being retested. These periods, in order, are seven days, 14 days, 28 days, and 60 days. This extended time of non-exposure is meant to determine if the student truly understands what they are learning or whether they are just finding a way to memorize a certain set of problems.

Should a student get a question wrong on their ARRS test, they will be forced to relearn the material before being eligible for another ARRS test on that specific topic. This entails remastering the material by correctly answering the prescribed number of questions in a row from the original problem set, just like the skill building period. This is to ensure that students, who are for whatever reason not retaining the knowledge, are having the knowledge reinforced by the relearning system.

The slight flaw in this system is the fact that it only works if the student actually goes in to take the tests when they are scheduled. Thus the effectiveness of the ARRS system is somewhat dependent on either the student's individual motivation or the teacher making sure the students take their ARRS tests when they need to. In terms of this project, it is necessary to discard students who do not take their ARRS tests, as the data from these assessments is crucial in understanding how well the system works in reinforcing knowledge. (TeacherWiki)

Methodology

The basic idea of this study was to determine whether the use of the ARRS system can result in a significantly higher rate of learning compared to students who are simply presented with a topic and receive no further tutoring or retesting on the subject matter. This concept of spacing helps to determine how students retain information when they are not directly exposed to the topic matter for well-defined periods of time, such as a week or a month. The data from the study is to be analyzed to determine if students can retain knowledge better after being exposed to material over these spacing intervals, relearning material when necessary, when compared to a "control" group. The control group is the students who are initially exposed to the material in the same fashion as the study group, but after which are not forcibly retested on the material based on the time intervals embedded in ASSISTments.

In the study, the students in each class were randomly divided into two groups, for simplicity named A and B. The various concepts presented to the students in a given class was divided into two broader areas of mathematics, such as measurements, statistics, etc. Each student was exposed to all material in both areas, but within each group, only one broader area was retested. For example, assume the class receives material in measurements and statistics. Group A may be retested on the topics within measurements, while group B would get their retesting in the statistics topics, or vice-versa. This gives a basis for students learning within a fairly well-defined area of study.

To begin, the student's first attempt at a topic (problem set) is regarded as a "pretest" score, consisting of their percent correct out of the first three questions, which is the minimum number of questions a student can see in a problem set, before attaining mastery. This gives a baseline measurement of prior knowledge on a topic and can be compared to other students in the same class. After some time, the student will receive ARRS tests in half of the skills, per the description above, to reinforce the topics they have allegedly "mastered" by correctly answering three questions in a row. The following tables show the various problem sets assigned by class, including which group (A or B) received ARRS and the release date of the problem set for student access.

Table 1: Grafton Pre-Algebra Problem Sets

Skill name	Problem Set Number	ARRS group	Release Date
Surface Area of Rectangular Prisms	8880	A	December 13, 2010
Mean Level 1 Skill Building	17470	B	December 13, 2010
Surface Area of Cylinders	8877	A	December 21, 2010
Surface Area of Prisms	8878	A	December 21, 2010
Mode	14115	B	December 21, 2010
Volume of Cones	8957	A	January 4, 2011
Range	8979	B	January 4, 2011
Probability Simple	8585	B	January 4, 2011
Volume of Cylinders	8886	A	January 11, 2011
Volume of Prisms	8917	A	January 11, 2011
Probability Compound	9222	B	January 11, 2011
Volume of Rectangular Prisms	8884	A	January 18, 2011
Counting Methods	15528	B	January 18, 2011
Mean – Skill Building Set	19362	B	January 18, 2011
Median – Skill Building Set	21943	B	January 25, 2011

Table 2: Grafton "Low Level" Problem Sets

Skill name	Problem Set Number	ARRS group	Release Date
Properties and Classification of Circles	22457	A	December 16, 2010
Properties and Classification of Rectangular Prisms	21994	A	December 16, 2010
Supplementary Angles	9244	B	December 16, 2010
Sum of Interior Angles of a Triangle	17790	B	December 16, 2010
Properties and Classification of Quadrilaterals	23755	A	January 6, 2011
Properties and Classification of Polygons with 5 or more sides	24173	A	January 6, 2011
Probability Simple	8585	B	January 6, 2011

Table 3: Millbury Problem Sets

Skill name	Problem Set Number	ARRS group	Release Date
Properties and Classification of Circles	22457	B	December 16, 2010
Properties and Classification of Polygons with 5 or more sides	24173	B	December 16, 2010

A post test is assigned to the students after completion of the relearning and reassessment period. The scores on this post test should in theory reflect an increase of knowledge in the students who receive ARRS, whereas students in the control group would be expected to stay at a relatively constant level of knowledge. A comparison of these scores, by use of a gain, between the two groups will give an idea of how this system of teaching affects the way students learn and retain knowledge.

Assistment Creation

In order to build the problem sets, each member of the Interactive Qualifying Project group was assigned skills. For each skill, the group member then designs various templates asking different types of questions related to the given skill. For example, a problem set on addition and subtraction of integers would likely contain a template on adding two positive numbers, one positive and one negative, as well as subtracting positive/negative integers.

In addition to the templates themselves, it was necessary to develop the tutoring for each template in order to further aid students. In most cases, this required designing a series of two to three hints outlining basic concepts and then moving to the specific case of the individual problem with the numbers inserted. The Interactive Qualifying Project group ensured that the final hint always contained the answer to the problem so the student can continue working. As an alternative to the “hints” method, there also exists a “scaffolding” method in which the student is asked various questions in order to solve the problem on a step by step basis. Each scaffolding question may also contain hints associated to the specific part of the problem being analyzed. This method is used in Mastering Physics to break down complex problems into their elementary steps.

The templates which have been created are then "instantiated," meaning that the computer system will generate multiple problems based on a single template, but each problem will contain different numbers. This helps to create variety so that students are not just memorizing a single fact, but rather learning a procedure to solve problems of a similar nature. A finished problem set typically contains 100-150 problems, with a maximum of 200 due to the limits of the system, but the number of templates can vary between five or six to almost 20 in some cases. The only difference in these cases is that the more templates there are, the less individualized questions there are for each template and this means it is less likely that a student will see an example from each template during their study of the material.

Post Test Creation

In order to create the post tests for the various study groups, it was necessary to first choose at least one question from each skill studied by the students in a given class. This was accomplished through choosing a "simple" problem from the initial problem set that represented knowledge of the basic concepts. However, it was deemed necessary to also include additional problems for skills which the students had trouble mastering. This is necessary because by including a more difficult question, we can more accurately test the true level of knowledge for each student. The idea is that on these "transfer questions," which often include concepts from more than one problem set, the students who receive ARRS in the combined skills will perform better compared to the students who did not.

To determine the skills for which transfer was necessary, we analyzed the data from the pretest and ARRS reports in ASSISTments. From that, the skills were ordered by the percentage of problems students were answering correctly. The lower half of this list was used as the skills for transfer questions. Example: A class has 12 assignments (meaning each student would receive ARRS in 6 of them). After sorting the skills by their scores, the lowest six scores would be chosen for transfer questions.

To avoid problems that are either not well written or have other possible issues, as many of the transfer questions as possible are taken from previous standardized tests, such as the MCAS. This process was relatively easy because a large number of MCAS questions from the past few years are archived in the ASSISTments system. They are further broken down by individual skill. It was determined that these MCAS questions would serve the purpose best as they have been used to equally test the knowledge of students over the state of Massachusetts.

In order to show that the two groups in each class are “balanced” at the initial point of the study, a t-test was done to make sure that the relative level of prior knowledge in each group is statistically equal. Following are summaries of the statistical data used to determine that the groups were “equal” at pretest. Note that these values are based on our binarized groups, which came from labeling any non perfect pretest (first three problems) as a zero, representing some lack of prior knowledge.

Table 4: Pretest data for all classes

Class	Grafton Pre-Alg	Grafton “Low Level”	Millbury
Group A Average	5.40	3.27	0.71
Group B Average	5.56	3.28	0.81
Group A Standard Deviation	2.57	1.87	0.70
Group B Standard Deviation	1.67	1.31	0.69
Effect Size	-0.07	-0.01	-0.14
T-Test	0.76	0.98	0.48

Based on the T-test values for this data, the groups are statistically equivalent in their incoming knowledge over all skills tested.The lower averages represent a lower number of skills for the students, due to the binarizing effect. Also the high standard deviation in the Millbury data reflects only having two skills which were run properly during the study. Reasons for a skill to be run improperly included not designating ARRS properly or setting release/due dates to 2012 by mistake. However, the large t-test values show that for all three classes, the two groups are statistically equivalent in their relative prior knowledge, thus any change from that by the end of the study shows a significant effect of the ARRS system on student learning.

Results

Table 5: Compilation of Gain Scores for Grafton Pre-Algebra Class

Skill Set, ARRS Group	Avg A	Avg B	SD A	SD B	Effect Size	T-Test
Surface Area of Rectangular Prisms, A	0.00	0.08	0.49	0.45	-0.15	0.53
Surface Area of Cylinders, A	-0.20	-0.13	0.55	0.59	-0.12	0.62
Surface Area of Prisms, A	0.10	0.13	0.46	0.48	-0.06	0.81
Volume of Cones, A	-0.07	-0.11	0.56	0.56	0.07	0.77
Volume of Cylinders, A	0.02	0.06	0.48	0.43	-0.09	0.70
Volume of Prisms, A	0.11	0.10	0.39	0.37	0.04	0.87
Volume of Rectangular Prisms, A	0.14	0.06	0.34	0.31	0.25	0.31
Mean Level 1, B	0.11	0.07	0.31	0.32	-0.12	0.63
Mode, B	0.04	-0.07	0.27	0.24	-0.45	0.07
Range, B	-0.08	-0.03	0.26	0.33	0.15	0.54
Probability Simple, B	-0.02	-0.09	0.33	0.41	-0.17	0.47
Probability Compound, B	0.12	0.10	0.48	0.55	-0.05	0.83
Counting methods, B	-0.18	-0.14	0.36	0.40	0.11	0.65
Mean Skill Building, B	-0.06	0.04	0.34	0.52	0.23	0.36
Median, B	0.00	-0.18	0.33	0.36	-0.52	0.04

Table 6: Compilation of Gain Scores for Grafton "Low Level" Class

Skill Set, ARRS Group	Avg A	Avg B	SD A	SD B	Effect Size	T-Test
Properties and Classification of Circles, A	-0.17	-0.17	0.34	0.43	0.02	0.95
Properties and Classification of Rectangular Prisms, A	0.02	-0.07	0.38	0.41	0.24	0.40
Properties and Classification of Quadrilaterals, A	-0.06	-0.20	0.32	0.46	0.34	0.24
Properties and Classification of Polygons with 5 or more sides, A	0.00	-0.12	0.35	0.37	0.33	0.25
Probability Simple, B	-0.13	-0.12	0.36	0.43	0.01	0.98
Supplementary Angles, B	0.04	-0.03	0.23	0.40	-0.21	0.48
Sum of Interior Angles of a triangle, B	-0.29	-0.32	0.48	0.57	-0.06	0.84

Table 7: Compilation of Gain Scores for Millbury Class

Skill Set, ARRS Group	Avg A	Avg B	SD A	SD B	Effect Size	T-Test
Properties and Classification of Circles, A	-0.14	-0.06	0.36	0.41	-0.20	0.32
Properties and Classification of Polygons with 5 or more sides, A	-0.06	0.02	0.36	0.39	-0.22	0.27

In the tables above, the data is organized by each skill. The effect size shows the magnitude of difference between the two group averages, accounting for standard deviation. Based on the theory of the ARRS system, each skill should have a positive effect size, as it is calculated to be positive if the ARRS group "gains" more than the control group. However, for an unknown reason, the majority of effect sizes are negative, which would indicate that the control group actually had a higher knowledge gain over the testing gap. Also interesting to note is the fact that the majority of the t-test values indicate no statistical difference between the two groups. This somewhat counters the negative effect size values because it shows the two groups have statistically equivalent gain scores. Only three skills show a statistical difference between the control and ARRS groups. Two of these three have negative effect sizes, and therefore showed that the control group students had much larger gains than those of the students in ARRS for the skills Probability Simple (In the "Low Level" class) and Sum of Interior Angles of a Triangle (In the "Low Level" class). There was one skill which showed the desired result of ARRS students showing a higher gain than the control group, which was Probability Compound (In the Pre-Algebra class).

Discussion

The odd nature of these data points invoked a lot of double checking of the calculation of these values, but to the surprise of the Interactive Qualifying Project group all the formulas checked out, so the correlations above are what the data truly shows about these classes. It is possible that in some way the timing of our administration of post test corresponded with an optimum testing gap for the control students after having been exposed to the material for one time. However, another possibility is that in some way the retesting function used in ARRS causes students to see too many different skills over and over, which may result in some sort of information overload for students who do poorly on periodic ARRS tests. A bad result on an ARRS test can cause a student to re-master many skills at one time, which forces them to learn a lot of different problem solving procedures at a rate which is much higher than they would learn in a classroom environment, even at a college level. Also, the ARRS system only works effectively if the student actually goes in to take the tests when they are scheduled. Thus the effectiveness of the ARRS system is somewhat dependent on either the student's individual motivation or the teacher making sure the students take their ARRS tests when they need to. In terms of this project, the teachers made all of the ARRS assignments voluntary. This may have contributed to the unexpected nature of the data.

Works Cited

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APPENDIX A: Assistments by Matthew Carr

Assistments templates/ Examples created by Matthew Carr. This contains a compilation of the assistments created by Matthew Carr during the ASSISTments Interactive Qualifying Project for the 2010-2011 school year. The format is: documentation of skill, followed by in alternating templates and numerical examples, in order by the template listing in the documentation.

Skill	Class
Make a Graph From Function	Algebra 1

Mastery Problem Set #14168	Number of Templates 9
Number to Master 3 in-a-row	Number of Attempts 10 First Day, 10 Subsequent Days

Templates

- 106642

Which of the following graphs correctly represents the following function?

y = x

Note: Be careful when reading these graphs, they do not all have the same scale. Make sure that you check the values on the y-axis before making your choice.

Comment on this question

  - Linear Function (form y = mx + b)
  - Graph parameters
    - Slope between -2 and 2, inclusive of integers
    - Y-intercept between -2 and 2, inclusive of integers
  - Incorrect linear graph shows a variance in slope
  - 6 choices (variable images of graphs)
    - 2 quadratic
    - 2 linear
    - 2 exponential

- 107988
  - Same as above (including graph parameters and tutoring), only the incorrect linear graph shows a shift in the y-intercept
- 106722 – make 20 (max from sets)

Which of the following graphs represents the following function?

$y = (x + 2)^2 - 2$

Note: Be careful when reading these graphs, they do not all have the same scale. Make sure that you check the values on the y-axis before makir your choice.

Comment on this ques

  - Quadratic Function (form $y = (x – a)^2 + b$)
  - Parameters for graph
    - A = [-2,2] whole numbers
    - B = [-2,1] whole numbers
  - 6 choices (same as template #106642)
  - Incorrect quadratic graph shifts left or right from correct one.

- 107987
  - Identical to template #106722, except the incorrect quadratic choice is shifted up or down from the correct one.
- 109710

Which of the following graphs represents the following function?

$y = x^2 + 1$

Note: Be careful when reading these graphs, they do not all have the same scale. Make sure that you check the values on the y-axis before makin
your choice.

Comment on this questi

- Quadratic function (form $\pm x^2 + b$)
- Same tutoring strategy as template #107622
- Incorrect quadratic choice is facing the opposite direction (up/down) and has a different y-intercept
- Variable b ranges from -1 to 4 on downward facing graphs and -4 to 1 on upward facing graphs

• 107041

Which of the following graphs represents the following function?

$2^{(x + 1)} + 1$

Note: Be careful when reading these graphs, they do not all have the same scale. Make sure that you check the values on the y-axis before makin
your choice.

Comment on this quest

- Exponential Function (form $a^{x-b} + c$)
- Same tutoring strategy as template # 106722
- Graph parameters
    - A = 2 or 3
    - B = -1, 0, or 1
    - C = -1, 0, or 1
- 6 Choices, same as other templates
    - Incorrect exponential graph has a difference in variable B (left/right shift)

• 107989

- Identical question/tutoring to #107041
- Incorrect exponential graph is a change in variable C (up/down shift)

• 107990

- Identical question/tutoring to #107041
- Incorrect exponential graph is a change in variable A (change of base)

• 109310

Which of the following grpahs represents the following function?

$2^x - 1$

Note: Be careful when reading these graphs, they do not all have the same scale. Make sure that you check the values on the y-axis before makir
your choice.

Comment on this ques

- Exponential function (form $a^x + c$)
  - A either 2 or 3
  - C ranges from -3 to 3
- Identical tutoring to template #107041
- 6 choices, same as before
  - Incorrect exponential choice is a change in C (up/down shift)

Problem Set "Make Graph From Function examples" id:[29016]

1) Assistment #106722 "106722 - Which of the foll..."

Which of the following graphs represents the following function?

y = (x%v{a})^2 %v{b}

Note: Be careful when reading these graphs, they do not all have the same scale. Make sure that you check the values on the y-axis before making your choice.

Multiple choice:

✓

✗

✗

✗

✗

✗

Hints:

□ The equation you were given is the following quadratic function

y = (x - %v{a})^2 +%v{b}

You will identify the correct graph by using

1: The y-intercept
2: Any other point

 The y-intercept is the y value of the function when x=0.
Find this value by substituting 0 in for the variable x.
y = (0 - %v{a})^2 + %v{b}

Find the graph(s) with the correct y-intercept.
Eliminate the other graphs, including those which are not quadratic if you have not already.

 If you still have more than one graph left, choose another value for x other than zero. Plug it in and find the y-value.
Choose the graph that is left that contains this point

Scaffold:

The function you have been given is the following:

y = (x%v{a})^2 %v{b}

What kind of function is this?

Multiple choice:

✗ linear
✓ quadratic
✗ exponential

Scaffold:

Right! This function is quadratic. That means the graph is a parabola, which looks very similar to a letter U, or one that is upside down. Now you know that when you have a quadratic function, you can mentally eliminate all graphs that are not this shape.

What is the y-intercept of the function y = (x%v{a})^2 %v{b}?

Algebra:

✓ %v{yint}

Hints:

 The y-intercept is where the x value is 0.

y = (x%v{a})^2 %v{b} Substitute 0 in for x
y = (0%v{a})^2 %v{b}
 y = %v{asqrd} %v{b} Now solve for y.
y= %v{yint}

The y - intercept is %v{yint}. Type in %v{yint}

Scaffold:

Good! If you think you know which is the correct graph, go ahead and pick it from the two choices below.

y = (x%v{a})^2 %v{b}

Multiple choice:

sorry, this is the wrong graph. Check again to make sure it has both points that should be there.

Hints:

☐ Remember what you know:

You know the y-intercept.

Now find another point:

pick a value of x between -2 and 2(do not pick something like 10 since it will not be on these graphs)

☐ Here is an example for your problem.

Choose x = 1 or -1 depending on what you can see, then substitute into your equation.

y = (1%v{a})^2 %v{b} Solve for y

y = %v{point}

\- OR -

y = (-1%v{a})^2 %v{b} Solve for y

y = %v{pointb}

Now choose the graph that contains the point (0,%v{yint}) and both of the points (1,%v{poi t}) and (-1, %v{pointb})

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2) Assistment #112004 "112004 - Which of the foll..."

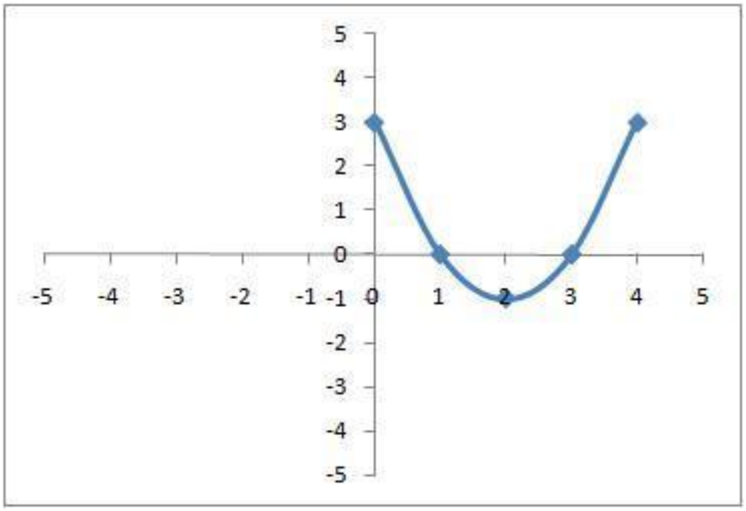
Which of the following graphs represents the following function?

$y = (x - 2)^2 - 1$

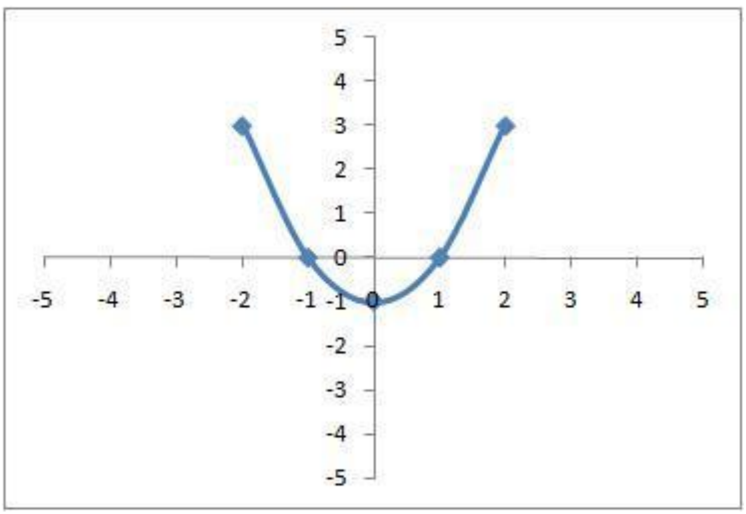
Note: Be careful when reading these graphs, they do not all have the same scale. Make sure that you check the values on the y-axis before making your choice.

Multiple choice:

✓


5 4 3 2 1 0 -1 -2 -3 -4 -5
-5 -4 -3 -2 -1 0 1 2 3 4 5

✗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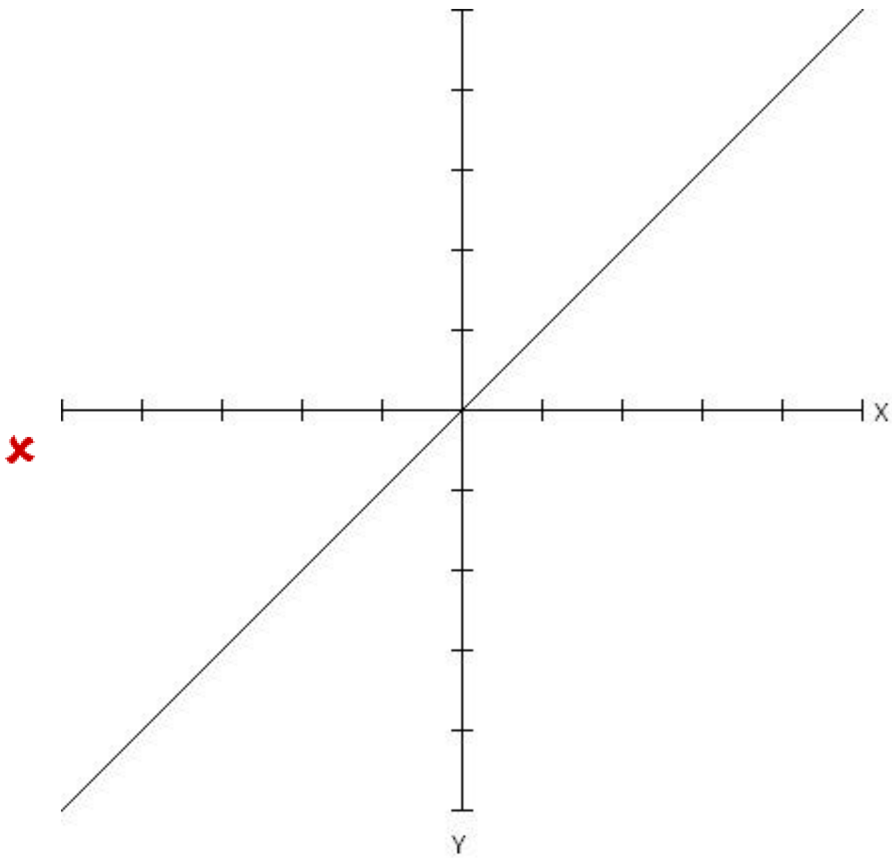
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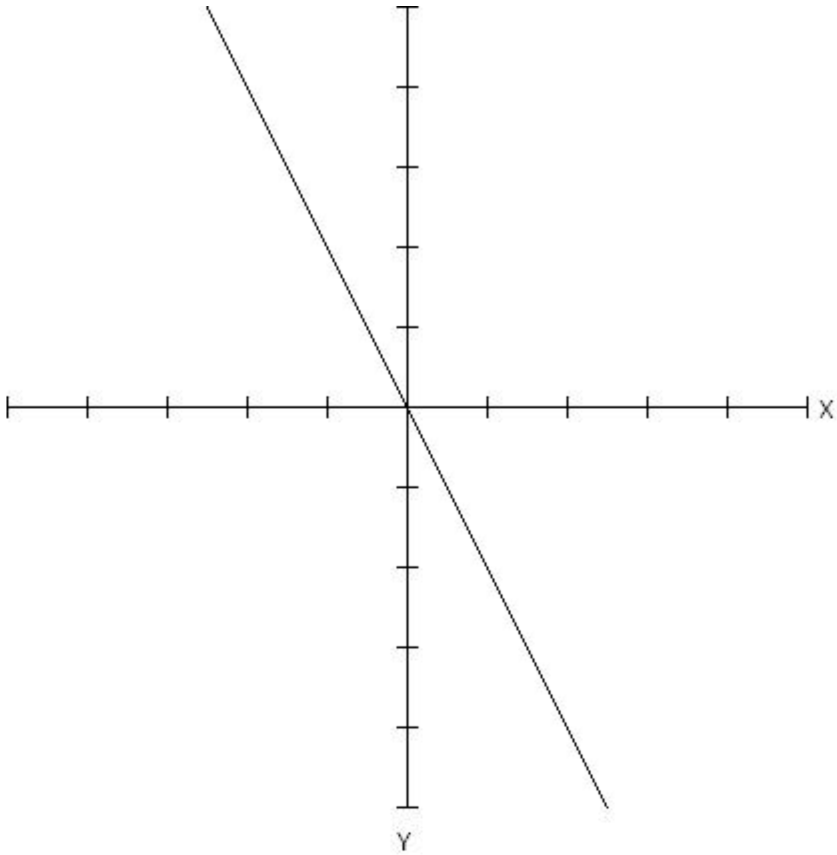
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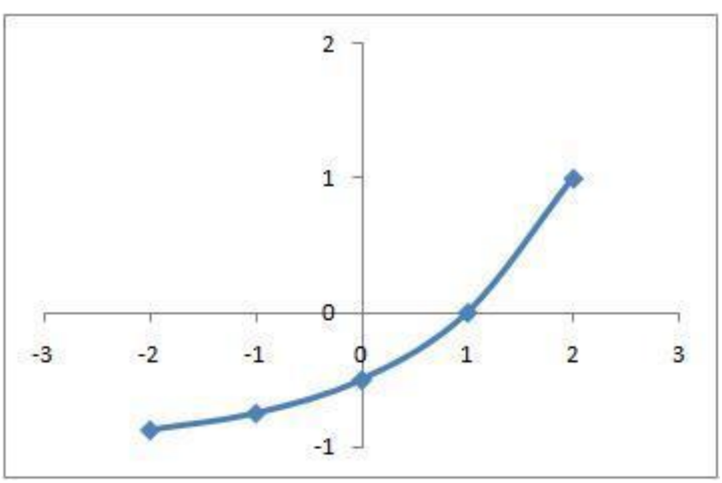
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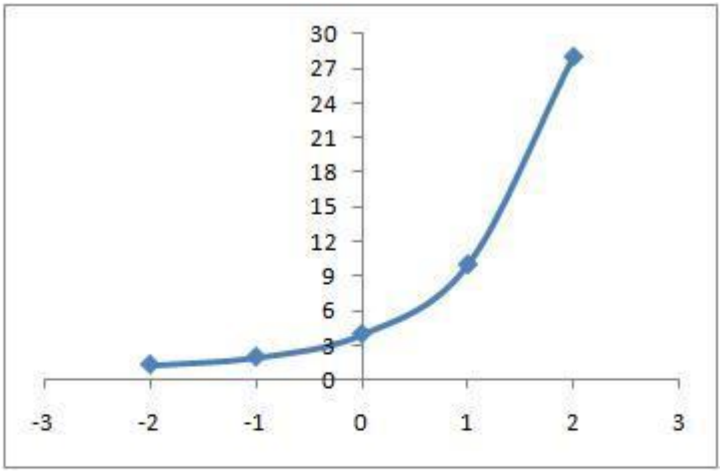
✘ 

Hints:

□ The equation you were given is the following quadratic function

$y = (x - - 2)^2 +- 1$

You will identify the correct graph by using
1: The y-intercept
2: Any other point

□ The y-intercept is the y value of the function when x=0.
Find this value by substituting 0 in for the variable x.
$y = (0 - - 2)^2 + - 1$

Find the graph(s) with the correct y-intercept.
Eliminate the other graphs, including those which are not quadratic if you have not already.

□ If you still have more than one graph left, choose another value for x other than zero. Plug it in and find the y-value.
Choose the graph that is left that contains this point

Scaffold:

The function you have been given is the following:

$y = (x - 2)^2 - 1$

What kind of function is this?

Multiple choice:

✘ linear
✔ quadratic
✘ exponential

Scaffold:

Right! This function is quadratic. That means the graph is a parabola, which looks very similar to a letter U, or one that is upside down. Now you know that when you have a quadratic function, you can mentally eliminate all graphs that are not this shape.

What is the y-intercept of the function $y = (x - 2)^2 - 1$?

Algebra:

✓ 3

Hints:

 The y-intercept is where the x value is 0.

$y = (x - 2)^2 - 1$ Substitute 0 in for x
$y = (0 - 2)^2 - 1$
 $y = 4 - 1$ Now solve for y.
$y = 3$

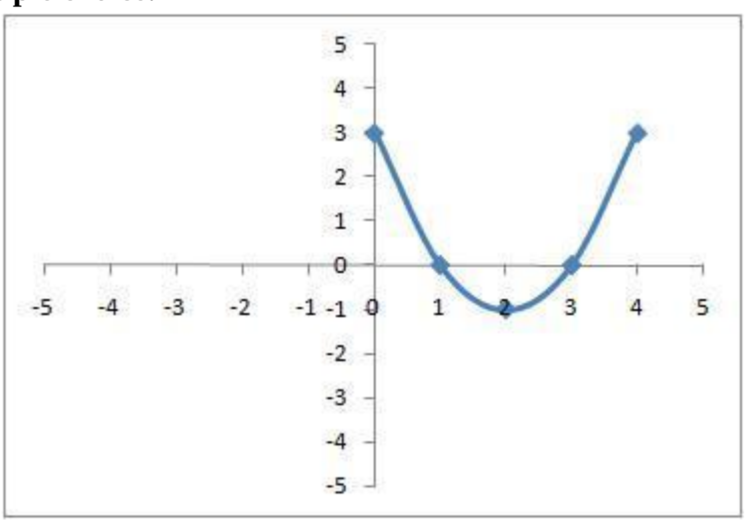
The y - intercept is 3. Type in 3

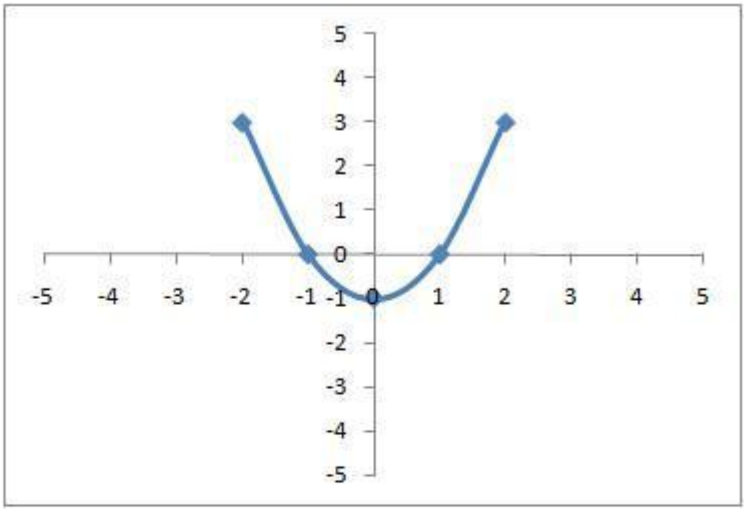
Scaffold:

Good! If you think you know which is the correct graph, go ahead and pick it from the two choices below.

$y = (x - 2)^2 - 1$

Multiple choice:

✓ 



so ry, this is the wrong graph. Check again to make sure it has both points that should be there.

Hints:

- Remember what you know:

You know the y-intercept.

Now find another point:

pick a value of x between -2 and 2(do not pick something like 10 since it will not be on these graphs)

- Here is an example for your problem.

Choose x = 1 or -1 depending on what you can see, then substitute into your equation.

$y = (1 - 2)^2 - 1$ Solve for y

$y = 0$

- OR -

$y = (-1 - 2)^2 - 1$ Solve for y

$y = 8$

Now choose the graph that contains the point (0,3) and both of the points (1,0) and (-1, 8)

---

3) Assistment #107987 "107987 - Which of the foll..."

Which of the following graphs represents the following function?

y = (x%v{a})^2 %v{b}

Note: Be careful when reading these graphs, they do not all have the same scale. Make sure that you check the values on the y-axis before making your choice.

Multiple choice:

✔

✘

✘

✘

✘

✘

Hints:

□ The equation you were given is the following quadratic function

y = (x - %v{a})^2 +%v{b}

You will identify the correct graph by using
1: The y-intercept
2: Any other point

□ The y-intercept is the y value of the function when x=0.
Find this value by substituting 0 in for the variable x.
y = (0 - %v{a})^2 + %v{b}

Find the graph(s) with the correct y-intercept.
Eliminate the other graphs, including those which are not quadratic if you have not already.

□ If you still have more than one graph left, choose another value for x other than zero. Plug it in and find the y-value.
Choose the graph that is left that contains this point

Scaffold:

The function you have been given is the following:

y = (x%v{a})^2 %v{b}

What kind of function is this?

Multiple choice:

✘ linear
✔ quadratic
✘ exponential

Scaffold:

Right! This function is quadratic. That means the graph is a parabola, which looks very similar to a letter U, or one that is upside down. Now you know that when you have a quadratic function, you can mentally eliminate all graphs that are not this shape.

What is the y-intercept of the function y = (x%v{a})^2 %v{b}?

Fill in:

✓ %v{yint}

Hints:

□ The y-intercept is where the x value is 0.

y = (x%v{a})^2 %v{b} Substitute 0 in for x
y = (0%v{a})^2 %v{b}

□ y = %v{asqrd} %v{b} Now solve for y.
y= %v{yint}

The y - intercept is %v{yint}. Type in %v{yint}

Scaffold:

Good! If you think you know which is the correct graph, go ahead and pick it from the two choices below.

y = (x%v{a})^2 %v{b}

Multiple choice:

✓

✗

sorry, this is the wrong graph. Check again to make sure it has both points that should be there.

Hints:

□ Remember what you know:

You know the y-intercept.

Now find another point:

pick a value of x between -2 and 2(do not pick something like 10 since it will not be on these graphs)

 Here is an example for your problem.
Choose x = 1 or -1 depending on what you can see, then substitute into your equation.
y = (1%v{a})^2 %v{b} Solve for y
y = %v{point}

- OR -

y = (-1%v{a})^2 %v{b} Solve for y
y = %v{pointb}

Now choose the graph that contains the point (0,%v{yint}) and both of the points (1,%v{point}) and (-1, %v{pointb})

---

4) Assistment #112032 "112032 - Which of the foll..."

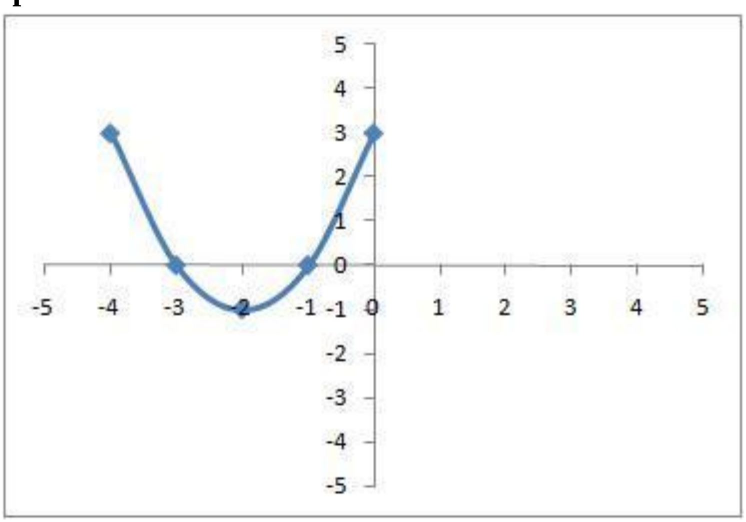
Which of the following graphs represents the following function?

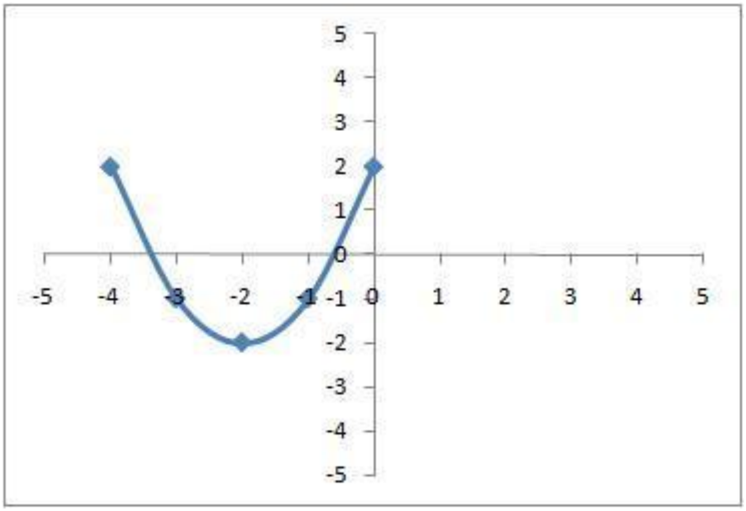
$y = (x + 2)^2 - 1$

Note: Be careful when reading these graphs, they do not all have the same scale. Make sure that you check the values on the y-axis before making your choice.

Multiple choice:

✓





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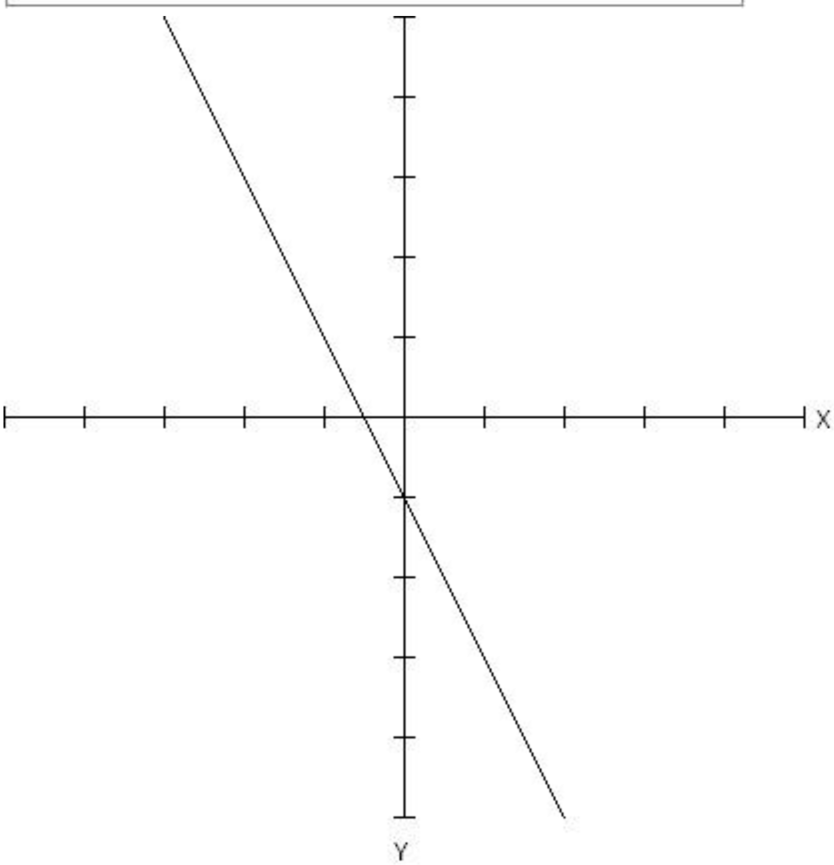

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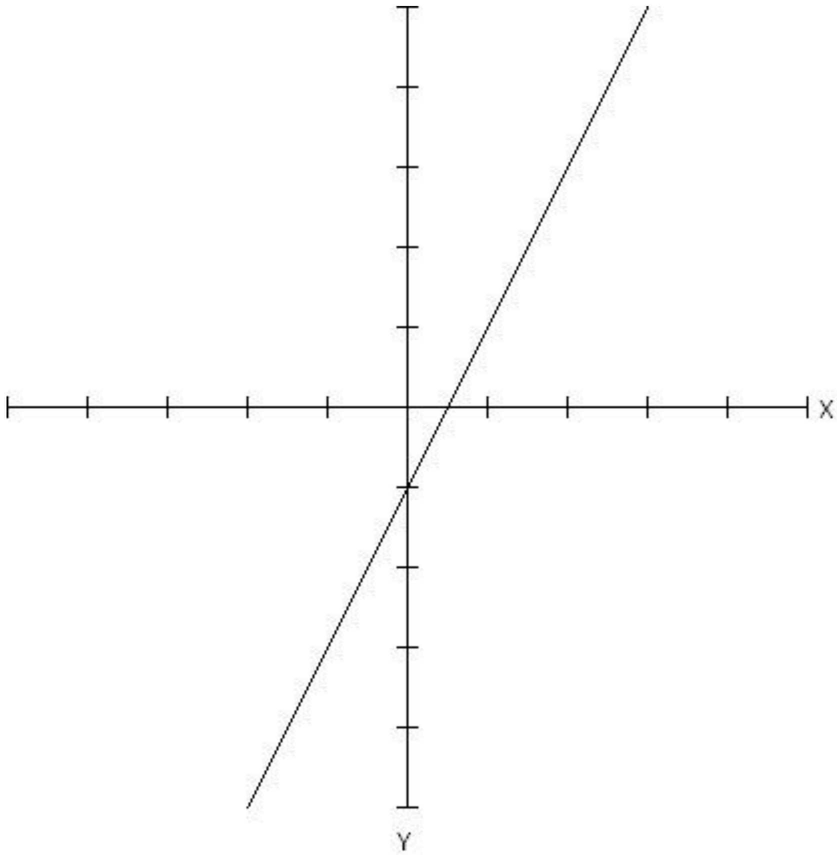
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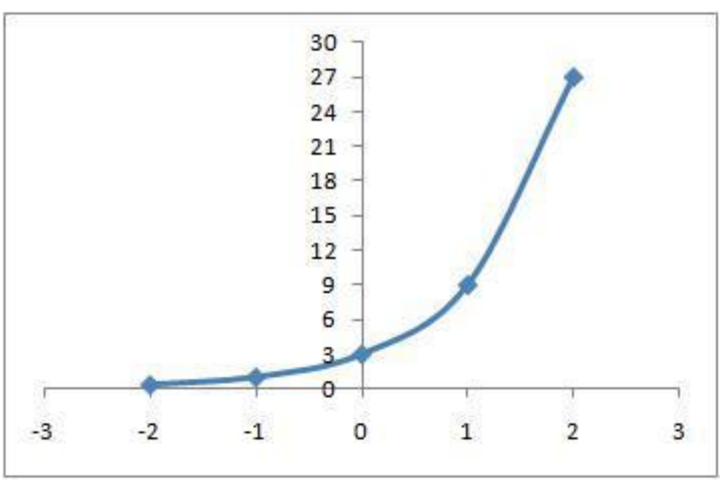
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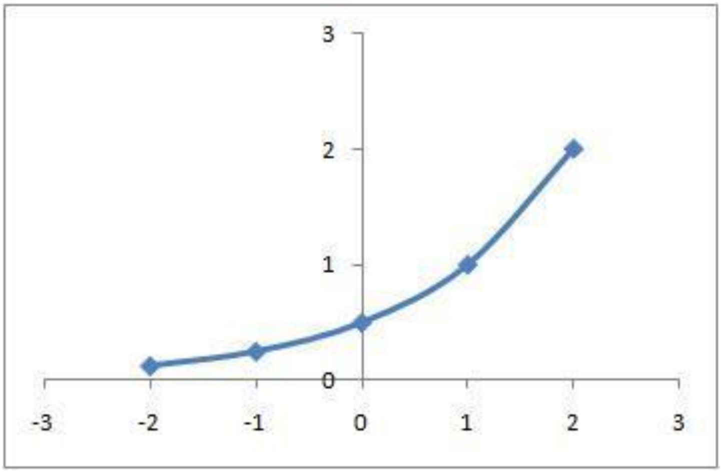


Scaffold:

The function you have been given is the following:

$y = (x + 2)^2 - 1$

What kind of function is this?

Multiple choice:

- linear
- quadratic
- exponential

Scaffold:

Right! This function is quadratic. That means the graph is a parabola, which looks very similar to a letter U, or one that is upside down. Now you know that when you have a quadratic function, you can mentally eliminate all graphs that are not this shape.

What is the y-intercept of the function $y = (x + 2)^2 - 1$?

Fill in:

3

Hints:

- The y-intercept is where the x value is 0.

$y = (x + 2)^2 - 1$ Substitute 0 in for x
$y = (0 + 2)^2 - 1$

- $y = 4 - 1$ Now solve for y.

$y= 3$

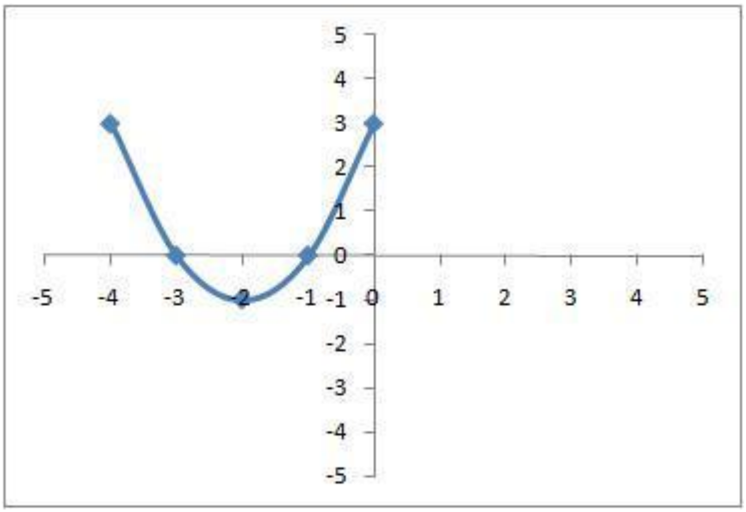
The y - intercept is 3. Type in 3

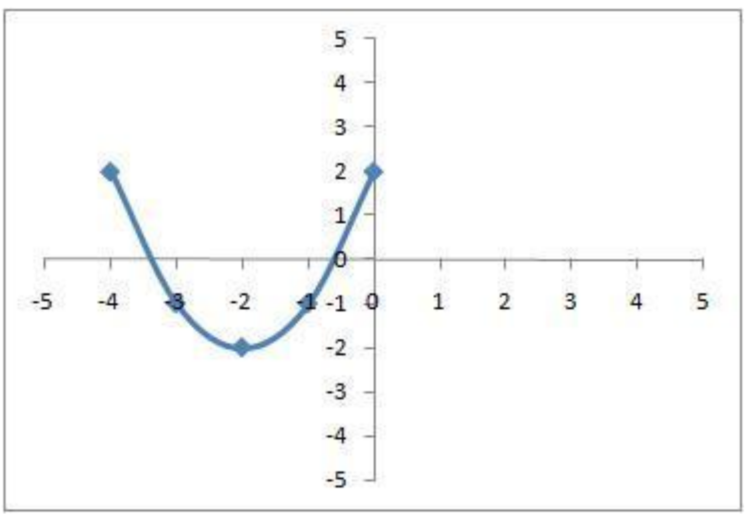
Scaffold:

Good! If you think you know which is the correct graph, go ahead and pick it from the two choices below.

$y = (x + 2)^2 - 1$

Multiple choice:





sorry, this is the wrong graph. Check again to make sure it has both points that should be there.

Hints:

- Remember what you know:

You know the y-intercept.

Now find another point:

pick a value of x between -2 and 2(do not pick something like 10 since it will not be on these graphs)

 Here is an example for your problem.
Choose x = 1 or -1 depending on what you can see, then substitute into your equation.
$y = (1 + 2)^2 - 1$ Solve for y
$y = 8$

- OR -

$y = (-1 + 2)^2 - 1$ Solve for y
$y = 0$

Now choose the graph that contains the point (0,3) and both of the points (1,8) and (-1, 0)

Hints:

 The equation you were given is the following quadratic function

$y = (x - + 2)^2 +- 1$

You will identify the correct graph by using
1: The y-intercept
2: Any other point

 The y-intercept is the y value of the function when x=0.
Find this value by substituting 0 in for the variable x.
$y = (0 - + 2)^2 + - 1$

Find the graph(s) with the correct y-intercept.
Eliminate the other graphs, including those which are not quadratic if you have not already.

 If you still have more than one graph left, choose another value for x other than zero. Plug it in and find the y-value.
Choose the graph that is left that contains this point

---

5) Assistment #109710 "109710 - Which of the foll..."

Which of the following graphs represents the following function?

y = %v{s}x^2 %v{b}

Note: Be careful when reading these graphs, they do not all have the same scale. Make sure that you check the values on the y-axis before making your choice.

Multiple choice:

Hints:

□ The equation you were given is the following quadratic function

$y = (x - \%v\{a\})^2 + \%v\{b\}$

You will identify the correct graph by using
1: The y-intercept
2: Any other point

□ The y-intercept is the y value of the function when x=0.
Find this value by substituting 0 in for the variable x.
$y = (0 - \%v\{a\})^2 + \%v\{b\}$

Find the graph(s) with the correct y-intercept.
Eliminate the other graphs, including those which are not quadratic if you have not already.

□ If you still have more than one graph left, choose another value for x other than zero. Plug it in and find the y-value.
Choose the graph that is left that contains this point

Scaffold:

The function you have been given is the following:

$y = \%v\{s\}x^2 \%v\{b\}$

What kind of function is this?

Multiple choice:

linear

✓ quadratic
✗ exponential

Scaffold:

Right! This function is quadratic. That means the graph is a parabola, which looks very similar to a letter U, or one that is upside down. Now you know that when you have a quadratic function, you can mentally eliminate all graphs that are not this shape.

What is the y-intercept of the function y = %v{s}x^2 %v{b}?

Algebra:

✓ %v{yint}

Hints:

☐ The y-intercept is where x = 0.

y = %v{s}x^2 %v{b} Substitute 0 in for x
y = %v{s}0^2 %v{ }

☐ Zero to any power is zero, and zero times anything is zero, so you are left with:

y = 0 %v{b}
y = %v{yint}

Therefore, the y-intercept is %v{yint}. Type in %v{yint}

Scaffold:

Good! If you think you know which is the correct graph, go ahead and pick it from the two choices below.

y = %v{s}x^2 %v{b}

Multiple choice:

✓

✗

sorry, this is the wrong graph. Check again to make sure it has both points that should be there.

Hints:

☐ Remember what you know:

You know the y-intercept.

Now find another point:

pick a value of x between -2 and 2(do not pick something like 10 since it will not be on these graphs)

 Here is an example for your problem.
Choose x = 1 or -1 depending on what you can see, then substitute into your equation.
y = %v{s}1^2 %v{b} Solve for y
y = %v{point}

- OR -
y = %v{s}$(-1)^2$ + %v{b} Solve for y
y = %v{pointb}

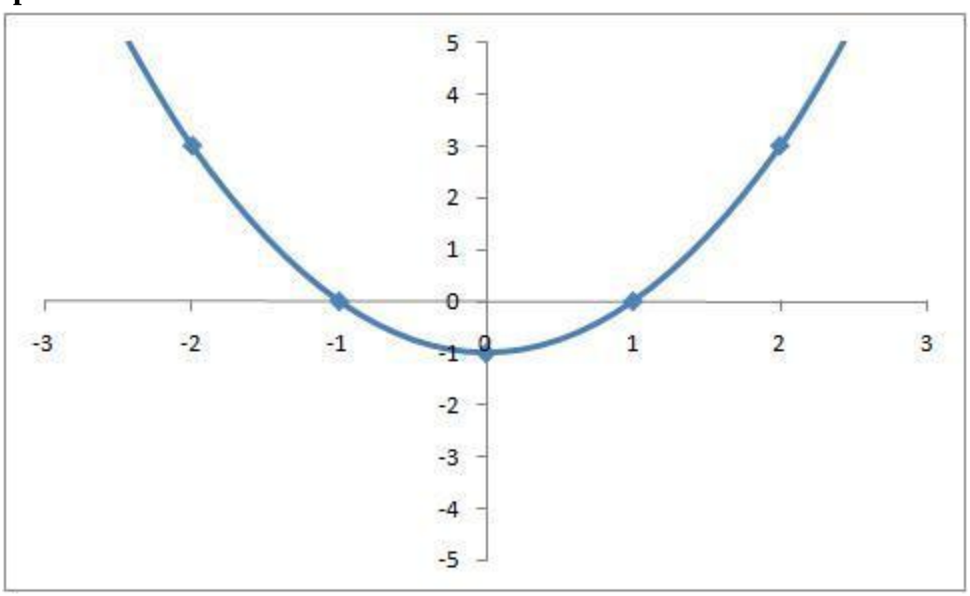
Now choose the graph that contains the point (0,%v{yint}) and both of the points (1,%v{point}) and (-1, %v{pointb})

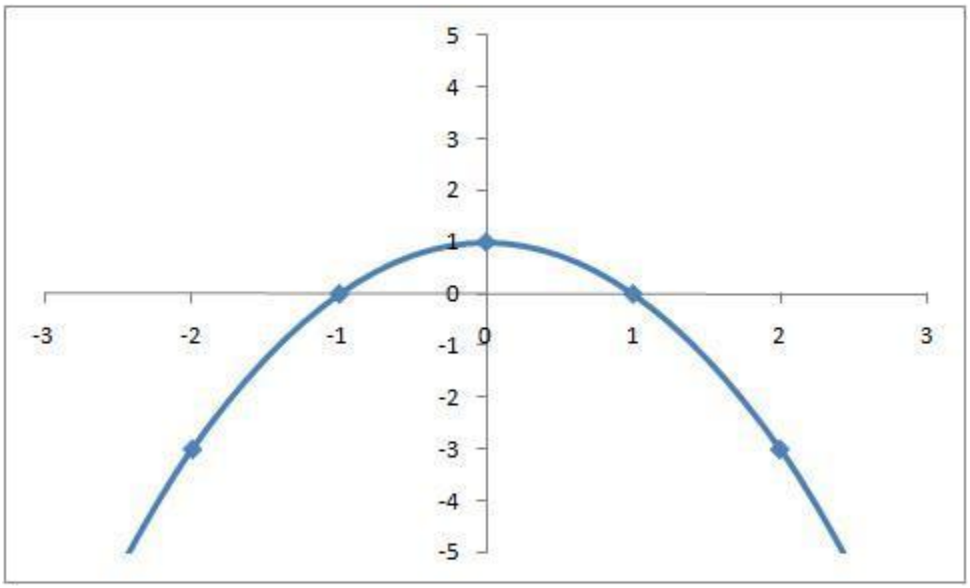
---

6) Assistment #112104 "112104 - Which of the foll..."
Which of the following graphs represents the following function?

$y = x^2 - 1$

Note: Be careful when reading these graphs, they do not all have the same scale. Make sure that you check the values on the y-axis before making your choice.
Multiple choice:

✓ 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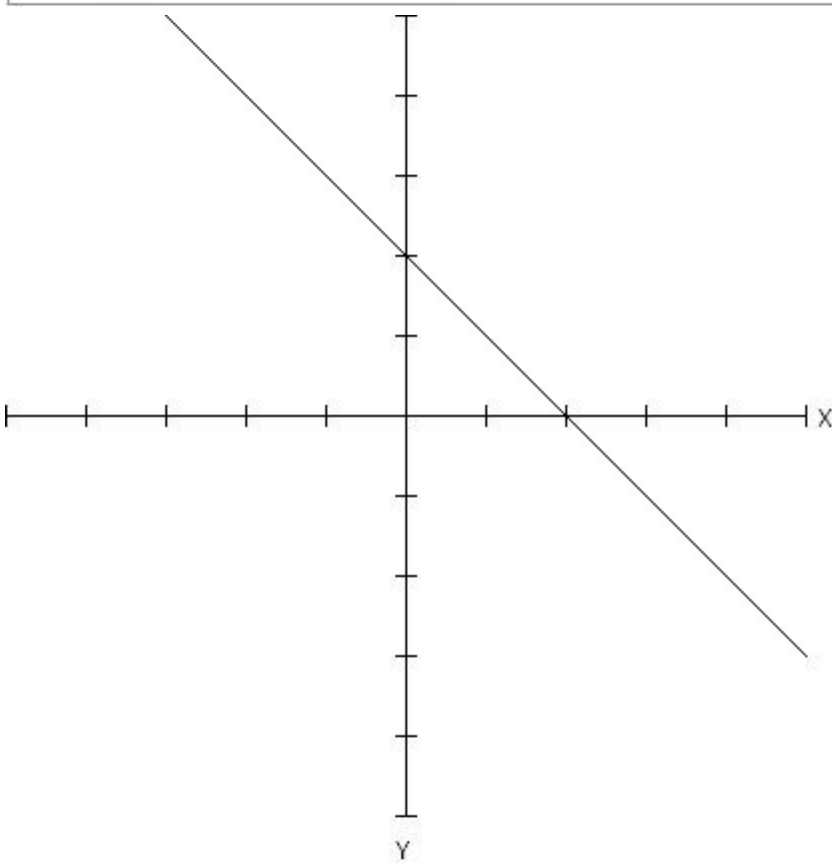
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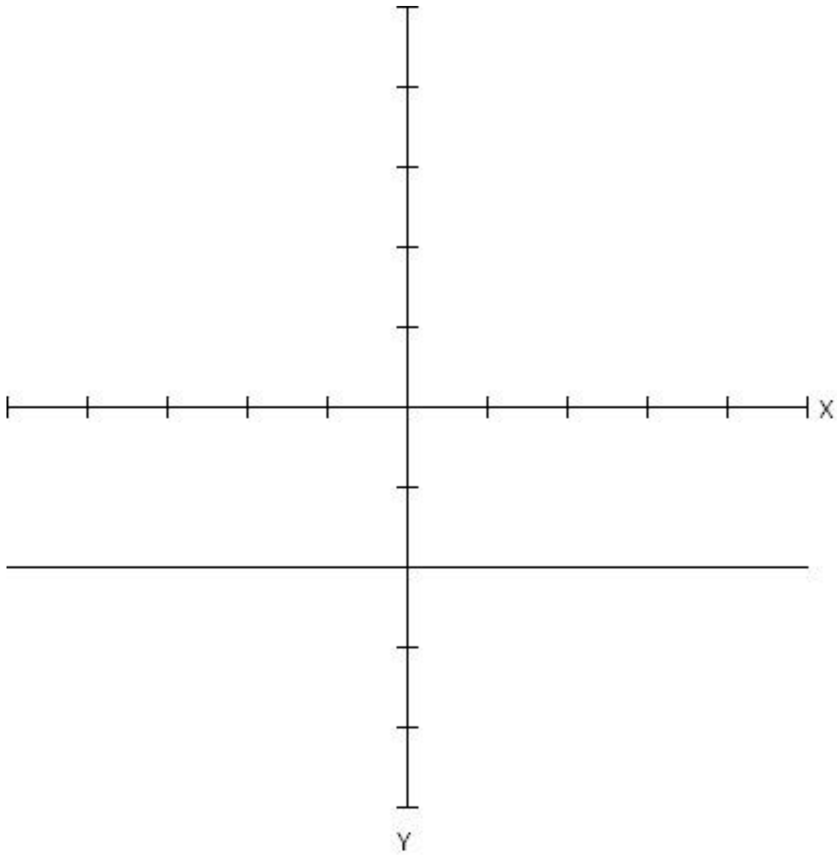
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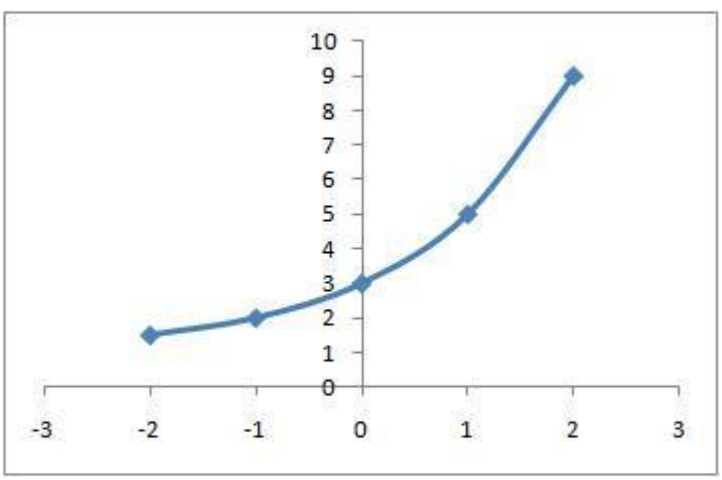
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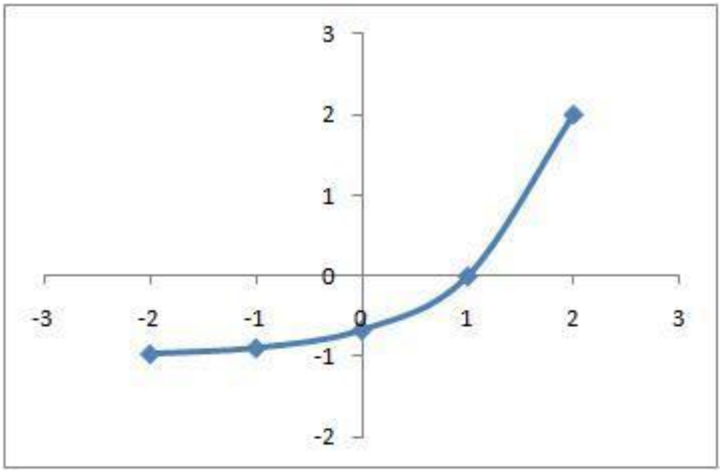


Scaffold:

The function you have been given is the following:

$y = x^2 - 1$

What kind of function is this?

Multiple choice:

- linear
- quadratic
- exponential

Scaffold:

Right! This function is quadratic. That means the graph is a parabola, which looks very similar to a letter U, or one that is upside down. Now you know that when you have a quadratic function, you can mentally eliminate all graphs that are not this shape.

What is the y-intercept of the function $y = x^2 - 1$?

Algebra:

-1

Hints:

- The y-intercept is where x = 0.

$y = x^2 - 1$ Substitute 0 in for x
$y = 0^2 - 1$

- Zero to any power is zero, and zero times anything is zero, so you are left with:

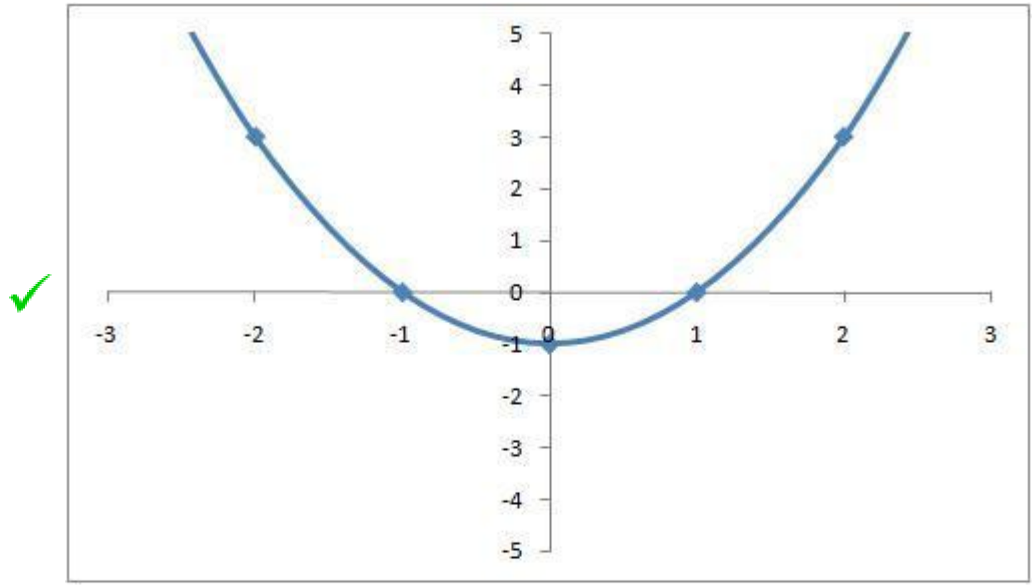
y = 0 - 1
y = -1

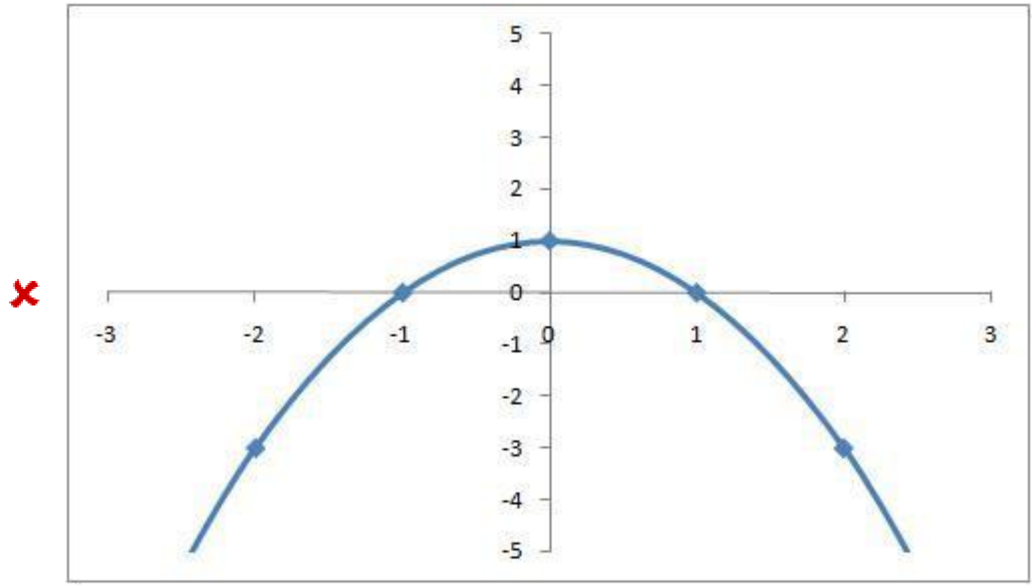
Therefore, the y-intercept is -1. Type in -1

Scaffold:
Good! If you think you know which is the correct graph, go ahead and pick it from the two choices below.

$y = x^2 - 1$

Multiple choice:





sorry, this is the wrong graph. Check again to make sure it has both points that should be there.

Hints:

□ Remember what you know:

You know the y-intercept.

Now find another point:

pick a value of x between -2 and 2(do not pick something like 10 since it will not be on these graphs)

□ Here is an example for your problem.
Choose x = 1 or -1 depending on what you can see, then substitute into your equation.
$y = 1^2 - 1$ Solve for y
$y = 0$

- OR -
$y = (-1)^2 + - 1$ Solve for y
$y = 0$

Now choose the graph that contains the point (0,-1) and both of the points (1,0) and (-1, 0)

Hints:

□ The equation you were given is the following quadratic function

y = (x -

Error processing following variabilized expression: a
A possible error is that the expression uses a variable that does not exist.
Another possibility is that the expression is invalid.

$)^2$ +- 1

You will identify the correct graph by using
1: The y-intercept
2: Any other point

□ The y-intercept is the y value of the function when x=0.
Find this value by substituting 0 in for the variable x.
y = (0 -

Error processing following variabilized expression: a
A possible error is that the expression uses a variable that does not exist.
Another possibility is that the expression is invalid.

)^2 + - 1

Find the graph(s) with the correct y-intercept.
Eliminate the other graphs, including those which are not quadratic if you have not already.

□ If you still have more than one graph left, choose another value for x other than zero. Plug it in and find the y-value.
Choose the graph that is left that contains this point

---

7) Assistment #106642 "106642 - Which of the foll..."
Which of the following graphs correctly represents the following function?

y = %v{m} %v{b}

Note: Be careful when reading these graphs, they do not all have the same scale. Make sure that you check the values on the y-axis before making your choice.
Multiple choice:

✓

✗

✗

✗

✗

✗

Hints:

□ In this problem you are asked to choose the correct graph which represents a linear function. However, all the choices are graphs of linear functions, so you must determine which one is correct based on the properties of the specific function you are presented with.

The two distinguishing features of a line on the coordinate plane are
1: The slope of the line
2: The y-intercept of the line.

□ In order to determine which graph is correct, the first thing to look at is the slope of the line. Slope is defined as
RISE

——

RUN

In your problem, y = %v{m}x + %v{b}, the slope is **%v{m}**

Thus, if a line has a slope of 1, for every 1 unit you move on the x-axis, you will move 1 unit up on the y-axis.

At this point you should be able to eliminate one or more of the graphs based on the slope. Also remember to eliminate all graphs that are not linear functions.

- If you still cannot determine the correct graph, consider looking at the y-intercept of the line on each graph.

In this problem, y = %v{m}x + %v{b}, the y-intercept is **%v{b}**.

The y-intercept is the value which the line crosses on the y-axis, which is the vertical one. For any function, you can find the y-intercept by plugging in x=0 and finding the corresponding y value.

Choose the graph that contains the correct slope and y-intercept.

Scaffold:

The function you have been given is the following:

y = %v{m} %v{b}

What kind of function is this?

Multiple choice:

- ✓ linear
- ✗ quadratic
- ✗ exponential

Scaffold:

Right! This function is linear. That means the graph is a straight line. Now you know that when you have a linear function, you can mentally eliminate all graphs that are not a straight line.

What is the y-intercept of the function y = %v{m} %v{b}?

Fill in:

- ✓ %v{yint}

Hints:

□ The y-intercept is when x = 0

When you substitute 0 in for x, you are left with this:
y = %v{mc}%v{z} %v{b}

□ Zero times anything is zero, so the y-intercept is simply %v{yint}

Type in %v{yint}

Scaffold:

Good! If you think you know which is the correct graph, go ahead and pick it from the 2 choices below.

y = %v{m} %v{b}

Multiple choice:

✓

✗

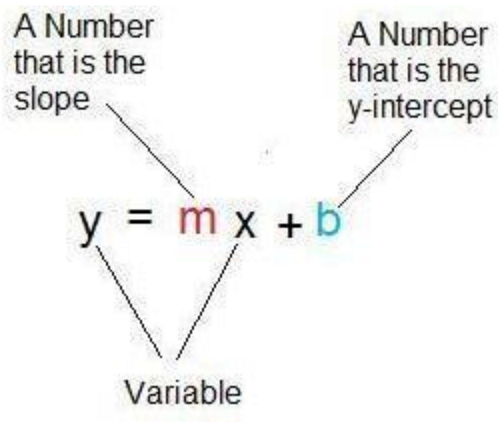
sorry, this graph is not the right one. Check again to make sure you have the correct slope and y-intercept.

Hints:

□ However with linear functions, you can use the slope along with the y-intercept to determine for sure which is the correct graph.
Visually, slope is

RISE
____
RUN

For example: a line with a slope of 1 will rise by 1 unit for every 1 unit you move right on the x-axis.
In a linear function, the slope is the coefficient of the x term.



 In your function, y = %v{m} %v{b} the slope is %v{mc}.

Now using the slope and y-intercept, choose the correct linear graph from below to show you understand what you have just done.

---

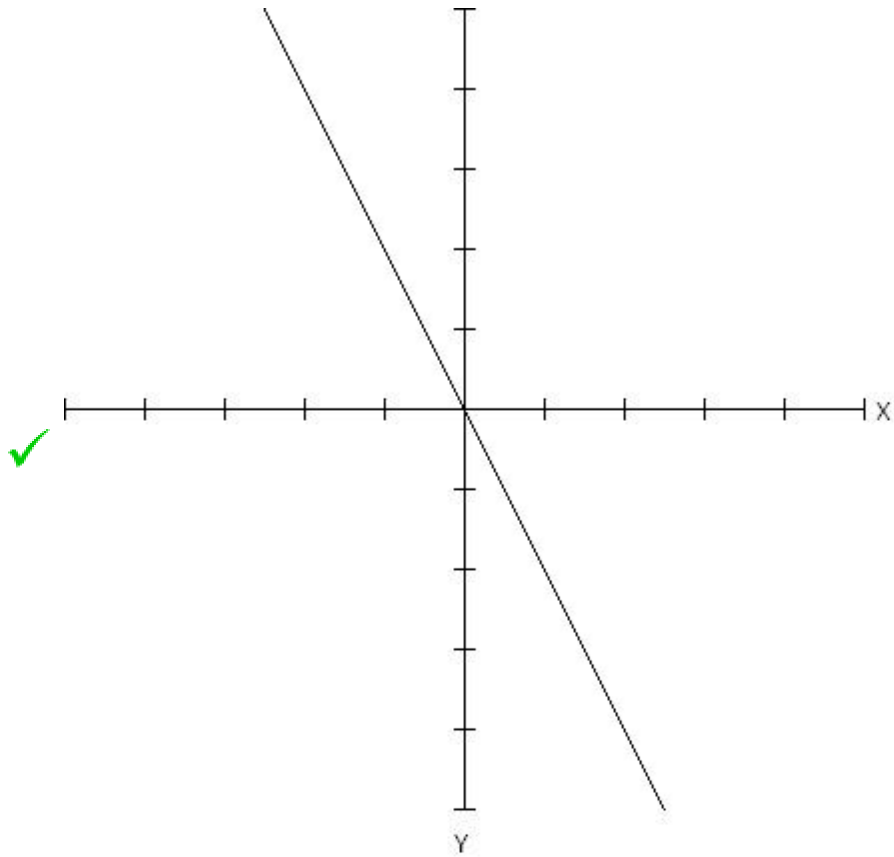
8) Assistment #112160 "112160 - Which of the foll..."

Which of the following graphs correctly represents the following function?

y = -2x

Note: Be careful when reading these graphs, they do not all have the same scale. Make sure that you check the values on the y-axis before making your choice.

Multiple choice: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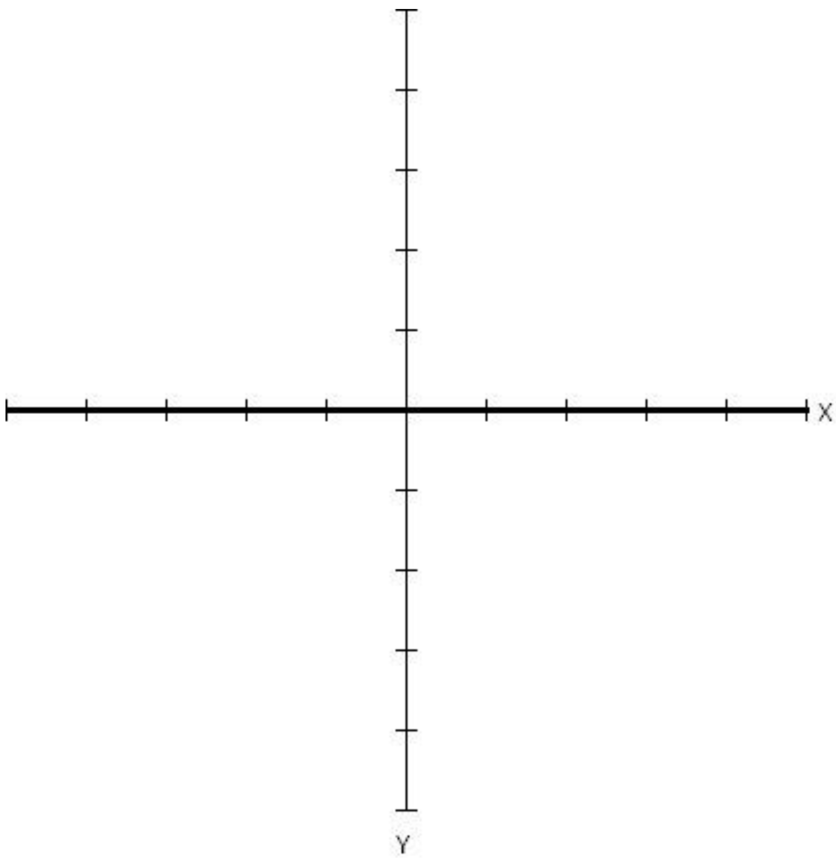
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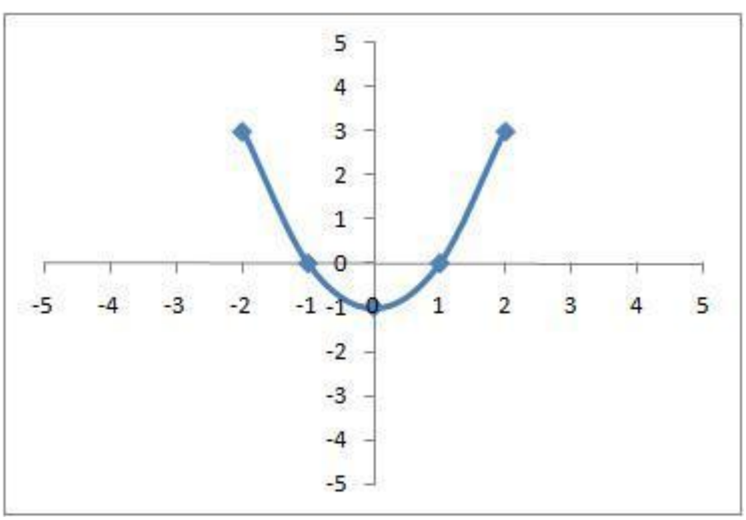
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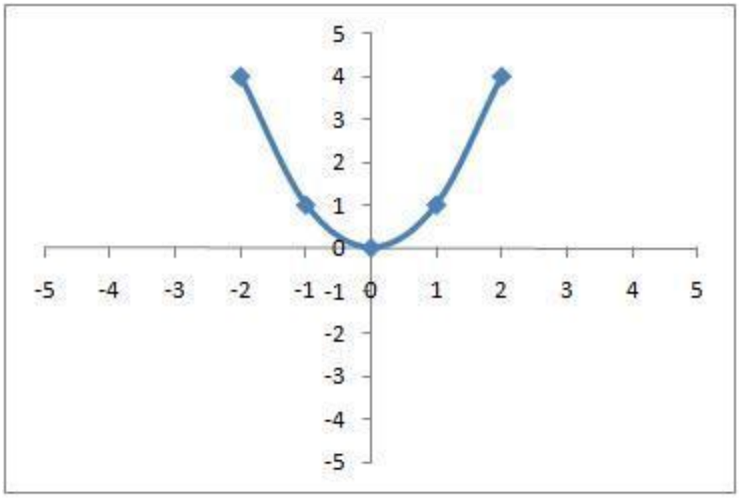

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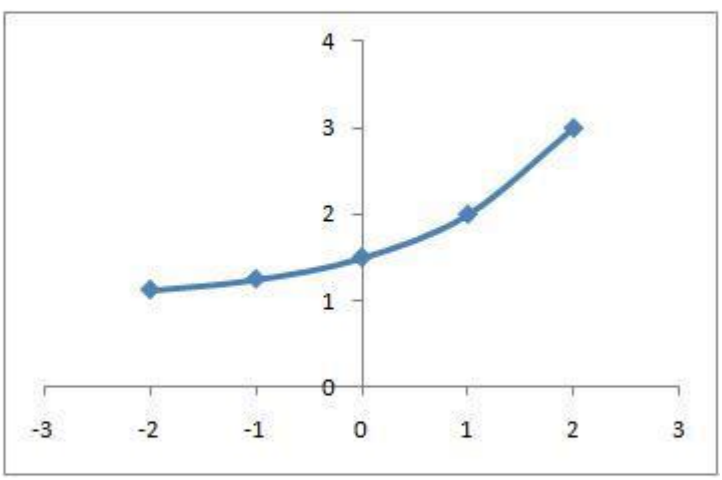

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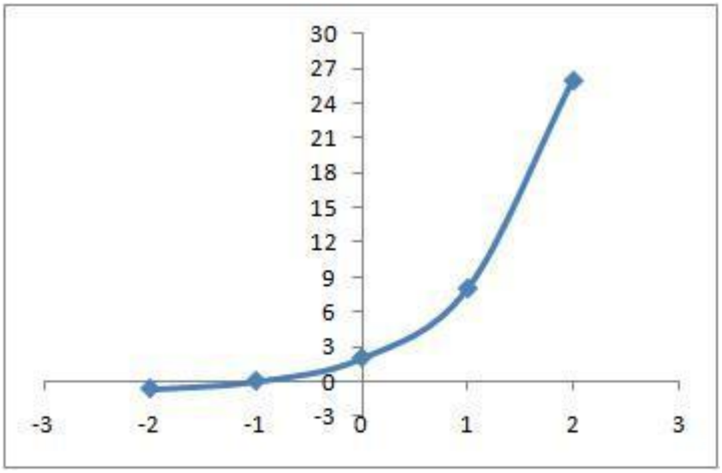


Hints:

 In this problem you are asked to choose the correct graph which represents a linear function. However, all the choices are graphs of linear functions, so you must determine which one is correct based on the properties of the specific function you are presented with.

The two distinguishing features of a line on the coordinate plane are
1: The slope of the line
2: The y-intercept of the line.

 In order to determine which graph is correct, the first thing to look at is the slope of the line. Slope is defined as

RISE

____

RUN

In your problem, y = -2xx + , the slope is **-2x**
Thus, if a line has a slope of 1, for every 1 unit you move on the x-axis, you will move 1 unit up on the y-axis.

At this point you should be able to eliminate one or more of the graphs based on the slope. Also remember to eliminate all graphs that are not linear functions.

 If you still cannot determine the correct graph, consider looking at the y-intercept of the line on each graph.
In this problem, y = -2xx + , the y-intercept is .

The y-intercept is the value which the line crosses on the y-axis, which is the vertical one. For any function, you can find the y-intercept by plugging in x=0 and finding the corresponding y value.

Choose the graph that contains the correct slope and y-intercept.

Scaffold:

The function you have been given is the following:

y = -2x

What kind of function is this?

Multiple choice:

✓ linear

✗ quadratic

✗ exponential

Scaffold:

Right! This function is linear. That means the graph is a straight line. Now you know that when you have a linear function, you can mentally eliminate all graphs that are not a straight line.

What is the y-intercept of the function y = -2x ?

Fill in:

✓ 0

Hints:

- The y-intercept is when x = 0

When you substitute 0 in for x, you are left with this:
y = -2(0)

- Zero times anything is zero, so the y-intercept is simply 0

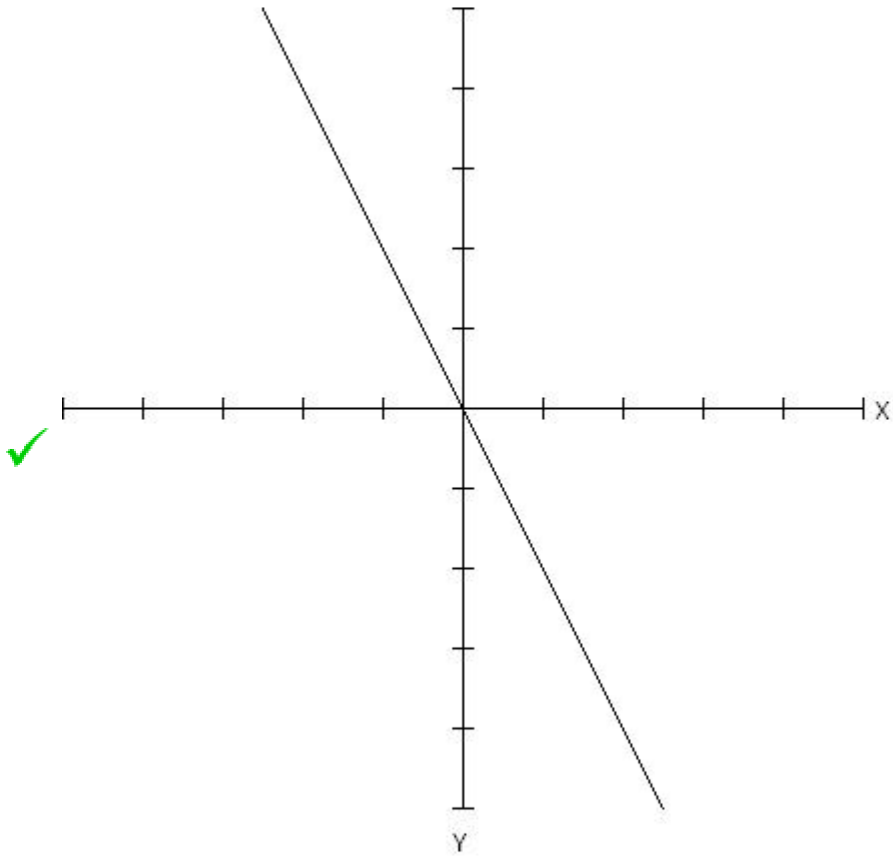
Type in 0

Scaffold:

Good! If you think you know which is the correct graph, go head and pick it from the 2 choices below.

y = -2x

Multiple choice: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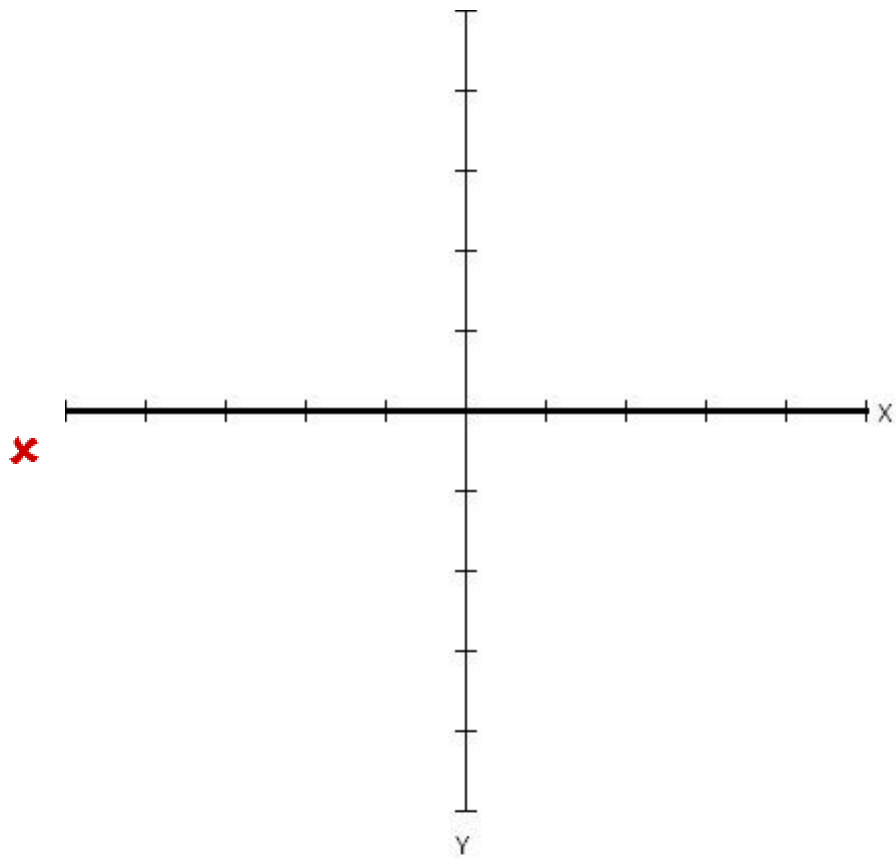


sorry, this graph is not the right one. Check again to make sure you have the correct slope and y-intercept.

Hints:

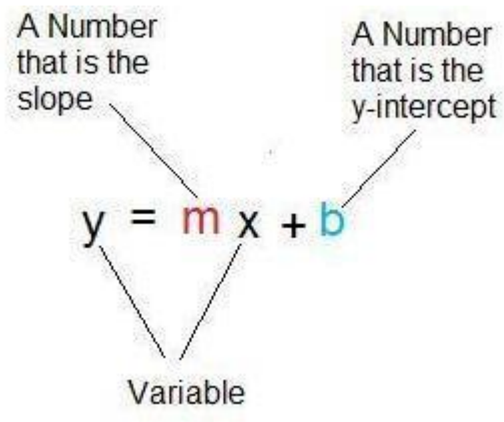
 However with linear functions, you can use the slope along with the y-intercept to determine for sure which is the correct graph.
Visually, slope is

RISE

____

RUN

For example: a line with a slope of 1 will rise by 1 unit for every 1 unit you move right on the x-axis. In a linear function, the slope is the coefficient of the x term.



- In your function, y = -2x the slope is -2.

Now using the slope and y-intercept, choose the correct linear graph from below to show you understand what you ave just done.

---

9) Assistment #107988 "107988 - Which of the foll..."

Which of the following graphs correctly represents the following function?

y = %v{m} %v{b}

Note: Be careful when reading these graphs, they do not all have the same scale. Make sure that you check the values on the y-axis before making your choice.

Multiple choice:

Scaffold:

The function you have been given is the following:

y = %v{m} %v{b}

What kind of function is this?

Multiple choice:

✓ linear

✗ quadratic

✗ exponential

Scaffold:

Right! This function is linear. That means the graph is a straight line. Now you know that when you have a linear function, you can mentally eliminate all graphs that are not a straight line.

What is the y-intercept of the function y = %v{m} %v{b}?

Fill in:

✓ %v{yint}

Hints:

- The y-intercept is when x = 0

When you substitute 0 in for x, you are left with this:
y = %v{mc}%v{z} %v{b}

- Zero times anything is zero, so the y-intercept is simply %v{yint}.

Type in %v{yint}

Scaffold:

Good! If you think you kn w which graph is correct go ahead and pick it from the 2 choices below below.

y = %v{m} %v{b}

Multiple choice:

✓

✗

sorry, this graph is not the right one. Check again to make sure you have the correct slope and y-

intercept.

Hints:

 However with linear functions, you can use the slope along with the y-intercept to determine for sure which is the correct graph.
Visually, slope is

RISE

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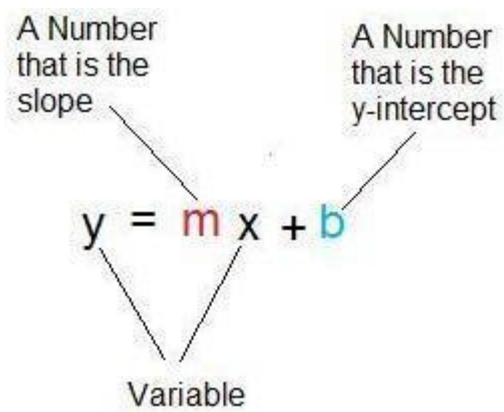
RUN

For example: a line with a slope of 1 will rise by 1 unit for every 1 unit you move right on the x-axis. In a linear function, the slope is the coefficient of the x term.



 In your function, y = %v{m} %v{b} the slope is %v{mc}.

Now using the slope and y-intercept, choose the correct linear graph from below to show you understand what you have just done.

---

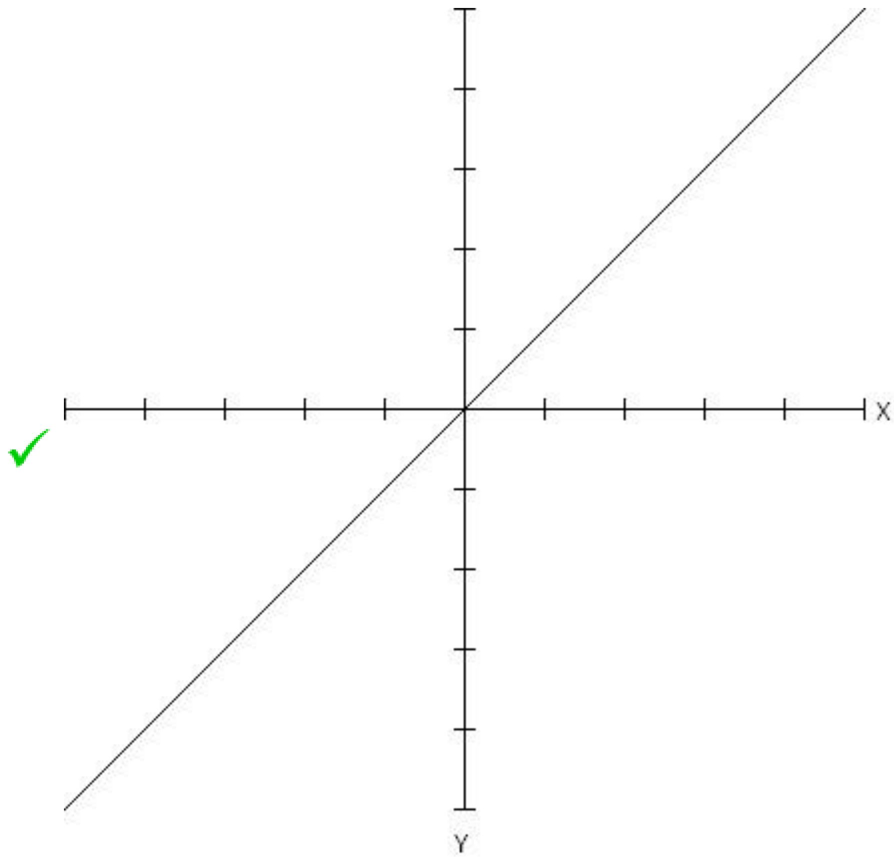
10) Assistment #112077 "112077 - Which of the foll..."

Which of the following graphs correctly represents the following function?

y = x

Note: Be careful when reading these graphs, they do not all have the same scale. Make sure that you check the values on the y-axis before making your choice.

Multiple choice: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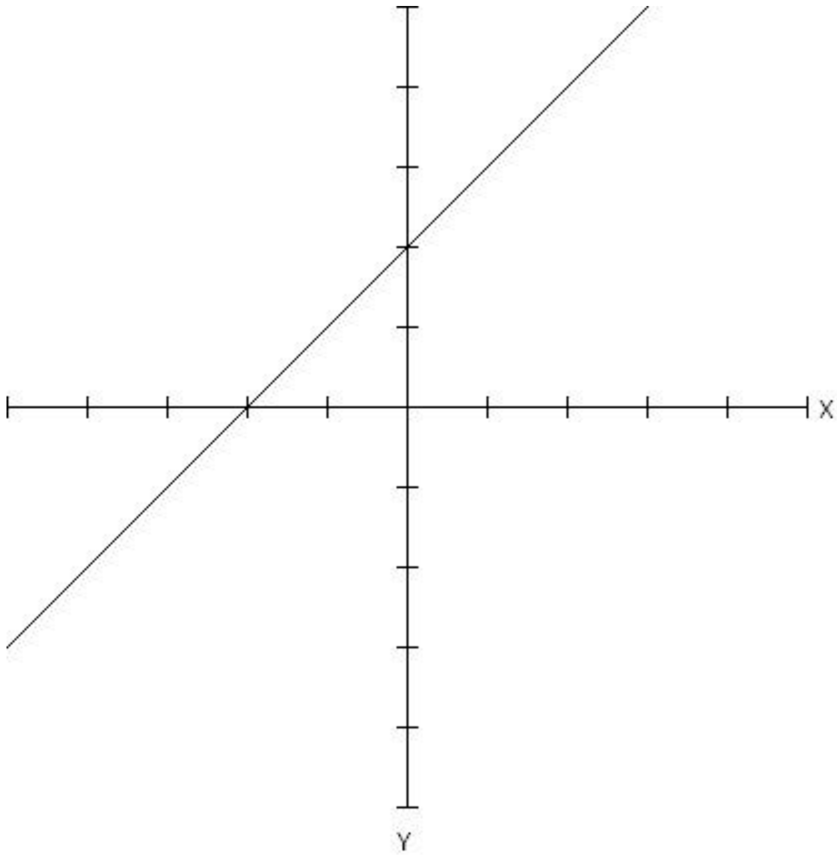
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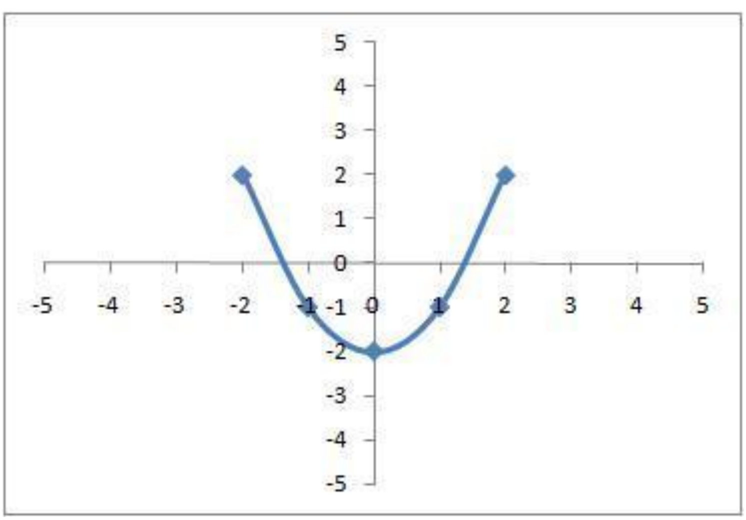
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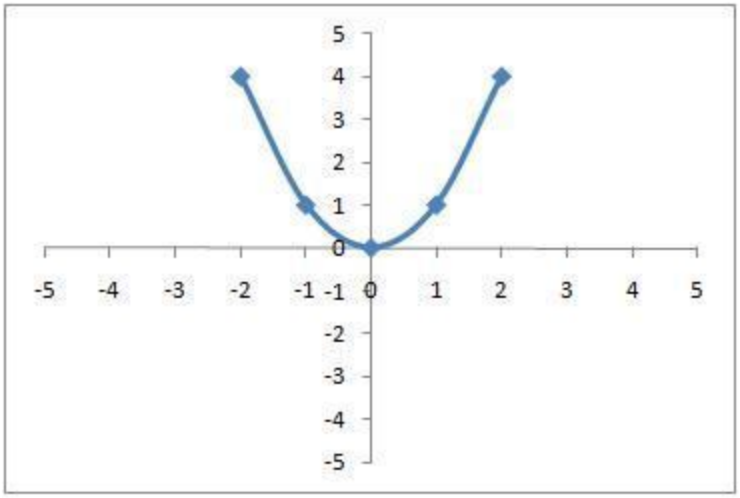
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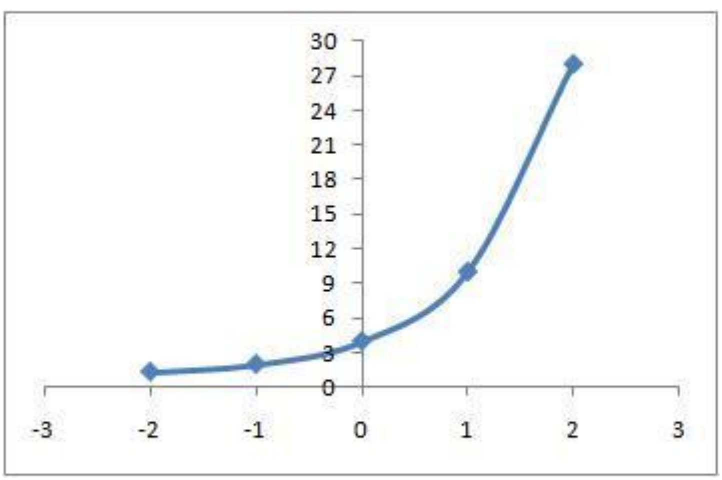
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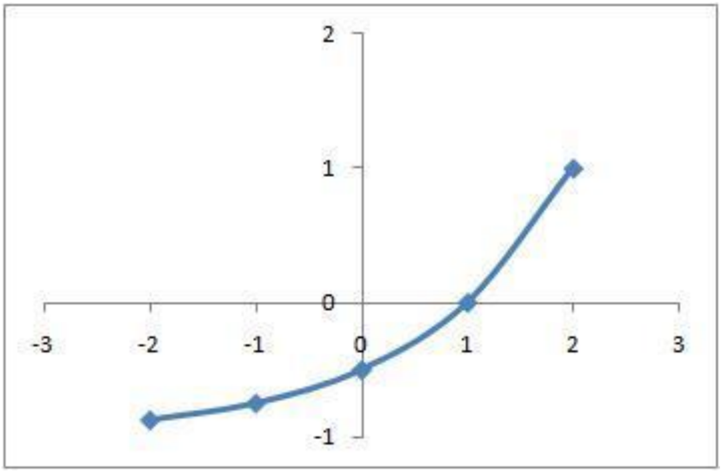
✗ 

Scaffold:

The function you have been given is the following:

y = x

What kind of function is this?

Multiple choice:

- ✓ linear
- ✗ quadratic
- ✗ exponential

Scaffold:

Right! This function is linear. That means the graph is a straight line. Now you know that when you have a linear function, you can mentally eliminate all graphs that are not a straight line.

What is the y-intercept of the function y = x ?

Fill in:

✓ 0

Hints:

- The y-intercept is when x = 0

When you substitute 0 in for x, you are left with this:
y = 1(0)

- Zero times anything is zero, so the y-intercept is simply 0.

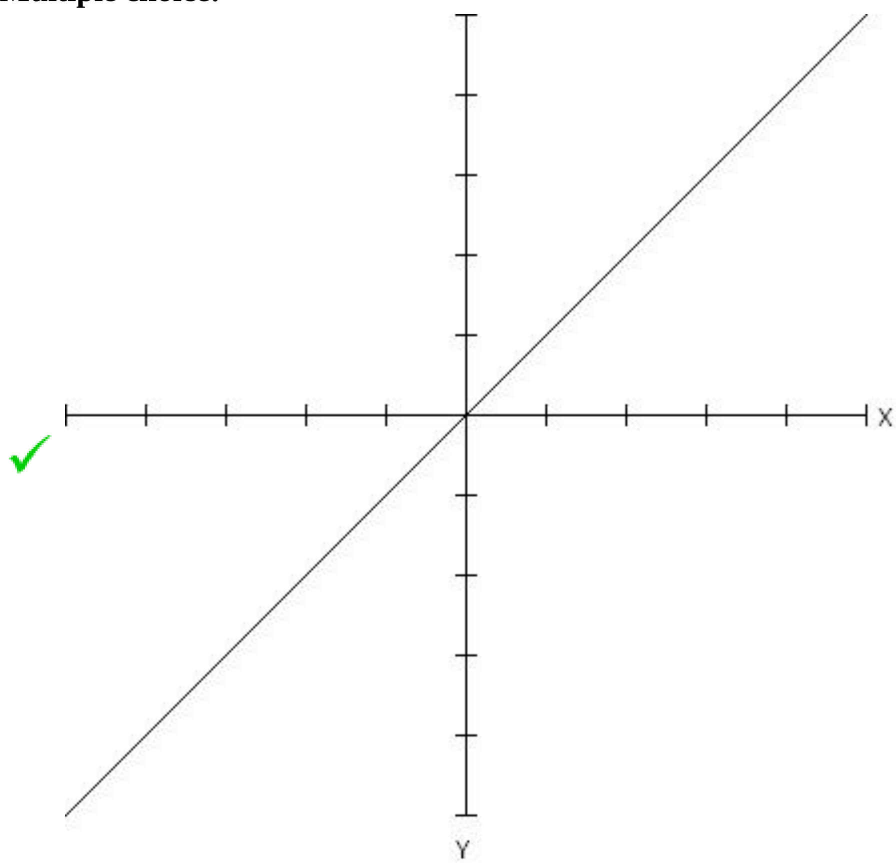
Type in 0

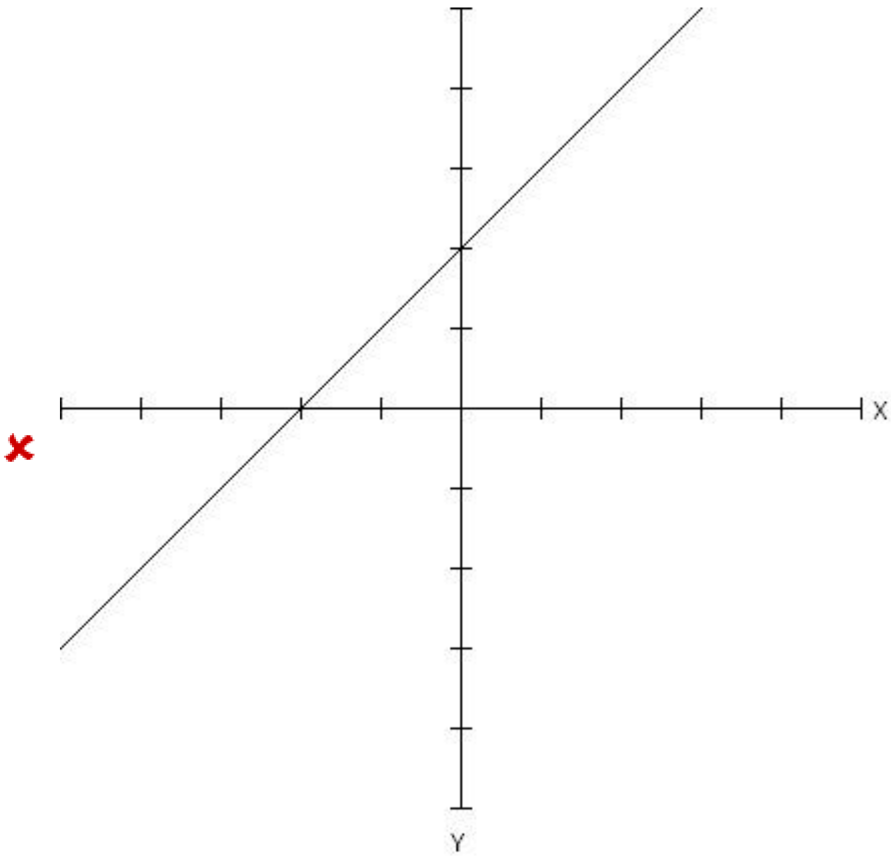
Scaffold:

Good! If you think you know which graph is correct go ahead and pick it from   the 2 choices below below.

y = x

Multiple choice:





sorry, this graph is not the right one. Check again to make sure you have the correct slope and y-intercept.

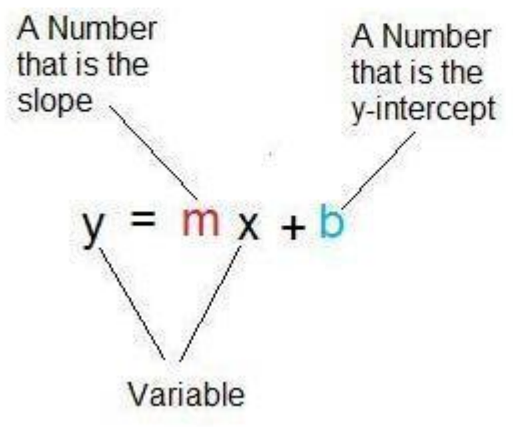
Hints:

 However with linear functions, you can use the slope along with the y-intercept to determine for sure which is the correct graph.
Visually, slope is

RISE

____
RUN

For example: a line with a slope of 1 will rise by 1 unit for every 1 unit you move right on the x-axis.
In a linear function, the slope is the coefficient of the x term.



- In your function, y = x the slope is 1.

Now using the slope and y-intercept, choose the correct linear graph from below to show you understand what you have just done.

---

11) Assistment #107041 "107041 - Which of the foll..."

Which of the following graphs represents the following function?

$\%v\{a\}^{(x\%v\{b\})}$ %v{c}

Note: Be careful when reading these graphs, they do not all have the same scale. Make sure that you check the values on the y-axis before making your choice.

Multiple choice:

✓

✗

✗

✗

✗

✗

Scaffold:

The function you have been given is the following:

y = %v{a}$^{(x\%v\{b\})}$ %v{c}

What kind of function is this?

Multiple choice:

- ✗ linear
- ✗ quadratic
- ✓ exponential

Scaffold:

Right! This function is exponential. That means the graph is a curving line that flattens out on one end, but does not go back up. Now you know that when you have an exponential function, you can mentally eliminate all graphs that are not like this.

What is the y-intercept of the function y = %v{a}$^{(x\%v\{b\})}$ %v{c} ?
If your answer is not a whole number, enter it as a fraction. EX: 1/3, 4/3.

Algebra:

✓ %v{yint}

Hints:

- The y-intercept is when x = 0

y = %v{a}$^{(x\%v\{b\})}$ %v{c}
y = %v{a}$^{(0\%v\{b\})}$ %v{c}

- y = %v{d} %v{c} Now solve for y

y = %v{yint}

Type in %v{yint}

Scaffold:

Good! If you think you know which is the correct graph, go ahead and pick it from the two choices below.

y = %v{a}$^{(x\%v\{b\})}$ %v{c}

Multiple choice:

✓

✗

Sorry, this is the wrong graph. Check to make sure it has the correct y-intercept and also the additional point if you found one.

Hints:

□ Remember what you know:

You know the y-intercept.

Now find another point:

pick a value of x between -2 and 2 (do not pick something like 10 since it will not be on these graphs)

□ Here is an example for your problem.
Choose x = 1 then substitute into your equation.

y =%v{a}$^{(1\%v\{b\})}$ %v{c} Now solve for y
y = %v{point}

Now choose the graph that contains the points (0,%v{yint}) and the point (1,%v{point}).

Hints:

□ You have been given the following function and are asked to find its graphical representation.

y = %v{a}^(x+%v{b})+%v{c}

We can figure out which graph is right by looking at two things.
1: the y-intercept
2: plotting any other point

□ First let's find the y-intercept. This is the point where the graph crosses the y-axis. It can be found by plugging in x=0 in your function:

y = %v{a}^(0+%v{b})+%v{c}

Do the math out, and figure out which graph(s) have that y-intercept.
Eliminate all other graphs. Also eliminate any graphs that are not exponential if you have not done so already.

□ Finally, you can choose any other value for x between -2 and 2, except for zero, because you already have that point.
Plug in that value for x, and find the corresponding y value.
Choose the remaining graph that also contains this point.

---

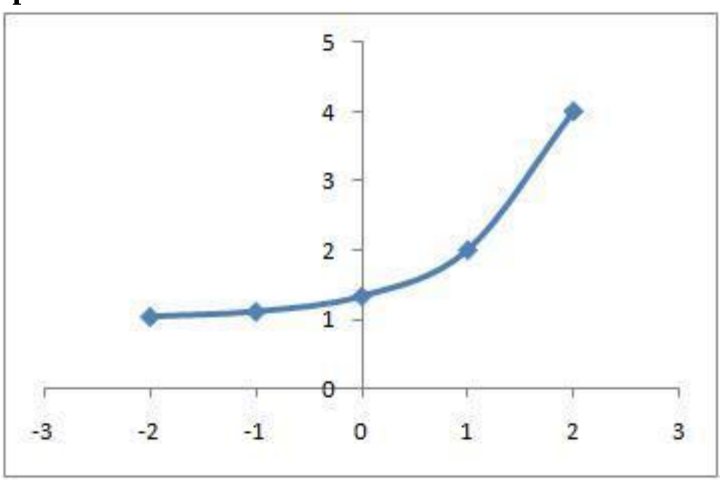
12) Assistment #112060 "112060 - Which of the foll..."

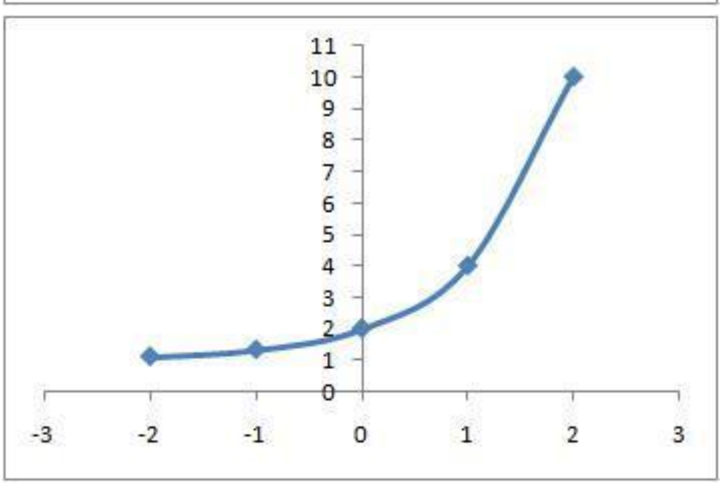
Which of the following graphs represents the following function?

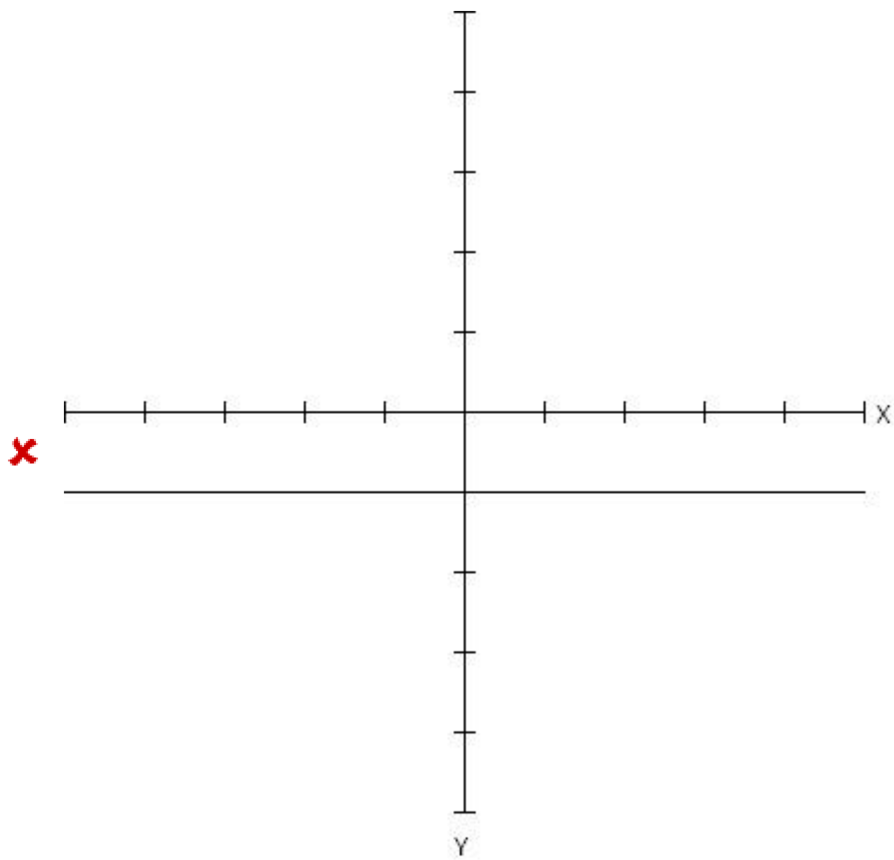
$3^{(x - 1)} + 1$

Note: Be careful when reading these graphs, they do not all have the same scale. Make sure that you check the values on the y-axis before making your choice.

Multiple choice:

✓ 

✗ 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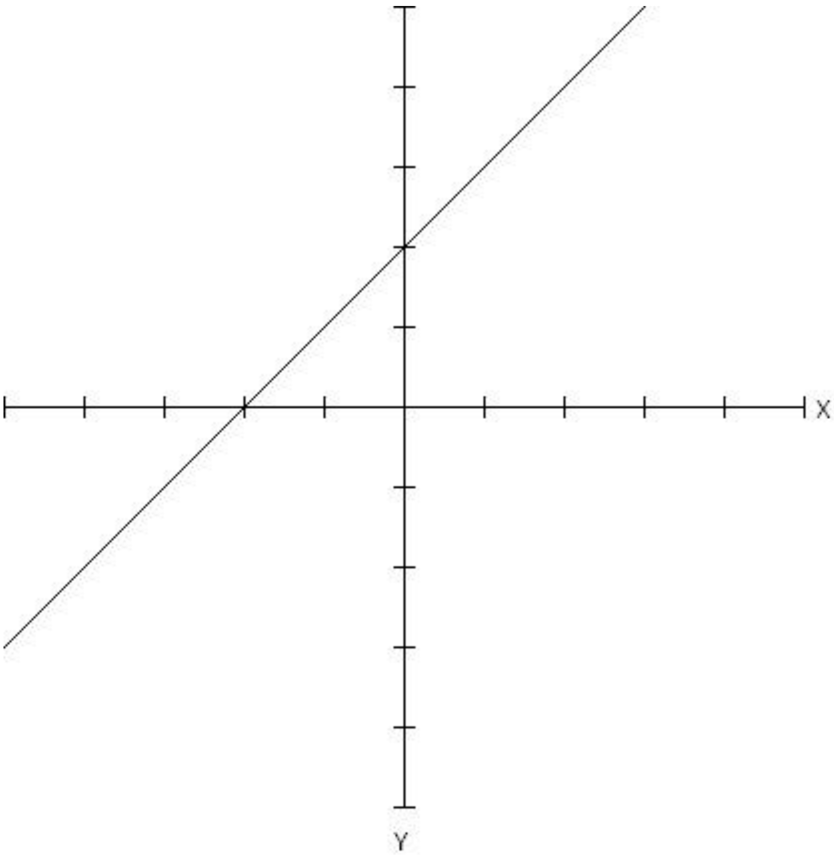
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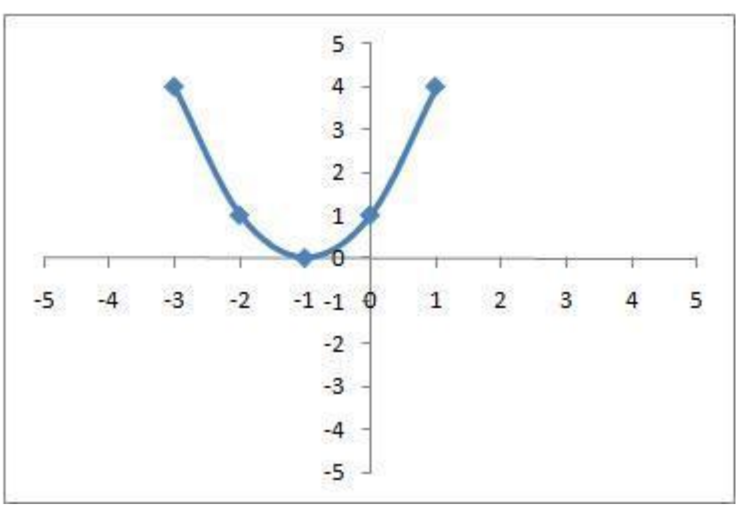
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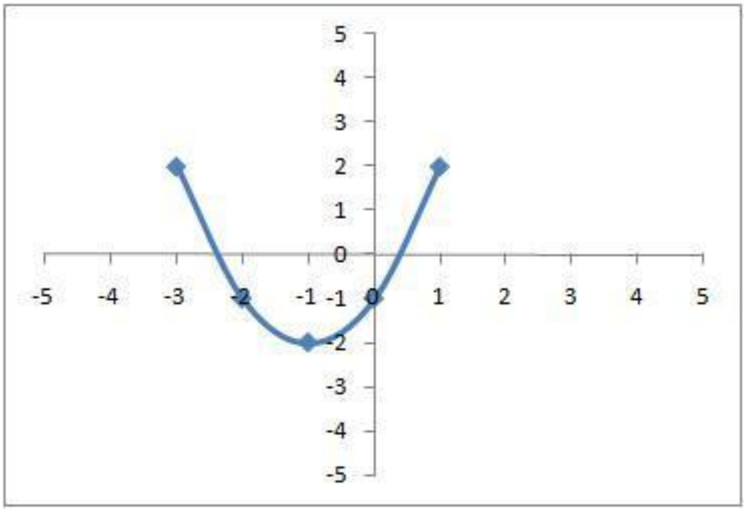


Hints:

☐ You have been given the following function and are asked to find its graphical representation.

y = 3^(x+ - 1)++ 1

We can figure out which graph is right by looking at two things.
1: the y-intercept
2: plotting any other point

☐ First let's find the y-intercept. This is the point where the graph crosses the y-axis. It can be found by plugging in x=0 in your function:

y = 3^(0+ - 1)++ 1

Do the math out, and figure out which graph(s) have that y-intercept.
Eliminate all other graphs. Also eliminate any graphs that are not exponential if you have not done so already.

☐ Finally, you can choose any other value for x between -2 and 2, except for zero, because you already have that point.
Plug in that value for x, and find the corresponding y value.
Choose the remaining graph that also contains this point.

Scaffold:

The function you have been given is the following:

$y = 3^{(x - 1)} + 1$

What kin of function is this?

Multiple choice:

- ✗ linear
- ✗ quadratic
- ✓ exponential

Scaffold:

Right! This function is exponential. That means the graph is a curving line that flattens out on one end, but does not go back up. Now you know that when you have an exponential function, you can mentally eliminate all graphs that are not like this.

What is the y-intercept of the function $y = 3^{(x - 1)} + 1$?
If your answer is not a whole number, enter it as a fraction. EX: 1/3, 4/3.

Algebra:

✓ 4/3

Hints:

☐ The y-intercept is when x = 0

$y = 3^{(x - 1)} + 1$
$y = 3^{(0 - 1)} + 1$

☐ $y = 1/3 + 1$ Now solve for y
$y = 4/3$

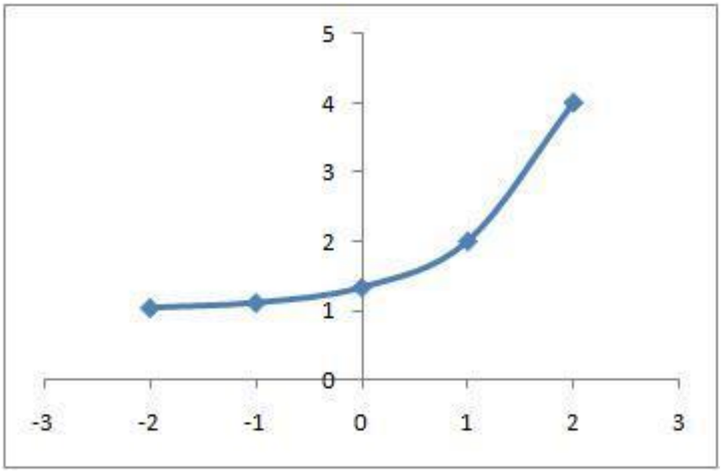
Type in 4/3

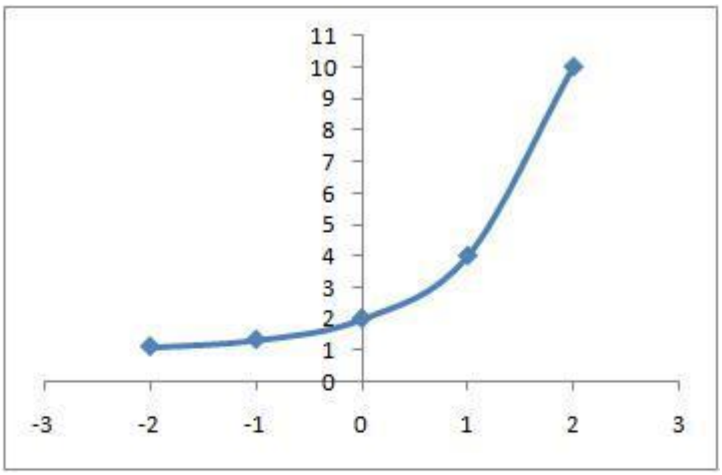
Scaffold:

Good! If you think you know which is the correct graph, go ahead and pick it from the two choices below.

$y = 3^{(x - 1)} + 1$

Multiple choice:





Sorry, this is the wrong graph. Check to make sure it has the correct y-intercept and also the additional point if you found one.

Hints:

- Remember what you know:

You know the y-intercept.

Now find another point:

pick a value of x between -2 and 2 (do not pick something like 10 since it will not be on these graphs)

- Here is an example for your problem.

Choose x = 1 then substitute into your equation.

$y = 3^{(1-1)} + 1$ Now solve for y

$= 2$

Now choose the graph that contains the points (0,4/3) and the point (1,2).

---

13) Assistment #107989 "107989 - Which of the foll..."

Which of the following grapahs represents the following function?

%v{a}$^{(x\%v\{b\})}$ %v{c}

Note: Be careful when reading these graphs, they do not all have the same scale. Make sure that you check the values on the y-axis before making your choice.

Multiple choice:

✓

✗

✗

✗

✗

✗

Scaffold:

The function you have been given is the following:

y = %v{a}$^{(x\%v\{b\})}$ %v{c}

What kind of function is this?

Multiple choice:

✗ linear

✗ quadratic

✓ exponential

Scaffold:

Right! This function is exponential. That means the graph is a curving line that flattens out on one end, but does not go back up. Now you know that when you have an exponential function, you can mentally eliminate all graphs that are not like this.

What is the y-intercept of the function y = %v{a}$^{(x\%v\{b\})}$ %v{c} ?
If your answer is not a whole number, enter it as a fraction. EX: 1/3, 4/3.

Algebra:

✓ %v{yint}

Hints:

☐ The y-intercept is when x = 0

y = %v{a}$^{(x\%v\{b\})}$ %v{c} Substitute in 0 for x
y = %v{a}$^{(0\%v\{b\})}$ %v{c}

☐ y = %v{d} %v{c} Now solve for y
y = %v{yint}

Type in %v{yint}

Scaffold:

Good! If you think you know which is the correct graph, go ahead and pick it from the two choices below.

y = %v{a}$^{(x\%v\{b\})}$ %v{c}

Multiple choice:

✓

✗

Sorry, this is the wrong graph. Check to make sure it has the correct y-intercept and also the additional point if you found one.

Hints:

☐ Remember what you know:

You know the y-intercept.

Now find another point:

pick a value of x between -2 and 2 (do not pick something like 10 since it will not be on these graphs)

□ Here is an example for your problem.
Choose x = 1 then substitute into your equation.

y =%v{a}$^{(1\%v\{b\})}$ %v{c} Now solve for y
y = %v{point}

Now choose the graph that contains the points (0,%v{yint}) and the point (1,%v{point}).

Hints:

□ You have been given the following function and are asked to find its graphical representation.

y = %v{a}^(x+%v{b})+%v{c}

We can figure out which graph is right by looking at two things.
1: the y-intercept
2: plotting any other point

□ First let's find the y-intercept. This is the point where the graph crosses the y-axis. It can be found by plugging in x=0 in your function:

y = %v{a}^(0+%v{b})+%v{c}

Do the math out, and figure out which graph(s) have that y-intercept.
Eliminate all other graphs. Also eliminate any graphs that are not exponential if you have not done so already.

□ Finally, you can choose any other value for x between -2 and 2, except for zero, because you already have that point.
Plug in that value for x, and find the corresponding y value.
Choose the remaining graph that also contains this point.

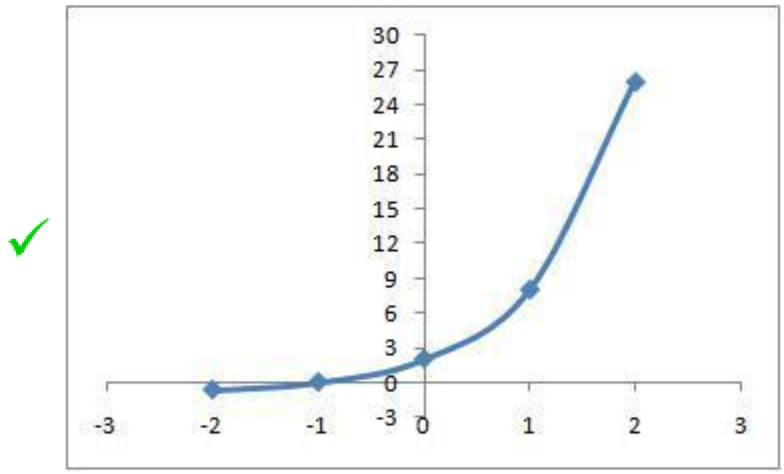
---

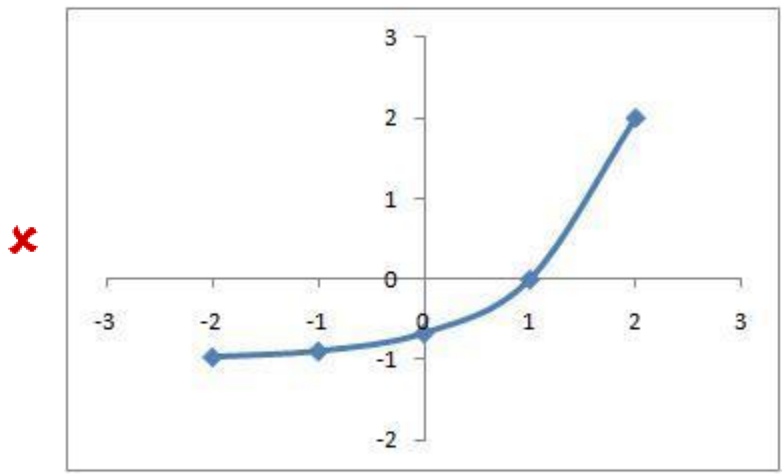
14) Assistment #112057 "112057 - Which of the foll..."
Which of the following graphs represents the following function?

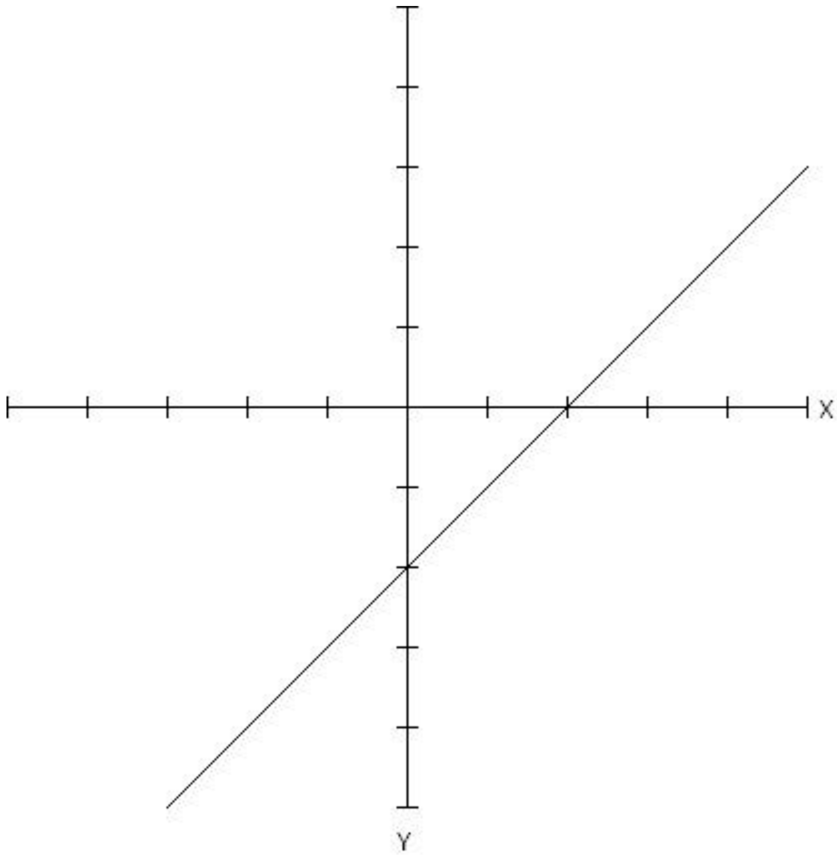
$3^{(x + 1)} - 1$

Note: Be careful when reading these graphs, they do not all have the same scale. Make sure that you

check the values on the y-axis before making your choice.
Multiple choice:



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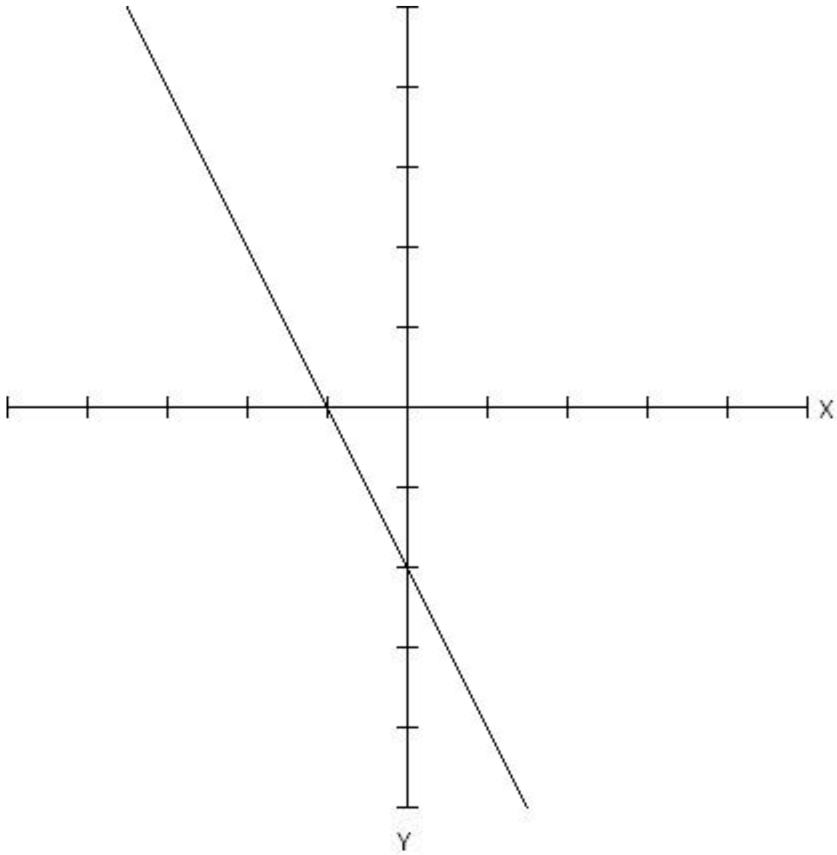
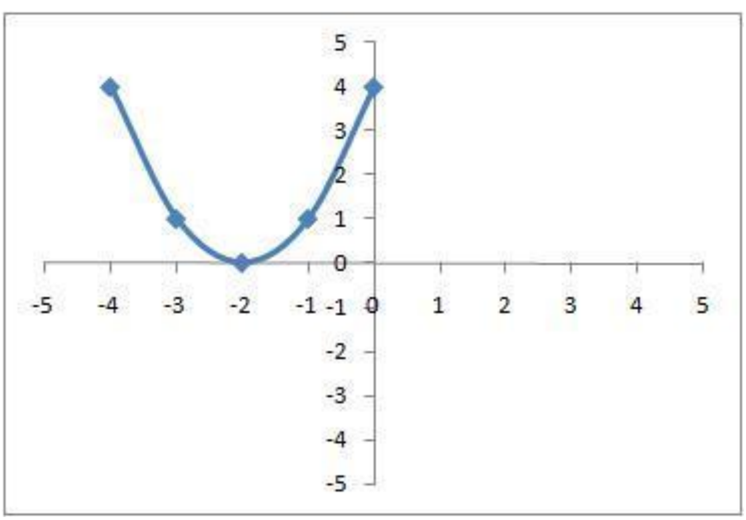

X
Y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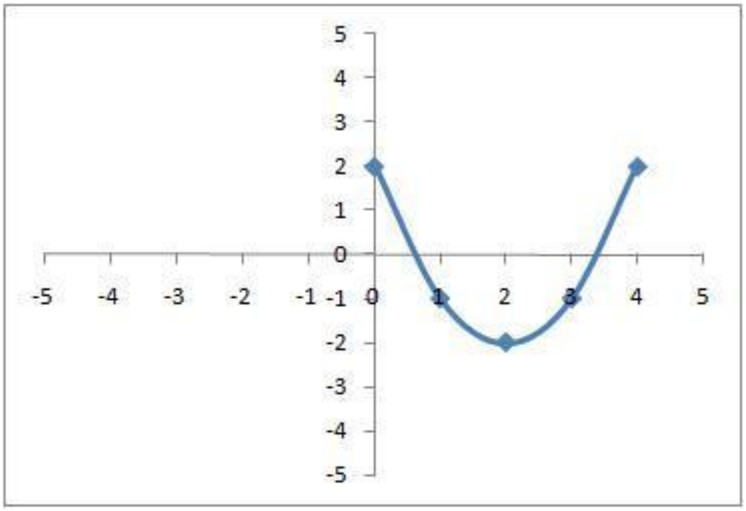


Hints:

 You have been given the following function and are asked to find its graphical representation.

y = 3^(x+ + 1)+- 1

We can figure out which graph is right by looking at two things.
1: the y-intercept
2: plotting any other point

 First let's find the y-intercept. This is the point where the graph crosses the y-axis. It can be found by plugging in x=0 in your function:

y = 3^(0+ + 1)+- 1

Do the math out, and figure out which graph(s) have that y-intercept.
Eliminate all other graphs. Also eliminate any graphs that are not exponential if you have not done so already.

 Finally, you can choose any other value for x between -2 and 2, except for zero, because you already have that point.
Plug in that value for x, and find the corresponding y value.
Choose the remaining graph that also contains this point.

Scaffold:

The function you have been given is the following:

$y = 3^{(x + 1)} - 1$

What kind of function is this?

Multiple choice:

- ✗ linear
- ✗ quadratic
- ✓ exponential

Scaffold:

Right! This function is exponential. That means the graph is a curving line that flattens out on one end, but does not go back up. Now you know that when you have an exponential function, you can mentally eliminate all graphs that are not like this.

What is the y-intercept of the function $y = 3^{(x + 1)} - 1$?
If your answer is not a whole number, enter it as a fraction. EX: 1/3, 4/3.

Algebra:

✓ 2

Hints:

- The y-intercept is when x = 0

$y = 3^{(x + 1)} - 1$
$y = 3^{(0 + 1)} - 1$

- $y = 3 - 1$ Now solve for y

$y = 2$

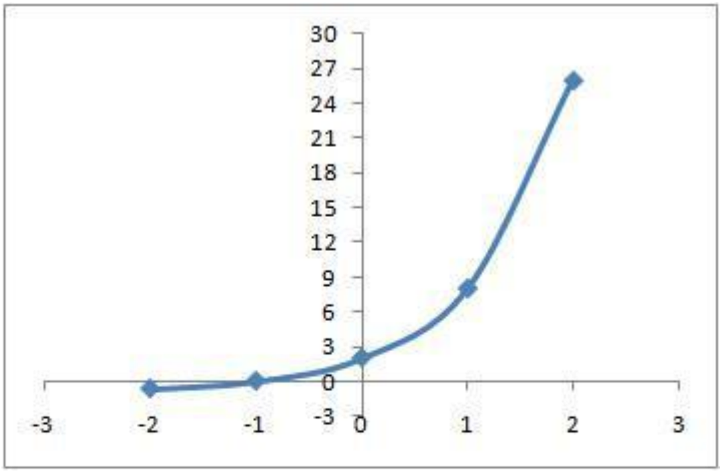
Type in 2

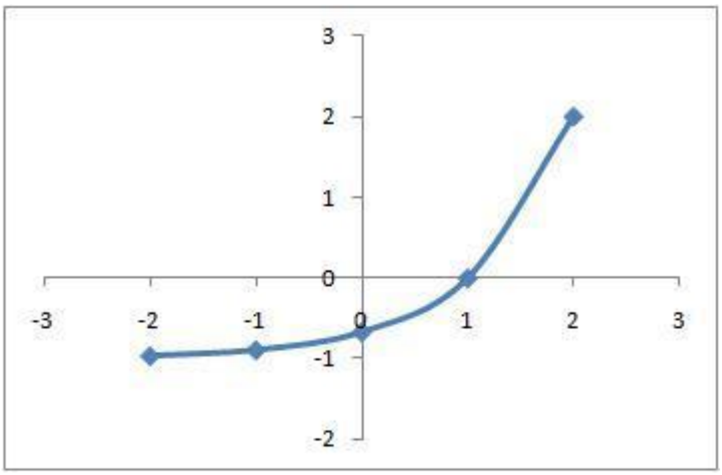
Scaffold:

Good! If you think you know which is the correct graph, go ahead and pick it from the two choices below.

$y = 3^{(x + 1)} - 1$

Multiple choice:





Sorry, this is the wrong graph. Check to make sure it has the correct y-intercept and also the additional point if you found one.

Hints:

 Remember what you know:

You know the y-intercept.

Now find another point:

pick a value of x between -2 and 2 (do not pick something like 10 since it will not be on these graphs)

 Here is an example for your problem.
Choose x = 1 then substitute into your equation.

$y = 3^{(1+1)} - 1$ Now solve for y
$y = 8$

Now choose the graph that contains the points (0,2) and the point (1,8).

---

15) Assistment #107990 "107990 - Which of the foll..."

Which of the following grpahs represents the following function?

$\%v\{a\}^{(x\%v\{b\})}\ \%v\{c\}$

Note: Be careful when reading these graphs, they do not all have the same scale. Make sure that you check the values on the y-axis before making your choice.

Multiple choice:

✓

✗

✗

✗

✗

✗

Scaffold:

The function you have been given is the following:

$y = \%v\{a\}^{(x\%v\{b\})}\ \%v\{c\}$

What kind of function is this?

Multiple choice:

✗ linear
✗ quadratic
✓ exponential

Scaffold:

Right! This function is exponential. That means the graph is a curving line that flattens out on one end but does not go back up. Now you know that when you have an exponential function, you can mentally eliminate all graphs that are not like this.

What is the y-intercept of the function y = %v{a}$^{(x\%v\{b\})}$ %v{c} ?
If your answer is not a whole number, enter it as a fraction. EX: 1/3, 4/3.

Algebra:

✓ %v{yint}

Hints:

☐ The y-intercept is when x = 0.

y = %v{a}$^{(x\%v\{b\})}$ %v{c} Substitute in 0 for x
y = %v{a}$^{(0\%v\{b\})}$ %v{c}

☐ y = %v{d} %v{c} Now solve for y
y = %v{yint}

Type in %v{yint}

Scaffold:

Good! If you think you know which is the correct graph, go ahead and pick it from the two choices below.

y = %v{a}$^{(x\%v\{b\})}$ %v{c}

Multiple choice:

✓

✗

Sorry, this is the wrong graph. Check to make sure it has the correct y-intercept and also the additional point if you found one.

Hints:

☐ Remember what you know:

You know the y-intercept.

Now find another point:

pick a value of x between -2 and 2 (do not pick something like 10 since it will not be on these graphs)

 Here is an example for your problem.
Choose x = 1 then substitute into your equation.

y =%v{a}^(1%v{b}) %v{c} Now solve for y
y = %v{point}

Now choose the graph that contains the points (0,%v{yint}) and the point (1,%v{point}).

Hints:

 You have been given the following function and are asked to find its graphical representation.

y = %v{a}^(x+%v{b})+%v{c}

We can figure out which graph is right by looking at two things.
1: the y-intercept
2: plotting any other point

 First let's find the y-intercept. This is the point where the graph crosses the y-axis. It can be found by plugging in x=0 in your function:

y = %v{a}^(0+%v{b})+%v{c}

Do the math out, and figure out which graph(s) have that y-intercept.
Eliminate all other graphs. Also eliminate any graphs that are not exponential if you have not done so already.

 Finally, you can choose any other value for x between -2 and 2, except for zero, because you already have that point.
Plug in that value for x, and find the corresponding y value.
Choose the remaining graph that also contains this point.

---

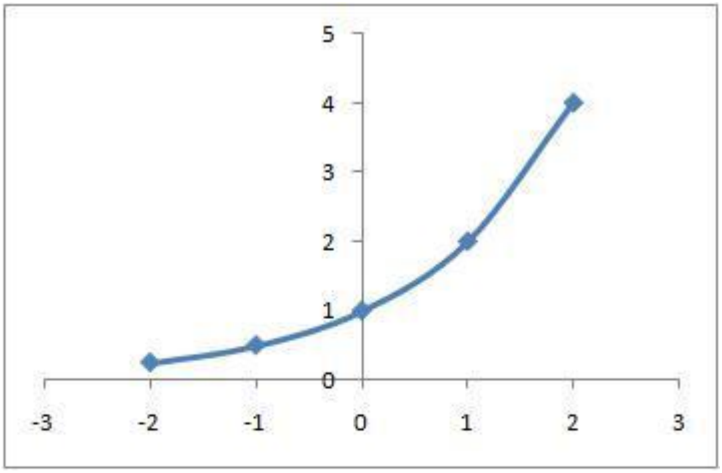
16) Assistment #112180 "112180 - Which of the foll..."

Which of the following grpahs represents the following function?

$2^{(x)}$

Note: Be careful when reading these graphs, they do not all have the same scale. Make sure that you check the values on the y-axis before making your choice.

Multiple choice:



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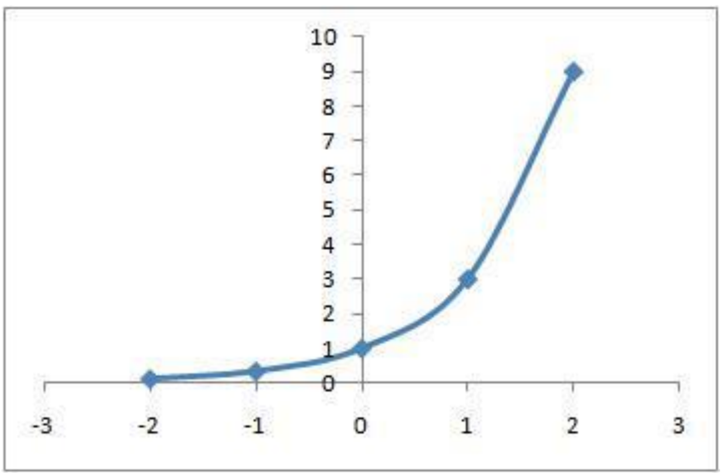

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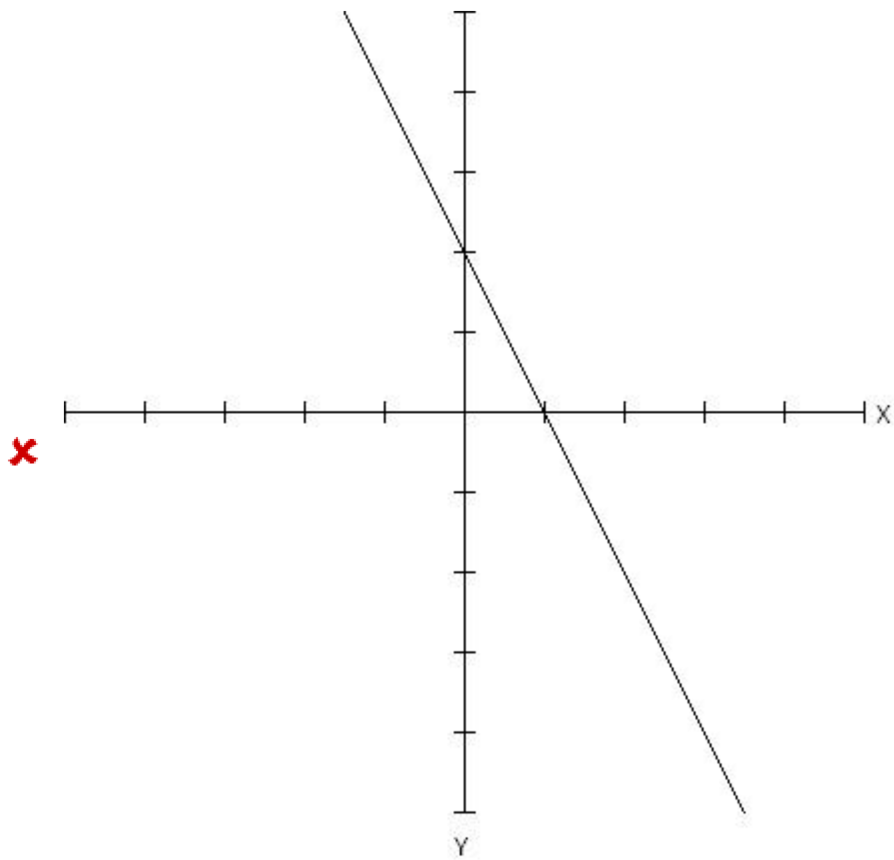
X
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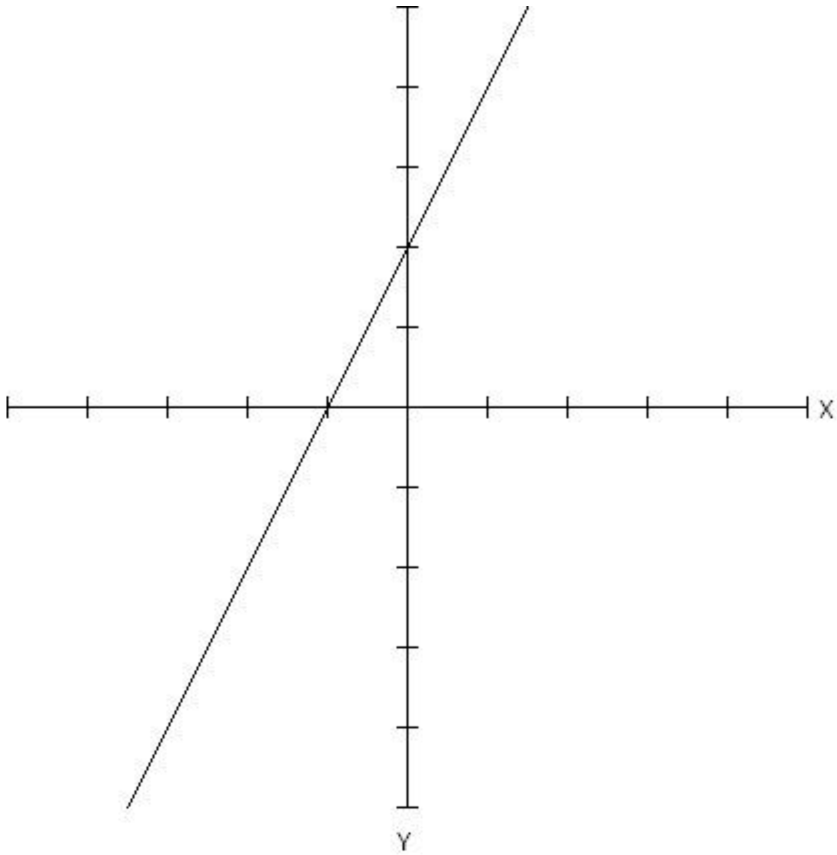
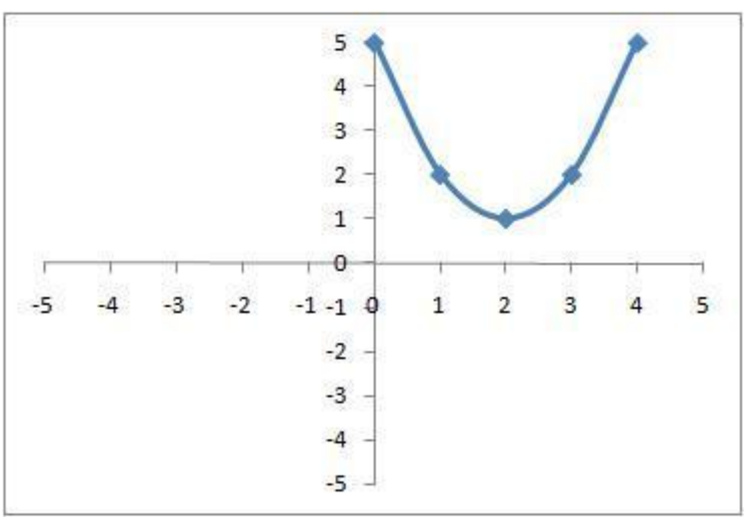


X
Y



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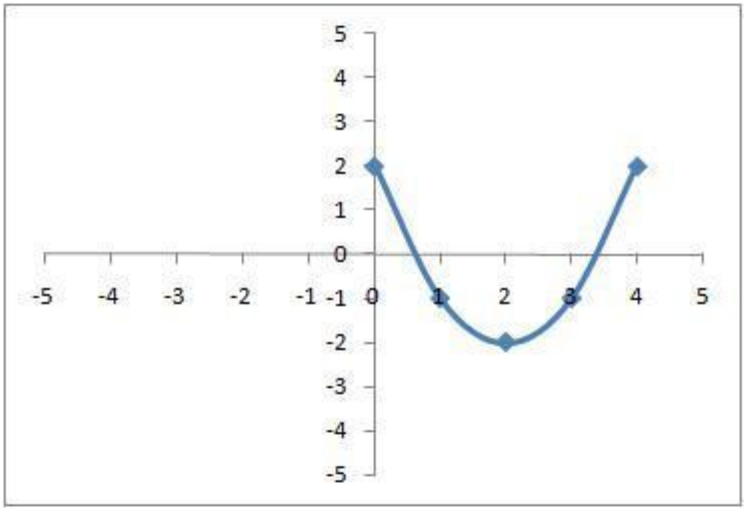
✗ 

Scaffold:

The function you have been given is the following:

$y = 2^{(x)}$

What kind of function is this?

Multiple choice:

- ✗ linear
- ✗ quadratic
- ✓ exponential

Scaffold:

Right! This function is exponential. That means the graph is a curving line that flattens out on one end but does not go back up. Now you know that when you have an exponential function, you can mentally eliminate all graphs that are not like this.

What is the y-intercept of the function $y = 2^{(x)}$?
If your answer is not a whole number, enter it as a fraction. EX: 1/3, 4/3.

Algebra:

✓ 1

Hints:

- The y-intercept is when x = 0.

$y = 2^{(x)}$ Substitute in 0 for x
$y = 2^{(0)}$

  y = 1 Now solve for y
y = 1

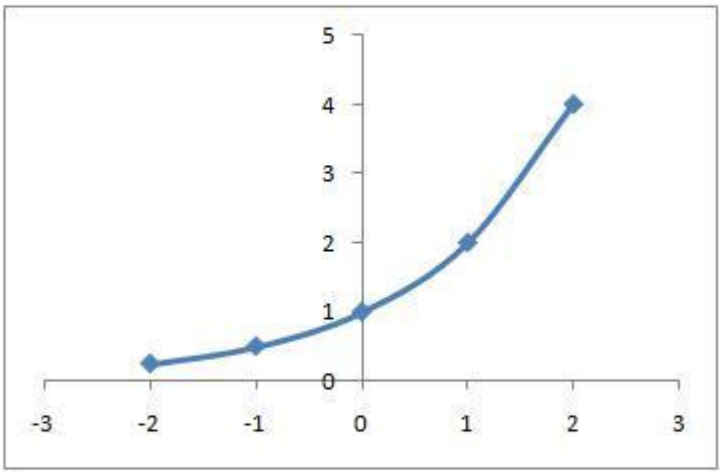
Type in 1

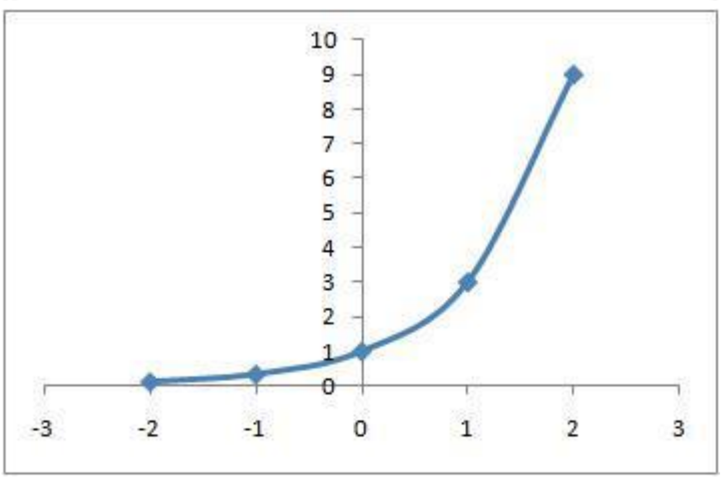
Scaffold:

Good! If you think you know which is the correct graph, go ahead and pick it from the two choices below.

$y = 2^{(x)}$

Multiple choice:





Sorry, this is the wrong graph. Check to make sure it has the correct y-intercept and also the additional point if you found one.

Hints:

  Remember what you know:

You know the y-intercept.

Now find another point:

pick a value of x between -2 and 2 (do not pick something like 10 since it will not be on these graphs)

- Here is an example for your problem.

Choose x = 1 then substitute into your equation.

y =$2^{(1)}$ Now solve for y
y = 2

Now choose the graph that contains the points (0,1) and the point (1,2).

Hints:

- You have been given the following function and are asked to find its graphical representation.

y = 2^(x+)+

We can figure out which graph is right by looking at two things.
1: the y-intercept
2: plotting any other point

- First let's find the y-intercept. This is the point where the graph crosses the y-axis. It can be found by plugging in x=0 in your function:

y = 2^(0+)+

Do the math out, and figure out which graph(s) have that y-intercept.
Eliminate all other graphs. Also eliminate any graphs that are not exponential if you have not done so already.

- Finally, you can choose any other value for x between -2 and 2, except for zero, because you already have that point.

Plug in that value for x, and find the corresponding y value.
Choose the remaining graph that also contains this point.

17) Assistment #109310 "109310 - Which of the foll..."

Which of the following grpahs represents the following function?

%v{a}^{x} %v{c}

Note: Be careful when reading these graphs, they do not all have the same scale. Make sure that you check the values on the y-axis before making your choice.

Multiple choice:

✓

✗

✗

✗

✗

✗

Scaffold:

The function you have been given is the following:

y = %v{a}^{x} %v{c}

What kind of function is this?

Multiple choice:

✗ linear

✗ quadratic

✓ exponential

Scaffold:

Right! This function is exponential. That means the graph is a curving line that flattens out on one end but does not go back up. Now you know that when you have an exponential function, you can mentally eliminate all graphs that are not like this.

What is the y-intercept of the function y = %v{a}^{x} %v{c} ?

Note: If your answer is a fraction, enter it with no spaces. EX: 1/3, 4/3.

Algebra:

%v{yint}

Hints:

- The y-intercept is when x = 0.

y = %v{a}^{x} %v{c} Substitute in 0 for x
y = %v{a}^{0} %v{c}

- Since any number to the 0 power equals 1:

y = 1 %v{c} Now solve for y
y = %v{yint}

Type in %v{yint}

Scaffold:

Good! If you think you know which is the correct graph, go ahead and pick it from the two choices below.

y = %v{a}^{x} %v{c}

Multiple choice:

Sorry, this is the wrong graph. Check to make sure it has the correct y-intercept and also the additional point if you found one.

Hints:

- Remember what you know:

You know the y-intercept.

Now find another point:

pick a value of x between -2 and 2 (do not pick something like 10 since it will not be on these graphs)

- Here is an example for your problem.

Choose x = 1 then substitute into your equation.

y =%v{a}[1] %v{c} Now solve for y
y = %v{point}

Now choose the graph that contains the points (0,%v{yint}) and one or both of the points (1,%v{point}.

Hints:

 You have been given the following function and are asked to find its graphical representation.

y = %v{a}^(x+%v{b})+%v{c}

We can figure out which graph is right by looking at two things.
1: the y-intercept
2: plotting any other point

 First let's find the y-intercept. This is the point where the graph crosses the y-axis. It can be found by plugging in x=0 in your function:

y = %v{a}^(0+%v{b})+%v{c}

Do the math out, and figure out which graph(s) have that y-intercept.
Eliminate all other graphs. Also eliminate any graphs that are not exponential if you have not done so already.

 Finally, you can choose any other value for x between -2 and 2, except for zero, because you already have that point.
Plug in that value for x, and find the corresponding y value.
Choose the remaining graph that also contains this point.

---

18) Assistment #112132 "112132 - Which of the foll..."

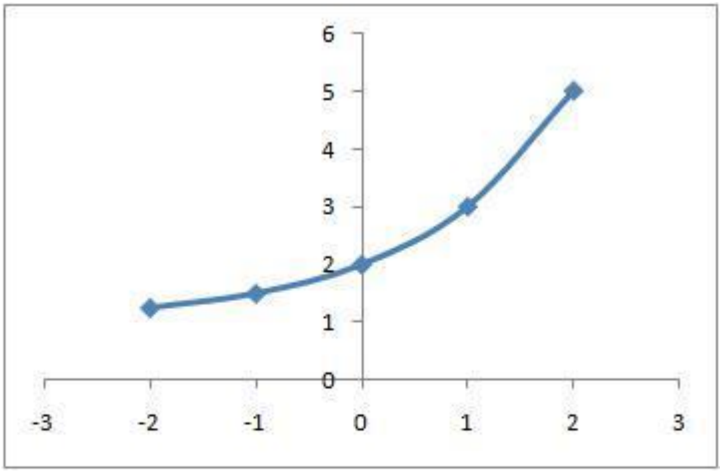
Which of the following grapahs represents the following function?

$2^{(x)} + 1$

Note: Be careful when reading these graphs, they do not all have the same scale. Make sure that you check the values on the y-axis before making your choice.

Multiple choice:

✓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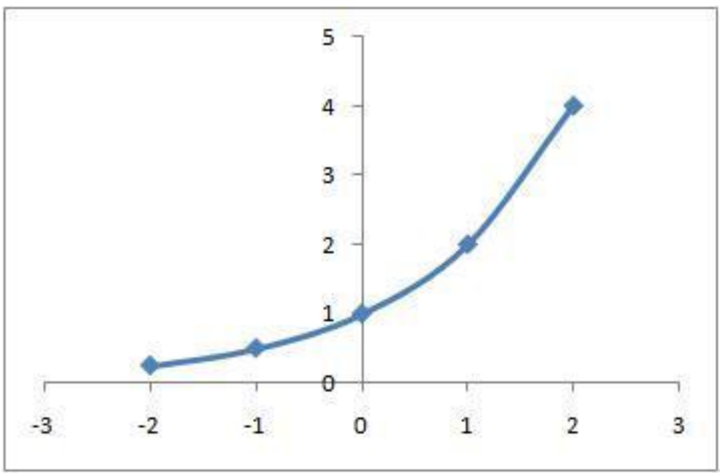
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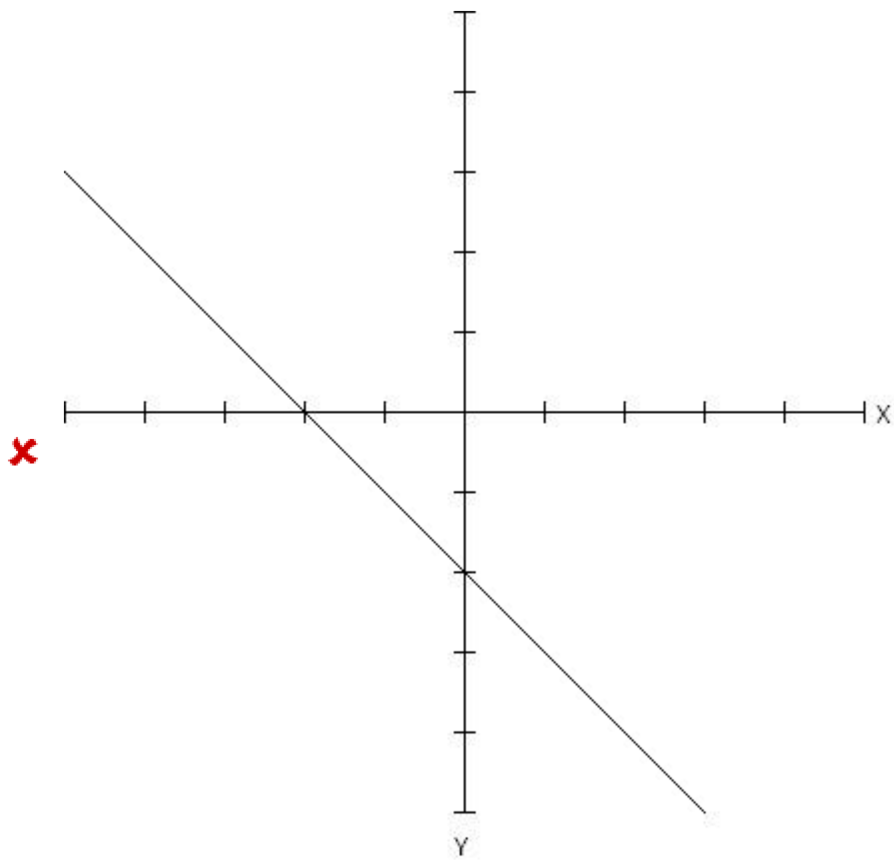
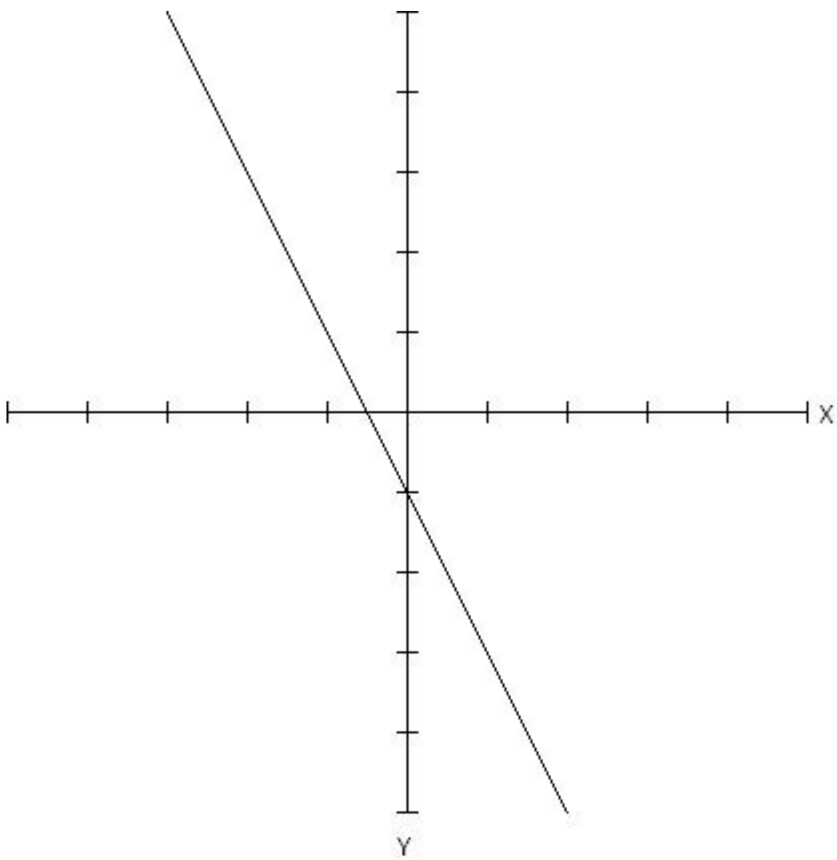
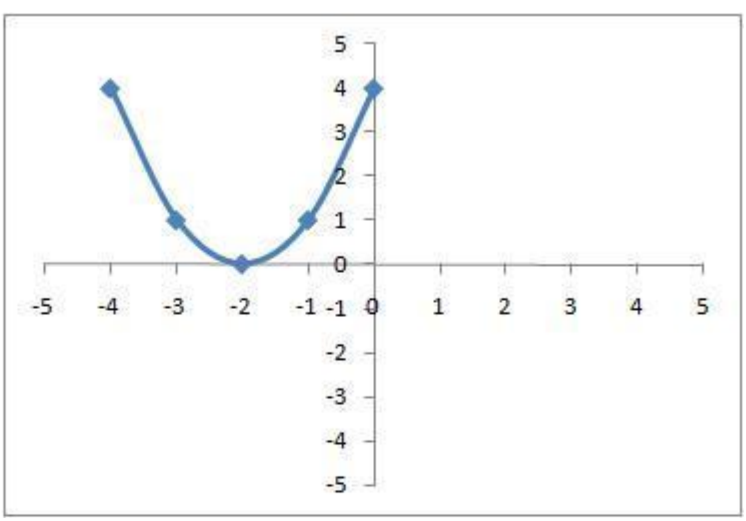

X
Y



X
Y



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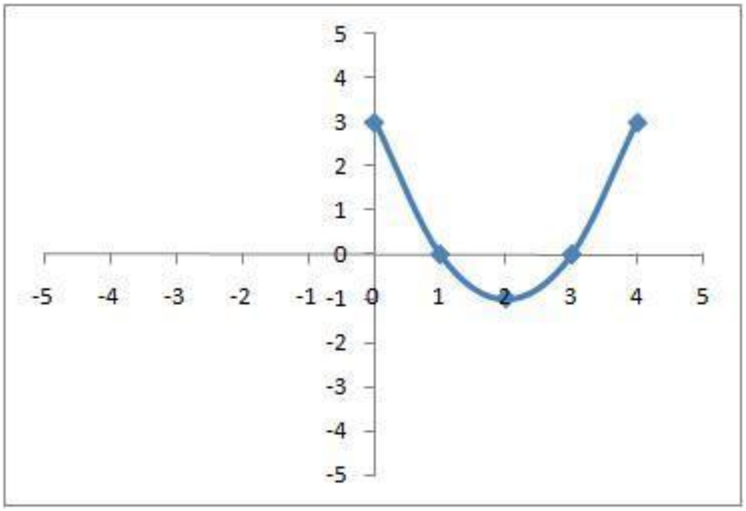
✗ 

Scaffold:

The function you have been given is the following:

$y = 2^{(x)} + 1$

What kind of function is this?

Multiple choice:

- ✗ linear
- ✗ quadratic
- ✓ exponential

Scaffold:

Right! This function is exponential. That means the graph is a curving line that flattens out on one end, but does not go back up. Now you know that when you have an exponential function, you can mentally eliminate all graphs that are not like this.

What is the y-intercept of the function $y = 2^{(x)} + 1$?
If your answer is not a whole number, enter it as a fraction. EX: 1/3, 4/3.

Algebra:

✓ 2

Hints:

- The y-intercept is when x = 0

$y = 2^{(x)} + 1$ Substitute in 0 for x
$y = 2^{(0)} + 1$

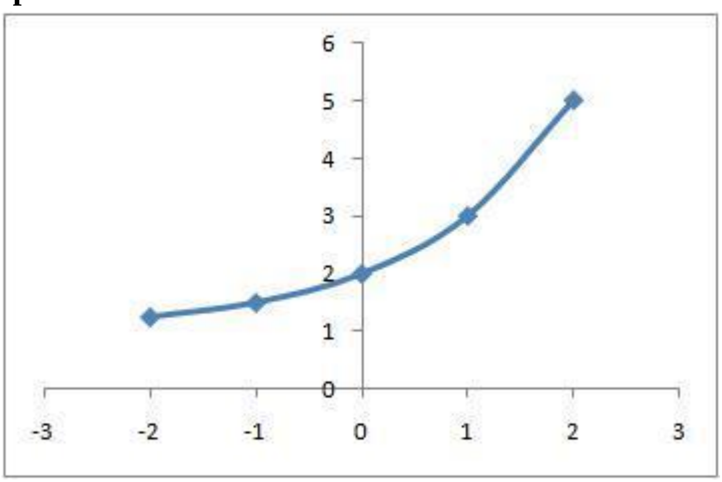
□ $y = 1 + 1$ Now solve for y
$y = 2$

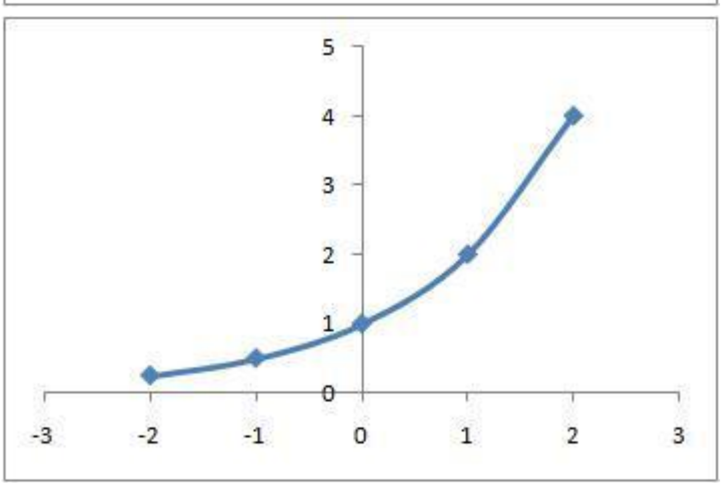
Type in 2

Scaffold:
Good! If you think you know which is the correct graph, go ahead and pick it from the two choices below.

$y = 2^{(x)} + 1$

Multiple choice:





Sorry, this is the wrong graph. Check to make sure it has the correct y-intercept and also the additional point if you found one.

Hints:

 Remember what you know:

You know the y-intercept.

Now find another point:

pick a value of x between -2 and 2 (do not pick something like 10 since it will not be on these graphs)

 Here is an example for your problem.
Choose x = 1 then substitute into your equation.

$y = 2^{(1)} + 1$ Now solve for y
$y = 3$

Now choose the graph that contains the points (0,2) and the point (1,3).

Hints:

 You have been given the following function and are asked to find its graphical representation.

y = 2^(x+)++ 1

We can figure out which graph is right by looking at two things.
1: the y-intercept
2: plotting any other point

 First let's find the y-intercept. This is the point where the graph crosses the y-axis. It can be found by plugging in x=0 in your function:

y = 2^(0+)++ 1

Do the math out, and figure out which graph(s) have that y-intercept.
Eliminate all other graphs. Also eliminate any graphs that are not exponential if you have not done so already.

 Finally, you can choose any other value for x between -2 and 2, except for zero, because you already have that point.
Plug in that value for x, and find the corresponding y value.
Choose the remaining graph that also contains this point.

Skill	Class
Make a Table From Function	Algebra 1

Mastery Problem Set # 15690	Number of Templates 9
Number to Master 3 in-a-row	Number of Attempts 10 First Day, 10 Subsequent Days

Templates

- 114208

You have been asked to fill in the table for the following function:

y = 1x + 1

x	y
0	
1	
2	
3	
4	
5	

What is the y value when x is 0 in the table?

  - Linear function form y = mx+b
  - m,b range from 1-9
  - student will be asked to find value for x between 0 and 5

- 116335

You have been asked to fill in the table for the following function:

y = 9x - 4

x	y
0	
1	
2	
3	
4	
5	

What is the y value when x is 0 in the table?

- Linear function form y = mx – b
- Same parameters as above

- 116336

You have been asked to fill in the table for the following function:

y = 8 - 3x

x	y
0	
1	
2	
3	
4	
5	

What is the y value when x is 0 in the table?

- Linear function form y = b – mx
- Same parameters as above

- 114224

You have been asked to fill in the table for the following function:

$y = 2x^2 + 6x + 10$

x	y
0	
1	
2	
3	
4	
5	

What is the value of y when x is 2 in the table?

- Quadratic Function form $ax^2 + bx + c$
- a is either 1 or 2
- b ranges from 1 to 7
- c ranges from 1 to 10
- value of x ranges between 0 and 5

- 116337

You have been asked to fill in the table for the following function:

$y = 2x^2 - 5x + 5$

x	y
0	
1	
2	
3	
4	
5	

What is the value of y when x is 5 in the table?

- Quadratic function form $y = ax^2 – bx + c\backslash$
- Same parameters as above

- 116338

You have been asked to fill in the table for the following function:

$y = 2x^2 + 2x - 1$

x	y
0	
1	
2	
3	
4	
5	

What is the value of y when x is 0 in the table?

- Quadratic function form $y = ax^2 + bx – c$
- Same parameters as above

- 116339

You have been asked to fill in the table for the following function:

$y = -1x^2 + 2x + 3$

x	y
0	
1	
2	
3	
4	
5	

What is the value of y when x is 2 in the table?

  - Quadratic function form $y = -ax^2 + bx + c$
  - Same parameters as above

- 116340

You have been asked to fill in the table for the following function:

$y = 2^x + 9$

x	y
0	
1	
2	
3	
4	
5	

What is the value of y when x is 4 in the table?

- Exponential function form $a^x + b$
- Parameters currently
  - A either 2 or 3
  - B ranges from 1-9
  - Value of x between 0 and 3

- 116341

You have been asked to fill in the table for the following function:

$y = 3^x - 1$

x	y
0	
1	
2	
3	
4	
5	

What is the value of y when x is 0 in the table?

- Exponential function form $y = a^x – b$
- Parameters same as above template

Problem Set "Make table from function examples" id:[29017]

1) Assistment #114208 "114208 - You have been ask..."

You have been asked to fill in the table for the following function:

y = %v{m}x + %v{b}

x	y
0	
1	
2	
3	
4	
5	

What is the y value when x is %v{q} in the table?

Algebra:

✓ %v{ans}

Hints:

□ Start by substituting in for x:

First, write the equation:

y = %v{m}x + %v{b}

Next, substitute the value of x = %v{q}:
y = %v{m}*%v{q} + %v{b}

□ Finally, solve for y by simplifying the right side:

y = %v{m*q} + %v{b}

y = %v{ans} Type in %v{ans}

---

2) Assistment #121580 "121580 - You have been ask..."

You have been asked to fill in the table for the following function:

y = 3x + 3

x	y
0	
1	
2	
3	
4	
5	

What is the y value when x is 1 in the table?

Algebra:

✓ 6

Hints:

☐ Start by substituting in for x:

First, write the equation:

y = 3x + 3

Next, substitute the value of x = 1:
y = 3*1 + 3

☐ Finally, solve for y by simplifying the right side:

y = 3 + 3

y = 6 Type in 6

3) Assistment #116335 "116335 - You have been ask..."

You have been asked to fill in the table for the following function:

y = %v{m}x - %v{b}

x	y
0	
1	
2	
3	
4	
5	

What is the y value when x is %v{q} in the table?

Algebra:

✓ %v{ans}

Hints:

☐

Start by substituting in for x:

First, write the equation:

y = %v{m}x - %v{b}

Next, substitute the value of x = %v{q}:
y = %v{m}*%v{q} - %v{b}

☐ Finally, solve for y by simplifying the right side:

y = %v{m*q} - %v{b}

y = %v{ans} Type in %v{ans}

4) Assistment #121660 "121660 - You have been ask..."

You have been asked to fill in the table for the following function:

y = 5x - 1

x	y
0	
1	
2	
3	
4	
5	

What is the y value when x is 0 in the table?

Algebra:

✓ -1

Hints:

□

Start by substituting in for x:

First, write the equation:

y = 5x - 1

Next, substitute the value of x = 0:
y = 5*0 - 1

□ Finally, solve for y by simplifying the right side:

y = 0 - 1

y = -1 Type in -1

---

5) Assistment #116336 "116336 - You have been ask..."

You have been asked to fill in the table for the following function:

y = %v{b} - %v{m}x

x	y
0	
1	
2	
3	
4	
5	

What is the y value when x is %v{q} in the table?

Algebra:

✓ %v{ans}

Hints:

☐

Start by substituting in for x:

First, write the equation:

y = %v{b} - %v{m}x

Next, substitute the value of x = %v{q}:

y = %v{b} - %v{m}*%v{q}

☐ Finally, solve for y by simplifying the right side:

y = %v{b} - %v{m*q}

y = %v{ans} Type in %v{ans}

---

6) Assistment #121560 "121560 - You have been ask..."

You have been asked to fill in the table for the following function:

y = 4 - 5x

x	y

0	
1	
2	
3	
4	
5	

What is the y value when x is 4 in the table?

Algebra:

✓ -16

Hints:

□

Start by substituting in for x:

First, write the equation:

y = 4 - 5x

Next, substitute the value of x = 4:

y = 4 - 5*4

□ Finally, solve for y by simplifying the right side:

y = 4 - 20

y = -16 Type in -16

---

7) Assistment #114224 "114224 - You have been ask..."

You have been asked to fill in the table for the following function:

y = %v{a}x^2 + %v{b}x + %v{c}

x	y
0	
1	

2	
3	
4	
5	

What is the value of y when x is %v{q} in the table?

Algebra:

✓ %v{ans}

Hints:

- Start by substituting in for x:

First, write the equation:

y = %v{a}x^2 + %v{b}x + %v{c}

Next, substitute the value of x = %v{q}:

y = %v{a}*(%v{q})^2 + %v{b}*%v{q} + %v{c}

- Finally, solve for y by simplifying the right side:

y = %v{a*q*q} + %v{b*q} + %v{c}

y = %v{ans} Type in %v{ans}

---

8) Assistment #121540 "121540 - You have been ask..."

You have been asked to fill in the table for the following function:

$y = 2x^2 + 7x + 4$

x	y
0	
1	
2	
3	

4	
5	

What is the value of y when x is 2 in the table?

Algebra:

✓ 26

Hints:

- Start by substituting in for x:

First, write the equation:

$y = 2x^2 + 7x + 4$

Next, substitute the value of x = 2:

$y = 2*(2)^2 + 7*2 + 4$

- Finally, solve for y by simplifying the right side:

$y = 8 + 14 + 4$

$y = 26$ Type in 26

---

9) Assistment #116337 "116337 - You have been ask..."

You have been asked to fill in the table for the following function:

y = %v{a}x^2 - %v{b}x + %v{c}

x	y
0	
1	
2	
3	
4	
5	

What is the value of y when x is %v{q} in the table?

Algebra:

✓ %v{ans}

Hints:

☐ Start by substituting in for x:

First, write the function:
y = %v{a}x^2 - %v{b}x + %v{c}

Next, substitute in the value of x = %v{q}
y = %v{a}*(%v{q})^2 - %v{b}*%v{q} + %v{c}

☐ Finally, solve for y by simplifying the right side:

y = %v{a*q*q} - %v{b*q} + %v{c}

y = %v{ans} Type in %v{ans}

---

10) Assistment #121600 "121600 - You have been ask..."

You have been asked to fill in the table for the following function:

$y = 2x^2 - 2x + 1$

x	y
0	
1	
2	
3	
4	
5	

What is the value of y when x is 5 in the table?

Algebra:

✓ 41

Hints:

☐ Start by substituting in for x:

First, write the function:
$y = 2x^2 - 2x + 1$

Next, substitute in the value of $x = 5$
$y = 2*(5)^2 - 2*5 + 1$

□ Finally, solve for y by simplifying the right side:

$y = 50 - 10 + 1$

$y = 41$ Type in 41

---

11) Assistment #116338 "116338 - You have been ask..."

You have been asked to fill in the table for the following function:

y = %v{a}x^2 + %v{b}x - %v{c}

x	y
0	
1	
2	
3	
4	
5	

What is the value of y when x is %v{q} in the table?

Algebra:

✓ %v{ans}

Hints:

□ Start by substituting in for x:

First, write the function:
y = %v{a}x^2 + %v{b}x - %v{c}

Next, substitute in the value of x = %v{q}
y = %v{a}*(%v{q})^2 + %v{b}*%v{q} - %v{c}

☐ Finally, solve for y by simplifying the right side:

y = %v{a*q*q} + %v{b*q} - %v{c}

y = %v{ans} Type in %v{ans}

---

12) Assistment #121615 "121615 - You have been ask..."

You have been asked to fill in the table for the following function:

$y = 2x^2 + 2x - 1$

x	y
0	
1	
2	
3	
4	
5	

What is the value of y when x is 3 in the table?

Algebra:

✓ 23

Hints:

☐ Start by substituting in for x:

First, write the function:
$y = 2x^2 + 2x - 1$

Next, substitute in the value of x = 3
$y = 2*(3)^2 + 2*3 - 1$

☐ Finally, solve for y by simplifying the right side:

y = 18 + 6 - 1

$y = 23$ Type in 23

---

13) Assistment #116339 "116339 - You have been ask..."

You have been asked to fill in the table for the following function:

y = -%v{a}x^2 + %v{b}x + %v{c}

x	y
0	
1	
2	
3	
4	
5	

What is the value of y when x is %v{q} in the table?

Algebra:

✓ %v{ans}

Hints:

- Start by substituting in for x:

First, write the equation:

y = -%v{a}x^2 + %v{b}x + %v{c}

Next, substitute the value of x = %v{q}:

y = %v{a}*(%v{q})^2 + %v{b}*%v{q} + %v{c}

- Finally, solve for y by simplifying the right side:

y = -%v{a*q*q} + %v{b*q} + %v{c}

y = %v{ans} Type in %v{ans}

---

14) Assistment #121620 "121620 - You have been ask..."

You have been asked to fill in the table for the following function:

$y = -2x^2 + 6x + 5$

x	y
0	
1	
2	
3	
4	
5	

What is the value of y when x is 0 in the table?

Algebra:

✓ 5

Hints:

- Start by substituting in for x:

First, write the equation:

$y = -2x^2 + 6x + 5$

Next, substitute the value of $x = 0$:

$y = 2*(0)^2 + 6*0 + 5$

- Finally, solve for y by simplifying the right side:

$y = -0 + 0 + 5$

y = 5 Type in 5

---

15) Assistment #116340 "116340 - You have been ask..."

You have been asked to fill in the table for the following function:
y = %v{b}^{x} + %v{c}

x	y
0	
1	
2	
3	
4	
5	

What is the value of y when x is %v{q} in the table?

Algebra:

✓ %v{ans}

Hints:

- Start by substituting in for x:

First, write the equation:

y = %v{b}^{x} + %v{c}

Next, substitute the value of x = %v{q}:

y = %v{b}$^{\%v\{q\}}$ + %v{c}

- Finally, solve for y by simplifying the right side:

y = %v{f} + %v{c}

y = %v{ans} Type in %v{ans}

16) Assistment #121640 "121640 - You have been ask..."

You have been asked to fill in the table for the following function:

$y = 2^x + 2$

x	y
0	
1	
2	
3	
4	
5	

What is the value of y when x is 2 in the table?

Algebra:

✓ 6

Hints:

- Start by substituting in for x:

First, write the equation:

$y = 2^x + 2$

Next, substitute the value of x = 2:

$y = 2^2 + 2$

- Finally, solve for y by simplifying the right side:

$y = 4 + 2$

$y = 6$ Type in 6

17) Assistment #116341 "116341 - You have been ask..."

You have been asked to fill in the table for the following function:
y = %v{b}^{x} - %v{c}

x	y
0	
1	
2	
3	
4	
5	

What is the value of y when x is %v{q} in the table?

Algebra:

✓ %v{ans}

Hints:

☐ Start by substituting in for x:

First, write the equation:

y = %v{b}^{x} - %v{c}

Next, substitute the value of x = %v{q}:

y = %v{b}$^{\%v\{q\}}$ - %v{c}

☐ Finally, solve for y by simplifying the right side:

y = %v{f} - %v{c}

y = %v{ans}   Type in %v{ans}

---

18) Assistment #121512 "121512 - You have been ask..."

You have been asked to fill in the table for the following function:
$y = 2^{x} - 1$

x	y
0	
1	
2	
3	
4	
5	

What is the value of y when x is 0 in the table?

Algebra:

✓ 0

Hints:

☐ Start by substituting in for x:

First, write the equation:

$y = 2^x - 1$

Next, substitute the value of $x = 0$:

$y = 2^0 - 1$

☐ Finally, solve for y by simplifying the right side:

$y = 1 - 1$

$y = 0$ Type in 0

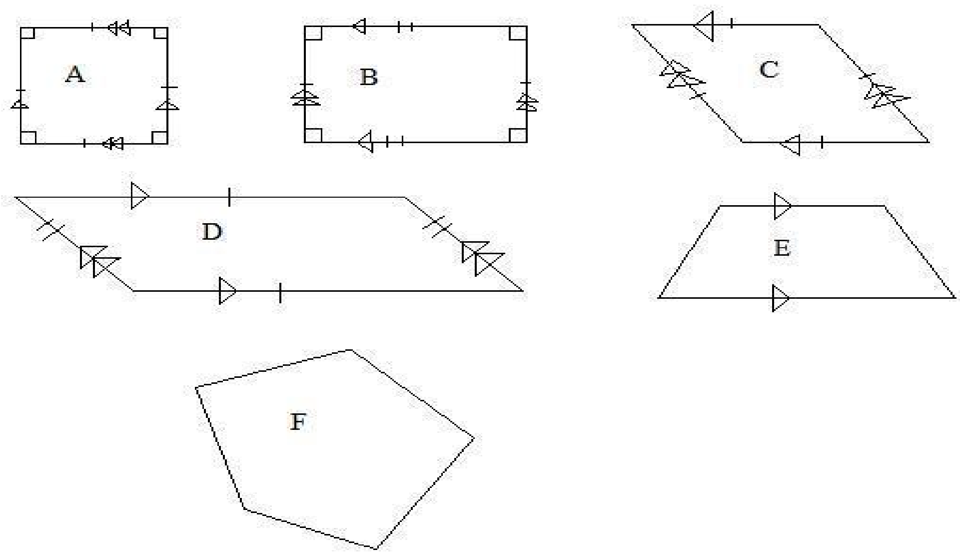
Skill	Class
Properties and Classification of Quadrilaterals	Algebra 1

Mastery Problem Set #23755	Number of Templates 10 templates 14 individualized
Number to Master 3 in-a-row	Number of Attempts 10 First Day, 10 Subsequent Days

Templates

- #129524, 129526-192531

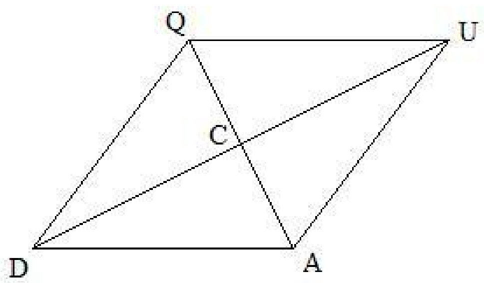
Which of the following figures are not quadrilaterals? (Check all that apply)



- This set of Assistments takes the large image and asks the student to classify the images based on the images given.
    - Square
    - Rectangle
    - Rhombus
    - Parallelogram
    - Trapezoid
    - 1 non-quadrilateral figure

- 137273 (rhombus), 140472 (parallelogram), 140473 (rectangle)

If the following shape is a rhombus:



If the length of the diagonal between points D and U is 16 units, what is the length of line segment CD?

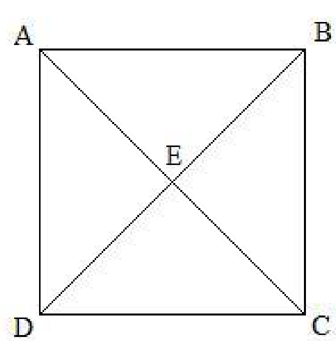
Comment on this question

Show me hint 1 of 2

- Addresses that the diagonals of a rhombus are bisected.
- Length of the whole diagonals ranges between 2 and 20 (even numbers only)
- The question remains basically unchanged for the other 2 templates, except the shape in the question is different and the diagonal in question might change. Also for the other three shapes, the labeling is ABCD with E as the center.

- 140474

If the following shape is a square:

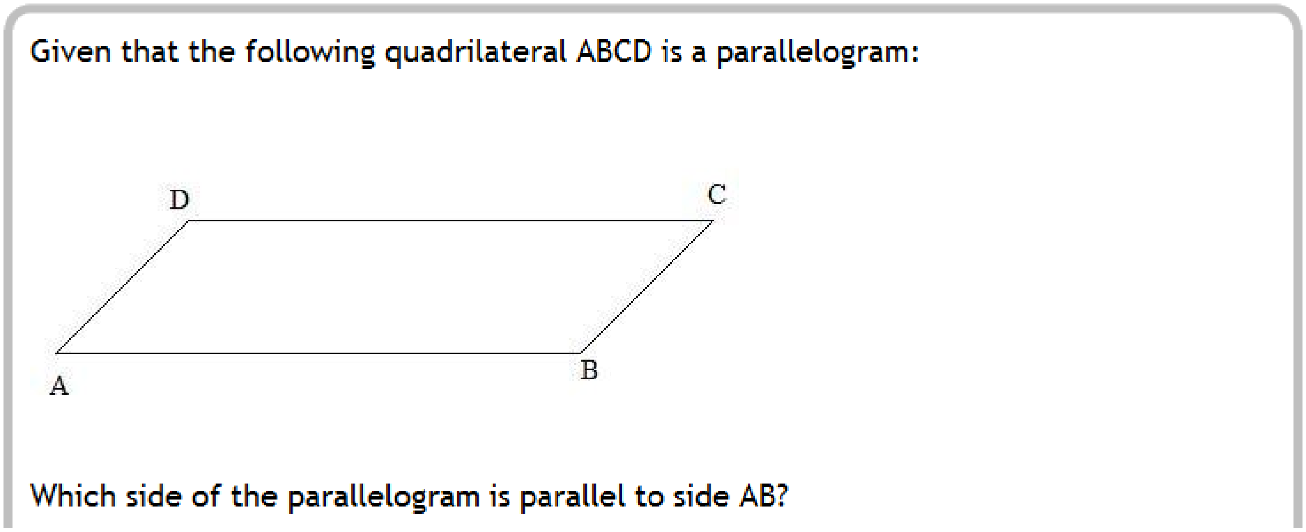


If the length of the line segment EC is 5 units, what is the length of diagonal AC?

- This problem addresses the fact that the diagonals of a square are bisected, however in this instance the question asks for the length of the diagonal given the length of half.

- Length of segment varies between 1 and 10.

- 142726 (parallelogram), 142733 (rhombus), 142734 (rectangle), 142735 (square)



  - This set of templates addresses the parallel nature of opposite sides in many quadrilaterals.
  - The question remains unchanged except for the type of shape between the 4 templates.
  - Template is variabilized to question about each individual side randomly.

- 142738 (parallelogram) and 142740 (rhombus)

Given that the following quadrilateral ABCD is a parallelogram:

Which angle of the parallelogram is congruent to angle D

- These 2 templates address opposite angles being congruent in parallelograms and rhombi. I considered doing square and rectangle but decided against because all 4 angles are congruent and that creates ambiguity in the answers.
- No change is made to the question in template 142740, just a different image.

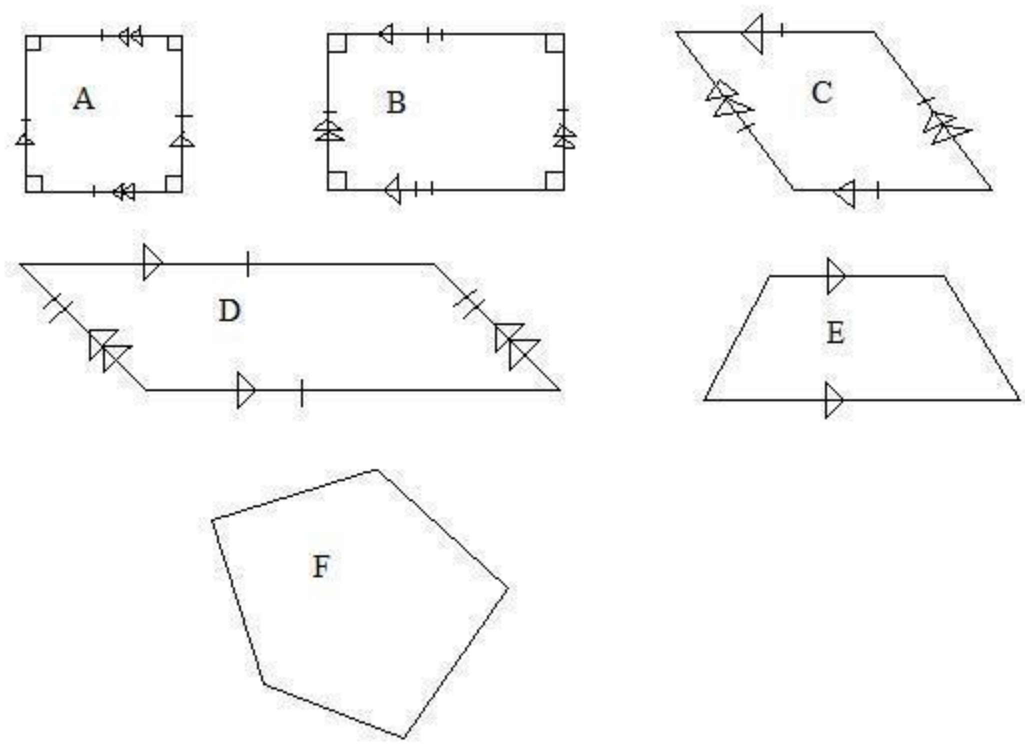
- Template is variabilized to ask about every angle.

Created by: Matthew Carr

Problem Set "Props/Classification of Quadrilaterals Examples" id:[29018]

1) Assistment #143214 "143214 - Which of the foll..."

Which of the following figures are quadrilaterals? (Check all that apply)



Check all that apply:

✓ A
✓ B
✓ C
✓ D
✓ E

✘ F

Hints:

- A quadrilateral is simply a 4-sided shape. There are many kinds of quadrilaterals, including:

Squares
Rectangles
Rhombi
Parallelograms
Trapezoids
Kites

So you should now count the sides of each shape to determine which are quadrilaterals.

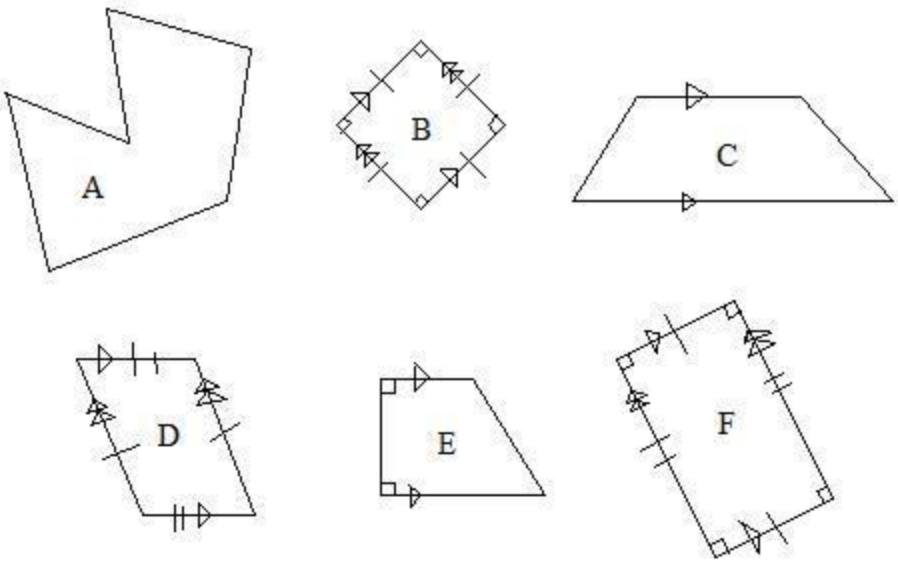
- In the figure above, the following shapes are quadrilaterals.

A (a square)
B (a rectangle)
C (a rhombus)
D (a parallelogram)
E (a trapezoid)

---

2) Assistment #143218 "143218 - Which of the foll..."

Which of the following figures are parallelograms? (Check all that apply)



Check all that apply:

- ✗ A
- ✓ B
- ✗ C
- ✓ D
- ✗ E
- ✓ F

Hints:

- A parallelogram is a shape which has 2 pairs of parallel sides. The other kinds of shapes that are parallelograms are:

Squares

Rectangles

Rhombi

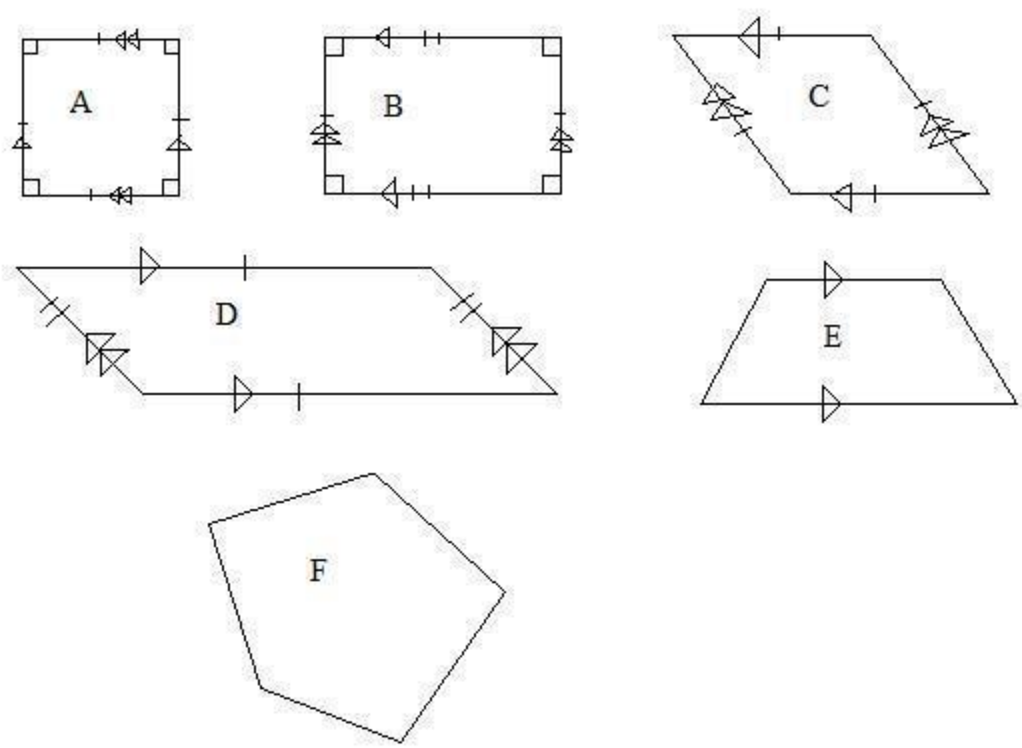
From this, you should be able to choose the shapes which are parallelograms from the figure.

- If you are still unsure, the correct answers are B (a square) D (a parallelogram) and F (a rectangle)

---

3) Assistment #143220 "143220 - Which of the foll..."

Which of the following figures are **not** quadrilaterals? (Check all that apply)



Check all that apply:

- ✗ A
- ✗ B
- ✗ C
- ✗ D
- ✗ E
- ✓ F

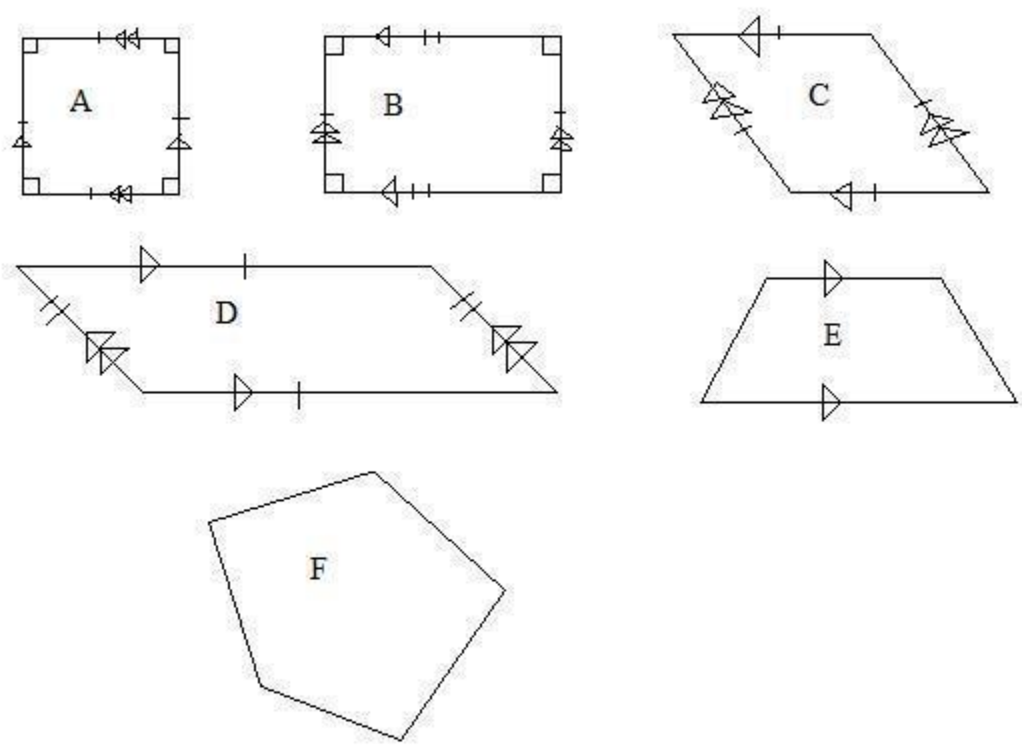
Hints:

- A quadrilateral is a 4-sided figure. So, you should count the sides on each shape and select the ones which do not have 4 sides.
- The only shape in the figure which does not have 4 sides is shape F (this is a pentagon).

---

4) Assistment #143222 "143222 - Which of the foll..."

Which of the following figures are rectangles? (Check all that apply)



Check all that apply:

- ✓ A
- ✓ B
- ✗ C
- ✗ D
- ✗ E
- ✗ F

Hints:

- In this problem you are asked to choose the shapes which are rectangles.
- A rectangle is a shape which has 4 right angles and 2 pairs of parallel sides. The other kinds of shapes that can be called rectangles are:

Squares

From this you should be able to choose all the shapes which are rectangles from the figure.

- If you are still unsure, the correct answers are

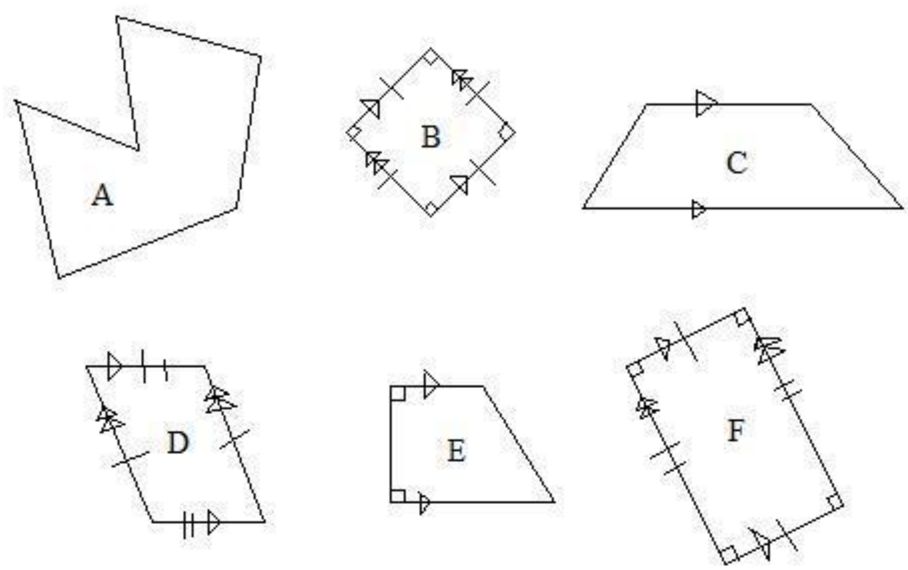
A (a square) and

B (a regular rectangle)

---

5) Assistment #143224 "143224 - Which of the foll..."

Which of the following figures are trapezoids? (Check all that apply)



Check all that apply:

- A
- B
- C
- D
- E
- F

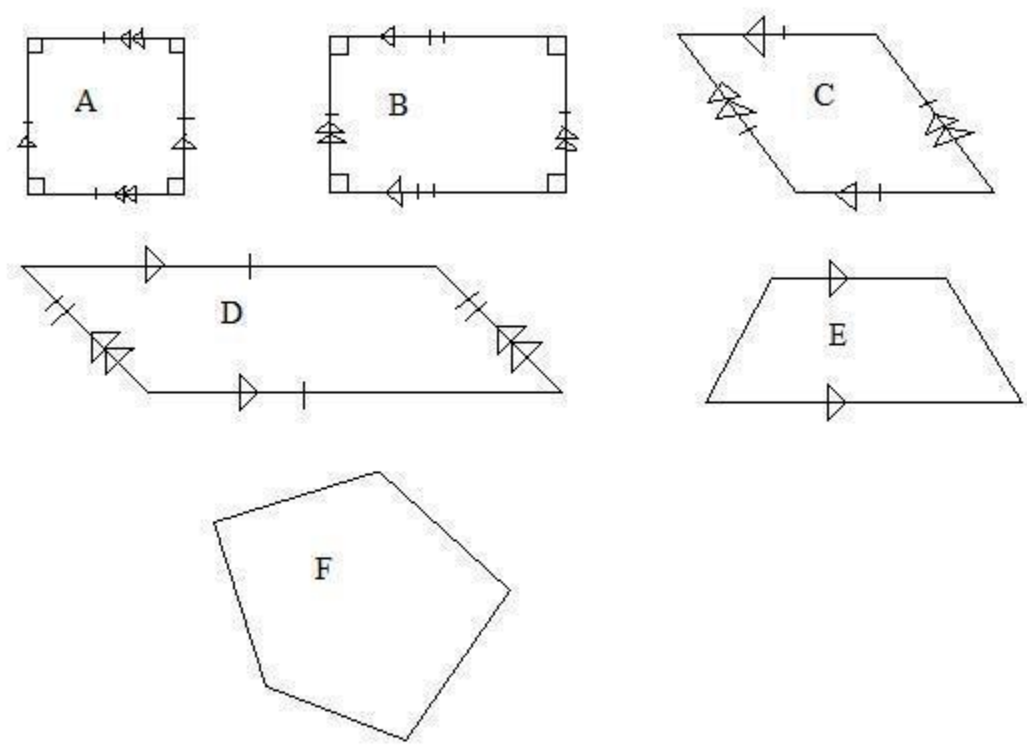
Hints:

- A trapezoid is a very unique quadrilateral that has only 1 pair of parallel sides. No other kinds of shapes can be classified as trapezoids.
- The only trapezoids in the figure above are shapes C and E.

---

6) Assistment #143246 "143246 - Which of the foll..."

Which of the following figures are rhombi? (Check all that apply)



Check all that apply:

✓ A
✗ B
✓ C
✗ D
✗ E
✗ F

Hints:

- In this question you are asked to choose all the shapes which are rhombi.
- A rhombus is a 4-sided figure in which all four sides are of equal length, as well as having 2 sets of parallel sides. The other types of quadrilaterals that are rhombi are:

Squares

From this, you should be able to choose all of the correct figures from above.

- if you are still unsure, the correct answers are:

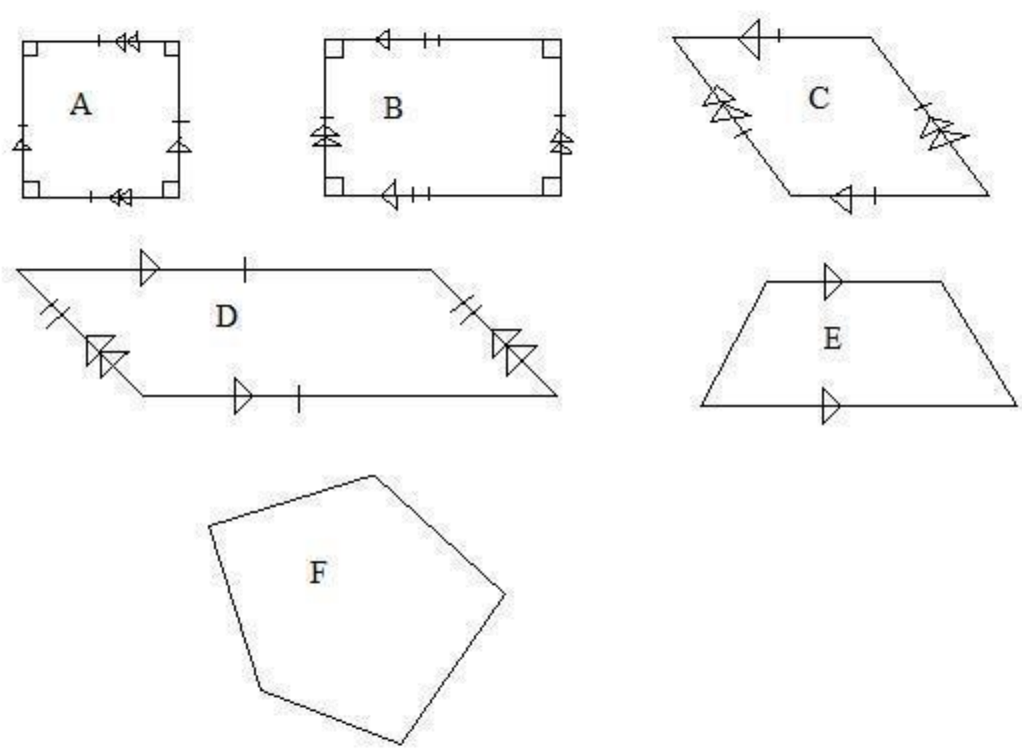
A (a square) and

C (a rhombus)

---

7) Assistment #143280 "143280 - Which of the foll..."

Which of the following figures are squares? (Check all that apply)



Check all that apply:

✓ A
✗ B
✗ C
✗ D
✗ E
✗ F

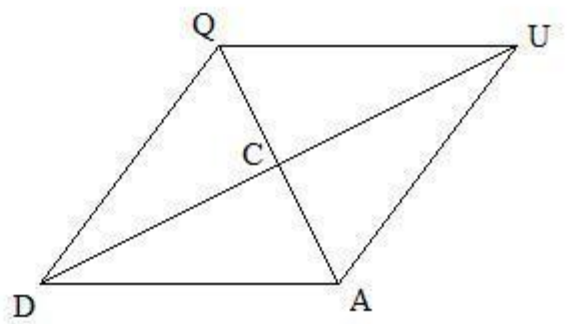
Hints:

- A square is a 4 sides figure which has 4 right angles and all 4 sides are the same length. No other types of shapes are squares.
- The square in the figure above is shape A.

---

8) Assistment #137273 "137273 - If the following ..."

If the following shape is a rhombus:



If the length of the diagonal between points D and U is %v{a} units, what is the length of line segment CD?

Algebra:

✓ %v{a/2}

Hints:

- This problem asks you to find the length of part of one diagonal of a rhombus.

One defining characteristic of a rhombus is that the diagonals **bisect** each other.

- The word bisect means to cut in half. Therefore if you know the length of the whole line DU is%v{a} units,

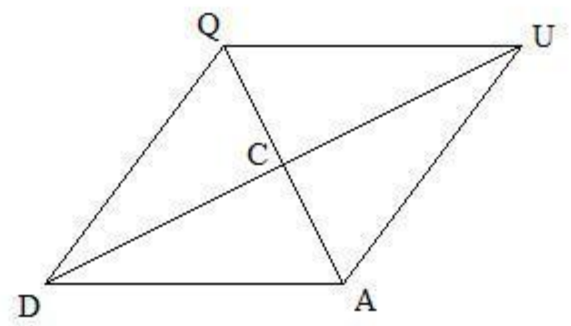
Length of DC = (1/2) * length of DU = %v{a}/2 = %v{a/2}

Therefore the length of segment DC is %v{a/2} units, so type in %v{a/2}.

---

9) Assistment #143292 "143292 - If the following ..."

If the following shape is a rhombus:



If the length of the diagonal between points D and U is 10 units, what is the length of line segment CD?

Algebra:

✓ 5

Hints:

- This problem asks you to find the length of part of one diagonal of a rhombus.

One defining characteristic of a rhombus is that the diagonals **bisect** each other.

- The word bisect means to cut in half. Therefore if you know the length of the whole line DU is10 units,

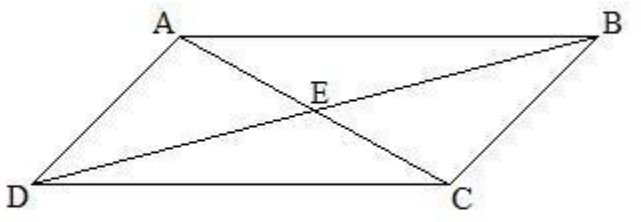
Length of DC = (1/2) * length of DU = 10/2 = 5

Therefore the length of segment DC is 5 units, so type in 5.

---

10) Assistment #140472 "140472 - If the following ..."

If the following shape is a parallelogram:



If the length of the diagonal between points A and C is %v{a} units, what is the length of line segment AE?

Algebra:

✓ %v{a/2}

Hints:

- This problem asks you to find the length of part of one diagonal of a parallelogram.

One characteristic of a parallelogram is that the diagonals **bisect** each other.

- The word bisect means to cut in half. Therefore if you know the length of the whole line AC is%v{a} units,

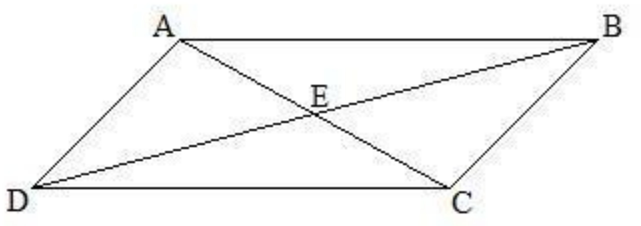
Length of AE = (1/2) * length of AC = %v{a}/2 = %v{a/2}

Therefore the length of segment AE is %v{a/2} units, so type in %v{a/2}.

---

11) Assistment #143248 "143248 - If the following ..."

If the following shape is a parallelogram:



If the length of the diagonal between points A and C is 8 units, what is the length of line segment AE?

Algebra:

✓ 4

Hints:

- This problem asks you to find the length of part of one diagonal of a parallelogram.

One characteristic of a parallelogram is that the diagonals **bisect** each other.

- The word bisect means to cut in half. Therefore if you know the length of the whole line AC is8 units,

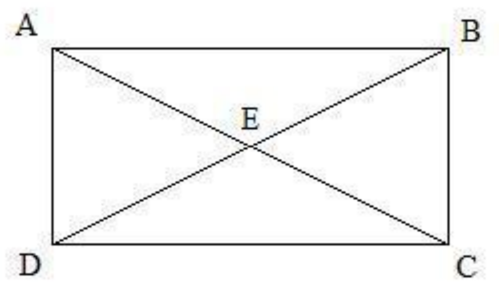
Length of AE = (1/2) * length of AC = 8/2 = 4

Therefore the length of segment AE is 4 units, so type in 4.

---

12) Assistment #140473 "140473 - If the following ..."

If the following shape is a rectangle:



If the length of the diagonal between points B and D is %v{a} units, what is the length of line segment EB?

Algebra:

✓ %v{a/2}

Hints:

- This problem asks you to find the length of part of one diagonal of a rectangle.

One characteristic of a rectangle is that the diagonals **bisect** each other.

- The word bisect means to cut in half. Therefore if you know the length of the whole line BD is%v{a} units,

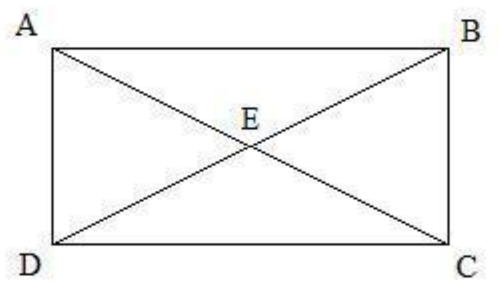
Length of EB = (1/2) * length of EB = %v{a}/2 = %v{a/2}

Therefore the length of segment EB is %v{a/2} units, so type in %v{a/2}.

---

13) Assistment #143269 "143269 - If the following ..."

If the following shape is a rectangle:



If the length of the diagonal between points B and D is 14 units, what is the length of line segment EB?

Algebra:

✓ 7

Hints:

- This problem asks you to find the length of part of one diagonal of a rectangle.

One characteristic of a rectangle is that the diagonals **bisect** each other.

- The word bisect means to cut in half. Therefore if you know the length of the whole line BD is14 units,

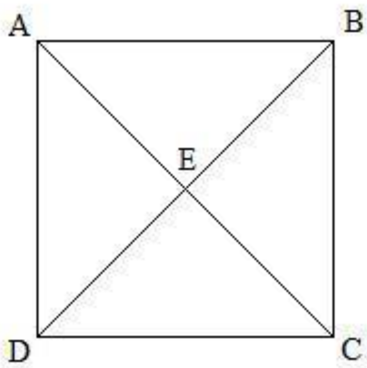
Length of EB = (1/2) * length of EB = 14/2 = 7

Therefore the length of segment EB is 7 units, so type in 7.

---

14) Assistment #140474 "140474 - If the following ..."

If the following shape is a square:



If the length of the line segment EC is %v{a} units, what is the length of diagonal AC?

Algebra:

✓ %v{b}

Hints:

- This problem asks you to find the length one diagonal of a square, knowing the length of one segment.

One characteristic of a square is that the diagonals **bisect** each other.

- The word bisect means to cut in half. Therefore if you know the length of the line segment EC is %v{a} units,

Length of EC = (1/2) * length of AC

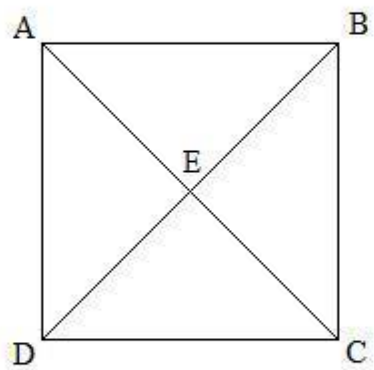
Length of AC = 2 * Length of EC = 2*%v{a} = %v{b}

Therefore the length of diagonal AC = %v{b} units, so type in %v{b}

---

15) Assistment #143306 "143306 - If the following ..."

If the following shape is a square:



If the length of the line segment EC is 2 units, what is the length of diagonal AC?

Algebra:

✓ 4

Hints:

- This problem asks you to find the length one diagonal of a square, knowing the length of one segment.

One characteristic of a square is that the diagonals **bisect** each other.

- The word bisect means to cut in half. Therefore if you know the length of the line segment EC is 2 units,

Length of EC = (1/2) * length of AC

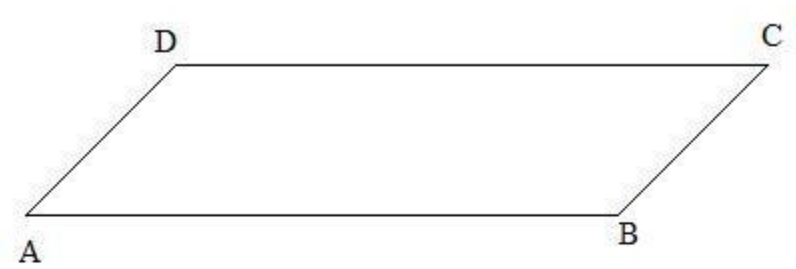
Length of AC = 2 * Length of EC = 2*2 = 4

Therefore the length of diagonal AC = 4 units, so type in 4

---

16) Assistment #142726 "142726 - Given that the fo..."

Given that the following quadrilateral ABCD is a parallelogram:



Which side of the parallelogram is parallel to side %v{a}?

Multiple choice:

- ✗ %v{ans1}
- ✗ %v{ans2}
- ✓ %v{ans3}
- ✗ %v{ans4}

Hints:

- When two lines are parallel, it means that if they were extended forever, they would never cross.

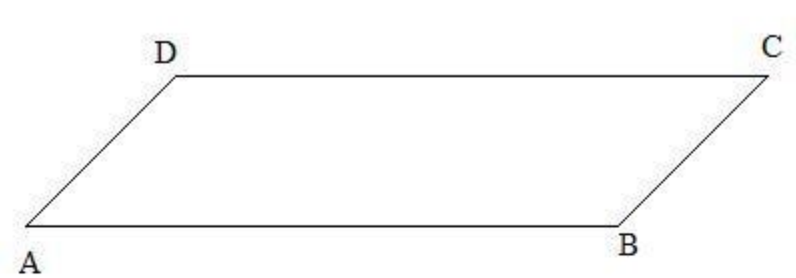
In a parallelogram, the opposite sides are parallel.

- in your problem you are asked to choose which side is parallel to %v{a}, so you should choose the side opposite that one. In this case, the answer is %v{ans3}.

---

17) Assistment #143227 "143227 - Given that the fo..."

Given that the following quadrilateral ABCD is a parallelogram:



Which side of the parallelogram is parallel to side CD?

Multiple choice:

✘ CD
✘ AD
✔ AB
✘ BC

Hints:

- When two lines are parallel, it means that if they were extended forever, they would never cross.

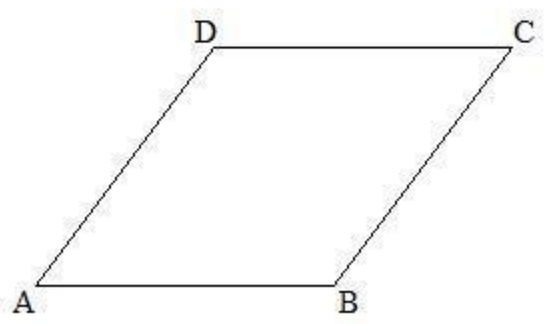
In a parallelogram, the opposite sides are parallel.

- in your problem you are asked to choose which side is parallel to CD, so you should choose the side opposite that one. In this case, the answer is AB.

---

18) Assistment #142733 "142733 - Given that the fo..."

Given that the following quadrilateral ABCD is a rhombus:



Which side of the rhombus is parallel to side %v{a}?

Multiple choice:

✘ %v{ans1}
✘ %v{ans2}
✔ %v{ans3}
✘ %v{ans4}

Hints:

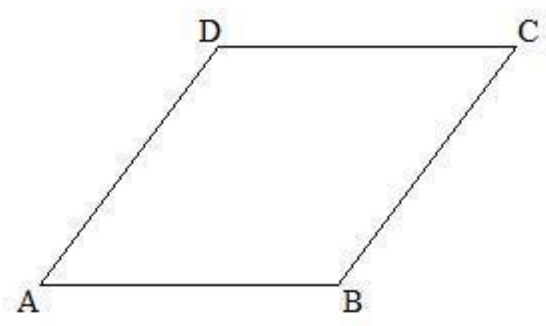
- When two lines are parallel, it means that if they were extended forever, they would never cross.

In a rhombus, the opposite sides are parallel.

- in your problem you are asked to choose which side is parallel to %v{a}, so you should choose the side opposite that one. In this case, the answer is %v{ans3}.

19) Assistment #143262 "143262 - Given that the fo..."

Given that the following quadrilateral ABCD is a rhombus:



Which side of the rhombus is parallel to side AB?

Multiple choice:

- ✘ AB
- ✘ BC
- ✔ CD
- ✘ AD

Hints:

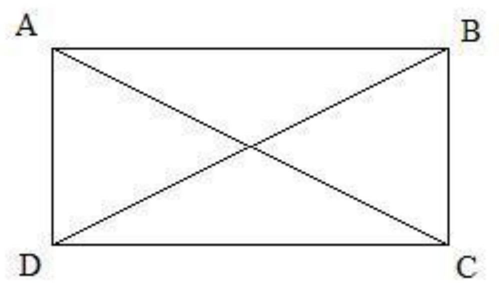
- When two lines are parallel, it means that if they were extended forever, they would never cross.

In a rhombus, the opposite sides are parallel.

- in your problem you are asked to choose which side is parallel to AB, so you should choose the side opposite that one. In this case, the answer is CD.

20) Assistment #142734 "142734 - Given that the fo..."

Given that the following quadrilateral ABCD is a rectangle:



Which side of the rectangle is parallel to side %v{a}?

Multiple choice:

- ✗ %v{ans1}
- ✗ %v{ans2}
- ✓ %v{ans3}
- ✗ %v{ans4}

Hints:

- When two lines are parallel, it means that if they were extended forever, they would never cross.

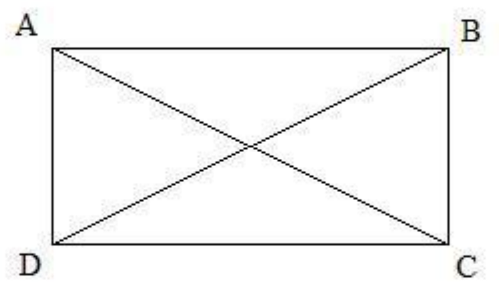
In a rectangle, the opposite sides are parallel.

- in your problem you are asked to choose which side is parallel to %v{a}, so you should choose the side opposite that one. In this case, the answer is %v{ans3}.

---

21) Assistment #143283 "143283 - Given that the fo..."

Given that the following quadrilateral ABCD is a rectangle:



Which side of the rectangle is parallel to side AD?

Multiple choice:

- ✗ AD
- ✗ AB
- ✓ BC
- ✗ CD

Hints:

- When two lines are parallel, it means that if they were extended forever, they would never cross.

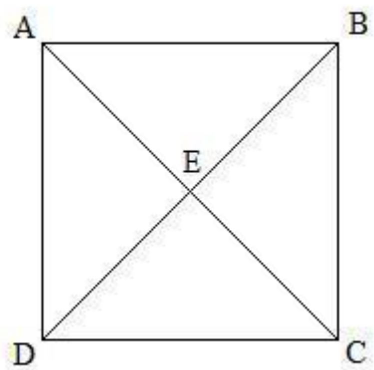
In a rectangle, the opposite sides are parallel.

- in your problem you are asked to choose which side is parallel to AD, so you should choose the side opposite that one. In this case, the answer is BC.

---

22) Assistment #142735 "142735 - Given that the fo..."

Given that the following quadrilateral ABCD is a square:



Which side of the square is parallel to side %v{a}?

Multiple choice:

- ✗ %v{ans1}
- ✗ %v{ans2}
- ✓ %v{ans3}
- ✗ %v{ans4}

Hints:

- When two lines are parallel, it means that if they were extended forever, they would never cross.

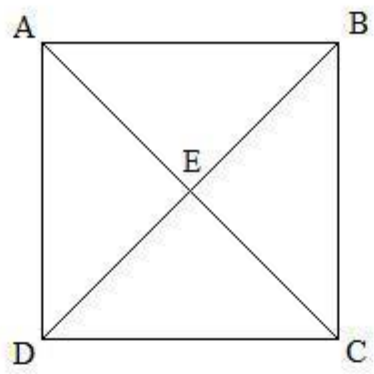
In a square, the opposite sides are parallel.

- in your problem you are asked to choose which side is parallel to %v{a}, so you should choose the side opposite that one. In this case, the answer is %v{ans3}.

---

23) Assistment #143328 "143328 - Given that the fo..."

Given that the following quadrilateral ABCD is a square:



Which side of the square is parallel to side AB?

Multiple choice:

- ✗ AB
- ✗ BC
- ✓ CD
- ✗ AD

Hints:

- When two lines are parallel, it means that if they were extended forever, they would never cross.

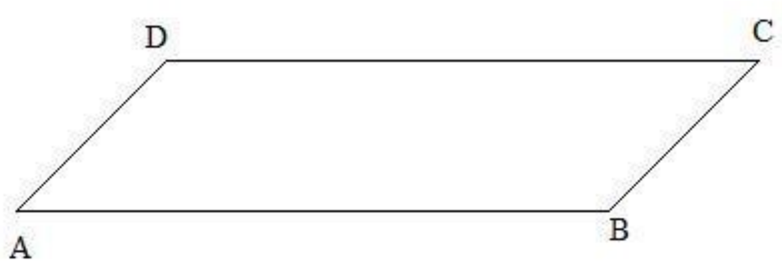
In a square, the opposite sides are parallel.

- in your problem you are asked to choose which side is parallel to AB, so you should choose the side opposite that one. In this case, the answer is CD.

---

24) Assistment #142738 "142738 - Given that the fo..."

Given that the following quadrilateral ABCD is a parallelogram:



Which angle of the parallelogram is congruent to angle %v{a}

Multiple choice:

- ✗ angle %v{ans1}
- ✓ angle %v{ans2}
- ✗ angle %v{ans3}
- ✗ angle %v{ans4}

Hints:

- The word congruent means that two things are the exact same shape and size. Congruent angles have the same measure in degrees.

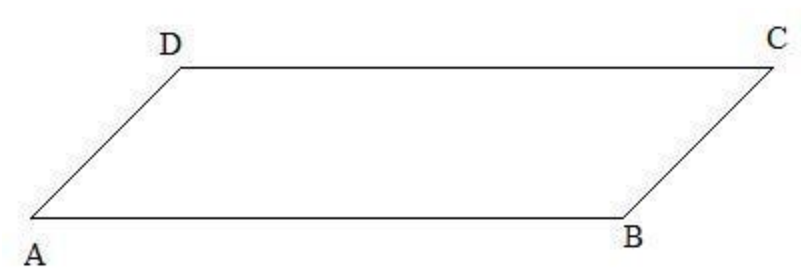
In a parallelogram, the opposite angles are congruent.

- in your problem you are asked to choose which angle is congruent to %v{a}, so you should choose the angle opposite that one. In this case, the answer is %v{ans2}.

---

25) Assistment #143237 "143237 - Given that the fo..."

Given that the following quadrilateral ABCD is a parallelogram:



Which angle of the parallelogram is congruent to angle A

Multiple choice:

- ✗ angle angle B
- ✓ angle angle C
- ✗ angle angle D
- ✗ angle angle A

Hints:

- The word congruent means that two things are the exact same shape and size. Congruent angles have the same measure in degrees.

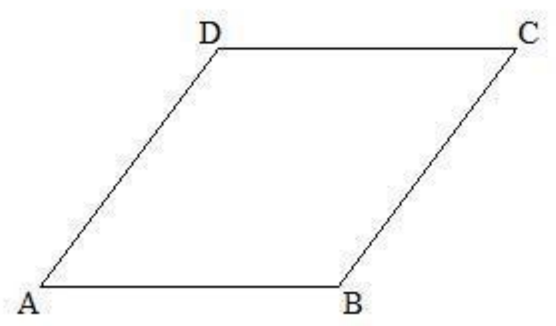
In a parallelogram, the opposite angles are congruent.

- in your problem you are asked to choose which angle is congruent to A, so you should choose the angle opposite that one. In this case, the answer is angle C.

---

26) Assistment #142740 "142740 - Given that the fo..."

Given that the following quadrilateral ABCD is a rhombus:



Which angle of the rhombus is congruent to angle %v{a}

Multiple choice:

- ✗ %v{ans1}
- ✓ %v{ans2}
- ✗ %v{ans3}
- ✗ %v{ans4}

Hints:

- The word congruent means that two things are the exact same shape and size. Congruent angles have the same measure in degrees.

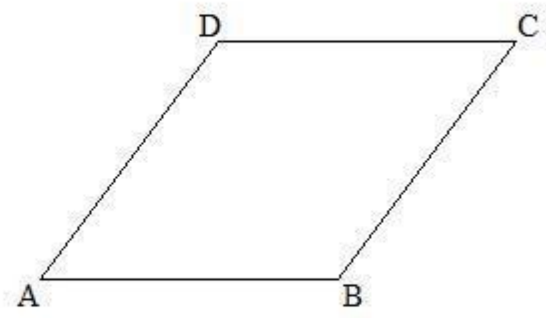
In a rhombus, the opposite angles are congruent.

- in your problem you are asked to choose which angle is congruent to %v{a}, so you should choose the angle opposite that one. In this case, the answer is %v{ans2}.

---

27) Assistment #143319 "143319 - Given that the fo..."

Given that the following quadrilateral ABCD is a rhombus:



Which angle of the rhombus is congruent to angle C

Multiple choice:

- ✘ D
- ✔ A
- ✘ B
- ✘ C

Hints:

- The word congruent means that two things are the exact same shape and size. Congruent angles have the same measure in degrees.

In a rhombus, the opposite angles are congruent.

- in your problem you are asked to choose which angle is congruent to C, so you should choose the angle opposite that one. In this case, the answer is A.

APPENDIX B: Assistments by Ashley Daisley

Assistments templates/ Examples created by Ashley Daisley. This contains a compilation of the assistments created by Ashley Daisley during the ASSISTments Interactive Qualifying Project for the 2010-2011 school year. The format is: documentation of skill, followed by in alternating templates and numerical examples, in order by the template listing in the documentation.

Skill	Class
Composition of Functions + and -	Algebra 1

Mastery Problem Set #14543	Number of Templates 8
Number to Master 3 in-a-row	Number of Attempts 10 First Day, 10 Subsequent Days

Templates

- 106932

You are previewing content. Lvl. 1 Composition of Functions - Adding **(#106932)**

Suppose you have two expressions:

f = $5x^2$+2x+6

y = 6x + 10

Fill in the blank for f + y = ________________

Comment on this question

  - Algebra
  - Answer %v{a}x^2 + %v{b+d}x + %v{c+e}
  - A = 1 to 10; C = 1 to 10; B = 1 to 10; D = 1 to 10; E= 1 to 10
  - 2 Hints

- 20 copies

- 107575

You are previewing content. Lvl. 2 Composition of Functions - Adding **(#107575)**

Suppose you have two expressions:

$f = 6x^2 + 8 + 3x$

$r = 2x + 4x^2 + 2$

Fill in the blank for f + r = ____________________

Comment on this question

- Algebra
- Answer - %v{a+e}x^2 + %v{d+c}x +%v{b+f}
- A = 1 to 10; C = 1 to 10; B = 1 to 10; D = 1 to 10; E= 1 to 10; F=1 to 10; G = 1 to 10
- 2 Hints
- 20 copies

- 107574

You are previewing content. Lvl. 3 Composition of Functions - Adding **(#107574)**

Suppose you have two expressions:

$a = 7x^3+7x^2+1x^4$

$t = 4x^4+9x^3+1x^2+7$

Fill in the blank for a + t = ____________________

Comment on this question

- Algebra
- Answer %v{d+c}x^4+%v{e+a}x^3+%v{f+b}x^2 + %v{g}
- A = 1 to 10; C = 1 to 10; B = 1 to 10; D = 1 to 10; E= 1 to 10 F=1 to 10
- 2 Hints
- 20 copies

- 107584

You are previewing content.	Composition of Functions Adding (Word Problem Lvl. 1) (#107584)

Candace's Bike Wash will wash bikes for 22 dollars on the weekend and 27 dollars on the week day. Every day Candace spends 27 dollars for bike shine and brushes.
Weekend = 22D - 54
Weekday = 27D - 135
Write an expression for the amount of money Candace will make each week.

Comment on this question

- Algebra
- Answer %v{a+b}d - 7*%v{c}
- A = 15 to 35; B = 25 to 60; C = 20 to 30; D = C*2 E= C*5
- 2 Hints
- 10 copies

- # 107573

You are previewing content.	Composition of Functions Adding (Word Problem Lvl. 2) (#107573)

Rollercoaster Rodeo was open from May to August last year. In May and June, tickets were $43 per adult and $38 per child. In July and August, tickets were $57 per adult and $42 per child. The park made $220 for food sales in May and June and $297 for food sales in July and August.

May and June = 43A+38C+220
July and August = 57A+42C+297

Write an expression for the amount of money Rollercoaster Rodeo made from food and ticket sales last year.

Comment on this question

- Algebra
- Answer %v{c+a}A+%v{d+b}C+%v{f+e}
- A = 30 to 80; B = 20 to 40; C = 40 to 90; D = 30 to 50; E= 150 to 350 F=250 to 650
- 2 Hints

- 10 copies

- # 107017

ou are previewing content. Composition of Funtions - Adding Word Problem **(#107017)**

Brian has a rule for calculating how many crunches he does on weekdays (WD) and how many crunches he does on weekends (WE). His rules depend on the number of bags of potato chips (x) he eats.

WD = $7x^2 + 6x + 7$
WE = $5x + 5$

Write an equation for the number of crunches he does in a week.
Fill in the blank ONE WEEK = ______________________________

Comment on this question

  - Algebra
  - Answer %v{a}x^2+%v{b+d}x+%v{e+c}
  - A = 1 to 10; C = 1 to 10; B = 1 to 10; D = 1 to 10; E= 1 to 10
  - 2 Hints
  - 10 copies

- # 114867

You are previewing content. 114867 Lvl. 1 Composition of Functions - Subtracting **(#114867)**

Suppose you have two expressions:
c = $4x^2 + 10x+10$
s = $5x + 2$
Fill in the blank for c - s = ____________________

Comment on this question

  - Algebra
  - Answer %v{a}x^2+%v{b-d}x+%v{c-e}
  - A = 1 to 10; C = 1 to 10; B = 1 to 10; D = 1 to 10; E= 1 to 10
  - 2 Hints

- 20 copies

- 114868

You are previewing content. Lvl. 2 Composition of Functions - Subtracting **(#114868)**

Suppose you have two expressions:

$g = 9x^2 + 6 + 5x$

$r = 4x + 2x^2 + 10$

Fill in the blank for $g - r$ = ____________________

Comment on this question

- Algebra
- Answer %v{a-e}x^2 + %v{c-d}x +%v{b-f}
- A = 1 to 10; C = 1 to 10; B = 1 to 10; D = 1 to 10; E= 1 to 10 F=1 to 10
- 2 Hints
- 20 copies

42) Assistment #106932 "106932 - Lvl. 1 Composition of Functions - Adding "

Suppose you have two expressions:
%v{letter1} = %v{a}x^2+%v{b}x+%v{c}
%v{letter2} = %v{d}x + %v{e}
Fill in the blank for %v{letter1} + **%v{letter2}** = ___________________

Algebra:

✓ %v{a}x^2+%v{b+d}x+%v{c+e}

Hints:

- To find the answer we only need to add the two expressions together.

%v{letter1} + %v{letter2} = (%v{a}x^2+%v{b}x+%v{c}) + (%v{d}x + %v{e})

- Now we need to combine like terms

%v{letter1} + %v{letter2} = %v{a}x^2 + (%v{b}x + %v{d}x) + (%v{c} + %v{e})
%v{letter1} + %v{letter2} = %v{a}x^2+%v{b+d}x+%v{c+e}

Type in %v{a}x^2+%v{b+d}x+%v{c+e}.

---

1) Assistment #115411 "115411 - 106932 - Lvl. 1 Composition of Functions - Adding "

Suppose you have two expressions:
a = $4x^2+8x+2$
r = 4x + 6
Fill in the blank for a + **r** = ___________________

Algebra:

4x^2+12x+8

Hints:

- To find the answer we only need to add the two expressions together.

a + r = (4x^2+8x+2) + (4x + 6)

- Now we need to combine like terms

a + r = 4x^2 + (8x + 4x) + (2 + 6)
a + r = 4x^2+12x+8

Type in 4x^2+12x+8.

---

2) Assistment #107575 "107575 - Lvl. 2 Composition of Functions - Adding "

Suppose you have two expressions:
%v{letter1} = %v{a}x^2 + %v{b} +%v{c}x
%v{letter2} = %v{d}x + %v{e}x^2 + %v{f}
Fill in the blank for %v{letter1} + %v{letter2} = ___________________

Algebra:

%v{a+e}x^2 + %v{d+c}x +%v{b+f}

Hints:

- To find the answer we only need to add the two expressions together.

%v{letter1} + %v{letter2} = (%v{a}x^2+%v{b}+%v{c}x) + (%v{d}x + %v{e}x^2 + %v{f})

- Now we need to combine like terms

%v{letter1}+ %v{letter2} = (%v{a}x^2+ %v{e}x^2) + (%v{b}+%v{f}) + (%v{c}x + %v{d}x)
%v{letter1} + %v{letter2} = %v{a+e}x^2+ %v{b+f}+ %v{c+d}x

Type in %v{a+e}x^2+ %v{b+f}+ %v{c+d}x.

---

3) Assistment #115391 "115391 - 107575 - Lvl. 2 Composition of Functions - Adding "

Suppose you have two expressions:
i = $1x^2$ + 8 +9x
o = 8x + $10x^2$ + 5
Fill in the blank for i + o = ___________________

Algebra:

✓ 11x^2 + 17x +13

Hints:

- To find the answer we only need to add the two expressions together.

i + o = ($1x^2$+8+9x) + (8x + $10x^2$ + 5)

- Now we need to combine like terms

i+ o = ($1x^2$+ $10x^2$) + (8+5) + (9x + 8x)
i + o = $11x^2$+ 13+ 17x

Type in 11x^2+ 13+ 17x.

---

4) Assistment #107574 "107574 - Lvl. 3 Composition of Functions - Adding "

Suppose you have two expressions:
%v{letter1} = %v{a}x^3+%v{b}x^2+%v{c}x^4
%v{letter2} = %v{d}x^4+%v{e}x^3+%v{f}x^2+ %v{g}
Fill in the blank for %v{letter1} + %v{letter2} = ___________________

Algebra:

✓ %v{d+c}x^4+%v{e+a}x^3+%v{f+b}x^2 + %v{g}

Hints:

- To find the answer we only need to add the two expressions together.

%v{letter1} + %v{letter2} = (%v{a}x^3 + %v{b}x^2 + %v{c}x^4) + (%v{d}x^4 + %v{e}x^3 + %v{f}x^2 + %v{g})

- Now we need to combine like terms

%v{letter1} + %v{letter2} = (%v{c}x^4 + %v{d}x^4) + (%v{a}x^3 + %v{e}x^3) + (%v{b}x^2 +%v{f}x^2) + %v{g}
%v{letter1} + %v{letter2} = %v{c+d}x^4 + %v{a+e}x^3 + %v{b+f}x^2 + %v{g}
Type in %v{c+d}x^4 + %v{a+e}x^3 + %v{b+f}x^2 + %v{g}.

---

5) Assistment #115331 "115331 - 107574 - Lvl. 3 Composition of Functions - Adding "

Suppose you have two expressions:
b = $5x^3+6x^2+8x^4$
p = $3x^4+2x^3+8x^2+ 6$
Fill in the blank for b + p = ___________________

Algebra:

11x^4+7x^3+14x^2 + 6

Hints:

- To find the answer we only need to add the two expressions together.

$b + p = (5x^3 + 6x^2 + 8x^4) + (3x^4 + 2x^3 + 8x^2 + 6)$

- Now we need to combine like terms

$b + p = (8x^4 + 3x^4) + (5x^3 + 2x^3) + (6x^2 + 8x^2) + 6$

$b + p = 11x^4 + 7x^3 + 14x^2 + 6$

Type in 11x^4 + 7x^3 + 14x^2 + 6.

---

6) Assistment #107584 "107584 - Composition of Functions Adding (Word Problem Lvl. 1)"

%v{name}'s %v{type} Wash will wash %v{typelower} for %v{a} dollars on the weekend and %v{b} dollars on the week day. Every day %v{name} spends %v{c} dollars for %v{supplies} and %v{suppliestwo}.

Weekend = %v{a}D - %v{d}

Weekday = %v{b}D - %v{e}

Write an expression for the amount of money %v{name} will make each week.

Algebra:

%v{a+b}d - 7*%v{c}

Hints:

- **Week = Weekend + Weekday**

The expressions for the amount of money %v{name} makes on weekends and weekdays has been given.

Weekend = %v{a}D - 2*%v{c}

Weekday = %v{b}D - 5*%v{c}

- So, to solve this problem all we have to do is add the two expressions together.

Week = **Weekend** + **Weekday**
Week = **(%v{a}D - 2*%v{c})** + **(%v{b}D - 5*%v{c})**
Week = **%v{a+b}D-%v{7*c}**

Type in **%v{a+b}D-%v{7*c}.**

---

7) Assistment #115451 "115451 - Composition of Functions Adding (Word Problem Lvl. 1)"

Dina's Boat Wash will wash boats for 19 dollars on the weekend and 33 dollars on the week day. Every day Dina spends 20 dollars for boat brushes and buckets.
Weekend = 19D - 40
Weekday = 33D - 100
Write an expression for the amount of money Dina will make each week.

Algebra:

✓ 52d - 7*20

Hints:

- **Week** = **Weekend** + **Weekday**

The expressions for the amount of money Dina makes on weekends and weekdays has been given.
Weekend = **19D - 2*20**
Weekday = **33D - 5*20**

- So, to solve this problem all we have to do is add the two expressions together.

Week = **Weekend** + **Weekday**
Week = **(19D - 2*20)** + **(33D - 5*20)**
Week = **52D-140**

Type in **52D-140.**

---

8) Assistment #107573 "107573 - Composition of Functions Adding (Word Problem Lvl. 2)"

%v{name} was open from May to August last year. In May and June, tickets were $%v{a} per adult and $%v{b} per child. In July and August, tickets were $%v{c} per adult and $%v{d} per child. The park made $%v{e} for food sales in May and June and $%v{f} for food sales in July and August.

May and June = %v{a}A+%v{b}C+%v{e}
July and August = %v{c}A+%v{d}C+%v{f}

Write an expression for the amount of money %v{name} made from food and ticket sales last year.

Algebra:

✓ %v{c+a}A+%v{d+b}C+%v{f+e}

Hints:

- **Year = May and June + July and August**

The expressions for the money made in May and June and July and August have all ready been given.
May and June = %v{a}A+%v{b}C+%v{e}
July and August = %v{c}A+%v{d}C+%v{f}

- So to solve this problem, all we have to do is add the two expressions together.

Year = May and June + July and August
%v{a+c}A + %v{b+d}C + %v{e+f} = %v{a}A+%v{b}C+%v{e} + %v{c}A+%v{d}C+%v{f}
Type in %v{a+c}A + %v{b+d}C + %v{e+f}.

---

9) Assistment #115441 "115441 - 107573 - Composition of Functions Adding (Word Problem Lvl. 2)"

The State Fair was open from May to August last year. In May and June, tickets were $37 per adult and $23 per child. In July and August, tickets were $77 per adult and $35 per child. The park made $345 for food sales in May and June and $449 for food sales in July and August.

May and June = 37A+23C+345
July and August = 77A+35C+449

Write an expression for the amount of money Get Soaked Water Park made from food and ticket sales last year.

Algebra:

✓ 114A+58C+794

Hints:

- **Year** = **May and June** + **July and August**

The expressions for the money made in May and June and July and August have all ready been given.

May and June = **37A+23C+345**

July and August = **77A+35C+449**

- So to solve this problem, all we have to do is add the two expressions together.

Year = **May and June** + **July and August**

114A + 58C + 794 = **37A+23C+345** + **77A+35C+449**

Type in 114A + 58C + 794.

---

10) Assistment #107017 "107017 - Composition of Funtions - Adding Word Problem"

%v{name} has a rule for calculating how many %v{exercise} %v{she} does on weekdays (WD) and how many %v{exercise} %v{she} does on weekends (WE). %v{her} rules depend on the number of %v{item} (x) %v{she} eats.

WD = %v{a}x^2 + %v{b}x + %v{c}
WE = %v{d}x + %v{e}

Write an equation for the number of %v{exercise} %v{she} does in a week.
Fill in the blank ONE WEEK = ____________________________

Algebra:

✓ %v{a}x^2+%v{b+d}x+%v{e+c}

Hints:

- **One Week = WD + WE**

Weekday (WD) = %v{a}x^2 + %v{b}x + %v{c}
Weekend (WE) = %v{d}x + %v{e}

- To solve this problem we need to add the two functions together.

Weekday (WD) = %v{a}x^2 + %v{b}x + %v{c}
Weekend (WE) = %v{d}x + %v{e}

To do this we must combine like terms.

WD + WE = %v{a}x^2 + (%v{b}x + %v{d}x) + (%v{c} + %v{e})
One Week = %v{a}x^2 + %v{b+d}x + %v{c+e}

Type in %v{a}x^2+%v{b+d}x+%v{c+e}.

---

11) Assistment #115431 "115431 - 107017 - Composition of Funtions - Adding Word Problem"

Betty has a rule for calculating how many crunches she does on weekdays (WD) and how many crunches she does on weekends (WE). Her rules depend on the number of slices of pizza (x) she eats.

WD = $10x^2 + 8x + 4$
WE = $6x + 5$

Write an equation for the number of crunches she does in a week.
Fill in the blank ONE WEEK = ____________________________

Algebra:

✓ 10x^2+14x+9

Hints:

- **One Week = WD + WE**

Weekday (WD) = $10x^2 + 8x + 4$
Weekend (WE) = $6x + 5$

- To solve this problem we need to add the two functions together.

Weekday (WD) = $10x^2 + 8x + 4$
Weekend (WE) = $6x + 5$

To do this we must combine like terms.

WD + WE = $10x^2 + (8x + 6x) + (4 + 5)$
One Week = $10x^2 + 14x + 9$

Type in 10x^2+14x+9.

---

12) Assistment #114867 "114867 - 114867 Lvl. 1 Composition of Functions - Subtracting"

Suppose you have two expressions:
%v{letter1} = %v{a}x^2 + %v{b}x+%v{c}
%v{letter2} = %v{d}x + %v{e}
Fill in the blank for %v{letter1} - **%v{letter2}** = ___________________

Algebra:

✓ %v{a}x^2+%v{b-d}x+%v{c-e}

Hints:

- To find the answer we only need to subtract %v{letter2} from %v{letter1}.

%v{letter1} + %v{letter2} = (%v{a}x^2+%v{b}x+%v{c}) - (%v{d}x + %v{e})

- Now we need to combine like terms

%v{letter1} - %v{letter2} = %v{a}x^2 + (%v{b}x - %v{d}x) + (%v{c} - %v{e})

%v{letter1} - %v{letter2} = %v{a}x^2+%v{b-d}x+%v{c-e}

Type in %v{a}x^2+%v{b-d}x+%v{c-e}.

---

13) Assistment #115351 "115351 - 114867 Lvl. 1 Composition of Functions - Subtracting"

Suppose you have two expressions:

l = $6x^2 + 9x+8$

z = $7x + 3$

Fill in the blank for l - z = ___________________

Algebra:

✓ 6x^2+2x+5

Hints:

- To find the answer we only need to subtract z from l.

l + z = ($6x^2$+9x+8) - (7x + 3)

- Now we need to combine like terms

l - z = $6x^2$ + (9x - 7x) + (8 - 3)

l - z = $6x^2$+2x+5

Type in 6x^2+2x+5.

---

14) Assistment #114868 "114868 - Lvl. 2 Composition of Functions - Subtracting"

Suppose you have two expressions:
%v{letter1} = %v{a}x^2 + %v{b} +%v{c}x
%v{letter2} = %v{d}x + %v{e}x^2 + %v{f}
Fill in the blank for %v{letter1} - %v{letter2} = ___________________

Algebra:

✓ %v{a-e}x^2 + %v{c-d}x +%v{b-f}

Hints:

- To find the answer we only need to subtract %v{letter2} from %v{letter1}.

%v{letter1} + %v{letter2} = (%v{a}x^2+%v{b}+%v{c}x) - (%v{d}x + %v{e}x^2 + %v{f})

- Now we need to combine like terms

%v{letter1}+ %v{letter2} = (%v{a}x^2 - %v{e}x^2) + (%v{b} - %v{f}) + (%v{c}x - %v{d}x)
%v{letter1} + %v{letter2} = %v{a-e}x^2+ %v{b-f}+ %v{c-d}x

Type in %v{a-e}x^2+ %v{b-f}+ %v{c-d}x.

---

15) Assistment #115371 "115371 - Lvl. 2 Composition of Functions - Subtracting"

Suppose you have two expressions:
d = 5x^2 + 2 +4x

Algebra Standard

$u = 5x + 7x^2 + 6$

Fill in the blank for d - u = ___________________

Algebra:

✓ -2x^2 + -1x +-4

Hints:

- To find the answer we only need to subtract u from d.

$d + u = (5x^2+2+4x) - (5x + 7x^2 + 6)$

- Now we need to combine like terms

$d + u = (5x^2 - 7x^2) + (2 - 6) + (4x - 5x)$

$d + u = -2x^2 + -4 + -1x$

Type in -2x^2+ -4+ -1x.

Algebra Standard

Skill	Class
Composition of Functions Substitution	Algebra 1

Mastery Problem Set #15296	Number of Templates 5
Number to Master 3 in-a-row	Number of Attempts 10 First Day, 10 Subsequent Days

Templates

- 114864

You are previewing content. Composition of Functions - Substitution (nothing squared) (#114864)

Suppose you have:
c = 14 + 3n
n = 4x
What is c in terms of x?

Comment on this question

  - Algebra
  - Answer %v{a}+%v{b*c}x
  - A = 1 to 15; B = 2 to 5; C = 2 to 5;
  - 2 Hints
  - 24 copies

- 107585

Algebra Standard

You are previewing content. Composition of Functions - Substitution (x squared) **(#107585)**

Suppose you have:
$s = 14 + 4v$
$v = 4x + 4x^2$
What is s in terms of x?

Comment on this question

- Algebra
- Answer - %v{a}+%v{b*c}x+%v{b*d}x^2
- A = 1 to 15; B = 2 to 5; C = 2 to 5; D = 2 to 5
- 2 Hints
- 24 copies

• 114863

You are previewing content. Composition of Functions - Substitution (Solve an Equation) **(#114863)**

Betty bought a computer game with a $87 gift card. The computer game was $x off and the sales tax added $4 to the cost (C). The original price of the computer game was $35.

C = (35 - x) + 4
Remaining money on gift card = 87 - C

Determine how much money Betty has left on the gift card in terms of x.

Comment on this question

- Algebra
- Answer %v{a-d-c}+x
- A = 1 to 51; C = 2 to 5; D = 20 to 60
- 2 Hints
- 24 copies

• 114866

You are previewing content. Composition of Functions - Substitution (x squared subtraction) **(#114866)**

Suppose you have:
$u = 3v + 8$
$v = 4x - 3x^2$
What is u in terms of x?

Comment on this question

Algebra Standard

- Algebra
- Answer %v{a}+%v{b*c}x-%v{b*d}x^2
- A = 1 to 15; B = 2 to 5; C = 2 to 5; D = 2 to 5
- 2 Hints
- 24 copies

• 114865

You are previewing content. Composition of Functions - Substitution (nothing squared subtraction) **(#114865)**

Suppose you have:
y = 1 - 3j
j = 4x
What is y in terms of x?

Comment on this question

- Algebra
- Answer %v{a}-%v{b*c}x
- A = 1 to 15; B = 2 to 5; C = 2 to 5
- 2 Hints
- 24 copies

Ashley Daisley

Algebra Standard

16) Assistment #114864 "114864 - Composition of Functions - Substitution (nothing squared)"

Suppose you have:
%v{alpha1} = %v{a} + %v{b}%v{alpha2}
%v{alpha2} = %v{c}x
What is %v{alpha1} in terms of x?

Algebra:

%v{a}+%v{b*c}x

Hints:

- In order to find %v{alpha1} in terms of x, we have to replace the %v{alpha2} that is in the %v{alpha1} function with the %v{alpha2} function.

%v{alpha1} = %v{a} + %v{b}%v{alpha2}   <--- In terms of %v{alpha2}
%v{alpha2} = %v{c}x   <--- In terms of x

We are doing this because the **%v{alpha2} function** is in terms of x and can be substituted for**%v{alpha2}** in the **%v{alpha1} function**.

- So we have,

%v{alpha1} = %v{a} + %v{b}%v{alpha2}
%v{alpha1} = %v{a} + %v{b}(%v{c}x)
%v{alpha1} = %v{a} + %v{b*c}x

Type in %v{a} + %v{b*c}x.

---

17) Assistment #117982 "117982 - Composition of Functions - Substitution (nothing squared)"

Suppose you have:
s = 5 + 2j
j = 3x

What is s in terms of x?

Algebra:

5+6x

Hints:

- In order to find s in terms of x, we have to replace the j that is in the s function with the j function.

$s = 5 + 2j$ <--- In terms of j
$j = 3x$ <--- In terms of x

We are doing this because the **j function** is in terms of x and can be substituted for **j** in the **s function**.

- So we have,

$s = 5 + 2j$
$s = 5 + 2(3x)$
$s = 5 + 6x$

Type in 5 + 6x.

---

18) Assistment #107885 "107885 - Study Link 3-1 #1b special case 2"

Study Link 3-1 #1b special case 2

Ungraded open response:

---

19) Assistment #117954 "117954 - 107585 - Composition of Functions - Substitution (x squared)"

Suppose you have:
$s = 12 + 3n$

$n = 3x + 4x^2$
What is s in terms of x?

Algebra:

✓ 12+9x+12x^2

Hints:

- In order to find s in terms of x, we have to replace the n that is in the s function with the n function.

s = 3n + 12 <--- In terms of n
n = 3x + 4x² <--- In terms of x

We are doing this because the **n function** is in terms of x and can be substituted for **n** in the **s function**.

- So we have,

s =3n + 12
s = 3(3x + 4x²) + 12
s = 9x + 12x² + 12

Type in 9x + 12x^2 + 12.

---

20) Assistment #114863 "114863 - Composition of Functions - Substitution (Solve an Equation)"

%v{name} bought a %v{item} with a $%v{a} gift card. The %v{item} was $x off and the sales tax added $%v{c} to the cost (C). The original price of the %v{item} was $%v{d}.

C = (%v{d} - x) + %v{c}
Remaining money on gift card = %v{a} - C

Determine how much money %v{name} has left on the gift card in terms of x.

Algebra:

%v{a-d-c}+x

Hints:

- In order to determine how much money %v{name} has left on the gift card in terms of x, we have to substitute the C function with the C variable in the function for the remaining money on the gift certificate.

C = (%v{d} - x) + %v{c} **<---- this function is in terms of x**

Remaining money on gift card = %v{a} - C <---- this function is in terms of C

- So we have,

Remaining money on gift card = %v{a} - C
Remaining money on gift card = %v{a} - (%v{d} - x + %v{c})
Remaining money on gift card = %v{a} - (%v{d+c} - x)
Remaining money on gift card = %v{a} - %v{d+c} + x
Remaining money on gift card = %v{a-d-c} + x
Type in %v{a-d-c} + x.

---

21) Assistment #117958 "117958 - Composition of Functions - Substitution (Solve an Equation)"

Brian bought a lamp with a $58 gift card. The lamp was $x off and the sales tax added $3 to the cost (C). The original price of the lamp was $32.

C = (32 - x) + 3
Remaining money on gift card = 58 - C

Determine how much money Brian has left on the gift card in terms of x.

Algebra:

23+x

Hints:

- In order to determine how much money Brian has left on the gift card in terms of x, we have to substitute the C function with the C variable in the function for the remaining money on the gift certificate.

C = (32 - x) + 3 **<---- this function is in terms of x**

Remaining money on gift card = 58 - C **<---- this function is in terms of C**

- So we have,

Remaining money on gift card = 58 - C
Remaining money on gift card = 58 - (32 - x + 3)
Remaining money on gift card = **58** - **(35 - x)**
Remaining money on gift card = **58** - **35 + x**
Remaining money on gift card = 23 + x
Type in 23 + x.

---

22) Assistment #114866 "114866 - Composition of Functions - Substitution (x squared subtraction)"

Suppose you have:
%v{alpha1} = %v{b}%v{alpha2} + %v{a}
%v{alpha2} = %v{c}x - %v{d}x^2
What is %v{alpha1} in terms of x?

Algebra:

✓ %v{a}+%v{b*c}x-%v{b*d}x^2

Hints:

- In order to find %v{alpha1} in terms of x, we have to replace the %v{alpha2} that is in the %v{alpha1} function with the %v{alpha2} function.

%v{alpha1} = %v{b}%v{alpha2} + %v{a} **<--- In terms of %v{alpha2}**
%v{alpha2} = %v{c}x - %v{d}x^2 **<--- In terms of x**

We are doing this because the **%v{alpha2} function** is in terms of x and can be substituted for**%v{alpha2}** in the **%v{alpha1} function**.

- So we have,

%v{alpha1} =%v{b}%v{alpha2} + %v{a
%v{alpha1} = %v{b}(%v{c}x - %v{d}x^2) + %v{a}
%v{alpha1} = %v{b*c}x - %v{b*d}x^2 + %v{a}

Type in %v{b*c}x - %v{b*d}x^2 + %v{a}.

---

23) Assistment #118032 "118032 - 114866 - Composition of Functions - Substitution (x squared subtraction)"

Suppose you have:
g = 3t + 11
t = 2x - $2x^2$
What is g in terms of x?

Algebra:

✓ 11+6x-6x^2

Hints:

- In order to find g in terms of x, we have to replace the t that is in the g function with the t function.

g = 3t + 11 <--- In terms of t
t = 2x - $2x^2$ <--- In terms of x

We are doing this because the **t function** is in terms of x and can be substituted for **t** in the **g function**.

- So we have,

g =3t + %v{a
g = 3(2x - $2x^2$) + 11
g = 6x - $6x^2$ + 11

Type in 6x - 6x^2 + 11.

---

24) Assistment #114865 "114865 - Composition of Functions - Substitution (nothing squared subtraction)"

Suppose you have:
%v{alpha1} = %v{a} - %v{b}%v{alpha2}
%v{alpha2} = %v{c}x
What is %v{alpha1} in terms of x?

Algebra:

✓ %v{a}-%v{b*c}x

Hints:

- In order to find %v{alpha1} in terms of x, we have to replace the %v{alpha2} that is in the %v{alpha1} function with the %v{alpha2} function.

%v{alpha1} = %v{a} - %v{b}%v{alpha2} **<--- In terms of %v{alpha2}**
%v{alpha2} = %v{c}x **<--- In terms of x**

We are doing this because the **%v{alpha2} function** is in terms of x and can be substituted for**%v{alpha2}** in the **%v{alpha1} function**.

- So we have,

%v{alpha1} = %v{a} - %v{b}%v{alpha2}
%v{alpha1} = %v{a} - %v{b}(%v{c}x)
%v{alpha1} = %v{a} - %v{b*c}x
Type in %v{a} - %v{b*c}x.

---

25) Assistment #118007 "118007 - 114865 - Composition of Functions - Substitution (nothing squared subtraction)"

Algebra Standard

Suppose you have:
w = 14 - 2v
v = 2x
What is w in terms of x?

Algebra:

14-4x

Hints:

- In order to find w in terms of x, we have to replace the v that is in the w function with the v function.

w = 14 - 2v <--- In terms of v
v = 2x <--- In terms of x

We are doing this because the **v function** is in terms of x and can be substituted for **v** in the **w function**.

- So we have,

w = 14 - 2v
w = 14 - 2(2x)
w = 14 - 4x
Type in 14 - 4x.

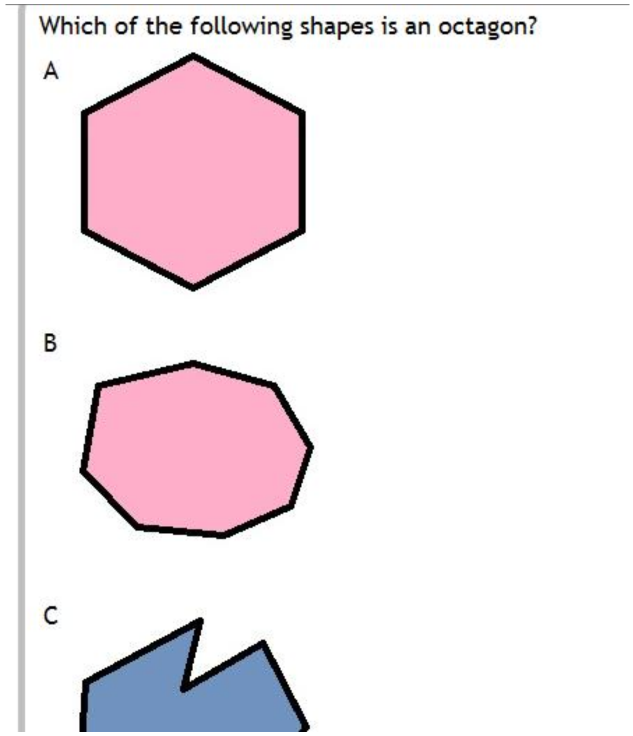
Skill	Class
Properties and Classification of Polygons With 5 Or	Geometry

More Sides (What is a Polygon?) THE SKILL BUILDING SET	

Mastery Problem Set #24173	Number of Templates 8
Number to Master 3 in-a-row	Number of Attempts 10 First Day, 10 Subsequent Days

Templates

140501 (Octagon)



- 15 copies
- Classifying/Naming polygons
  - 3 additional templates (139385 Pentagon, 140498 Hexagon and 140499 Heptagon)
- Random images (penta, hexa, hepta or octa)
- Random answer A, B, C, D
- Pictures
  - Pentagon – 22510, 22511, 22512, 22513
  - Hexagon – 22514, 22515, 22516, 22517
  - Heptagon – 22518, 22520, 22521, 22522
  - Octagon – 22523, 22524, 22525, 22526
- 1 Hint:

Number of Sides	Polygon Name
3	triangle
4	quadrilateral
5	pentagon
6	hexagon
7	heptagon
8	octagon
9	nonagon
10	decagon
12	dodecagon

- 140499 (Heptagon)

Same as above

15 copies

- 140498 (Hexagon)

Same as above

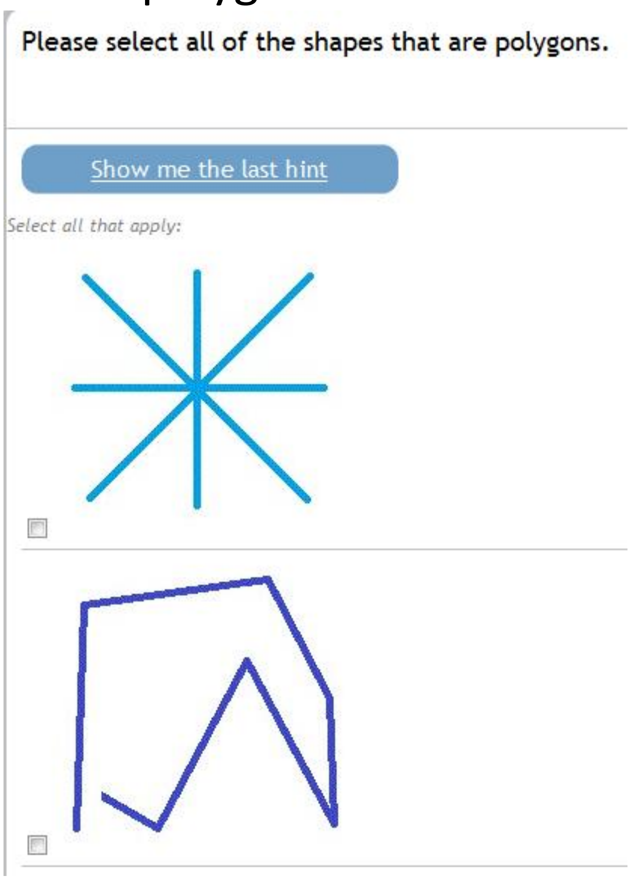
15 copies

- 139385 (Pentagon)

Same as above

15 copies

- 134809 (What is a polygon? Check all that apply)



  - 30 copies
  - Classifying polygons
  - One Correct Polygon
  - 1 additional templates (143426 with 2 correct polygons)

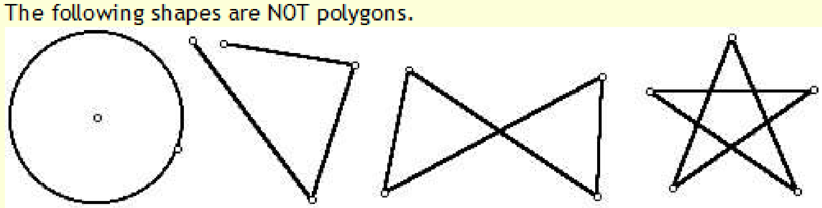
- Random images (curved sides, open sides, crosses and kites and polygons) embedded in answers
- Pictures
  - Curved sides: 22553, 22554, 22555, 22556
  - Open sides: 22557, 22558, 22559, 22560
  - Crosses and kites: 22561, 22562, 22563, 22564
  - Polygons: 22565, 22566, 22567, 22568, 22569, 22570, 22571, 22572
- Randomized
- Select All that Apply
- 1 Hint:

To solve this question, you need to know when a shape is NOT a polygon.
Polygons do NOT have curved sides.

Polygons do NOT cross over themselves.

Polygons do NOT have incomplete sides or openings.

The following shapes are NOT polygons.



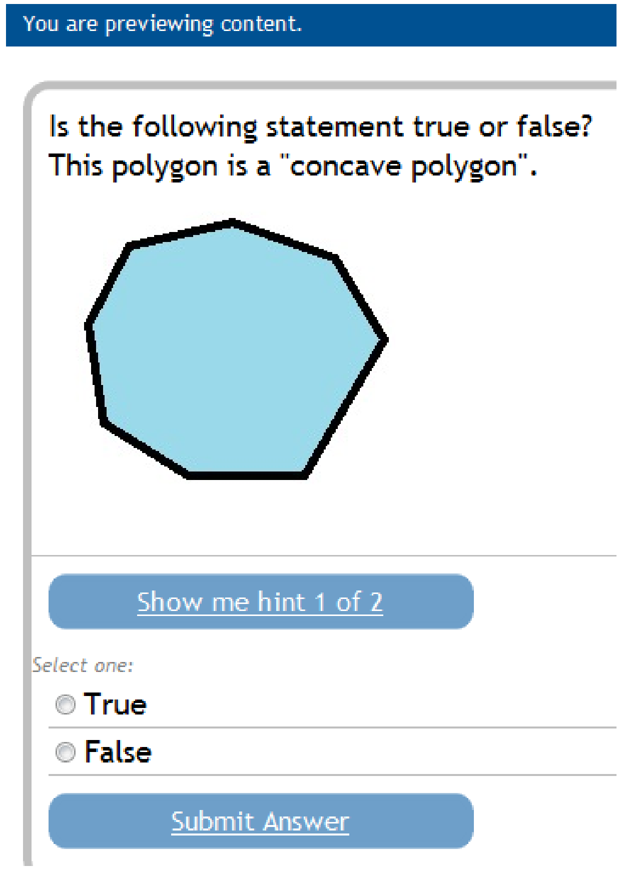
Comment on this hint

- ## 143426 (What is a polygon? Check all that apply)

Same as above

30 copies

- ## 143395 (Convex/Concave, True/False)



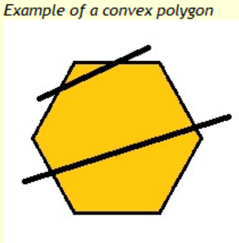
- 30 copies
- Properties of Polygons
  - 1 additional templates (140502 Regular Polygon)
- Random images (penta, hexa, hepta or octa)
- Random answer True/False
- Pictures
  - Pentagon – 22510, 22511, 22512, 22513
  - Hexagon – 22514, 22515, 22516, 22517
  - Heptagon – 22518, 22520, 22521, 22522
  - Octagon – 22523, 22524, 22525, 22526
  - 2 Hints:

To solve this question correctly, you must know the definition of a "concave polygon".

Comment on this hint

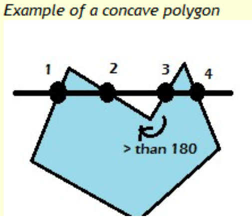
Convex - a straight line drawn through a convex polygon crosses at most two sides and every interior angle is less than 180°.

Example of a convex polygon



Concave - you can draw at least one straight line through a concave polygon that crosses more than two sides and at least one interior angle is greater than 180°.

Example of a concave polygon



- ## 140502 (Regular Polygon, True/False)

Same as above

30 copies

Ashley Daisley

26) Assistment #140501 "140501 - Naming Polygons (Octagon)"

Which of the following shapes is an octagon?

A

B

C

D

Fill in:

%v{ans}

%v{ans1}

Hints:

-

Number of Sides	Polygon Name
3	triangle
4	quadrilateral
5	pentagon
6	hexagon
7	heptagon
8	octagon
9	nonagon
10	decagon
12	dodecagon

---

27) Assistment #144018 "144018 - Naming Polygons (Octagon)"

Which of the following shapes is an octagon?

A

B

C

D

Fill in:

✓ c

✓ C

Hints:

Number of Sides	Polygon Name
3	triangle
4	quadrilateral
5	pentagon
6	hexagon
7	heptagon
8	octagon
9	nonagon
10	decagon
12	dodecagon

---

28) Assistment #140499 "140499 - Naming Polygons (Heptagon)"

Which of the following shapes is a heptagon?

A

B

C

D

Fill in:

%v{ans}

%v{ans1}

Hints:

-

Number of Sides	Polygon Name
3	triangle
4	quadrilateral
5	pentagon
6	hexagon
7	heptagon
8	octagon
9	nonagon
10	decagon
12	dodecagon

29) Assistment #143973 "143973 - 140499 - Naming Polygons (Heptagon)"

Which of the following shapes is a heptagon?

A

B

C

D

Fill in:

✓ c

✓ C

Hints:

-

Number of Sides	Polygon Name
3	triangle
4	quadrilateral
5	pentagon
6	hexagon
7	heptagon
8	octagon
9	nonagon
10	decagon
12	dodecagon

---

30) Assistment #140498 "140498 - Naming Polygons (Hexagon)"

Which of the following shapes is a hexagon?

A

B

C

D

Fill in:

✓ %v{ans}

✓ %v{ans1}

Hints:

Number of Sides	Polygon Name
3	triangle
4	quadrilateral
5	pentagon
6	hexagon
7	heptagon
8	octagon
9	nonagon
10	decagon
12	dodecagon

---

31) Assistment #143958 "143958 - Naming Polygons (Hexagon)"

Which of the following shapes is a hexagon?

A

B

C

D

Fill in:

✓ b

✓ B

Hints:

Number of Sides	Polygon Name
3	triangle
4	quadrilateral
5	pentagon
6	hexagon
7	heptagon
8	octagon
9	nonagon
10	decagon
12	dodecagon

32) Assistment #139385 "139385 - Naming Polygons (Pentagon)"

Which of the following shapes is a pentagon?

A

B

C

D

Fill in:

%v{ans}

%v{ans1}

Hints:

Number of Sides	Polygon Name
3	triangle
4	quadrilateral
5	pentagon
6	hexagon
7	heptagon
8	octagon
9	nonagon
10	decagon
12	dodecagon

---

33) Assistment #144063 "144063 - 139385 - Naming Polygons (Pentagon)"

Which of the following shapes is a pentagon?

A

B

C

D

Fill in:

✓ d

✓ D

Hints:

-

Number of Sides	Polygon Name
3	triangle
4	quadrilateral
5	pentagon
6	hexagon
7	heptagon
8	octagon
9	nonagon
10	decagon
12	dodecagon

---

34) Assistment #134809 "134809 - What is a Polygon? Check all that apply. (1correctpolygon)"

Please select all of the shapes that are polygons.

Check all that apply:

✓

✗

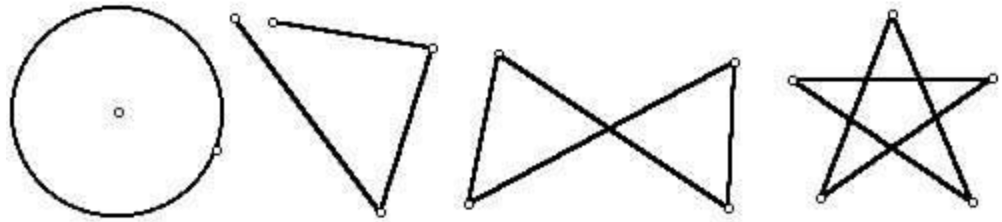
✗

✗

Hints:

- To solve this question, you need to know when a shape is NOT a polygon.
  - Polygons do NOT have curved sides.
  - Polygons do NOT cross over themselves.
  - Polygons do NOT have incomplete sides or openings.

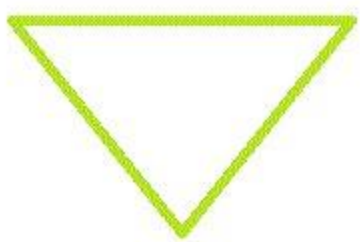
The following shapes are NOT polygons.

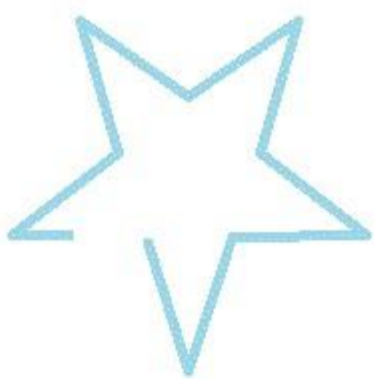


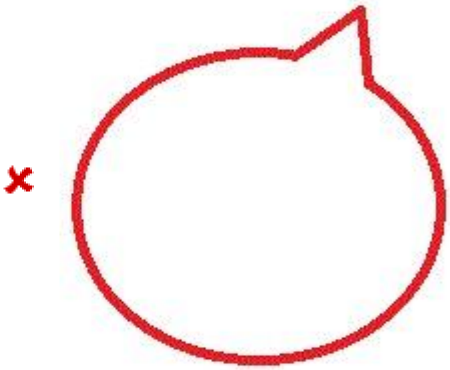
35) **Assistment #144033 "144033 - 134809 - What is a Polygon? Check all that apply. (1correctpolygon)"**

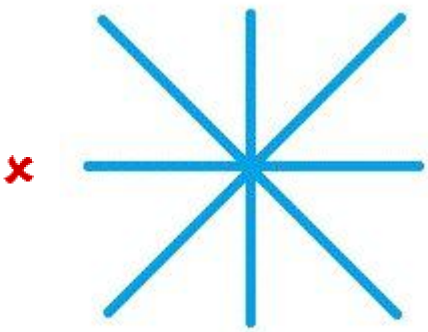
Please select all of the shapes that are polygons.

Check all that apply:







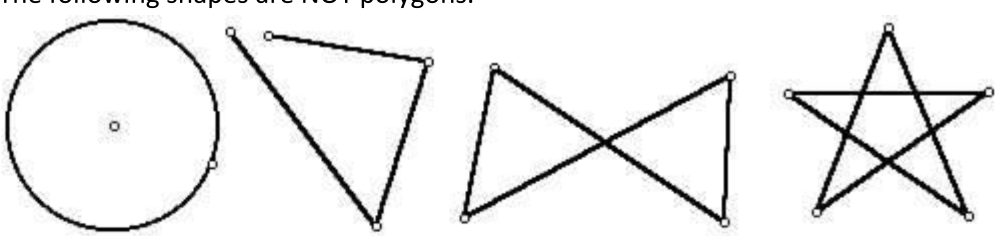


Hints:

- To solve this question, you need to know when a shape is NOT a polygon.

  - Polygons do NOT have curved sides.
  - Polygons do NOT cross over themselves.
  - Polygons do NOT have incomplete sides or openings.

The following shapes are NOT polygons.

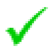


---

36) Assistment #143426 "143426 - What is a Polygon? Check all that apply. (2correctpolygons)"

Please select all of the shapes that are polygons.

Check all that apply:

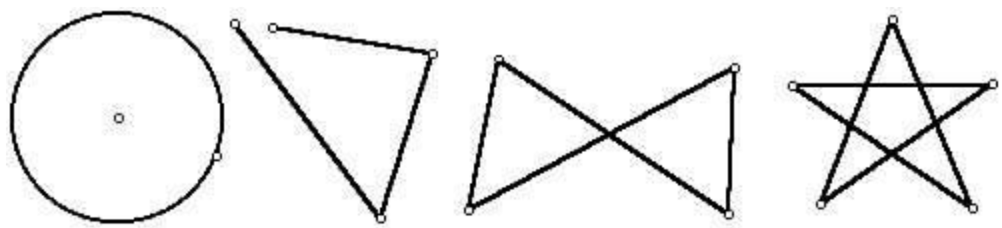


Hints:

- To solve this question, you need to know when a shape is NOT a polygon.

    - Polygons do NOT have curved sides.
    - Polygons do NOT cross over themselves.
    - Polygons do NOT have incomplete sides or openings.

The following shapes are NOT polygons.

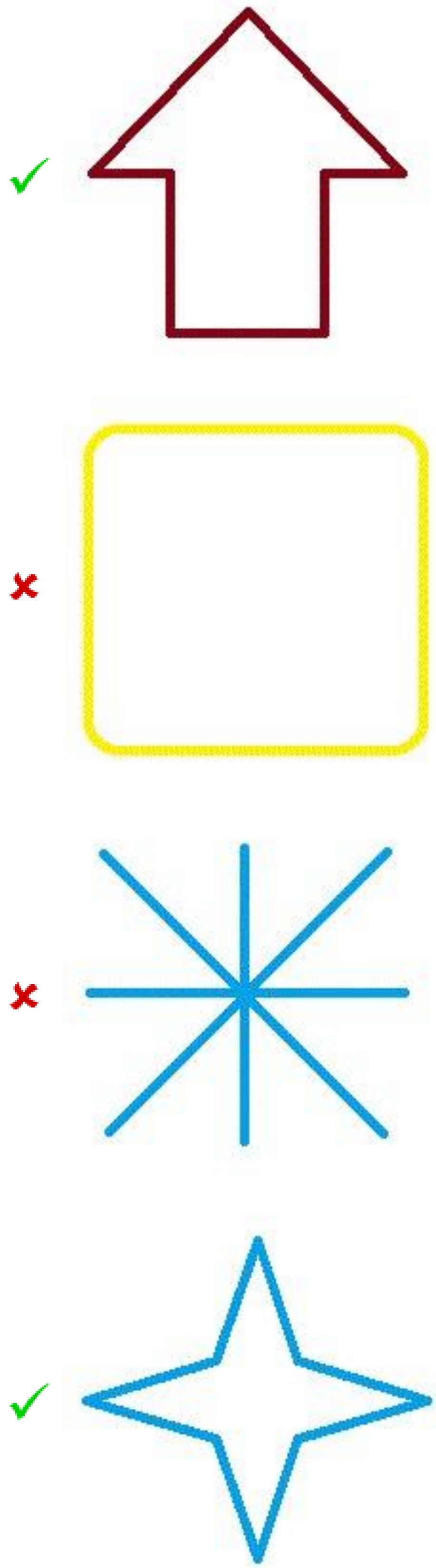


---

37) Assistment #143988 "143988 - 143426 - What is a Polygon? Check all that apply. (2correctpolygons)"

Please select all of the shapes that are polygons.

Check all that apply:

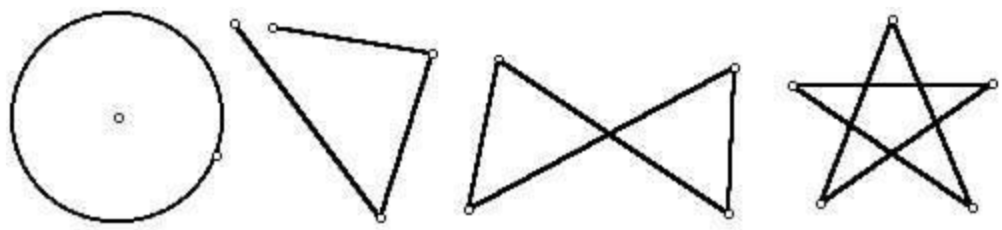


Hints:

- To solve this question, you need to know when a shape is NOT a polygon.

  - Polygons do NOT have curved sides.
  - Polygons do NOT cross over themselves.
  - Polygons do NOT have incomplete sides or openings.

The following shapes are NOT polygons.



---

38) Assistment #143395 "143395 - 143395 Convex/Concave Polygon (True or False)"

Is the following statement true or false?
This polygon is a "concave polygon".

Multiple choice:

✗ %v{answerwrong}

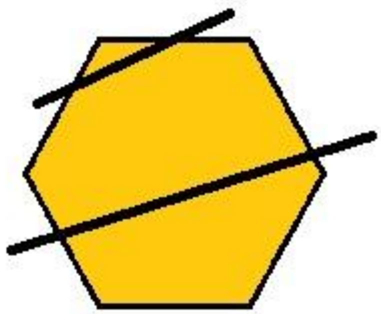
✓ %v{ans1}

Hints:

- **To solve this question correctly, you must know the definition of a "concave polygon".**

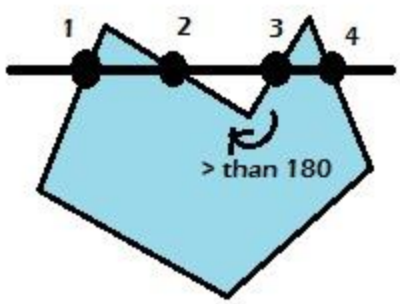
- **Convex** - a straight line drawn through a convex polygon crosses at most two sides and every interior angle is less than 180°.

Example of a convex polygon



Concave - you can draw at least one straight line through a concave polygon that crosses more than two sides and at least one interior angle is greater than 180°.

Example of a concave polygon



---

39) Assistment #144078 "144078 - 143395 Convex/Concave Polygon (True or False)"

Is the following statement true or false?
This polygon is a "concave polygon".

Multiple choice:

✗ True

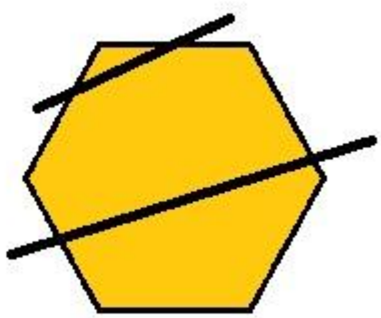
✓ False

Hints:

- **To solve this question correctly, you must know the definition of a "concave polygon".**

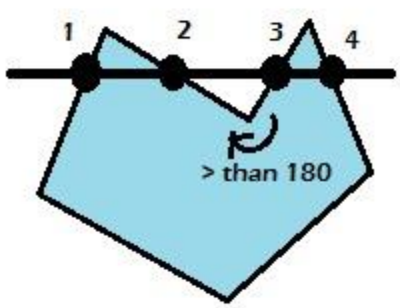
- **Convex** - a straight line drawn through a convex polygon crosses at most two sides and every interior angle is less than 180°.

Example of a convex polygon



Concave - you can draw at least one straight line through a concave polygon that crosses more than two sides and at least one interior angle is greater than 180°.

Example of a concave polygon



40) Assistment #140-502 "140502 - Regular Polygon (True or False)"

Is the following statement true or false?
This polygon is a "regular polygon".

Multiple choice:

%v{answerwrong}

%v{ans1}

Hints:

- **To solve this question correctly, you must know the definition of a "regular polygon".**

- **Regular Polygon** - all angles are equal and all sides are the same length. Regular polygons are both equiangular and equilateral.

Equiangular - all angles are equal.
Equilateral - all sides are the same length.

41) Assistment #144108 "144108 - 140502 - Regular Polygon (True or False)"

Is the following statement true or false?
This polygon is a "regular polygon".

Multiple choice:

✗ True

✓ False

Hints:

- **To solve this question correctly, you must know the definition of a "regular polygon".**

- **Regular Polygon** - all angles are equal and all sides are the same length. Regular polygons are both equiangular and equilateral.

Equiangular - all angles are equal.
Equilateral - all sides are the same length.

APPENDIX C: Assistments by Sarah Fischer

Assistments templates/ Examples created by Sarah Fischer. This contains a compilation of the assistments created by Sarah Fischer during the ASSISTments Interactive Qualifying Project for the 2010-2011 school year. The format is: documentation of skill, followed by in alternating templates and numerical examples, in order by the template listing in the documentation.

Skill	Class
Multiplying Binomials	Algebra 1

THE MASTERY SET

Mastery Problem Set: 14155	Number of Templates: 15
Number to Master: 3-in-a-row	Number of Attempts: 10 first day, 10 Subsequent Days

Templates

- # 106726

The format is (ax+b)(cx-d)

The answer is a.

If the directions are to apply the distributive property to multiply these binomials:

(9x+9)(4x-8)

Which option correctly multiplies the binomials?

a. (9x+9)(4x-8) $= (9x)(4x)-(9x)(8)+(9)(4x)-(9)(8)$
$= 36x^2-72x+36x-72$
$= 36x^2+-36x-72$

b. (9x+9)(4x-8) $= (9x)(4x)-(9x)(8)+(9)(4x)+(9)(8)$
$= 36x^2-72x+36x+72$
$= 36x^2+-36x+72$

c. (9x+9)(4x-8) $= (9x)(4x)-(9x)(8)+(9)(4x)-(9)(8)$
$= 13x^2-17x+13x-17$
$= 13x^2+-4x-17$

d. (9x+9)(4x-8) $= (9x)(4x)-(9x)(8)+(9)(4x)-(9)(8)$
$= 94x^2-98x+94x-98$
$= 94x^2+-4x-98$

Comment on this question

Select one:

- a
- b
- c
- d

Submit Answer

  - There are 4 coefficients each based on a different random number that is a number between 1 and 10.
  - All other coefficients are based on these first 4.
  - Everything else is constant

- # 106934

The format is (ax+b)(cx-d)

The answer is c

- # 106935

The format is (ax+b)(cx-d)

The answer is d

- # 106936

The format is (ax+b)(cx-d)

The answer is b

- # 107507

The format is (ax-b)(cx-d)

The answer is b

- # 107508

The format is (ax-b)(cx-d)

The answer is d

- # 107509

The format is (ax-b)(cx-d)

The answer is c

- # 107510

The format is (ax-b)(cx-d)

The answer is a

- # 107569

The format is (ax+b)(cx+d)

The answer is b

- # 107570

The format is (ax+b)(cx+d)

The answer is d

- # 107571

The format is (ax+b)(cx+d)

The answer is c

- 107572

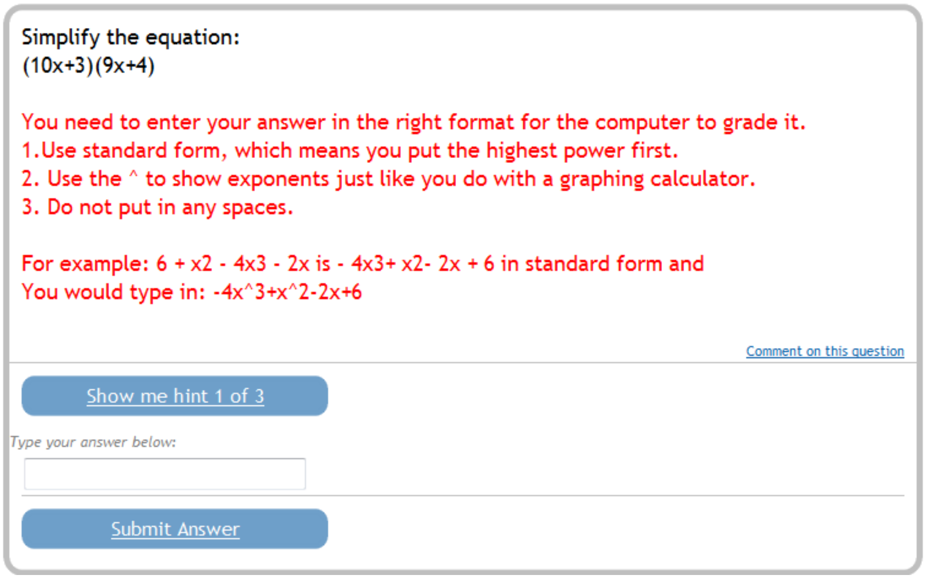
The format is (ax+b)(cx+d)

The answer is a

- ## 106491

The format is (ax+b)(cx+d)

The answer is (a*c)x^2+(a*d+b*c)x+(b*d)



- There are 4 coefficients each based on a different random number that is a number between 1 and 10.
- Everything else is constant

- ## 106917

The format is (ax-b)(cx-d)

The answer is (a*c)x^2-(a*d+b*c)x+(b*d)

106918

The format is (ax+b)(cx-d)

The answer is (a*c)x^2+(b*c-a*d)x-(b*d)

Sarah Fischer

1) Assistment #106726 "106726 - Multiplying Binomials"

If the directions are to apply the distributive property to multiply these binomials:

(%v{a}x+%v{b})(%v{c}x-%v{d})

Which option correctly multiplies the binomials?

a.(%v{a}x+%v{b})(%v{c}x-%v{d}) = (%v{a}x)(%v{c}x)-(%v{a}x)(%v{d})+(%v{b})(%v{c}x)-(%v{b})(%v{d})

= %v{e}x^2-%v{g}x+%v{f}x-%v{h}

= %v{e}x^2+%v{i}x-%v{h}

b.(%v{a}x+%v{b})(%v{c}x-%v{d}) = (%v{a}x)(%v{c}x)-(%v{a}x)(%v{d})+(%v{b})(%v{c}x)+(%v{b})(%v{d})

= %v{e}x^2-%v{g}x+%v{f}x+%v{h}

= %v{e}x^2+%v{i}x+%v{h}

c.(%v{a}x+%v{b})(%v{c}x-%v{d}) = (%v{a}x)(%v{c}x)-(%v{a}x)(%v{d})+(%v{b})(%v{c}x)-(%v{b})(%v{d})

= %v{j}x^2-%v{l}x+%v{k}x-%v{m}

= %v{j}x^2+%v{n}x-%v{m}

d.(%v{a}x+%v{b})(%v{c}x-%v{d}) = (%v{a}x)(%v{c}x)-(%v{a}x)(%v{d})+(%v{b})(%v{c}x)-(%v{b})(%v{d})

= %v{a}%v{c}x^2-%v{a}%v{d}x+%v{b}%v{c}x-%v{b}%v{d}

= %v{a}%v{c}x^2+%v{o}x-%v{b}%v{d}

Multiple choice:

✓ a

✗ b

✗ c

✗ d

---

2) Assistment #112792 "112792 - Multiplying Binomials"

If the directions are to apply the distributive property to multiply these binomials:

(3x+9)(8x-1)

Which option correctly multiplies the binomials?

a.(3x+9)(8x-1) = (3x)(8x)-(3x)(1)+(9)(8x)-(9)(1)

= $24x^2$-3x+72x-9

= $24x^2$+69x-9

b.(3x+9)(8x-1) = (3x)(8x)-(3x)(1)+(9)(8x)+(9)(1)

= $24x^2$-3x+72x+9

= $24x^2$+69x+9

c.(3x+9)(8x-1) = (3x)(8x)-(3x)(1)+(9)(8x)-(9)(1)

= $11x^2$-4x+17x-10

= $11x^2$+13x-10

d.(3x+9)(8x-1) = (3x)(8x)-(3x)(1)+(9)(8x)-(9)(1)

= $38x^2$-31x+98x-91

= $38x^2$+67x-91

Multiple choice:

✓ a

✗ b

✗ c

✗ d

---

3) Assistment #106934 "106934 - Multiplying Binomials"

If the directions are to apply the distributive property to multiply these binomials:

(%v{a}x+%v{b})(%v{c}x-%v{d})

Which option correctly multiplies the binomials?

a.(%v{a}x+%v{b})(%v{c}x-%v{d}) = (%v{a}x)(%v{c}x)-(%v{a}x)(%v{d})+(%v{b})(%v{c}x)-(%v{b})(%v{d})

= %v{j}x^2-%v{l}x+%v{k}x-%v{m}

= %v{j}x^2+%v{n}x-%v{m}

b.(%v{a}x+%v{b})(%v{c}x-%v{d}) = (%v{a}x)(%v{c}x)-(%v{a}x)(%v{d})+(%v{b})(%v{c}x)+(%v{b})(%v{d})

= %v{e}x^2-%v{g}x+%v{f}x+%v{h}

= %v{e}x^2+%v{i}x+%v{h}

c.(%v{a}x+%v{b})(%v{c}x-%v{d}) = (%v{a}x)(%v{c}x)-(%v{a}x)(%v{d})+(%v{b})(%v{c}x)-(%v{b})(%v{d})

= %v{e}x^2-%v{g}x+%v{f}x-%v{h}

= %v{e}x^2+%v{i}x-%v{h}

d.(%v{a}x+%v{b})(%v{c}x-%v{d}) = (%v{a}x)(%v{c}x)-(%v{a}x)(%v{d})+(%v{b})(%v{c}x)-(%v{b})(%v{d})

= %v{a}%v{c}x^2-%v{a}%v{d}x+%v{b}%v{c}x-%v{b}%v{d}

= %v{a}%v{c}x^2+%v{o}x-%v{b}%v{d}

Multiple choice:

✘ a

✘ b

✔ c

✘ d

---

4) Assistment #112755 "112755 - Multiplying Binomials"

If the directions are to apply the distributive property to multiply these binomials:

(3x+2)(6x-9)

Which option correctly multiplies the binomials?

a.(3x+2)(6x-9) = (3x)(6x)-(3x)(9)+(2)(6x)-(2)(9)

$= 9x^2-12x+8x-11$

$= 9x^2+-4x-11$

b.(3x+2)(6x-9) $= (3x)(6x)-(3x)(9)+(2)(6x)+(2)(9)$

$= 18x^2-27x+12x+18$

$= 18x^2+-15x+18$

c.(3x+2)(6x-9) $= (3x)(6x)-(3x)(9)+(2)(6x)-(2)(9)$

$= 18x^2-27x+12x-18$

$= 18x^2+-15x-18$

d.(3x+2)(6x-9) $= (3x)(6x)-(3x)(9)+(2)(6x)-(2)(9)$

$= 36x^2-39x+26x-29$

$= 36x^2+-13x-29$

Multiple choice:

✗ a

✗ b

✓ c

✗ d

---

5) Assistment #106935 "106935 - Multiplying Binomials"

If the directions are to apply the distributive property to multiply these binomials:

(%v{a}x+%v{b})(%v{c}x-%v{d})

Which option correctly multiplies the binomials?

a.(%v{a}x+%v{b})(%v{c}x-%v{d}) = (%v{a}x)(%v{c}x)-(%v{a}x)(%v{d})+(%v{b})(%v{c}x)-(%v{b})(%v{d})

= %v{j}x^{2}-%v{l}x+%v{k}x-%v{m}

= %v{j}x^{2}+%v{n}x-%v{m}

b.(%v{a}x+%v{b})(%v{c}x-%v{d}) = (%v{a}x)(%v{c}x)-(%v{a}x)(%v{d})+(%v{b})(%v{c}x)+(%v{b})(%v{d})

= %v{e}x^{2}-%v{g}x+%v{f}x+%v{h}

= %v{e}x^{2}+%v{i}x+%v{h}

c.(%v{a}x+%v{b})(%v{c}x-%v{d}) = (%v{a}x)(%v{c}x)-(%v{a}x)(%v{d})+(%v{b})(%v{c}x)-(%v{b})(%v{d})

= %v{a}%v{c}x^{2}-%v{a}%v{d}x+%v{b}%v{c}x-%v{b}%v{d}

= %v{a}%v{c}x^{2}+%v{o}x-%v{b}%v{d}

d.(%v{a}x+%v{b})(%v{c}x-%v{d}) = (%v{a}x)(%v{c}x)-(%v{a}x)(%v{d})+(%v{b})(%v{c}x)-(%v{b})(%v{d})

= %v{e}x^{2}-%v{g}x+%v{f}x-%v{h}

= %v{e}x^{2}+%v{i}x-%v{h}

Multiple choice:

✘ a

✗ b

✗ c

✓ d

---

6) Assistment #112798 "112798 - Multiplying Binomials"

If the directions are to apply the distributive property to multiply these binomials:

(3x+4)(1x-5)

Which option correctly multiplies the binomials?

a.(3x+4)(1x-5) = (3x)(1x)-(3x)(5)+(4)(1x)-(4)(5)

$= 4x^2-8x+5x-9$

$= 4x^2+-3x-9$

b.(3x+4)(1x-5) = (3x)(1x)-(3x)(5)+(4)(1x)+(4)(5)

$= 3x^2-15x+4x+20$

$= 3x^2+-11x+20$

c.(3x+4)(1x-5) = (3x)(1x)-(3x)(5)+(4)(1x)-(4)(5)

$= 31x^2-35x+41x-45$

$= 31x^2+6x-45$

d.(3x+4)(1x-5) = (3x)(1x)-(3x)(5)+(4)(1x)-(4)(5)

$= 3x^2-15x+4x-20$

$= 3x^2+-11x-20$

Multiple choice:

✘ a

✘ b

✘ c

✔ d

---

7) Assistment #106936 "106936 - Multipying Binomials"

If the directions are to apply the distributive property to multiply these binomials:

(%v{a}x+%v{b})(%v{c}x-%v{d})

Which option correctly multiplies the binomials?

a.(%v{a}x+%v{b})(%v{c}x-%v{d}) = (%v{a}x)(%v{c}x)-(%v{a}x)(%v{d})+(%v{b})(%v{c}x)-(%v{b})(%v{d})

= %v{j}x²-%v{l}x+%v{k}x-%v{m}

= %v{j}x²+%v{n}x-%v{m}

b.(%v{a}x+%v{b})(%v{c}x-%v{d}) = (%v{a}x)(%v{c}x)-(%v{a}x)(%v{d})+(%v{b})(%v{c}x)-(%v{b})(%v{d})

= %v{e}x²-%v{g}x+%v{f}x-%v{h}

= %v{e}x²+%v{i}x-%v{h}

c.(%v{a}x+%v{b})(%v{c}x-%v{d}) = (%v{a}x)(%v{c}x)-(%v{a}x)(%v{d})+(%v{b})(%v{c}x)-(%v{b})(%v{d})

= %v{a}%v{c}x^2-%v{a}%v{d}x+%v{b}%v{c}x-%v{b}%v{d}

= %v{a}%v{c}x^2+%v{o}x-%v{b}%v{d}

d.(%v{a}x+%v{b})(%v{c}x-%v{d}) = (%v{a}x)(%v{c}x)-(%v{a}x)(%v{d})+(%v{b})(%v{c}x)+(%v{b})(%v{d})

= %v{e}x^2-%v{g}x+%v{f}x+%v{h}

= %v{e}x^2+%v{i}x+%v{h}

Multiple choice:

✗ a

✓ b

✗ c

✗ d

---

8) Assistment #112669 "112669 - Multipying Binomials"

If the directions are to apply the distributive property to multiply these binomials:

(5x+9)(3x-7)

Which option correctly multiplies the binomials?

a.(5x+9)(3x-7) = (5x)(3x)-(5x)(7)+(9)(3x)-(9)(7)

= $8x^2$-12x+12x-16

= $8x^2$+0x-16

b.(5x+9)(3x-7) = (5x)(3x)-(5x)(7)+(9)(3x)-(9)(7)

= $15x^2$-35x+27x-63

= $15x^2$+-8x-63

c.(5x+9)(3x-7) = (5x)(3x)-(5x)(7)+(9)(3x)-(9)(7)

= $53x^2$-57x+93x-97

= $53x^2$+36x-97

d.(5x+9)(3x-7) = (5x)(3x)-(5x)(7)+(9)(3x)+(9)(7)

= $15x^2$-35x+27x+63

= $15x^2$+-8x+63

Multiple choice:

✗ a

✓ b

✗ c

✗ d

---

9) Assistment #107507 "107507 - Multipying Binomials"

If the directions are to apply the distributive property to multiply these binomials:

(%v{a}x-%v{b})(%v{c}x-%v{d})

Which option correctly multiplies the binomials?

a.(%v{a}x-%v{b})(%v{c}x-%v{d}) = (%v{a}x)(%v{c}x)-(%v{a}x)(%v{d})-(%v{b})(%v{c}x)+(%v{b})(%v{d})

= %v{j}x^2-%v{l}x-%v{k}x+%v{m}

= %v{j}x^2-%v{n}x+%v{m}

b.(%v{a}x-%v{b})(%v{c}x-%v{d}) = (%v{a}x)(%v{c}x)-(%v{a}x)(%v{d})-(%v{b})(%v{c}x)+(%v{b})(%v{d})

= %v{e}x^2-%v{g}x-%v{f}x+%v{h}

= %v{e}x^2-%v{i}x+%v{h}

c.(%v{a}x-%v{b})(%v{c}x-%v{d}) = (%v{a}x)(%v{c}x)-(%v{a}x)(%v{d})-(%v{b})(%v{c}x)+(%v{b})(%v{d})

= %v{a}%v{c}x^2-%v{a}%v{d}x-%v{b}%v{c}x+%v{b}%v{d}

= %v{a}%v{c}x^2-%v{o}x+%v{b}%v{d}

d.(%v{a}x-%v{b})(%v{c}x-%v{d}) = (%v{a}x)(%v{c}x)-(%v{a}x)(%v{d})+(%v{b})(%v{c}x)-(%v{b})(%v{d})

= %v{e}x^2-%v{g}x+%v{f}x-%v{h}

= %v{e}x^2+%v{p}x-%v{h}

Multiple choice:

✗ a

✓ b

✗ c

✗ d

10) Assistment #112804 "112804 - Multipying Binomials"

If the directions are to apply the distributive property to multiply these binomials:

(6x-9)(5x-7)

Which option correctly multiplies the binomials?

a.(6x-9)(5x-7) $= (6x)(5x)-(6x)(7)-(9)(5x)+(9)(7)$

$= 11x^2-13x-14x+16$

$= 11x^2-27x+16$

b.(6x-9)(5x-7) $= (6x)(5x)-(6x)(7)-(9)(5x)+(9)(7)$

$= 30x^2-42x-45x+63$

$= 30x^2-87x+63$

c.(6x-9)(5x-7) $= (6x)(5x)-(6x)(7)-(9)(5x)+(9)(7)$

$= 65x^2-67x-95x+97$

$= 65x^2-162x+97$

d.(6x-9)(5x-7) $= (6x)(5x)-(6x)(7)+(9)(5x)-(9)(7)$

$= 30x^2-42x+45x-63$

$= 30x^2+3x-63$

Multiple choice:

a

b

c

d

---

11) Assistment #107508 "107508 - Multiplying Binomials"

If the directions are to apply the distributive property to multiply these binomials:

(%v{a}x-%v{b})(%v{c}x-%v{d})

Which option correctly multiplies the binomials?

a.(%v{a}x-%v{b})(%v{c}x-%v{d}) = (%v{a}x)(%v{c}x)-(%v{a}x)(%v{d})-(%v{b})(%v{c}x)+(%v{b})(%v{d})

= %v{j}x^2-%v{l}x-%v{k}x+%v{m}

= %v{j}x^2-%v{n}x+%v{m}

b.(%v{a}x-%v{b})(%v{c}x-%v{d}) = (%v{a}x)(%v{c}x)-(%v{a}x)(%v{d})+(%v{b})(%v{c}x)-(%v{b})(%v{d})

= %v{e}x^2-%v{g}x+%v{f}x-%v{h}

= %v{e}x^2+%v{p}x-%v{h}

c.(%v{a}x-%v{b})(%v{c}x-%v{d}) = (%v{a}x)(%v{c}x)-(%v{a}x)(%v{d})-(%v{b})(%v{c}x)+(%v{b})(%v{d})

= %v{a}%v{c}x^2-%v{a}%v{d}x-%v{b}%v{c}x+%v{b}%v{d}

= %v{a}%v{c}x^2-%v{o}x+%v{b}%v{d}

d.(%v{a}x-%v{b})(%v{c}x-%v{d}) = (%v{a}x)(%v{c}x)-(%v{a}x)(%v{d})-(%v{b})(%v{c}x)+(%v{b})(%v{d})

= %v{e}x^2-%v{g}x-%v{f}x+%v{h}

= %v{e}x^2-%v{i}x+%v{h}

Multiple choice:

✗ a

✗ b

✗ c

✓ d

---

12) Assistment #112663 "112663 - Multiplying Binomials"

If the directions are to apply the distributive property to multiply these binomials:

(1x-9)(9x-6)

Which option correctly multiplies the binomials?

a.(1x-9)(9x-6) = (1x)(9x)-(1x)(6)-(9)(9x)+(9)(6)

= $10x^2-7x-18x+15$

= $10x^2-25x+15$

b.(1x-9)(9x-6) = (1x)(9x)-(1x)(6)+(9)(9x)-(9)(6)

$= 9x^2-6x+81x-54$

$= 9x^2+75x-54$

c.(1x-9)(9x-6) $= (1x)(9x)-(1x)(6)-(9)(9x)+(9)(6)$

$= 19x^2-16x-99x+96$

$= 19x^2-115x+96$

d.(1x-9)(9x-6) $= (1x)(9x)-(1x)(6)-(9)(9x)+(9)(6)$

$= 9x^2-6x-81x+54$

$= 9x^2-87x+54$

Multiple choice:

✘ a

✘ b

✘ c

✔ d

---

13) Assistment #107509 "107509 - Multiplying Binomials"

If the directions are to apply the distributive property to multiply these binomials:

(%v{a}x-%v{b})(%v{c}x-%v{d})

Which option correctly multiplies the binomials?

a.(%v{a}x-%v{b})(%v{c}x-%v{d}) = (%v{a}x)(%v{c}x)-(%v{a}x)(%v{d})-

(%v{b})(%v{c}x)+(%v{b})(%v{d})

= %v{j}x^2-%v{l}x-%v{k}x+%v{m}

= %v{j}x^2-%v{n}x+%v{m}

b.(%v{a}x-%v{b})(%v{c}x-%v{d}) = (%v{a}x)(%v{c}x)-(%v{a}x)(%v{d})+(%v{b})(%v{c}x)-(%v{b})(%v{d})

= %v{e}x^2-%v{g}x+%v{f}x-%v{h}

= %v{e}x^2+%v{p}x-%v{h}

c.(%v{a}x-%v{b})(%v{c}x-%v{d}) = (%v{a}x)(%v{c}x)-(%v{a}x)(%v{d})-(%v{b})(%v{c}x)+(%v{b})(%v{d})

= %v{e}x^2-%v{g}x-%v{f}x+%v{h}

= %v{e}x^2-%v{i}x+%v{h}

d.(%v{a}x-%v{b})(%v{c}x-%v{d}) = (%v{a}x)(%v{c}x)-(%v{a}x)(%v{d})-(%v{b})(%v{c}x)+(%v{b})(%v{d})

= %v{a}%v{c}x^2-%v{a}%v{d}x-%v{b}%v{c}x+%v{b}%v{d}

= %v{a}%v{c}x^2-%v{o}x+%v{b}%v{d}

Multiple choice:

✗ a

✗ b

✓ c

✗ d

✗ a

---

14) Assistment #112706 "112706 - Multiplying Binomials"

If the directions are to apply the distributive property to multiply these binomials:

(3x-5)(4x-2)

Which option correctly multiplies the binomials?

a.(3x-5)(4x-2) = (3x)(4x)-(3x)(2)-(5)(4x)+(5)(2)

= $7x^2$-5x-9x+7

= $7x^2$-14x+7

b.(3x-5)(4x-2) = (3x)(4x)-(3x)(2)+(5)(4x)-(5)(2)

= $12x^2$-6x+20x-10

= $12x^2$+14x-10

c.(3x-5)(4x-2) = (3x)(4x)-(3x)(2)-(5)(4x)+(5)(2)

= $12x^2$-6x-20x+10

= $12x^2$-26x+10

d.(3x-5)(4x-2) = (3x)(4x)-(3x)(2)-(5)(4x)+(5)(2)

= $34x^2$-32x-54x+52

= $34x^2$-86x+52

Multiple choice:

✗ a

✗ b

✓ c

✗ d

---

15) Assistment #107510 "107510 - Multiplying Binomials"

If the directions are to apply the distributive property to multiply these binomials:

(%v{a}x-%v{b})(%v{c}x-%v{d})

Which option correctly multiplies the binomials?

a.(%v{a}x-%v{b})(%v{c}x-%v{d}) = (%v{a}x)(%v{c}x)-(%v{a}x)(%v{d})-(%v{b})(%v{c}x)+(%v{b})(%v{d})

= %v{e}x^2-%v{g}x-%v{f}x+%v{h}

= %v{e}x^2-%v{i}x+%v{h}

b.(%v{a}x-%v{b})(%v{c}x-%v{d}) = (%v{a}x)(%v{c}x)-(%v{a}x)(%v{d})+(%v{b})(%v{c}x)-(%v{b})(%v{d})

= %v{e}x^2-%v{g}x+%v{f}x-%v{h}

= %v{e}x^2+%v{p}x-%v{h}

c.(%v{a}x-%v{b})(%v{c}x-%v{d}) = (%v{a}x)(%v{c}x)-(%v{a}x)(%v{d})-(%v{b})(%v{c}x)+(%v{b})(%v{d})

= %v{j}x^2-%v{l}x-%v{k}x+%v{m}

= %v{j}x^2-%v{n}x+%v{m}

d.(%v{a}x-%v{b})(%v{c}x-%v{d}) = (%v{a}x)(%v{c}x)-(%v{a}x)(%v{d})-(%v{b})(%v{c}x)+(%v{b})(%v{d})

= %v{a}%v{c}x^{2}-%v{a}%v{d}x-%v{b}%v{c}x+%v{b}%v{d}

= %v{a}%v{c}x^{2}-%v{o}x+%v{b}%v{d}

Multiple choice:

a

b

c

d

16) Assistment #112718 "112718 - Multiplying Binomials"

If the directions are to apply the distributive property to multiply these binomials:

(2x-1)(3x-8)

Which option correctly multiplies the binomials?

a.(2x-1)(3x-8) $= (2x)(3x)-(2x)(8)-(1)(3x)+(1)(8)$

$= 6x^2-16x-3x+8$

$= 6x^2-19x+8$

b.(2x-1)(3x-8) $= (2x)(3x)-(2x)(8)+(1)(3x)-(1)(8)$

$= 6x^2-16x+3x-8$

= $6x^2$+-13x-8

c.(2x-1)(3x-8) = (2x)(3x)-(2x)(8)-(1)(3x)+(1)(8)

= $5x^2$-10x-4x+9

= $5x^2$-14x+9

d.(2x-1)(3x-8) = (2x)(3x)-(2x)(8)-(1)(3x)+(1)(8)

= $23x^2$-28x-13x+18

= $23x^2$-41x+18

Multiple choice:

✓ a

✗ b

✗ c

✗ d

---

17) Assistment #107569 "107569 - Multipying Binomials"

If the directions are to apply the distributive property to multiply these binomials:

(%v{a}x+%v{b})(%v{c}x+%v{d})

Which option correctly multiplies the binomials?

a.(%v{a}x+%v{b})(%v{c}x+%v{d}) = (%v{a}x)(%v{c}x)+(%v{a}x)(%v{d})+(%v{b})(%v{c}x)+(%v{b})(%v{d})

= %v{j}x^2+%v{l}x+%v{k}x+%v{m}

= %v{j}x^2+%v{n}x+%v{m}

b.(%v{a}x+%v{b})(%v{c}x+%v{d}) = (%v{a}x)(%v{c}x)+(%v{a}x)(%v{d})+(%v{b})(%v{c}x)+(%v{b})(%v{d})

= %v{e}x^2+%v{g}x+%v{f}x+%v{h}

= %v{e}x^2+%v{i}x+%v{h}

c.(%v{a}x+%v{b})(%v{c}x+%v{d}) = (%v{a}x)(%v{c}x)+(%v{a}x)(%v{d})+(%v{b})(%v{c}x)+(%v{b})(%v{d})

= %v{a}%v{c}x^2+%v{a}%v{d}x+%v{b}%v{c}x+%v{b}%v{d}

= %v{a}%v{c}x^2+%v{o}x+%v{b}%v{d}

d.(%v{a}x+%v{b})(%v{c}x+%v{d}) = (%v{a}x)(%v{c}x)+(%v{a}x)(%v{d})+(%v{b})(%v{c}x)-(%v{b})(%v{d})

= %v{e}x^2+%v{g}x+%v{f}x-%v{h}

= %v{e}x^2+%v{i}x-%v{h}

Multiple choice:

✘ a

✔ b

✘ c

✘ d

---

18) Assistment #112700 "112700 - Multipying Binomials"

If the directions are to apply the distributive property to multiply these binomials:

$(1x+2)(9x+3)$

Which option correctly multiplies the binomials?

a. $(1x+2)(9x+3) = (1x)(9x)+(1x)(3)+(2)(9x)+(2)(3)$

$= 10x^2+4x+11x+5$

$= 10x^2+15x+5$

b. $(1x+2)(9x+3) = (1x)(9x)+(1x)(3)+(2)(9x)+(2)(3)$

$= 9x^2+3x+18x+6$

$= 9x^2+21x+6$

c. $(1x+2)(9x+3) = (1x)(9x)+(1x)(3)+(2)(9x)+(2)(3)$

$= 19x^2+13x+29x+23$

$= 19x^2+42x+23$

d. $(1x+2)(9x+3) = (1x)(9x)+(1x)(3)+(2)(9x)-(2)(3)$

$= 9x^2+3x+18x-6$

$= 9x^2+21x-6$

Multiple choice:

✗ a

✓ b

✗ c

d

---

19) Assistment #107570 "107570 - Multiplying Binomials"

If the directions are to apply the distributive property to multiply these binomials:

(%v{a}x+%v{b})(%v{c}x+%v{d})

Which option correctly multiplies the binomials?

a.(%v{a}x+%v{b})(%v{c}x+%v{d}) = (%v{a}x)(%v{c}x)+(%v{a}x)(%v{d})+(%v{b})(%v{c}x)+(%v{b})(%v{d})

= %v{j}x^2+%v{l}x+%v{k}x+%v{m}

= %v{j}x^{2+}%v{n}x+%v{m}

b.(%v{a}x+%v{b})(%v{c}x+%v{d}) = (%v{a}x)(%v{c}x)+(%v{a}x)(%v{d})+(%v{b})(%v{c}x)-(%v{b})(%v{d})

= %v{e}x^2+%v{g}x+%v{f}x-%v{h}

= %v{e}x^2+%v{i}x-%v{h}

c.(%v{a}x+%v{b})(%v{c}x+%v{d}) = (%v{a}x)(%v{c}x)+(%v{a}x)(%v{d})+(%v{b})(%v{c}x)+(%v{b})(%v{d})

= %v{a}%v{c}x^2+%v{a}%v{d}x+%v{b}%v{c}x+%v{b}%v{d}

= %v{a}%v{c}x^{2+}%v{o}x+%v{b}%v{d}

d.(%v{a}x+%v{b})(%v{c}x+%v{d}) =

(%v{a}x)(%v{c}x)+(%v{a}x)(%v{d})+(%v{b})(%v{c}x)+(%v{b})(%v{d})

= %v{e}x^2+%v{g}x+%v{f}x+%v{h}

= %v{e}x^2+%v{i}x+%v{h}

Multiple choice:

✗ a

✗ b

✗ c

✓ d

---

20) Assistment #112712 "112712 - Multiplying Binomials"

If the directions are to apply the distributive property to multiply these binomials:

(9x+7)(9x+3)

Which option correctly multiplies the binomials?

a.(9x+7)(9x+3) = (9x)(9x)+(9x)(3)+(7)(9x)+(7)(3)

= $18x^2+12x+16x+10$

= $18x^{2+}28x+10$

b.(9x+7)(9x+3) = (9x)(9x)+(9x)(3)+(7)(9x)-(7)(3)

= $81x^2+27x+63x-21$

= $81x^2+90x-21$

c.(9x+7)(9x+3) = (9x)(9x)+(9x)(3)+(7)(9x)+(7)(3)

= $99x^2$+93x+79x+73

= $99x^{2+}$172x+73

d.(9x+7)(9x+3) = (9x)(9x)+(9x)(3)+(7)(9x)+(7)(3)

= $81x^2$+27x+63x+21

= $81x^2$+90x+21

Multiple choice:

✗ a

✗ b

✗ c

✓ d

---

21) Assistment #107571 "107571 - Multiplying Binomials"

If the directions are to apply the distributive property to multiply these binomials:

(%v{a}x+%v{b})(%v{c}x+%v{d})

Which option correctly multiplies the binomials?

a.(%v{a}x+%v{b})(%v{c}x+%v{d}) = (%v{a}x)(%v{c}x)+(%v{a}x)(%v{d})+(%v{b})(%v{c}x)+(%v{b})(%v{d})

= %v{j}x^2+%v{l}x+%v{k}x+%v{m}

= %v{j}x^2+%v{n}x+%v{m}

b.(%v{a}x+%v{b})(%v{c}x+%v{d}) = (%v{a}x)(%v{c}x)+(%v{a}x)(%v{d})+(%v{b})(%v{c}x)-(%v{b})(%v{d})

= %v{e}x^2+%v{g}x+%v{f}x-%v{h}

= %v{e}x^2+%v{i}x-%v{h}

c.(%v{a}x+%v{b})(%v{c}x+%v{d}) = (%v{a}x)(%v{c}x)+(%v{a}x)(%v{d})+(%v{b})(%v{c}x)+(%v{b})(%v{d})

= %v{e}x^2+%v{g}x+%v{f}x+%v{h}

= %v{e}x^2+%v{i}x+%v{h}

d.(%v{a}x+%v{b})(%v{c}x+%v{d}) = (%v{a}x)(%v{c}x)+(%v{a}x)(%v{d})+(%v{b})(%v{c}x)+(%v{b})(%v{d})

= %v{a}%v{c}x^2+%v{a}%v{d}x+%v{b}%v{c}x+%v{b}%v{d}

= %v{a}%v{c}x^2+%v{o}x+%v{b}%v{d}

Multiple choice:

✗ a

✗ b

✓ c

✗ d

---

22) Assistment #112724 "112724 - Multiplying Binomials"

If the directions are to apply the distributive property to multiply these binomials:

$(7x+1)(6x+3)$

Which option correctly multiplies the binomials?

a. $(7x+1)(6x+3) = (7x)(6x)+(7x)(3)+(1)(6x)+(1)(3)$

$= 13x^2+10x+7x+4$

$= 13x^2+17x+4$

b. $(7x+1)(6x+3) = (7x)(6x)+(7x)(3)+(1)(6x)-(1)(3)$

$= 42x^2+21x+6x-3$

$= 42x^2+27x-3$

c. $(7x+1)(6x+3) = (7x)(6x)+(7x)(3)+(1)(6x)+(1)(3)$

$= 42x^2+21x+6x+3$

$= 42x^2+27x+3$

d. $(7x+1)(6x+3) = (7x)(6x)+(7x)(3)+(1)(6x)+(1)(3)$

$= 76x^2+73x+16x+13$

$= 76x^2+89x+13$

Multiple choice:

✗ a

✗ b

✓ c

✗ d

23) Assistment #107572 "107572 - Multiplying Binomials"

If the directions are to apply the distributive property to multiply these binomials:

(%v{a}x+%v{b})(%v{c}x+%v{d})

Which option correctly multiplies the binomials?

a.(%v{a}x+%v{b})(%v{c}x+%v{d}) = (%v{a}x)(%v{c}x)+(%v{a}x)(%v{d})+(%v{b})(%v{c}x)+(%v{b})(%v{d})

= %v{e}x^2+%v{g}x+%v{f}x+%v{h}

= %v{e}x^2+%v{i}x+%v{h}

b.(%v{a}x+%v{b})(%v{c}x+%v{d}) = (%v{a}x)(%v{c}x)+(%v{a}x)(%v{d})+(%v{b})(%v{c}x)-(%v{b})(%v{d})

= %v{e}x^2+%v{g}x+%v{f}x-%v{h}

= %v{e}x^2+%v{i}x-%v{h}

c.(%v{a}x+%v{b})(%v{c}x+%v{d}) = (%v{a}x)(%v{c}x)+(%v{a}x)(%v{d})+(%v{b})(%v{c}x)+(%v{b})(%v{d})

= %v{j}x^2+%v{l}x+%v{k}x+%v{m}

= %v{j}x^2+%v{n}x+%v{m}

d.(%v{a}x+%v{b})(%v{c}x+%v{d}) = (%v{a}x)(%v{c}x)+(%v{a}x)(%v{d})+(%v{b})(%v{c}x)+(%v{b})(%v{d})

= %v{a}%v{c}x^2+%v{a}%v{d}x+%v{b}%v{c}x+%v{b}%v{d}

= %v{a}%v{c}x^2+%v{o}x+%v{b}%v{d}

Multiple choice:

✓ a

✗ b

✗ c

✗ d

---

24) Assistment #112761 "112761 - Multiplying Binomials"

If the directions are to apply the distributive property to multiply these binomials:

(1x+5)(6x+9)

Which option correctly multiplies the binomials?

a.(1x+5)(6x+9) = (1x)(6x)+(1x)(9)+(5)(6x)+(5)(9)

= $6x^2+9x+30x+45$

= $6x^2+39x+45$

b.(1x+5)(6x+9) = (1x)(6x)+(1x)(9)+(5)(6x)-(5)(9)

= $6x^2+9x+30x-45$

= $6x^2+39x-45$

c.(1x+5)(6x+9) = (1x)(6x)+(1x)(9)+(5)(6x)+(5)(9)

= $7x^2+10x+11x+14$

= $7x^2$+21x+14

d.(1x+5)(6x+9) = (1x)(6x)+(1x)(9)+(5)(6x)+(5)(9)

= $16x^2$+19x+56x+59

= $16x^2$+75x+59

Multiple choice:

✓ a

✗ b

✗ c

✗ d

---

25) Assistment #106491 "106491 - FOIL"

Simplify the equation:
(%v{a}x+%v{b})(%v{c}x+%v{d})

You need to enter your answer in the right format for the computer to grade it.
1.Use standard form, which means you put the highest power first.
2. Use the ^ to show exponents just like you do with a graphing calculator.
3. Do not put in any spaces.

For example: 6 + x2 - 4x3 - 2x is - 4x3+ x2- 2x + 6 in standard form and
You would type in: -4x^3+x^2-2x+6

Fill in:

✓ %v{e}x^2+%v{f}x+%v{g}

Hints:

- Be sure to read the rules in orange carefully.

To solve the problem:
Think of each poynomial as one side of a rectangle.

	%v{c}x	+	%v{d}
%v{a}x			
+			
%v{b}			

- Then calculate the area for each section of the rectangle.

	%v{c}x	+	%v{d}
%v{a}x	(%v{c}x)(%v{a}x)		(%v{d})(%v{a}x)
+			
%v{b}	(%v{c}x)(%v{b})		(%v{d})(%v{b})

- Then add each area together:

(%v{c}x)(%v{a}x)+(%v{d})(%v{a}x)+(%v{c}x)(%v{b})+(%v{d})(%v{b})
and then simplify:
%v{e}x^2+%v{f}x+%v{g}
Type in: %v{e}x^2+%v{f}x+%v{g}

---

26) Assistment #112675 "112675 - 106491 - FOIL"

Simplify the equation:
(1x+2)(10x+4)

You need to enter your answer in the right format for the computer to grade it.
1.Use standard form, which means you put the highest power first.
2. Use the ^ to show exponents just like you do with a graphing calculator.
3. Do not put in any spaces.

For example: 6 + x2 - 4x3 - 2x is - 4x3+ x2- 2x + 6 in standard form and

You would type in: -4x^3+x^2-2x+6

Fill in:

10x^2+24x+8

Hints:

- Be sure to read the rules in orange carefully.

To solve the problem:
Think of each poynomial as one side of a rectangle.

	10x	+	4
1x			
+			
2			

- Then calculate the area for each section of the rectangle.

	10x	+	4
1x	(10x)(1x)		(4)(1x)
+			
2	(10x)(2)		(4)(2)

- Then add each area together:

(10x)(1x)+(4)(1x)+(10x)(2)+(4)(2)
and then simplify:
$10x^2+24x+8$
Type in: 10x^2+24x+8

---

27) Assistment #106917 "106917 - FOIL"

Simplify the equation:

(%v{a}x-%v{b})(%v{c}x-%v{d})

You need to enter your answer in the right format for the computer to grade it.
1.Use standard form, which means you put the highest power first.
2. Use the ^ to show exponents just like you do with a graphing calculator.
3. Do not put in any spaces.

For example: 6 + x2 - 4x3 - 2x is - 4x3+ x2- 2x + 6 in standard form and
You would type in: -4x^3+x^2-2x+6

Fill in:

✓ %v{e}x^2-%v{f}x+%v{g}

Hints:

- Be sure to read the rules in orange carefully.

To solve the problem:
Think of each polynomial as one side of a rectangle.

	%v{c}x	+	-%v{d}
%v{a}x			
+			
-%v{b}			

- Then calculate the area for each section of the rectangle.

	%v{c}x	+	-%v{d}
%v{a}x	(%v{c}x)(%v{a}x)		(-%v{d})(%v{a}x)
+			
-%v{b}	(%v{c}x)(-%v{b})		(-%v{d})(-%v{b})

- Then add each area together:

(%v{c}x)(%v{a}x)+(-%v{d})(%v{a}x)+(%v{c}x)(-%v{b})+(-%v{d})(-%v{b})
and then simplify:
%v{e}x^2-%v{f}x+%v{g}
Type in: %v{e}x^2-%v{f}x+%v{g}

---

28) Assistment #112730 "112730 - FOIL"

Simplify the equation:
(3x-4)(3x-7)

You need to enter your answer in the right format for the computer to grade it.
1.Use standard form, which means you put the highest power first.
2. Use the ^ to show exponents just like you do with a graphing calculator.
3. Do not put in any spaces.

For example: 6 + x2 - 4x3 - 2x is - 4x3+ x2- 2x + 6 in standard form and
You would type in: -4x^3+x^2-2x+6

Fill in:

✓ 9x^2-33x+28

Hints:

- Be sure to read the rules in orange carefully.

To solve the problem:
Think of each polynomial as one side of a rectangle.

	3x	+	-7
3x			
+			
-4			

- Then calculate the area for each section of the rectangle.

	3x	+	-7
3x	(3x)(3x)		(-7)(3x)
+			
-4	(3x)(-4)		(-7)(-4)

- Then add each area together:

(3x)(3x)+(-7)(3x)+(3x)(-4)+(-7)(-4)
and then simplify:
$9x^2$-33x+28
Type in: 9x^2-33x+28

---

29) Assistment #106918 "106918 - FOIL"

Simplify the equation:
(%v{a}x+%v{b})(%v{c}x-%v{d})

You need to enter your answer in the right format for the computer to grade it.

1.Use standard form, which means you put the highest power first.

2. Use the ^ to show exponents just like you do with a graphing calculator.

3. Do not put in any spaces.

For example: 6 + x^2 - $4x^3$ - 2x is - $4x^3$+ x^2- 2x + 6 in standard form and
You would type in: -4x^3+x^2-2x+6

Fill in:

✓ %v{e}x^2+%v{f}x-%v{g}

✓ %v{e}x^2-%v{h}x-%v{g}

Hints:

- Be sure to read the rules in orange carefully.

To solve the problem:

Think of each polynomial as one side of a rectangle.

	%v{c}x	+	-%v{d}
%v{a}x			
+			
%v{b}			

- Then calculate the area for each section of the rectangle.

	%v{c}x	+	-%v{d}
%v{a}x	(%v{c}x)(%v{a}x)		(-%v{d})(%v{a}x)
+			
%v{b}	(%v{c}x)(%v{b})		(-%v{d})(%v{b})

- Then add each area together:

(%v{c}x)(%v{a}x)+(-%v{d})(%v{a}x)+(%v{c}x)(%v{b})+(-%v{d})(%v{b})

and then simplify:

%v{e}x^2+%v{f}x-%v{g}

Type in: %v{e}x^2+%v{f}x-%v{g}

---

30) Assistment #112767 "112767 - FOIL"

Simplify the equation:

(9x+1)(6x-8)

You need to enter your answer in the right format for the computer to grade it.

1.Use standard form, which means you put the highest power first.

2. Use the ^ to show exponents just like you do with a graphing calculator.

3. Do not put in any spaces.

For example: $6 + x^2 - 4x^3 - 2x$ is $-4x^3 + x^2 - 2x + 6$ in standard form and
You would type in: -4x^3+x^2-2x+6

Fill in:

54x^2+-66x-8

54x^2-66x-8

Hints:

- Be sure to read the rules in orange carefully.

To solve the problem:
Think of each polynomial as one side of a rectangle.

	6x	+	-8
9x			
+			
1			

- Then calculate the area for each section of the rectangle.

	6x	+	-8
9x	(6x)(9x)		(-8)(9x)

+		
1	(6x)(1)	(-8)(1)

- Then add each area together:

(6x)(9x)+(-8)(9x)+(6x)(1)+(-8)(1)
and then simplify:
$54x^2$+-66x-8
Type in: 54x^2+-66x-8

APPENDIX D: Post Tests

Post Tests Administered by this Interactive Qualifying Project group. This section contains the post tests for the three classes involved in this study. These problems were given in a test format, where the students receive no feedback on their answers, but are still allowed to see tutoring if they wish (resulting in an automatic wrong answer). The problems for this section of the appendix are shown without tutoring, as the point is to demonstrate the range of skills tested for each class.

NOTE: Due to the way in which some of these problems were created in ASSISTments, the images do not show up properly when transferred to a word document. These problems all contain appropriate images based on the nature of the question. The problem lies in the fact that the images are overlaid on a table, which when copied, is read as simply an empty table containing any typed values that pertain to the particular question.

Grafton Pre-Algebra Post Test

Problem Set "Sequence #30011" id:[30011]

1) Assistment #67221 "67221 - Base Area: 26 squ..."

Base Area: 26 square inches
Lateral Surface Area: 369 square inches

What is the Surface Area of the hexagonal prism shown below? (in square inches)

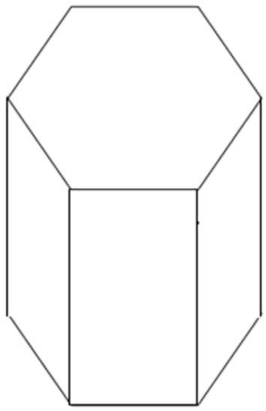


image not to scale

If there is not enough information to solve type 0.

2) Assistment #67135 "67135 - 62195 - SA of cylinder (height, diameter)"

Diameter= 10 inches
Height = 4 inches

What is the Surface Area of the Cylinder shown below? (square inches)

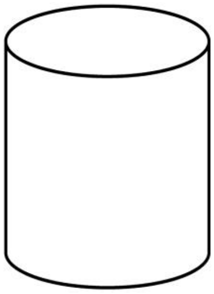


Image not to scale.

Use 3.14 for ∏.
If there is not enough information to solve, type 0.

---

3) Assistment #67372 "67372 - 62208 - SA of cylinder (side, radius)"

Area of Side A (A) = 8 square inches
Area of Side B (B) = 12 square inches
Total Surface Area (SA) = 100 square inches

What is the Area of Side C in the Rectangular Prism shown below? (square inches)

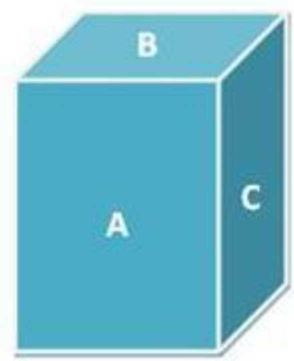


image not to scale

If there is not enough information to solve, type 0.

---

4) Assistment #70287 "70287 - 60219 - WP-Volume of cone (radius, height)"

A conical Water storage tank is 6 feet high and has a radius of 6 feet. What is the maximum volume of Water that can be stored in the tank?

Use 3.14 for ∏. Round any decimals to the nearest Hundredth.
If there is not enough information to solve, type 0.

---

5) Assistment #67870 "67870 - 56612 - Volume of Cylider (BaseArea, Height)"

Base Area = 50 in.^{2}
Height = 8 in.

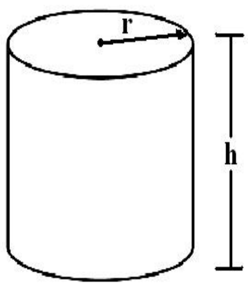


image not to scale

What is the Volume of the cylinder (in^3)?
if there is not enough information type 0.
Use 3.14 for ∏.

---

6) Assistment #68761 "68761 - Volume: 290 cubic..."

Volume: 290 cubic inches
Height: 10 inches

What is the Base Area of the hexagonal prism shown below? (in square inches)

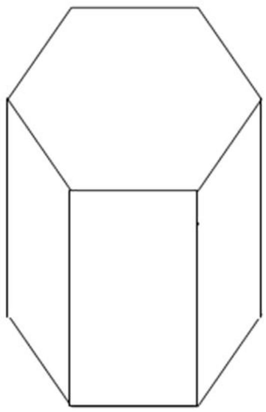


image not to scale

7) **Assistment #67661 "67661 - 61996 - Volume of rect. prism (l,w, height)"**

Volume = 80 cubic inches
Base Area = 16 square inches

What is the height of the rectangular prism shown below? (cubic inches)

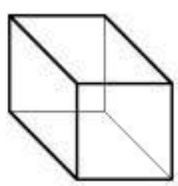


Image not to scale.

Use 3.14 for ∏. Round any decimals to the nearest Hundredth.
If there is not enough information to solve, type 0.

8) **Assistment #137317 "137317 - Median: Even Number of Values"**

Below is a list of numbers.

[26, 53, 38, 50, 85, 77, 43, 30, 91, 47, 55, 40]

What is the **median** number in this list?

9) Assistment #111487 "111487 - 57513 - Mode, 15"

Below is a set of numbers.

7, 34, 23, 15, 14, 15, 20, 15, 26, 34, 34, 23, 18, 34, 10

What is the **mode** of the given set of numbers?

10) Assistment #58474 "58474 - 57508 - Range, with Context, 8"

Beth's scores in 8 math tests are shown below. What is the range of Beth's scores?

27, 32, 24, 26, 11, 30, 37, 48

11) Assistment #172465 "172465 - March_2004_5_10"

Amanda is playing a game using a game piece in the shape of a regular triangular pyramid. Each of the four congruent faces of the pyramid is a different color: red, blue, green, or yellow.

If Amanda tosses the game piece 60 times, how many times is red most likely to be the color facing down?

12) Assistment #2145 "2145 - Probability 18 - 1999 Morph"

Use the chart below to answer this question

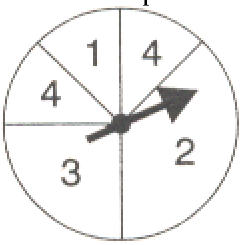
	Number of Band Members		
	Grade 6	**Grade 7**	**Grade 8**
Number	18	26	42

If a band member is chosen at random to represent the band at a parent-teacher meeting, which is the best estimate of the probability that an eighth grader will **not** be chosen?

- 67%
- 50%
- 33%
- 85%

13) Assistment #2110 "2110 - Probability 25 ? 1999"

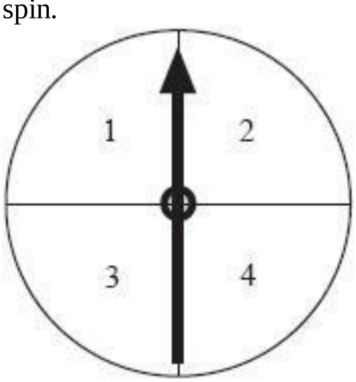
Use the spinner shown to answer this question.
What is the probability of spinning an odd number on this spinner?



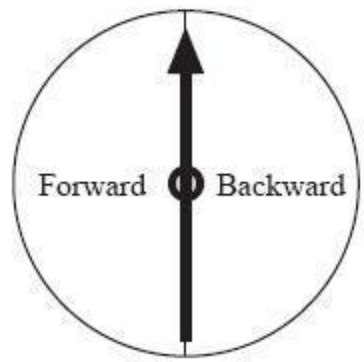
---

14) Assistment #62218 "62218 - 2002 spring 10th grade"

Janet is playing a game using the two spinners shown below. She will spin the arrow on each spinner once and will move a specified number of steps forward and backward according to the results of her spin.



Spinner 1



Spinner 2

What is the probability that Janet will have to move backward less than 4 steps?

---

15) Assistment #172466 "172466 - Nov_2003_8_10"

Four distinct points are shown on the number line below:

How many distinct line segments have two of these points as end points?

---

16) Assistment #63229 "63229 - 27523 - 2002 spring 10th grade"

In her closet, Mary has 6 different t-shirts, 5 different pairs of shorts, and 2 different hats. She pulls out 1 t-shirt, 1 pair of shorts, and 1 hat without looking.

How many different combinations of 1 t-shirt, 1 pair of shorts, and 1 hat are possible?

17) Assistment #27590 "27590 - Spring_2004_18_10"

Latrice plans to ride her bicycle a mean of 80 miles per week. During the last four weeks she has recorded distances of 76, 80, 82, and 74 miles.

How many miles must Latrice ride this week to obtain a 5-week mean of 80 miles?

---

18) Assistment #137347 "137347 - Median - Find Missing Data Points - Even"

What number should be added to the list below to get a **median** of 17.5?

11, 20, 8, 15, 29

- 9
- 12
- 33
- 1

Grafton “Low Level” Post Test

Problem Set "Grafton Low Level Problem set" id:[29083]

1) Assistment #132586 "132586 - radius definition"

Which of the following is true of a radius of a circle?

(1) Radius is the distance from the center to any point on the circle.
(2) Radius is half the diameter in any circle
(3) A circle may have different radii.

- Only (1) and (2)
- Only (2) and (3)
- Only (1) and (3)
- All (1), (2) and (3)

---

2) Assistment #139708 "139708 - Diameter of a circle using radius"

What is the **diameter** of the circle when the **radius** of the circle is 3?

3

image not to scale

---

3) Assistment #137813 "137813 - Identify side"

The shape shown below is a rectanglar prism. What is the length of edge n?

9

8

5

n

---

4) Assistment #137884 "137884 - Select prism"

Which of the following shapes is a right rectangular prism?

A

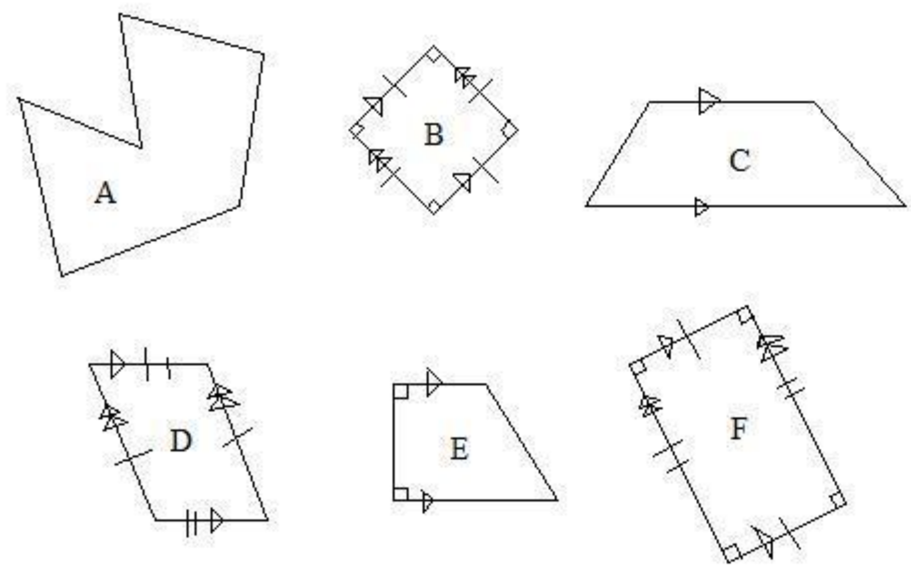
B

C

D

5) Assistment #143217 "143217 - Which of the foll..."

Which of the following figures are quadrilaterals? (Check all that apply)

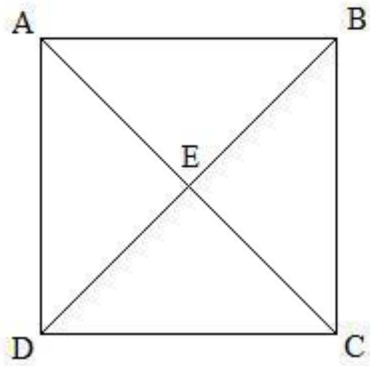


- ☐ A
- ☐ B
- ☐ C
- ☐ D
- ☐ E
- ☐ F

---

6) Assistment #143307 "143307 - If the following ..."

If the following shape is a rectangle:



If the length of the line segment EC is 7 units, what is the length of diagonal AC?

---

7) Assistment #144018 "144018 - Naming Polygons (Octagon)"

Which of the following shapes is an octagon?

A

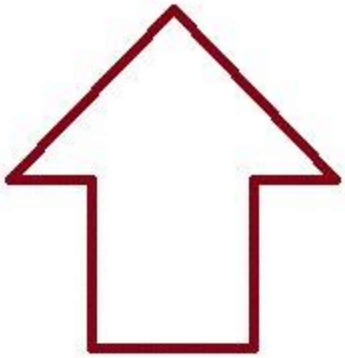
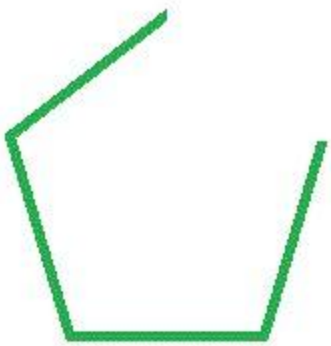
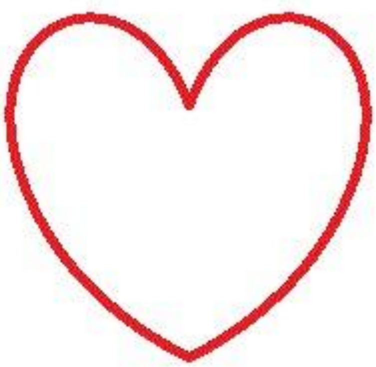
B

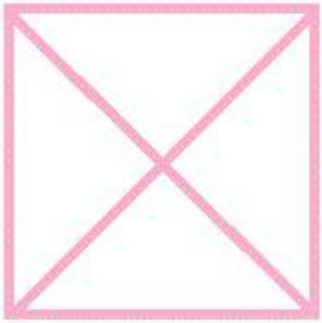
C

D

8) Assistment #144061 "144061 - 134809 - What is a Polygon? Check all that apply. (1correctpolygon)"

Please select all of the shapes that are polygons.

- [ ] 
- [ ] 
- [ ] 



9) Assistment #75142 "75142 - Supplementary Angles - Less Than 90"

127°

What is the value of angle **a** in the above figure?

10) Assistment #75123 "75123 - Supplementary Angles - Three Angles - Medium"

a

22° 52°

What is the value of angle **a** in the above figure?

11) Assistment #135447 "135447 - 27540 - Sum of Interior Angles - Triangle - Scalene"

What is the measure of angle a in degrees for the following scalene triangle?

68º 35º

12) **Assistment #172465 "172465 - March_2004_5_10"**

Amanda is playing a game using a game piece in the shape of a regular triangular pyramid. Each of the four congruent faces of the pyramid is a different color: red, blue, green, or yellow.

If Amanda tosses the game piece 60 times, how many times is red most likely to be the color facing down?

13) **Assistment #172466 "172466 - Nov_2003_8_10"**

Four distinct points are shown on the number line below:

How many distinct line segments have two of these points as end points?

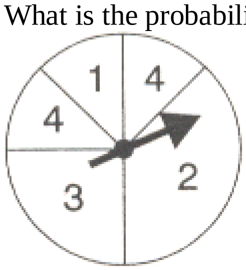
14) **Assistment #63229 "63229 - 27523 - 2002 spring 10th grade"**

In her closet, Mary has 6 different t-shirts, 5 different pairs of shorts, and 2 different hats. She pulls out 1 t-shirt, 1 pair of shorts, and 1 hat without looking.

How many different combinations of 1 t-shirt, 1 pair of shorts, and 1 hat are possible?

15) **Assistment #2110 "2110 - Probability 25 ? 1999"**

Use the spinner shown to answer this question.
What is the probability of spinning an odd number on this spinner?



16) **Assistment #2145 "2145 - Probability 18 - 1999 Morph"**

Use the chart below to answer this question

	Number of Band Members		
	Grade 6	**Grade 7**	**Grade 8**
Number	18	26	42

If a band member is chosen at random to represent the band at a parent-teacher meeting, which is the best estimate of the probability that an eighth grader will **not** be chosen?

- 67%
- 50%
- 33%
- 85%

Millbury Post Test

Problem Set "Millbury Practic Problem Set" id:[29086]

1) Assistment #132586 "132586 - radius definition"

Which of the following is true of a radius of a circle?

(1) Radius is the distance from the center to any point on the circle.
(2) Radius is half the diameter in any circle
(3) A circle may have different radii.

- Only (1) and (2)
- Only (2) and (3)
- Only (1) and (3)
- All (1), (2) and (3)

---

2) Assistment #132587 "132587 - radius definition"

Which of the following is true of a radius of a circle?

(1) Radius is twice the diameter in any circle
(2) Radius is the distance from the center to any point on the circle.
(3) All radii in circles have the same value.

- Only (1) and (2)
- Only (2) and (3)
- Only (1) and (3)
- All (1), (2) and (3)

---

3) Assistment #132589 "132589 - radius definition "

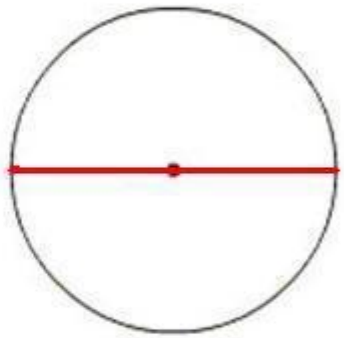
Which of the following is true of a radius of a circle?

(1) All radii have same value since all points on circle are equidistant from the center point
(2) Radius is half the diameter in any circle
(3) Radius is the distance from the center to any point on the circle.

- Only (1) and (2)
- Only (2) and (3)
- Only (1) and (3)
- All (1), (2) and (3)

4) Assistment #139695 "139695 - Radius of circle from diameter"

What is the **radius** of the circle when the **diameter** of the circle is 12?



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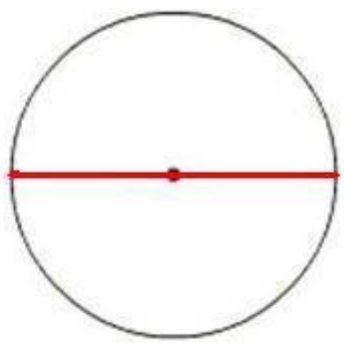
5) Assistment #139701 "139701 - Radius of circle from diameter"

What is the **radius** of the circle when the **diameter** of the circle is 18?



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6) Assistment #139708 "139708 - Diameter of a circle using radius"

What is the **diameter** of the circle when the **radius** of the circle is 3?

3

image not to scale

7) **Assistment #139719 "139719 - Diameter of a circle using radius"**

What is the **diameter** of the circle when the **radius** of the circle is 9?

9

image not to scale

8) **Assistment #143970 "143970 - Naming Polygons (Hexagon)"**

Which of the following shapes is a hexagon?

A

B

C

D

9) **Assistment #143974 "143974 - 140499 - Naming Polygons (Heptagon)"**

Which of the following shapes is a heptagon?

A

B

C

D

---

10) Assistment #144018 "144018 - Naming Polygons (Octagon)"

Which of the following shapes is an octagon?

A

B

C

D

11) **Assistment #144070 "144070 - 139385 - Naming Polygons (Pentagon)"**

Which of the following shapes is a pentagon?

A

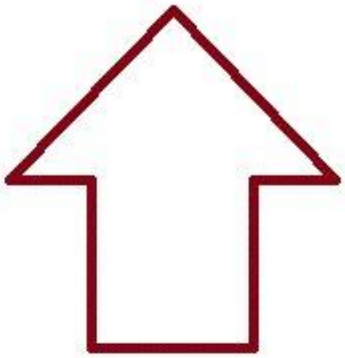
B

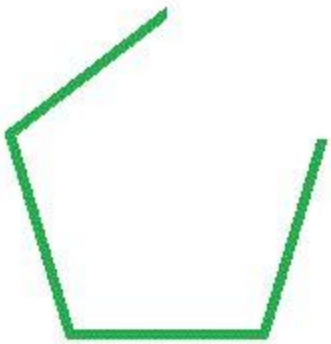
C

D

12) **Assistment #144061 "144061 - 134809 - What is a Polygon? Check all that apply. (1correctpolygon)"**

Please select all of the shapes that are polygons.

☐ 

☐ 

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13) Assistment #144090 "144090 - 143395 Convex/Concave Polygon (True or False)"

Is the following statement true or false?
This polygon is a "concave polygon".

- True
- False

---

14) Assistment #144117 "144117 - 140502 - Regular Polygon (True or False)"

Is the following statement true or false?
This polygon is a "regular polygon".

- True
- False

APPENDIX E: Student Survey

Student Survey on the ARRS system. This survey (written by Tin Myo Win and Anthony Spangenberger, who are members of the other Interactive Qualifying Project group) was given to the students involved in all studies done during the 2010-2011 school year. It was designed to provide feedback on the students' opinions on the ARRS system and their true participation by asking if they completed all of their assignments as asked.

Questions about Skill Building

This year you worked on special problem sets called Skill Builders where you had to work until you got three right in a row. On many of these skills you were also re-assessed to make sure you retained mastery. We would like to know how you feel about this system.

---

* Required

The time I spent doing all the Skill Building and Reassessments and Relearning was TIME WELL SPENT. *

- Disagree strongly
- Disagree somewhat
- Disagree
- Agree
- Agree somewhat
- Agree strongly

I like the challenge of working until I get three right in a row. *

- Disagree strongly
- Disagree somewhat
- Disagree
- Agree
- Agree somewhat

- Agree strongly

I feel that once I get three right in a row I know the topic and do not need to get re-assessed a week later. *

- Disagree strongly
- Disagree somewhat
- Disagree
- Agree
- Agree somewhat
- Agree strongly

I found that when I got a reassessment question wrong it was helpful to have to go back and practice a skill until I got three right in a row again. *

- Disagree strongly
- Disagree somewhat
- Disagree
- Agree
- Agree somewhat
- Agree strongly

It was really hard to keep up with the Reassessment tests and all the relearning I had to do. *

- Disagree strongly
- Disagree somewhat
- Disagree
- Agree
- Agree somewhat
- Agree strongly

Even thought it takes more time, adding reassessment and relearning to my homework was beneficial. *

- Disagree strongly
- Disagree somewhat
- Disagree
- Agree

- Agree somewhat
- Agree strongly

I feel as though the reassessment and retraining helped me retain the skills well into the year. * The post-test is the final test you took at the beginning of March.

- Disagree strongly
- Disagree somewhat
- Disagree
- Agree
- Agree somewhat
- Agree strongly

How often during skill building did you need to ask a teacher for help in a week? *

- Never
- 1-2 times
- 3-5 times
- More than 5 times per week

Continue »