

The Effectiveness of Mastery Learning in the ASSISTment Tutoring System

An Interactive Qualifying Project Report

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By

Alysia Hayes

Simon Goldish

Samuel M. Bailey

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Professor Neil Heffernan, Advisor

Abstract

A study to evaluate the effectiveness of mastery learning for MCAS mathematics tutoring among middle school students was performed. The ASSISTment system was used to create variabilized templates for the creation of mastery learning problem sets. The ASSISTment system was used to generate pre-tests and post-tests to evaluate the overall gain of the students involved in the experiment. The experiment concluded that there was an overall gain in test scores and mastery learning was effective to some extent

Acknowledgement

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1. Introduction

The ASSISTment Project, founded in 2003, was designed to assist students in improving MCAS scores using an online tutoring system. The purpose of the experiment was to determine the effectiveness of the ASSISTment tutoring with respect to the teacher's instruction. The ASSISTment system was designed as a way to test students on fine-grained skills, provide tutoring, and report their progress to teachers.

1.1 Purpose

The purpose of the study was to build content related to the MCAS skill sets and to determine if the tutoring was effective.

Each member of the team built a pre-test, a post-test (which was a morph¹ of the pre-test), and mastery learning problem sets.

The students were divided into a control group and an experimental group, which received the mastery learning. The experiment was designed to test if there was greater improvement in the students that received the mastery learning.

Statistical analysis was performed to ascertain the validity of the data.

¹ A morph is a copy of the original test using different numbers, images, and cover stories.

1.2 Hypothesis

It was expected that the scores of students who received mastery learning would improve on the post-test. This is because the mastery learning approach provided step by step instruction on how to solve each problem. Students who completed mastery learning were expected to become familiar with the format of questions on the pre-test and should therefore be able to break down and solve each corresponding problem on the post test.

On the other hand, if both the control and experimental group showed near identical improvement, it would be difficult to determine the effectiveness of mastery learning. In this situation, it is likely that the teacher's lectures are as effective as the tutoring provided in ASSISTments or a large percentage of the students "opted out" of the mastery learning problem set by answering their first mastery learning problem correctly.

2. Background

2.1 Massachusetts Comprehensive Assessment System (MCAS)

The Massachusetts Comprehensive Assessment System (MCAS) is designed to meet the requirements of the Education Reform Law of 1993. This law specifies that the testing program must test all public school students in Massachusetts, including students with disabilities and limited English proficient students; measure performance based on the Massachusetts Curriculum Framework learning standards; report on the performance of individual students, schools, and districts.

Figure 2-1 shows a sample page from the 2008 MCAS mathematics exam.

- 28 The table below shows the commissions that Roland earns selling computer equipment.

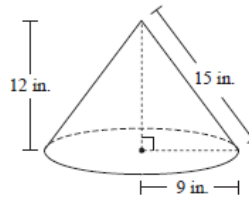
Roland's Commissions

Value of Computer Equipment Sold (\$)	Roland's Commission (\$)
500	25
1000	50
1200	60
2500	?
3200	160

Roland's commission varies directly with the value of computer equipment sold. What commission does he earn from selling computer equipment that has a value of \$2500?

- A. \$80
- B. \$100
- C. \$110
- D. \$125

- 29 A cap in the shape of a right circular cone is built on top of a chimney. A diagram representing the cap is shown below.



Based on the dimensions in the diagram, which of the following is closest to the lateral surface area of the cap?

- A. 212 sq. in.
- B. 339 sq. in.
- C. 424 sq. in.
- D. 565 sq. in.

- 30 Last year the value of Pat's car was \$8500. This year the value of her car is \$7000.

Which of the following is closest to the percent decrease in the value of Pat's car?

- A. 82%
- B. 45%
- C. 21%
- D. 18%

Figure 2-1: 2008 MCAS Math Exam Sample Page

Grade 7 mathematics were divided into several categories. The categories covered in this report are:

Accentuate the Negative

- order of operations
- sorting fractions and decimals from least to greatest
- scientific notation
- absolute value

Comparing and Scaling

- ratios
- percentages
- averages

Probability Review

- random selection
- combinations
- permutations
- compound and simple probabilities (i.e. multiplying the probabilities of 2 or more outcomes vs. just one outcome)

2.2 ASSISTment system

The mission statement of the ASSISTment system is “To provide cognitively based continuous assessment of students”. The ASSISTment system is a web based tutoring program that prepares student for the MCAS exam by providing them with similar problems, as well as tutoring. The tutoring was design to be simple and direct so as to provide a clear path to the solution. The program also allows teacher to track their students’ progress by providing them with a report that shows how long each student spent on a problem, how many hints they looked at and for how long, and what problems they answered incorrectly.

2.3 Content Builder

The builder was the software used for creating the ASSISTments and their problem sets. Figure 2-2 below shows a screenshot of the builder. In order to create a problem or problem set, one would need to log in as a content creator and click create new ASSISTment under the build tab. This brings up a panel with various buttons, tabs, and text boxes for creating the main problem, answers, and tutoring strategies. There also is a dropdown menu for changing the ASSISTment type to variabilized.

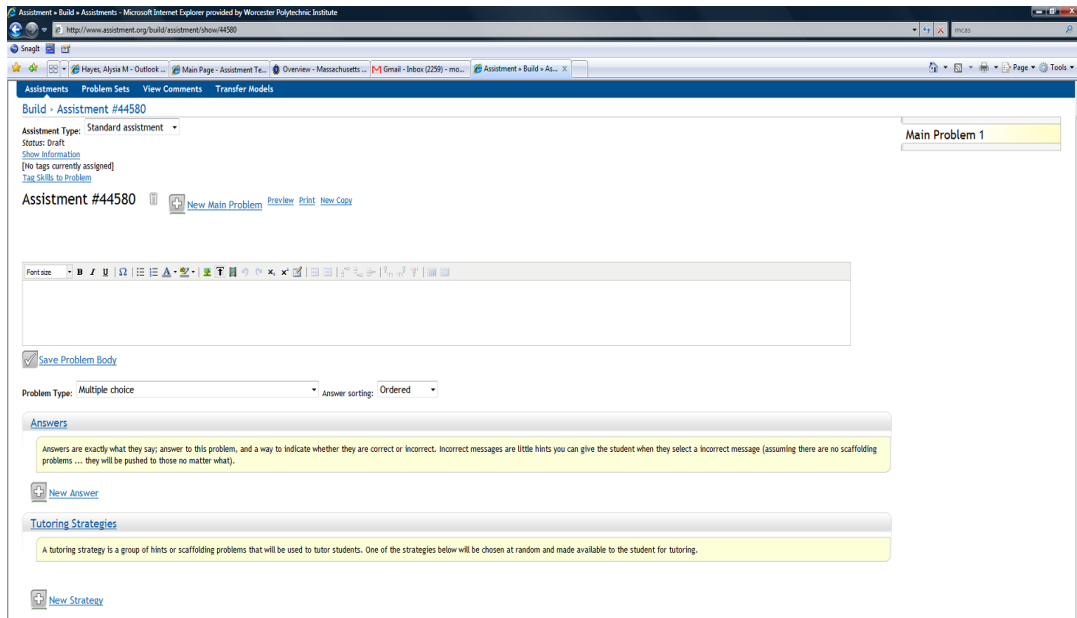


Figure 2-2: ASSISTments Content Builder

2.4 Building Variabilized ASSISTments and Problem Sets

The main difference between building a variabilized ASSISTment and building a regular ASSISTment is the use of variables to replace numbers. This enables the builder to generate multiple problems from one template. Figure 2-3 shows a side by side comparison of a regular ASSISTment and its variabilized counterpart. The variables can be randomly generated numbers within a determined range. These variabilized templates were used to generate the mastery learning problem sets. Each mastery learning problem set required fifty problems pertaining to each specific problem on the MCAS pretest. Creating so many problems would be a time consuming process. But the variabilized templates simplify the process by automating the creation of problems for the mastery learning problem sets.

The variabilized templates were created by replacing key numbers and words in an ASSISTment with an integer or string variable respectively. The main challenge here was determining how to find an appropriate range of values that would provide reasonable answers to the problems and to create formulas for displaying answers. For example: If x must be divisible by 3, then the variable is described by $3 * (\text{random } y)$, where (random y) is a randomly generated integer between 0 and y .

Variables could be placed in a 'set', so that if one particular value were randomly chosen for one variable, the corresponding value would be chosen for all other variables within the set. For example: If one variable could be aquarium, parking lot, or pet store and another could be shark, car, or dog, then if aquarium were randomly picked for the first variable, a set would require shark to be selected for the second variable. This was primarily useful in allowing the variabilized problems to have different cover stories, or if no equation could easily be used to represent the problem's required answer.

27927 - Probability 16 - 2000 Morph

Font size: **B** *I* U | Ω | \equiv | | | | | | | | | | |

A bag contains 3 red, 4 green, and 3 blue balls.
John is going to draw out a ball without looking in the bag.
What is the probability that he will draw either a green or a blue ball?

Save Problem Body

Problem Type: Algebra

Answers

.7

New Answer

30246 - Probability with Marbles

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A bag contains %v(r) red, %v(g) green, and %v(b) blue %v(set)s. John is going to draw out a %v(set) without looking in the bag.
What is the probability that he will draw either a green or a blue %v(set)?

Save Problem Body

Problem Type: Algebra

Variables

r = rand(9)+1
g = rand(9)+1
b = rand(8)+2
set = {ball,marble,pen,popsicle}
Variable has string values.
 New variable

Answers

%v(g+b)/%v(r+g+b)

New Answer

Figure 2-3: Regular vs. Variabilized ASSISTment

3. Literature Review

In the mid 1960s, Benjamin Bloom began researching the instructional issues involved in mastery learning. He recognized that students' individual differences posed a problem for teachers because they were placed in age based classrooms. Using traditional teaching methodology, Bloom found that only twenty percent of the students gained a complete understanding of the material that they had been taught. Bloom felt that the ideal teaching and learning situation occurred when a superior tutor worked with an individual student and tried to translate this into group based instructional settings. Bloom found that traditional tests used by teachers did little more than show who had benefited from the initial instruction and who had not. He recommended that teachers use these end of the unit tests to diagnose learning difficulties and give remedial procedures. This was referred to as feedback and correctives. He labeled this strategy "mastery learning". He labeled the end of the unit assessment "formative", meaning that it would provide information regarding what students had learned and what they needed to learn better. After students completed their corrective activities they were able to take a second formative assessment. This allowed teachers to verify whether the correctives had helped the students and served to motivate the students because they had a second chance to achieve success (Guskey).

In 1990 Kulik and Kulik conducted a meta-analysis of 108 evaluations of mastery learning programs. The results showed that mastery learning programs did help improve student performance, although the effects were more pronounced in relation

to social science than to math and the natural sciences. They found that mastery learning could be adapted to a larger range of students including those that learn at a slower pace than their fellows. They also found that the benefits of mastery learning endured rather than being a short-term boost. They also found that low aptitude students improved more drastically than high aptitude students. This is likely due to the fact that high aptitude students had less room for improvement (Davis).

The Journal of Educational Research in May of 1999 completed a study that looked at whether or not the quality of teaching affected the outcome of mastery learning significantly. Previous studies were shown to have not used adequate control for teacher effects. The results of the research revealed that there was a statistically reliable difference supporting the contention that the teacher rather than the procedure affected student performance. In addition, the results showed that mastery classes required twice as much of the teacher's time without commensurate increase in student achievement. One of the questions raised was whether or not mastery learning involves inefficient use of time. The study did not support the idea that additional time on tasks increased achievement or that mastery methods are beneficial to students who appear to be in need for additional remediation. Computer Assisted Instruction (CAI) was recommended as a method of dramatically reducing extra-time tasks and to track student's progress and even providing corrective feedback (Martinez).

ANDES is a mastery learning physics program created by the University of Pittsburgh. This program provides three kinds of help to students using it. ANDES dynamically checks for errors due to minor slips such as accidentally leaving an entry blank, a help button that explains what the student's doing wrong, and a series of hints that can be accessed throughout the problem. ANDES increases student learning by targeting and remedying errors. Because of the targeted help that was provided with the hints it's proven to be a more effective method of teaching the students than the textbook alone. The hints and repetition increased accuracy and the depth of student knowledge (VanLehn). Figure 3-1 below is a screenshot taken from the ANDES program.

ANDES Physics Workbench - [dt5a.fbd]

File Edit Diagram Variable View Help

A 2000-kg car in neutral at the top of a 20.0 deg inclined driveway 20.0 m long slips its parking brake and rolls down.

If we ignore friction and drag, what would the magnitude of the velocity of the car be when it hits the garage door?

Answer:

Variables

Name	Definition
T0	car starts rolling
T1	car hits garage door
x	axis
mc	mass of car
d	magnitude of the Displacement of
Fw	magnitude of the Weight Force on

1. $mc = 2000 \text{ kg}$

2. $d = 20.0 \text{ m}$

3. $Fw_y = mc * g$

4.

5.

6.

7.

8.

9.

10.

T: Now that you have stated all of the given information, you should start on the major principles. What quantity is the problem seeking?
 S: The magnitude of the instantaneous Velocity of car at time T1

T: Yep. What is the first principle application that you would like to work on? Hint: this principle application will usually be one that mentions the sought quantity explicitly. Therefore it's equation may contain the sought quantity that the problem seeks.

270 degrees

Figure 3-1: Screenshot of ANDES Physics Tutoring System

WPI also uses a program known as Mastering Physics to assist in teaching physics. However, it does not implement the mastery learning method of tutoring. It does provide hints for some of the problems and gives multiple opportunities to get the problem right.

Corbett and Anderson performed an experiment on computer science students comparing three different methods of tutoring for learning LISP. The first method was called “error flagging,” in which the program alerts the student of an error by highlighting

it but doesn't provide any assistance, in the hope that the student will realize how to fix the error on his own. The second method was called "Feedback on Demand," in which the student could request the tutor to search the code for errors at any time. The third method was called "standard immediate feedback and correction," in which the program would immediately call attention to and delete errors, requiring the student to try again. Students in all three categories performed equally well, but did better than those students who didn't receive any aid. Those who received feedback also required less time to complete the exercises (Corbett).

A 2004 article on the Online Web-Based Learning System (OWL) used to accompany chemistry textbooks outlined how mastery learning was being used online to improve student performance. It is used for homework and assessment in introductory, organic, and general chemistry. Students are not able to receive credit for an assignment until they have mastered all of the skills and concepts required. Due to OWL's paperless homework and automatic grading, instructors are able to customize OWL, therefore they are able to spend more time teaching and less time on administrative chores. Students are allowed to answer similar questions with different numbers. They are given feedback and step by step instruction in order to elicit a correct response. Teachers that are using the OWL program embrace it is a method of teaching and evaluation (PR Newswire).

4. Design Process

4.1 Organization

Our team worked on the Accentuate the Negative, Comparing and Scaling, and Probability Review sections of the MCAS. To keep all our documents organized as well as to share them with the rest of the group we stored everything in Google docs. For each problem that was created, we received feedback from our advisor and once all the edits were made the content was approved and the problem sets were ready to be used for testing.

4.2 Experiment Participants

The population of students for this experiment came from Mrs. Zietek's 7th grade cycle 4 math lab. There were four classes of students involved in this experiment. Two of Mrs. Zietek's four 7th grade math classes were assigned to the experimental group, while the other two were assigned to the control group. The experimental group would receive mastery learning, while the control group would only receive the teacher's daily instruction.

5. Experimental Design

5.1 Problem Set Creation

The first step in this year's work with the ASSISTment program was to take last year's tests and add tutoring to those problems that didn't already have it. Each test consisted of anywhere from six to thirteen problems and was organized by topic as represented on the MCAS. The first step in tutoring was choosing a format so that all tutoring would be consistent. The number of hints present, how much information was provided in each hint, and the specific word choice for asking for input and communicating with the student were all standardized between the problems. At this point variabilized templates were being implemented in beta (beta.assistment.org) and were soon to be added as an option to the regular ASSISTments program site. After creating mastery learning problem sets with the variabilized templates, the original tests were duplicated and the numbers and cover stories changed, thus generating the post-tests. The post tests were used to determine whether or not mastery learning aided the students in learning the material presented.

5.2 Implementation

The first data received was from all students, both control and experimental, who took the pre-tests. From there, the students in the experimental group were tutored through mastery learning using the mastery learning problem sets. See section 4.4 for an explanation of how mastery learning was executed.

Approximately two weeks after the pre-test was taken and the experimental group had sufficient time to receive mastery learning tutoring, both the control and experimental group were reevaluated with the post-tests.

5.3 Execution of Mastery Learning

For every mastery learning problem set, students who correctly answered the first question “opted out” and were not required to complete further mastery learning problems for that problem set. However, if a student got the first question wrong, in order to master the problem set they would then need to correctly answer three mastery learning problems consecutively.

6. Data Analysis

6.1 Data Collection

After each student completed the pre-test, post-test, and, if in the experimental group, mastery learning, the data from each class was exported to a Microsoft excel spreadsheet. The spreadsheet contained the following information:

Problem set id

ASSISTment id

Teacher

Student Name

Pre-test score

Pre-test problem answers and scores

Post-test score

Post-test problem answers and scores

The spreadsheets can be viewed in Appendix D.

The first step was to organize the data in the spreadsheet by group (i.e. control or experimental). The next step was to reject useless data, such as that from students designated as “goofers” (see section 5.2.2) or students who completed ASSISTments but weren’t on the class roster. For both the control and the mastery groups, averages, standard deviations, and gain scores were calculated

to determine the amount of improvement between the pre and post tests for each group. A t-test was also calculated to determine if the improvement in the mastery learning group was statistically reliable.

6.2 Accentuate the Negative

6.2.1 Accentuate the Negative Data

The following procedure was completed in order to gain analytical insight on the data received from the accentuate the negative tests.

First, the average score of each student on the pre-test was calculated from the control group and the group that received Mastery Learning.

Next, a t-test was performed on the data for the pre-test. The results are listed in Table 5-1.

Control Standard Deviation	20.15%
Mastery Learning Standard Deviation	19.16%
Control Average	66%
Mastery Learning Average	65%
T test	0.843

Table 6-1: Accentuate the Negative Pre-test Data

The t value is greater than .05. Therefore, the null hypothesis can't be rejected and we can confidently conclude that the data did come from two random selections drawn from a single uniform population.

Next, we calculated the average score on the post test for the students from the control group and the group that received Mastery learning. A t-test was also performed. The results are listed in Table 5-2.

Control Standard Deviation	19.4%
Mastery Learning Standard Deviation	22.9%
Control Average	73%
Mastery Learning Average	74%
T test	0.673

Table 6-2: Accentuate the Negative Post-test Data

Once again, the t value is greater than .05. The null hypothesis cannot be rejected and we can confidently conclude that the data did come from two random selections drawn from a single uniform population.

Finally, the impact of Mastery learning was analyzed by calculating the gain score between the pre-test and post-test for the control group and the group that received Mastery Learning. The results are listed in Table 5-3.

Control Standard Deviation	18.5%
Mastery Learning Standard Deviation	22.1%
Control Gain Score	7%
Mastery Learning Gain Score	10%
T test	0.540

Table 6-3: Accentuate the Negative Overall Gain Score Data

Looking at the table above, the value of the overall t-test was 0.5403. The t value is greater than .05, meaning that the null hypothesis cannot be

rejected and we can confidently conclude that the data did come from two random selections drawn from a single uniform population. This proved that there was no statistically reliable difference between learning in the control group and in the group that received Mastery Learning. There was 7% overall learning in the control group and 10% overall learning in the experimental group.

6.2.2 Data Rejection

We checked if there was a reliable difference between control and experimental performance if data from the non-learners designated “goofers”, students who refused to follow the instructions of ASSISTments or their teacher, were thrown out. The reasoning behind this is that there was no reason for unlearning, other than that students were guessing.

Throwing out the “goofers” still did not prove that there was any statistically reliable difference between the control group and the group that received mastery learning. The results are summarized in Table 5-4.

	Average score Pre-test	Average Score Post-test	Gain Score
control	64%	81%	17%
experiment	60%	79%	19%
all	62%	80%	18%
ttest	0.510	0.672	0.623

Table 6-4: Accentuate the Negative Data, Post “Goofers” Removal

There was more learning if the un-learners are disregarded, 17% overall learning for the control group and 19% overall learning for the group that received Mastery Learning, However, the value of the t-test is 0.62337. The t value is greater than .05, meaning that the null hypothesis cannot be rejected and we can confidently conclude that the data did come from two random selections drawn from a single uniform population.

6.2.3 Interpretation of Accentuate the Negative Data

While both the control and experimental group showed considerable improvement between the pre-test and the post-test, the t-test of this data demonstrates that the improvement was relatively equal for both groups. Therefore, we cannot conclude if the mastery learning was the cause for the improvement. The most likely reason for this is the fact that an average of 91% of students who received Accentuate the Negative mastery learning opted out, and therefore were unable to gain a significant advantage from it. This is shown in table 6-5 below. Another possible reason for this identical improvement is that the material is more straightforward than other types of MCAS testing material. It is also possible that the teacher's instruction was similar and just as effective as the tutoring presented in mastery learning.

	Accentuate the Negative	Comparing and Scaling
Average % opted out	90.989	67.137
Average % didn't opt out	9.011	32.863
T-test value on gain score	0.54	0.00673

Table 6-5: Opting Out Comparison Data

6.3 Comparing and Scaling

6.3.1 Comparing and Scaling Data

First, we calculate the average score on the pretest in both the control group and the group that received Mastery Learning. Then we perform a t-test upon the data for the pretest. Table 5-5 shows the results.

Control Standard Deviation	20.2%
Mastery Learning Standard Deviation	24.8%
Control Average	62.0%
Mastery Learning Average	60.7%
T test	0.781

Table 6-6: Comparing and Scaling Pre-test Data

That the t value is greater than .05 means that the null hypothesis can't be rejected and we can confidently conclude that the data did indeed come from two random selections drawn from a single uniform population.

Next, we calculate the average score on the post-test in both the control group and the group that received Mastery Learning. Table 5-6 shows the results.

Control Standard Deviation	16.3%
Mastery Learning Standard Deviation	18.4%
Control Average	57.4%
Mastery Learning Average	69.6%
T test	0.00162

Table 6-7: Comparing and Scaling Post-test Data

That the t value is less than .05 means that the null hypothesis can be rejected and we can confidently conclude that the Mastery Learning had a sizeable enough impact that the two groups can no longer be random selections from a uniform population.

But to determine whether the impact of Mastery Learning was a positive one or a negative one, next we calculate the gain score between the pretest and the post-test for both the control group and the group that received Mastery Learning. Table 5-7 shows the results.

Control Standard Deviation	22.3%
Mastery Learning Standard Deviation	23.1%
Control Average	-4.6%
Mastery Learning Average	8.95%
T test	0.00673

Table 6-8: Comparing and Scaling Gain Score Data

The gain score for the control group is a negative value, from which we can conclude that between the pretest and the post-test there was observable unlearning of the material presented. The gain score for the

Mastery Learning group, however, is a positive value, from which we can conclude that between the pretest and the post-test there was observable learning of the material presented. That the t value is less than .05 means that the null hypothesis can be rejected and we can confidently conclude that the students who received Mastery Learning learned more than those who did not.

6.3.2 Interpretation of Comparing and Scaling Data

Based on the gain score of the students who received mastery learning with respect to those who did not, it is obvious that there was considerable improvement due to the mastery learning tutoring. The fact that the t-test was less than 0.05 confirms that the improvement was statistically reliable and mastery learning was a success for the types of problems presented in comparing and scaling.

6.4 Probability Review

Unfortunately, no data is readily available for this section because testing is currently being conducted. However, this data will hopefully be available for analysis within the next few months.

7. Limitations and Future Suggestions

Although the project was successful in helping students gain a better understanding of the material, there are some improvements that could be made to the experiment and to ASSISTments as a whole.

First, in order to simplify the logistics of conducting this experiment, the control group and the experimental group each contained two randomly selected classes rather than an equal number of randomly selected students. The benefit of randomly selecting individual students is that it reduces the probability of one group starting out with a better grasp of the material than another.

Due to time constraints, not all of the material we created was used in the experiment by the time the report was written. This is due to the fact that teachers can only present a limited amount of material during this time interval. One way to improve this would be to increase the number of schools which participate in the experiment. This would not only allow for more material to be tested, but it would also provide a larger population from which to draw conclusions.

Also, some mastery learning problem sets were associated with complex ASSISTments, and contained problems testing several different skills. The problem with this is that students who correctly answered the first mastery learning problem they received “opted out” of the mastery learning problem set, and therefore only received tutoring in one of the skills tested by the problem set.

If they were having trouble with the associated problem because of one particular skill, they may never receive mastery learning aid on that skill. Then when they receive a problem on the post-test that requires one of the skills they didn't see tutoring for, they would show no sizable improvement since the pre-test. The suggestions to improve this are to:

- a) create more, simpler ASSISTments tagged with only one skill
- b) remove the opt out option
- c) assign the system such that students only complete mastery learning once they correctly answer problems with each skill tagged

Some improvements should be made in the ASSISTment system. For example, adding a spell-check to the builder and an easier method of inserting fractions, equations, tables and images would allow for the faster creation of more professional looking problems. Another improvement would be to increase the number of characters that can be listed in a variabilized ASSISTment set. The current value is 256 characters, which is insufficient for problems that have a large range of answers. Another improvement would be some system of error flagging for variabilized ASSISTments that would point out undeclared variables, improper data types, etc.

8. Conclusions

From the analysis of our data on Accentuate the Negative, there was no meaningful difference in the gain scores of the students in the mastery learning group and the students in the control group. However, in Comparing and Scaling the t-test confirmed that the improvement among mastery learning students was reliably greater than that of the students in the control group.

If mastery learning had been implemented more effectively (as suggested in section 6), these results could have been more consistent between the different topics.

Also, the environment in which the experiment was conducted was not ideal. For example, if students received help from their peers or their teacher during the testing process this would affect the results of the tests. Furthermore, if there are students who refuse to use the ASSISTment system and are just trying to complete the tests it is likely that they'll just click hints in an attempt to reach the final answers as quickly as possible, without actually learning the material.

Although there are several unknown variables which could have affected the outcome of this experiment, the fact that there was an overall improvement among students who received mastery learning confirms that it is a helpful tool in assisting the learning efforts of students. Since our group only had two sets of data to analyze, we cannot confidently say that mastery learning is the superior approach to tutoring.

9. References

Guskey, Thomas. "Defining the Differences between Outcome-based Education and Mastery Learning." *School Administrator*. 34. (1994).

Martinez, Joseph and Nancy Martinez. "Teacher Effectiveness and Learning for Mastery." *The Journal of Educational Research*. 279. (1999)

"Thomson Higher Education Provides Online Web-Based Learning (OWL) to Accompany Chemistry Textbooks; Online System Uses Mastery Learning to Improve Student Performance; Increase Retention of Learned Content." *PR Newswire*. (2004)

Davis, D., & Sorrell, J. (1995, December). Mastery learning in public schools. Paper prepared for PSY 702: Conditions of Learning. Valdosta, GA: Valdosta State University. Available online:
[<http://chiron.valdosta.edu/whuitt/files/mastlear.html>]

VanLehn, Kurt et al. "The Andes Physics Tutoring System: Lessons Learned." *International Journal of Artificial Intelligence in Education*, 15(3), 2005.

Corbett, Albert T. and John R. Anderson. "Feedback Control and Learning to Program with the CMU Lisp Tutor." http://act-r.psy.cmu.edu/papers/165/FeedbackControl_CorJRA.pdf

http://www.doe.mass.edu/mcas/2008/retest/nov_items.pdf

<http://www.doe.mass.edu/mcas/overview.html>

10 Appendix A: Accentuate the Negative

Problem Set "7th Grade Accentuate the Negative Test V1.0 With Tutoring (13 items)" id:[5312]

1) Assistent #27965 "27965 - 27965 Accentuate the Negative 7th - Ordering Integers and Fractions"

Arrange these numbers from least to greatest.

$-1/4$, 1.5, -0.33, $7/4$

Multiple choice:

- $-1/4$, 1.5, -0.33, $7/4$
- $-1/4$, 1.5, $7/4$, -0.33
- $-1/4$, $7/4$, -0.33, 1.5
- $-1/4$, $7/4$, 1.5, -0.33
- $-1/4$, -0.33, $7/4$, 1.5
- $-1/4$, -0.33, 1.5, $7/4$
- 0.33, $7/4$, 1.5, $-1/4$
- 0.33, $7/4$, $-1/4$, 1.5
- 0.33, 1.5, $-1/4$, $7/4$
- 0.33, 1.5, $7/4$, $-1/4$
- 0.33, $-1/4$, 1.5, $7/4$
- 0.33, $-1/4$, $7/4$, 1.5
- $7/4$, 1.5, $-1/4$, -0.33
- $7/4$, 1.5, -0.33, $-1/4$
- $7/4$, -0.33, 1.5, $-1/4$
- $7/4$, -0.33, $-1/4$, 1.5
- $7/4$, $-1/4$, -0.33, 1.5
- $7/4$, $-1/4$, 1.5, -0.33
- 1.5, $7/4$, $-1/4$, -0.33
- 1.5, $7/4$, -0.33, $-1/4$
- 1.5, $-1/4$, -0.33, $7/4$
- 1.5, $-1/4$, $7/4$, -0.33
- 1.5, -0.33, $7/4$, $-1/4$
- 1.5, -0.33, $-1/4$, $7/4$

Scaffold:

One way to order the numbers from least to greatest is to convert them all to decimals.

Let's start by converting $-1/4$ to a decimal. What is $-1/4$ written as a decimal?

Fill in:

- 0.25
- 25

Hints:

- Remember, $\frac{1}{4}$ is a quarter
- If you relate this to money, one quarter is 25 cents or 0.25 of a dollar.
- $-\frac{1}{4}$ is -0.25. Type in -0.25

Scaffold:

Now we have -0.25, 1.5, -0.33, and $\frac{7}{4}$.

What is $\frac{7}{4}$ written as a decimal?

Fill in:

✓ 1.75

Hints:

- We know $\frac{1}{4}$ is equal to 0.25
- So $\frac{7}{4}$ would be $7 * 0.25$
- $0.25 + 0.25 + 0.25 + 0.25 + 0.25 + 0.25 + 0.25$
 $1.00 + 0.75 = 1.75$
 So $\frac{7}{4}$ equals 1.75. Type in 1.75

Scaffold:

We know negative numbers are less than positive numbers.
 Therefore, 1.5 and $\frac{7}{4}$ are not the smallest.
 Now, let's find what number is the smallest.

Which is smaller -0.33 or $-\frac{1}{4}$?

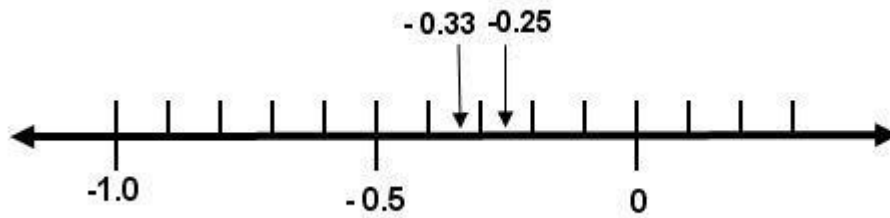
Multiple choice:

✓ -0.33

✗ $-\frac{1}{4}$

Hints:

- Remember, $-\frac{1}{4}$ is the same as -0.25
- Arrange the numbers on a number line in order to visualize the order.



- -0.33 is less than -0.25 or -0.33 is less than $-1/4$.
Select -0.33

Scaffold:

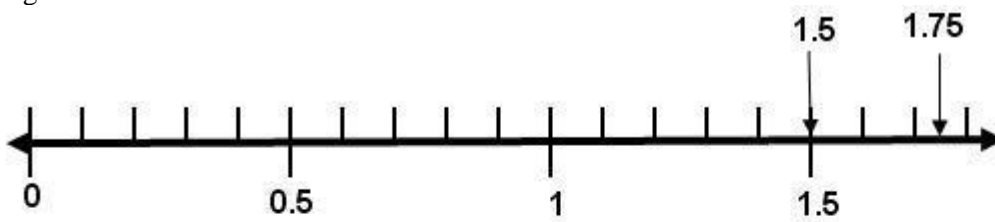
Which of the positive numbers is greater, 1.5 or $7/4$?

Multiple choice:

- ✓ A. $7/4$
- ✗ B. 1.5

Hints:

- Remember, $7/4$ is 1.75 in decimal form.
- Arrange 1.5 and 1.75 on a number line to visualize the order.



- 1.75 is greater than 1.5 or $7/4$ is greater than 1.5. Type in $7/4$

Scaffold:

Now, lets return to the original question.

What is the order of $-1/4$, 1.5 , -0.33 , $7/4$ from least to greatest?

Multiple choice:

- $-1/4, 1.5, -0.33, 7/4$
- $-1/4, 1.5, 7/4, -0.33$
- $-1/4, 7/4, -0.33, 1.5$
- $-1/4, 7/4, 1.5, -0.33$
- $-1/4, -0.33, 7/4, 1.5$
- $-1/4, -0.33, 1.5, 7/4$
- $-0.33, 7/4, 1.5, -1/4$
- $-0.33, 7/4, -1/4, 1.5$
- $-0.33, 1.5, -1/4, 7/4$
- $-0.33, 1.5, 7/4, -1/4$
- $-0.33, -1/4, 1.5, 7/4$
- $-0.33, -1/4, 7/4, 1.5$
- $7/4, 1.5, -1/4, -0.33$
- $7/4, 1.5, -0.33, -1/4$
- $7/4, -0.33, 1.5, -1/4$
- $7/4, -0.33, -1/4, 1.5$
- $7/4, -1/4, -0.33, 1.5$
- $7/4, -1/4, 1.5, -0.33$
- $1.5, 7/4, -1/4, -0.33$
- $1.5, 7/4, -0.33, -1/4$
- $1.5, -1/4, -0.33, 7/4$
- $1.5, -1/4, 7/4, -0.33$
- $1.5, -0.33, 7/4, -1/4$
- $1.5, -0.33, -1/4, 7/4$

Hints:

- Because negative numbers are less than positive numbers we can exclude some of the options.

Choose from

- $-1/4, -0.33, 7/4, 1.5$
- $-1/4, -0.33, 1.5, 7/4$
- $-0.33, -1/4, 1.5, 7/4$
- $-0.33, -1/4, 7/4, 1.5$

- We know -0.33 is less than $-1/4$, so choose from these:

- $-0.33, -1/4, 1.5, 7/4$
- $-0.33, -1/4, 7/4, 1.5$

- We know $7/4$ is the largest number, so the number order from least to greatest is $-0.33, -1/4, 1.5, 7.4$. Select $-0.33, -1/4, 1.5, 7.4$.

2) Assistentment #27966 "27966 - 27966 Accentuate the Negative 7th- Ordering Decimals"

Arrange these numbers from least to greatest

0.28, 0.064, -1.03, -0.17

Multiple choice:

- 0.28, 0.064, -1.03, -0.17
- 0.28, 0.064, -0.17, -1.03
- 0.28, -1.03, -0.17, 0.064
- 0.28, -1.03, 0.064, -0.17
- 0.28, -0.17, 0.064, -1.03
- 0.28, -0.17, -1.03, 0.064
- 0.064, 0.28, -0.17, -1.03
- 0.064, 0.28, -1.03, -0.17
- 0.064, -0.17, -1.03, 0.28
- 0.064, -0.17, 0.28, -1.03
- 0.064, -1.03, 0.28, -0.17
- 0.064, -1.03, -0.17, 0.28
- 1.03, -0.17, 0.28, 0.064
- 1.03, -0.17, 0.064, 0.28
- 1.03, 0.28, 0.064, -0.17
- 1.03, 0.28, -0.17, 0.064
- 1.03, 0.064, -0.17, 0.28
- 1.03, 0.064, 0.28, -0.17
- 0.17, -1.03, 0.064, 0.28
- 0.17, -1.03, 0.28, 0.064
- 0.17, 0.28, 0.064, -1.03
- 0.17, 0.28, -1.03, 0.064
- 0.17, 0.064, 0.28, -1.03
- 0.17, 0.064, -1.03, 0.28

Scaffold:

Are positive or negative numbers smaller?

Multiple choice:

- A. Positive
- B. Negative

Scaffold:

We know negative numbers are less than positive numbers.
Therefore 0.28 and 0.064 are not the smallest.
Now, let's find what number is the smallest.

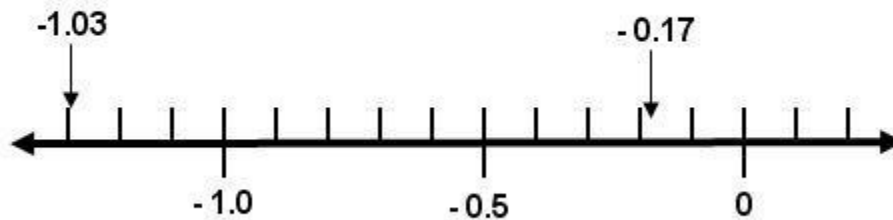
Which is smaller -1.03 or -0.17?

Multiple choice:

- ✓ A. -1.03
- ✗ B. -0.17

Hints:

- Arrange these numbers on a number line to visualize the order.



- 0.17 is closer to zero than -1.03.
Therefore -1.03 is smaller than -0.17.

Select -1.03

Scaffold:

For the positive numbers 0.28 and 0.064, which number is greater?

Multiple choice:

- ✓ A. 0.28
- ✗ B. 0.064

Hints:

- $0.28 = \frac{28}{100} = \frac{280}{1000}$

$$0.064 = \frac{64}{1000}$$

- $\frac{280}{1000}$ is greater than $\frac{64}{1000}$.

Therefore 0.28 is greater than 0.064.

Select 0.28

Scaffold:

Now, we can return to the original problem.

What is the order of 0.28, 0.064, -1.03, -0.17 from least to greatest?

Multiple choice:

- 0.28, 0.064, -1.03, -0.17
- 0.28, 0.064, -0.17, -1.03
- 0.28, -1.03, -0.17, 0.064
- 0.28, -1.03, 0.064, -0.17
- 0.28, -0.17, 0.064, -1.03
- 0.28, -0.17, -1.03, 0.064
- 0.064, 0.28, -0.17, -1.03
- 0.064, 0.28, -1.03, -0.17
- 0.064, -0.17, -1.03, 0.28
- 0.064, -0.17, 0.28, -1.03
- 0.064, -1.03, 0.28, -0.17
- 0.064, -1.03, -0.17, 0.28
- 1.03, -0.17, 0.28, 0.064
- 1.03, -0.17, 0.064, 0.28
- 1.03, 0.28, 0.064, -0.17
- 1.03, 0.28, -0.17, 0.064
- 1.03, 0.064, -0.17, 0.28
- 1.03, 0.064, 0.28, -0.17
- 0.17, -1.03, 0.064, 0.28
- 0.17, -1.03, 0.28, 0.064
- 0.17, 0.28, 0.064, -1.03
- 0.17, 0.28, -1.03, 0.064
- 0.17, 0.064, 0.28, -1.03
- 0.17, 0.064, -1.03, 0.28

Hints:

- Negative numbers are less than positive numbers, so we can exclude some of the options.

Choose from:

- 1.03, -0.17, 0.28, 0.064
- 1.03, -0.17, 0.064, 0.28
- 0.17, -1.03, 0.064, 0.28
- 0.17, -1.03, 0.28, 0.064

- We know -1.03 is less than -0.17, so choose from these:

- 1.03, -0.17, 0.28, 0.064
- 1.03, -0.17, 0.064, 0.28

- We know 0.28 is the largest number, so the number order from least to greatest is -1.03, -0.17, 0.064, 0.28.

Select -1.03, -0.17, 0.064, 0.28.

3) Assisment #27967 "27967 - 27967 Accentuate the Negative 7th- Ordering Integers"

The table below shows the low temperatures of four cities on one winter night.

Low Temperatures of Four Cities One Night

City	Temperature
Boston	4°F
Lowell	-1°F
Springfield	7°F
Worcester	-3°F

Which city had the lowest temperature that night?

Multiple choice:

- A. Boston
- B. Lowell
- C. Springfield
- D. Worcester

Scaffold:

City	Temperature
Boston	4°F
Lowell	-1°F
Springfield	7°F
Worcester	-3°F

Let's start by trying to make sense of the temperatures given.

Are positive or negative temperatures lower?

Multiple choice:

- A. Positive
- B. Negative

Scaffold:

Now, we are ready to try the original problem again.

City	Temperature
Boston	4°F
Lowell	-1°F
Springfield	7°F
Worcester	-3°F

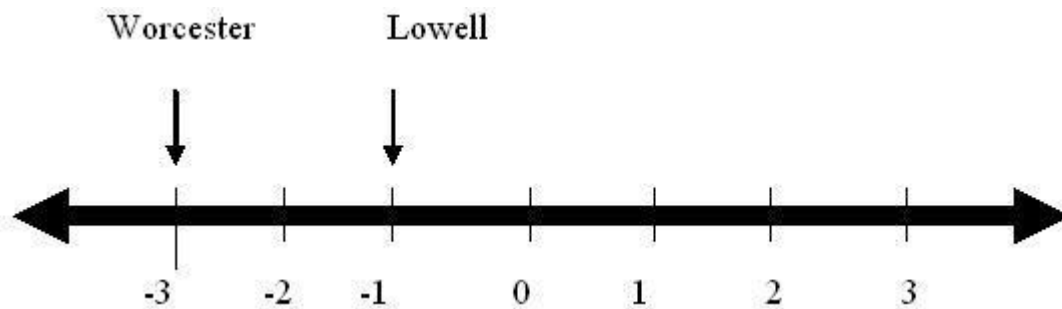
Which city had the lowest temperature that night?

Multiple choice:

- A. Boston
- B. Lowell
- C. Springfield
- D. Worcester

Hints:

- We know that negative numbers are lower than positive number
- We also know that Boston and Springfield can be excluded as having the lowest temperatures because they are positive.
- Arrange the temperature of Lowell and Worcester from least to greatest on a number line.



- -3 is less than -1 because it is further away from zero.
Therefore, Worcester has a lower temperature.

Select Worcester.

4) Assistent #27969 "27969 - 27969 Accentuate the Negative 7th-Scientific Notation"

Wrangell–St. Elias National Park and Preserve in Alaska covers 148,000,000 acres.

What is 148,000,000 written in scientific notation?

Multiple choice:

- ✗ A. 1.48×10^5
- ✗ B. 1.48×10^6
- ✓ C. 1.48×10^8
- ✗ D. 1.48×10^7

Scaffold:

Scientific notation is a method of writing a number in terms of a decimal number between 1 and 10 multiplied by a power of 10.

Let's start by working backwards.

What is $1.48 * 10^?$

Algebra:

- ✓ 14.8

Hints:

- A shortcut to multiplying by 10 is to move the decimal over one place to the right.



- If you move the decimal one place to the right, you get 14.8

Therefore, $1.48 * 10 = 14.8$

Type 14.8

Scaffold:

Now try $1.48 * 10^4$.

What is this number in standard form?

Algebra:

- ✓ 14,800

Hints:

- Each time you multiply by 10, you move the decimal to the right one place.
- You are multiplying 1.48 by ten four times.

$$1.48 * 10^4 = 1.48 * 10 * 10 * 10 * 10$$

- You must move the decimal over four times.

Add zeros to hold your place.

$$1.4800 = 14800.$$

- So $1.48 * 10^4 = 14,800$.
Type 14,800

Scaffold:

Now, you are ready to do the original problem.

Wrangell-St. Elias National Park and Preserve in Alaska covers 148,000,000 acres.
What is 148,000,000 written in scientific notation?

- A. $1.48 * 10^5$
- B. $1.48 * 10^6$
- C. $1.48 * 10^8$
- D. $1.48 * 10^7$

Multiple choice:

- A. $1.48 * 10^5$
- B. $1.48 * 10^6$
- C. $1.48 * 10^8$
- D. $1.48 * 10^7$

Hints:

- Lets start with $1.48 * 10^5$. This is $1.48 * 10 * 10 * 10 * 10 * 10$

Move the decimal 5 places to the right:

1.48000




$1.48 * 10^5 = 148,000$
This is too small.

- Next, try $1.48 * 10^6$. This is $1.48 * 10 * 10 * 10 * 10 * 10 * 10$

Move the decimal 6 places to the right:

1.4800000




$1.48 * 10^6 = 1,480,000$
This is still too small.

- Now try $1.48 * 10^8$. This is $1.48 * 10 * 10 * 10 * 10 * 10 * 10 * 10 * 10$

Move the decimal 8 places to the right:

1.480000000



$1.48 * 10^8 = 148,000,000$.
This is the number you were looking for.
Therefore, you do not have to go any further.

Choose $1.48 * 10^8$.

5) Assistent #27970 "27970 - 27970 Accentuate the Negative 7th - Absolute Value"

What is the value of the expression below?

$$|7| + |-11|$$

Algebra:

✓ 18

✗ -4

Scaffold:

The absolute value of a number is the distance that number is from zero.

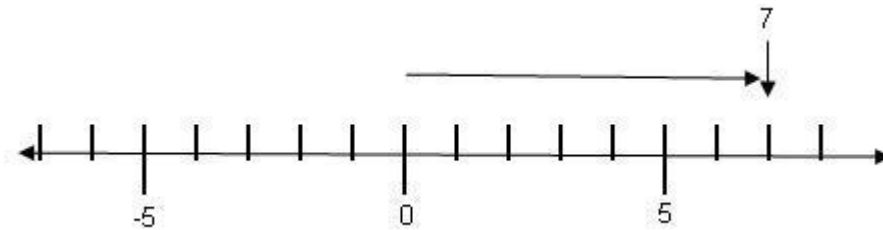
What is the value of $|7|$?

Algebra:

✓ 7

Hints:

- Place 7 on a number line to see how far it is from zero.



- $|7| = 7$ because 7 is 7 units away from zero.

Type in 7.

Scaffold:

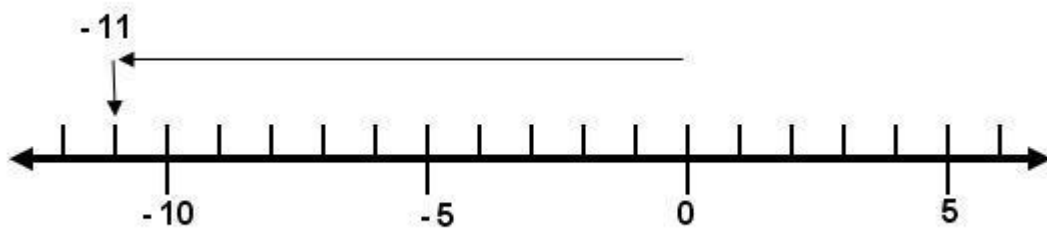
What is the value of $|-11|$?

Algebra:

✓ 11

Hints:

- Place -11 on a number line to see how far it is from zero.



- $|-11| = 11$ because -11 is 11 units away from zero.

Type in 11.

Scaffold:

Now try the original problem again.

What is the value of the expression below?

$$|7| + |-11|$$

Algebra:

✓ 18

Hints:

- Rewrite $|7| + |-11|$ without the absolute values.

- $|7| + |-11| = 7 + 11$

- Since,

$$|7| + |-11|$$

$$= 7 + 11$$

$$= 18$$

The value of $|7| + |-11|$ is 18.

Type in 18.

6) Assisment #27971 "27971 - 27971 Accentuate the Negative 7th- Exponents"

What is the value of this expression?

$$(4-7)^2$$

Fill in:

✓ 9

Scaffold:

You can use order of operations to find the value of the expression $(4-7)^2$.

Remember the Order of Operations

1. Parenthesis
2. Exponents (powers, roots, etc)
3. Multiplication & Division (from left to right)
4. Addition & Subtraction (from left to right)

This can be remembered as **PEMDAS**.

So first, simplify the expression, by simplifying what is inside the parentheses.

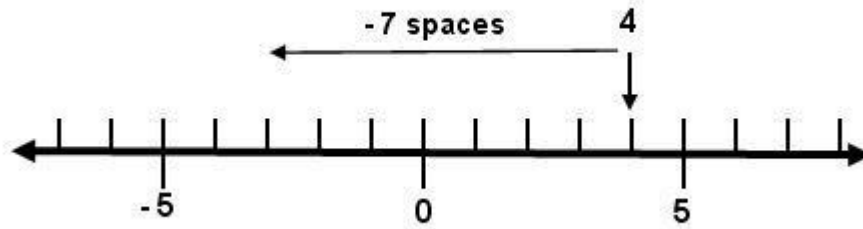
What is the value of $(4-7)$?

Algebra:

✓ -3

Hints:

- Use a number line. Start at 4 and go back 7 spaces.
- Your number line should look like this:



- 7 spaces to the left of 4 is -3.

Therefore, the value of $(4-7)$ is -3. Type in -3

Scaffold:

[Now let's go back to the original problem.](#)

What is the value of the expression $(4-7)^2$?

Algebra:

✓ 9

Hints:

- We found that when you solved inside the parentheses you get,

$$\begin{aligned} (4-7)^2 \\ = (-3)^2 \end{aligned}$$

- Remember, $(-3)^2$ is the same as $-3 * -3$.
- A negative number times a negative number results in a positive product.

- $$\begin{aligned} (-3)^2 \\ = -3 * -3 \\ = 9 \end{aligned}$$

Therefore, the value of the expression $(4-7)^2$ is 9.
Type in 9.

7) Assisment #27972 "27972 - 28760 Accentuate the Negative 7th- Addition and Subtraction"

A) Find the sum.

$$-3/4 + 1/4$$

Algebra:

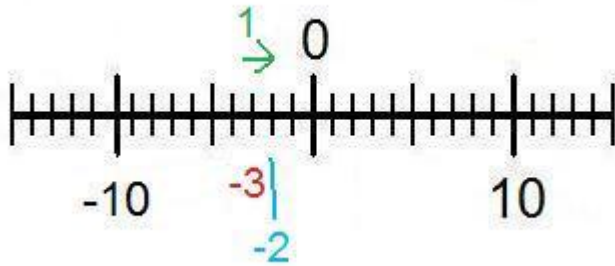
✓ $-1/2$

Hints:

- When adding or subtracting fractions you must first make sure that the denominators (bottom of the fraction) are equal. In this case they are both 4.

$$\frac{-3}{4} + \frac{1}{4}$$

- Now we just have to evaluate the numerators (top of the fraction) like you would normal integers. Here is a numberline to help visualize the problem.



- $-3 + 1 = -2$

Now we put the denominator back and we get the answer of $-2/4$

B) Find the difference.

$$-20 - (-60)$$

Algebra:

✓ 40

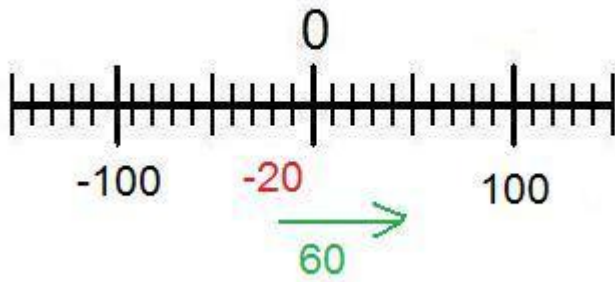
Hints:

- To make this problem easier you should first simplify the signs. Subtracting a negative number is the same thing as adding a positive number

$$-20 - (-60)$$

$$-20 + 60$$

- Now we can use a numberline to help solve the problem.



- Start at -20, move 60 places to the right (the positive direction) and end at 40, therefore the answer is 40.

You could also use the rule for adding integers, that is if two integers have different signs, subtract them and add the sign of the number with the highest absolute value (furthest from 0)

$$60 - 20 = 40$$

$$60 > 20$$

40

C) Find the Sum.

$$3.7 + -1.5$$

Algebra:

✓ 2.2

Hints:

- Adding a negative is the same as subtracting.

$$3.7 + -1.5$$

$$3.7 - 1.5$$

- This should be how the problem is set up on your paper.

$$\begin{array}{r} 3.7 \\ -1.5 \\ \hline \end{array}$$

- Now evaluate the rightmost number.

$$\begin{array}{r} 3.7 \\ -1.5 \\ \hline .2 \\ \uparrow \end{array}$$

- Now evaluate the next number

$$\begin{array}{r} 3.7 \\ -1.5 \\ \hline 2.2 \\ \uparrow \end{array}$$

- The answer is 2.2, type in 2.2.

8) Assistent #27973 "27973 - 28765 Accentuate the Negative 7th- Mutlification and Division"

A) Find the product:

$$\frac{1}{2} * -10 = ?$$

Algebra:

✓ -5

Hints:

- When you multiply two integers, remember to
First: Multiply the numbers while ignoring the signs
Then: Determine what the sign should be
- Applying this process to $\frac{1}{2} * -10 = ?$
 First, since $\frac{10}{1} = 10$, multiply $\frac{1}{2} * \frac{10}{1}$
 to get $\frac{10}{2}$

Then, determine the proper sign.

even number of negatives	$-1 * -1 = +1$
odd number of negatives	$-1 * +1 = -1$
odd number of negatives	$+1 * -1 = -1$
no negatives	$+1 * +1 = +1$

Since there is one negative (-10) and one positive ($\frac{1}{2}$), the sign is **negative**, making the answer $-\frac{10}{2}$ or simplified, **-5**

B) What is the value of p that makes the statement true?

$$-20 / p = -4$$

Fill in:

✓ 5

Hints:

even number of negatives $\frac{-1}{-1} = +1$

odd number of negatives $\frac{-1}{+1} = -1$

odd number of negatives $\frac{+1}{-1} = -1$

no negatives $\frac{+1}{+1} = +1$

•

You can use these rules to determine what sign P has to be.

• For the answer to be negative, P must be positive, just like the 2nd example above.

• Ignoring the signs, we need to find 20 divided by what equals 4.

$$20/?=4$$

• We know that $20/5=4$

Therefore $-20/5=-4$

Since P has to be positive for the signs to work out,

p=5

9) Assistent #27974 "27974 - 27974 Accentuate the Negative 7th- Order of Operations"

Find the value:

$$(7 - 34) \div 3^2 - 6(-3)$$

Fill in:

✓ 15

Scaffold:

We can use order of operations to find the value of the expression

$$(7 - 34) \div 3^2 - 6(-3).$$

Remember the Order of Operations

1. **Parenthesis**
2. **Exponents** (powers, roots, etc)
3. **Multiplication & Division** (from left to right)

4. Addition & Subtraction (from left to right)

This can be remembered as **PEMDAS**.

So first, simplify what is in the parentheses.

What is the value of $7 - 34$?

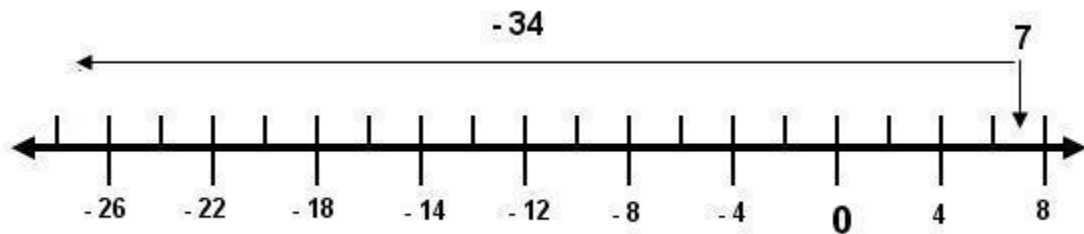
Algebra:

✓ -27

Hints:

- The easiest way to picture this is to use a number line.

Start at 7 and move 34 spaces to the left.



- After seven steps to the left, you will reach zero and be in the negatives.
- You will have to go $34 - 7 = 27$ steps into the negative side.
So, $7 - 34 = -27$. Type in -27

Scaffold:

Now, you should have this written on your paper:

$$(7 - 34) \div 3^2 - 6(-3) \\ = -27 \div 3^2 - 6(-3).$$

Next, the exponents must be simplified. What is the value of 3^2 ?

Algebra:

✓ 9

Hints:

- 3^2 is the same as $3 * 3$.
- $3 * 3 = 9$
- The value of 3^2 is 9. Type in 9

Scaffold:

After simplifying the exponents, you should have this written on your paper:

$$(7 - 34) \div 3^2 - 6(-3) \\ = -27 \div 3^2 - 6(-3) \\ = -27 \div 9 - 6(-3)$$

Next, perform multiplication and division operations in order from left to right.
What the expression be if all the multiplication and division steps are simplified?

Multiple choice:

- A. $3 - (-18)$
- B. $3 - 18$
- C. $-3 - (-18)$
- D. $-3 - 18$

Hints:

- To simplify the expression, move from left to right and do all division and multiplication operations.
- First look at $-27 \div 9$. $-27 \div 9$ is -3 . So we have $-3 - 6(-3)$
- Next, look at $6(-3)$. This is the same as $6 * -3$. $6 * -3 = -18$. So we have $-3 - (-18)$.
- If all the multiplication and division steps are simplified, the expression is $-3 - (-18)$. Choose $-3 - (-18)$.

Scaffold:

Now, we can return to the original problem.

What is the value of $(7 - 34) \div 3^2 - 6(-3)$?

Algebra:

15

Hints:

- So far, we have followed order of operations and done this much of the problem:

$$\begin{aligned}(7 - 34) \div 3^2 - 6(-3) \\ &= -27 \div 3^2 - 6(-3). \\ &= -27 \div 9 - 6(-3). \\ &= -3 - (-18)\end{aligned}$$

All we have left to do is add and subtract.

- $-3 - (-18)$ is the same as $-3 + 18$.
- $-3 + 18 = 15$
- Therefore, the value of $(7 - 34) \div 3^2 - 6(-3)$ is 15.
Type 15.

10) Assistentment #27975 "27975 - 27975 Accentuate the Negative 7th- Order of Operations"

Find the value:

$$8 - [30 \div (-3 \times 2) - 5] \times 2^2$$

Fill in:

✓ 48

✗ 32

Scaffold:

Order of operations can be used to find the value of the expression

$$8 - [30 \div (-3 \times 2) - 5] \times 2^2.$$

Remember the Order of Operations

1. **Parenthesis**
2. **Exponents (powers, roots, etc)**
3. **Multiplication & Division (from left to right)**
4. **Addition & Subtraction (from left to right)**

This can be remembered as **PEMDAS**.

So first work on what is inside the outer brackets, the part in blue.

$$8 - [30 \div (-3 \times 2) - 5] \times 2^2.$$

Which part inside of the blue brackets needs to be done first?

Multiple choice:

- ✓ A. Multiplication inside Parentheses
- ✗ B. Division
- ✗ C. Subtraction

Scaffold:

We know we need to do the multiplication inside the parentheses first. Then, we can do the division.

So, what is the value of the part in blue?

$$8 - [30 \div (-3 \times 2) - 5] \times 2^2?$$

Algebra:

✓ -5

Hints:

- First, do what is inside the parentheses.

$$8 - [30 \div (-3 \times 2) - 5] \times 2^2$$

$$8 - [30 \div (-6) - 5] \times 2^2$$

- Now you simplify what is left in blue:

$$8 - [30 \div (-3 \times 2) - 5] \times 2^2$$

$$8 - [30 \div (-6) - 5] \times 2^2$$

- $8 - [30 \div (-3 \times 2) - 5] \times 2^2$
 $8 - [30 \div (-6) - 5] \times 2^2$

$$8 - [-5 - 5] \times 2^2$$

The value of $30 \div (-3 \times 2)$ is -5 type in -5

Scaffold:

Now you can finish simplifying what is inside the brackets.

What is the value of the blue part inside the brackets?

$$8 - [30 \div (-3 \times 2) - 5] \times 2^2$$

Algebra:

✓ -10

Hints:

- We have done the part in red so far.

$$8 - [30 \div (-3 \times 2) - 5] \times 2^2$$

$$8 - [30 \div (-6) - 5] \times 2^2$$

$$8 - [-5 - 5] \times 2^2$$

- $-5 + -5 = -10$. so we can finish the part inside the bracket.

$$8 - [30 \div (-3 \times 2) - 5] \times 2^2$$

$$8 - [30 \div (-6) - 5] \times 2^2$$

$$8 - [-5 - 5] \times 2^2$$

$$8 - [-10] \times 2^2$$

- The part inside the brackets is -10. Type in -10

Scaffold:

Now that we know the value of what is inside the brackets, we can simplify the expression.

$$8 - [30 \div (-3 \times 2) - 5] \times 2^2$$

$$8 - [30 \div (-6) - 5] \times 2^2$$

$$8 - [-5 - 5] \times 2^2$$

$$8 - (-10) \times 2^2$$

So next, perform exponential operations. What is the value of 2^2 ?

Algebra:

✓ 4

Hints:

- 2^2 is the same as $2 * 2$.

- $8 - [30 \div (-3 \times 2) - 5] \times 2^2$

$$8 - [30 \div (-6) - 5] \times 2^2$$

$$8 - [-5 - 5] \times 2^2$$

$$8 - (-10) \times 2^2$$

$$8 - (-10) \times (2 \times 2)$$

- $2 * 2$ is 4.

$$8 - [30 \div (-3 \times 2) - 5] \times 2^2$$

$$8 - [30 \div (-6) - 5] \times 2^2$$

$$8 - [-5 - 5] \times 2^2$$

$$8 - (-10) \times 2^2$$

$$8 - (-10) \times (2 \times 2)$$

$$8 - (-10) \times 4$$

The value of 2^2 is 4. Type in 4

Scaffold:

Now, we can finish the original problem.

What is the value of $8 - [30 \div (-3 \times 2) - 5] \times 2^2$?

Algebra:

✓ 48

Hints:

- Now, you should have this on your paper:

$$8 - [30 \div (-3 \times 2) - 5] \times 2^2$$

$$8 - [30 \div (-6) - 5] \times 2^2$$

$$8 - [-5 - 5] \times 2^2$$

$$8 - (-10) \times 2^2$$

$$8 - (-10) \times (2 \times 2)$$

$$8 - (-10) \times 4$$

Now, we have to perform any multiplication/ division operations from left to right.

Then, add and subtract from left to right

- The only multiplication operation left in the expression $(-10) \times 4$.

$$-10 \times 4 = -40$$

- $8 - [30 \div (-3 \times 2) - 5] \times 2^2$

$$8 - [30 \div (-6) - 5] \times 2^2$$

$$8 - [-5 - 5] \times 2^2$$

$$8 - (-10) \times 2^2$$

$$8 - (-10) \times (2 \times 2)$$

$$8 - (-10) \times 4$$

$$8 - (-40)$$

- $8 - (-40)$ is the same as $8 + 40$ because a negative minus a negative is a positive.

- Now, this should be written on your paper:

$$8 - [30 \div (-3 \times 2) - 5] \times 2^2$$

$$8 - [30 \div (-6) - 5] \times 2^2$$

$$8 - [-5 - 5] \times 2^2$$

$$8 - (-10) \times 2^2$$

$$8 - (-10) \times (2 \times 2)$$

$$8 - (-10) \times 4$$

$$8 - (-40)$$

$$8 + 40$$

$$48$$

The value of $8 - [30 \div (-3 \times 2) - 5] \times 2^2$ is 48. Type in 48.

Problem Set "7th Grade Accentuate the Negative Post Test V1.0 With Tutoring (13 items)" id:[5866]

1) Assistent #31003 "31003 - 27965 Accentuate the Negative 7th- Ordering Fractions and Integers"

Arrange these numbers from least to greatest.

$\frac{1}{4}$, -1.7, 0.55, $-\frac{6}{4}$

Multiple choice:

- $\frac{1}{4}$, -1.7, 0.55, $-\frac{6}{4}$
- $\frac{1}{4}$, -1.7, $-\frac{6}{4}$, 0.55
- $\frac{1}{4}$, 0.55, -1.7, $-\frac{6}{4}$
- $\frac{1}{4}$, 0.55, $-\frac{6}{4}$, -1.7
- $\frac{1}{4}$, $-\frac{6}{4}$, 0.55, -1.7
- $\frac{1}{4}$, $-\frac{6}{4}$, -1.7, 0.55
- 1.7, $-\frac{6}{4}$, $\frac{1}{4}$, 0.55
- 1.7, $-\frac{6}{4}$, 0.55, $\frac{1}{4}$
- 1.7, 0.55, $-\frac{6}{4}$, $\frac{1}{4}$
- 1.7, 0.55, $\frac{1}{4}$, $-\frac{6}{4}$
- 1.7, $\frac{1}{4}$, 0.55, $-\frac{6}{4}$
- 1.7, $\frac{1}{4}$, $-\frac{6}{4}$, 0.55
- 0.55, $\frac{1}{4}$, -1.7, $-\frac{6}{4}$
- 0.55, $\frac{1}{4}$, $-\frac{6}{4}$, -1.7
- 0.55, -1.7, $\frac{1}{4}$, $-\frac{6}{4}$
- 0.55, -1.7, $-\frac{6}{4}$, $\frac{1}{4}$
- 0.55, $-\frac{6}{4}$, -1.7, $\frac{1}{4}$
- 0.55, $-\frac{6}{4}$, $\frac{1}{4}$, -1.7
- $-\frac{6}{4}$, 0.55, -1.7, $\frac{1}{4}$
- $-\frac{6}{4}$, 0.55, $\frac{1}{4}$, -1.7
- $-\frac{6}{4}$, $\frac{1}{4}$, 0.55, -1.7
- $-\frac{6}{4}$, $\frac{1}{4}$, -1.7, 0.55
- $-\frac{6}{4}$, -1.7, $\frac{1}{4}$, 0.55
- $-\frac{6}{4}$, -1.7, 0.55, $\frac{1}{4}$

Scaffold:

One way to order the numbers from least to greatest is to convert them all to decimals.

Let's start by converting $\frac{1}{4}$ to a decimal. What is $\frac{1}{4}$ written as a decimal?

Algebra:

- 0.25

Hints:

- Remember, $\frac{1}{4}$ is a quarter
- If you relate this to money, one quarter is 25 cents or 0.25 of a dollar.

- $1/4$ is 0.25. Type in 0.25

Scaffold:

Now we have 0.25, -1.7, 0.55, and $-6/4$.

What is $-6/4$ written as a decimal?

Algebra:

✓ -1.50

Hints:

- We know $1/4$ is equal to 0.25
 - So $6/4$ would be $6 * 0.25$
 - $0.25 + 0.25 + 0.25 + 0.25 + 0.25 + 0.25$
 $1.00 + 0.50 = 1.50$
- Replace the negative sign. Therefore $-6/4$ equals -1.50. Type in -1.50

Scaffold:

We know negative numbers are less than positive numbers.
 Therefore, $1/4$ and 0.55 are not the smallest.
 Now, let's find what number is the smallest.

Which is smaller $-6/4$ or -1.7?

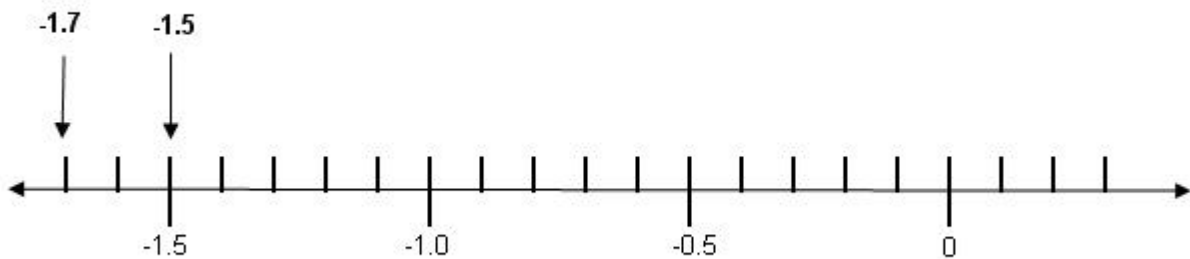
Multiple choice:

✓ -1.7

✗ $-6/4$

Hints:

- Remember, $-6/4$ is the same as -1.5
- Arrange the numbers on a number line in order to visualize the order.



- -1.7 is less than -1.5 or -1.7 is less than $-6/4$.
 Select -1.7

Scaffold:

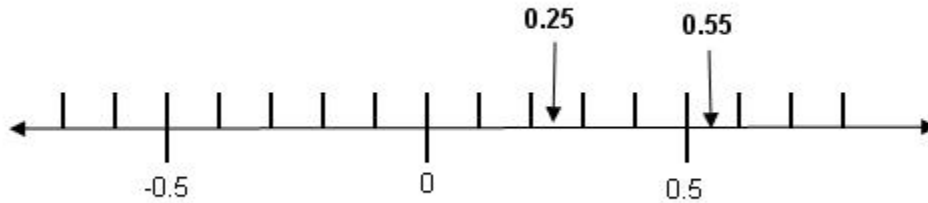
Which of the positive numbers is greater, $1/4$ or 0.55?

Multiple choice:

- A. $1/4$
- B. 0.55

Hints:

- Remember, $1/4$ is 0.25 in decimal form.
- Arrange $1/4$ and 0.55 on a number line to visualize the order.



- 0.55 is greater than 0.25 or 0.55 is greater than $1/4$. Select 0.55.

Scaffold:

[Now, lets return to the original question.](#)

What is the order of $1/4$, -1.7, 0.55, $-6/4$ from least to greatest?

Multiple choice:

- $1/4$, -1.7, 0.55, $-6/4$
- $1/4$, -1.7, $-6/4$, 0.55
- $1/4$, 0.55, -1.7, $-6/4$
- $1/4$, 0.55, $-6/4$, -1.7
- $1/4$, $-6/4$, 0.55, -1.7
- $1/4$, $-6/4$, -1.7, 0.55
- 1.7, $-6/4$, $1/4$, 0.55
- 1.7, $-6/4$, 0.55, $1/4$
- 1.7, 0.55, $-6/4$, $1/4$
- 1.7, 0.55, $1/4$, $-6/4$
- 1.7, $1/4$, 0.55, $-6/4$
- 1.7, $1/4$, $-6/4$, 0.55
- 0.55, $1/4$, -1.7, $-6/4$
- 0.55, $1/4$, $-6/4$, -1.7
- 0.55, -1.7, $1/4$, $-6/4$
- 0.55, -1.7, $-6/4$, $1/4$
- 0.55, $-6/4$, -1.7, $1/4$

- ✗ 0.55, -6/4, 1/4, -1.7
- ✗ -6/4, 0.55, -1.7, 1/4
- ✗ -6/4, 0.55, 1/4, -1.7
- ✗ -6/4, 1/4, 0.55, -1.7
- ✗ -6/4, 1/4, -1.7, 0.55
- ✗ -6/4, -1.7, 1/4, 0.55
- ✗ -6/4, -1.7, 0.55, 1/4

Hints:

-

Because negative numbers are less than positive numbers we can exclude some of the options.

Choose from

- 1.7, -6/4, 1/4, 0.55
- 1.7, -6/4, 0.55, 1/4
- 6/4, -1.7, 1/4, 0.55
- 6/4, -1.7, 0.55, 1/4

-

We know -1.7 is less than -6/4, so choose from these:

- 1.7, -6/4, 1/4, 0.55
- 1.7, -6/4, 0.55, 1/4

- We know 0.55 is the largest number,
so the number order from least to greatest is -1.7, -6/4, 1/4, 0.55
Select -1.7, -6/4, 1/4, 0.55

2) Assistent #31094 "31094 - 27966 Accentuate the Negative 7th- Ordering Decimals"

Arrange these numbers from least to greatest

-0.35, 0.053, -1.63, 0.57

Multiple choice:

- ✗ -0.35, 0.053, 0.57, -1.63
- ✗ -0.35, 0.053, -1.63, 0.57
- ✗ -0.35, 0.57, 0.053, -1.63
- ✗ -0.35, 0.57, -1.63, 0.053
- ✗ -0.35, -1.63, 0.57, 0.053
- ✗ -0.35, -1.63, 0.053, 0.57
- ✗ 0.053, -0.35, 0.57, -1.63
- ✗ 0.053, -0.35, -1.63, 0.57
- ✗ 0.053, 0.57, -0.35, -1.63
- ✗ 0.053, 0.57, -1.63, -0.35
- ✗ 0.053, -1.63, 0.57, -0.35

- ✗ 0.053, -1.63, -0.35, 0.57
- ✗ -1.63, 0.053, -0.35, 0.57
- ✗ -1.63, 0.053, 0.57, -0.35
- ✗ -1.63, 0.57, 0.053, -0.35
- ✗ -1.63, 0.57, -0.35, 0.053
- ✓ -1.63, -0.35, 0.053, 0.57
- ✗ -1.63, -0.35, 0.57, 0.053
- ✗ 0.57, -1.63, -0.35, 0.053
- ✗ 0.57, -1.63, 0.053, -0.35
- ✗ 0.57, 0.053, -1.63, -0.35
- ✗ 0.57, 0.053, -0.35, -1.63
- ✗ 0.57, -0.35, 0.053, -1.63
- ✗ 0.57, -0.35, -1.63, 0.053

Scaffold:

Are positive or negative numbers smaller?

Multiple choice:

- ✗ A. Positive
- ✓ B. Negative

Scaffold:

We know negative numbers are less than positive numbers.
Therefore 0.053 and 0.57 are not the smallest.
Now, let's find what number is the smallest.

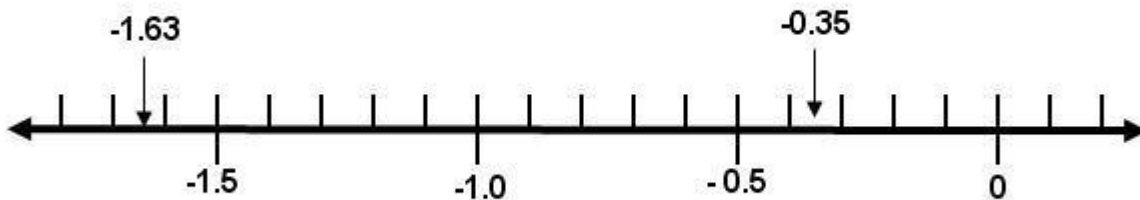
Which is smaller -0.35 or -1.63?

Multiple choice:

- ✗ A. -0.35
- ✓ B. -1.63

Hints:

- Arrange these numbers on a number line to visualize the order.



- -0.35 is closer to zero than -1.63.
Therefore -1.63 is smaller than -0.35.

Select -1.63

Scaffold:

For the positive numbers 0.053 and 0.57, which number is greater?

Multiple choice:

- A. 0.053
- B. 0.57

Hints:

- $0.053 = 53/1000$

$$0.57 = 57/100 = 570/1000$$

- $570/1000$ is greater than $53/1000$.

Therefore 0.57 is greater than 0.053
Select 0.57

Scaffold:

Now, we can return to the original problem.

What is the order of -0.35, 0.053, -1.63, 0.57 from least to greatest?

Multiple choice:

- 0.35, 0.053, 0.57, -1.63
- 0.35, 0.053, -1.63, 0.57
- 0.35, 0.57, 0.053, -1.63
- 0.35, 0.57, -1.63, 0.053
- 0.35, -1.63, 0.57, 0.053
- 0.35, -1.63, 0.053, 0.57
- 0.053, -0.35, 0.57, -1.63
- 0.053, -0.35, -1.63, 0.57
- 0.053, 0.57, -0.35, -1.63
- 0.053, 0.57, -1.63, -0.35
- 0.053, -1.63, 0.57, -0.35
- 0.053, -1.63, -0.35, 0.57
- 1.63, 0.053, -0.35, 0.57
- 1.63, 0.053, 0.57, -0.35
- 1.63, 0.57, 0.053, -0.35
- 1.63, 0.57, -0.35, 0.053
- 1.63, -0.35, 0.053, 0.57
- 1.63, -0.35, 0.57, 0.053

- ✗ 0.57, -1.63, -0.35, 0.053
- ✗ 0.57, -1.63, 0.053, -0.35
- ✗ 0.57, 0.053, -1.63, -0.35
- ✗ 0.57, 0.053, -0.35, -1.63
- ✗ 0.57, -0.35, 0.053, -1.63
- ✗ 0.57, -0.35, -1.63, 0.053

Hints:

- Negative numbers are less than positive numbers, so we can exclude some of the options.

Choose from:

- 1.63, -0.35, 0.053, 0.57
- 1.63, -0.35, 0.57, 0.053
- 0.35, -1.63, 0.57, 0.053
- 0.35, -1.63, 0.053, 0.57

- We know -1.63 is less than -0.35, so choose from these:

- 1.63, -0.35, 0.053, 0.57
- 1.63, -0.35, 0.57, 0.053

- We know 0.57 is the largest number,
so the number order from least to greatest is -1.63, -0.35, 0.053, 0.57

Select -1.63, -0.35, 0.053, 0.57

3) Assistent #31083 "31083 - 27967 Accentuate the Negative 7th-Ordering Integers"

The table below shows the low temperatures of four New England cities on one winter night.

Low Temperatures of Four Cities One Night

City	Temperature
Concord, NH	-5°F
Boston, MA	4°F
Hartford, CN	8°F
Augusta, ME	-4°F

Which city had the lowest temperature that night?

Multiple choice:

- ✓ A. Concord, NH
- ✗ B. Boston, MA
- ✗ C. Hartford, CN
- ✗ D. Augusta, ME

Scaffold:

Let's start by trying to make sense of the temperatures given.

City	Temperature
Concord, NH	-5°F
Boston, MA	4°F
Hartford, CN	8°F
Augusta, ME	-4°F

Are positive or negative temperatures lower?

Multiple choice:

- ✗ A. Positive
- ✓ B. Negative

Scaffold:

Now, we are ready to try the original problem again.

City	Temperature
Concord, NH	-5°F
Boston, MA	4°F
Hartford, CN	8°F
Augusta, ME	-4°F

Which city had the lowest temperature that night?

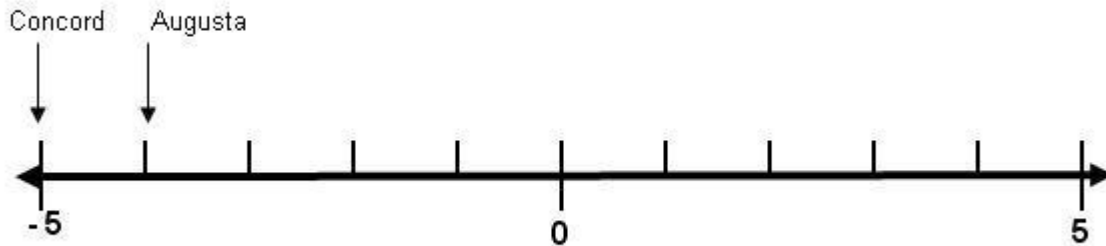
Multiple choice:

- ✓ A. Concord, NH
- ✗ B. Boston, MA
- ✗ C. Hartford, CN
- ✗ D. Augusta, ME

Hints:

- We know that negative numbers are lower than positive number

- We also know that Boston and Hartford can be excluded as having the lowest temperatures because they are positive.
- Arrange the temperature of Concord and Augusta from least to greatest on a number line.



- -5 is less than -4 because it is further away from zero. Therefore, Concord, NH has a lower temperature.

Select Concord, NH

4) Assistent #31047 "31047 - 27969 Accentuate the Negative 7th- Scientific Notation"

The world's population is estimated to be 6,700,000,000

What is 6,700,000,000 written in scientific notation?

Multiple choice:

- A. 6.7×10^6
- B. 6.7×10^{10}
- C. 6.7×10^9
- D. 6.7×10^7

Scaffold:

Scientific notation is a method of writing a number in terms of a decimal number between 1 and 10 multiplied by a power of 10.

Let's start by working backwards.

What is $6.7 * 10$?

Algebra:

- 67

Hints:

- A shortcut to multiplying by 10 is to move the decimal over one place to the right.



- If you move the decimal one place to the right, you get 67

Therefore, $6.7 * 10 = 67$

Type in 67

Scaffold:

Now try $6.7 * 10^4$.

What is this number in standard form?

Algebra:


✓ 67,000

Hints:

- Each time you multiply by 10, you move the decimal to the right one place.
- You are multiplying 6.7 by ten four times.

$$6.7 * 10^4 = 6.7 * 10 * 10 * 10 * 10$$

- You must move the decimal over four times.
Add zeros to hold your place.

$$6.7000$$

$$= 67,000$$

- So $6.7 * 10^4 = 67,000$.
Type 67,000

Scaffold:

Now, you are ready to do the original problem.

The world's population is estimated to be 6,700,000,000.

What is 6,700,000,000 written in scientific notation?


Multiple choice:

- A. 6.7×10^6
- B. 6.7×10^{10}
- C. 6.7×10^9
- D. 6.7×10^7

Hints:

- Lets start with $6.7 * 10^6$. This is $6.7 * 10 * 10 * 10 * 10 * 10 * 10$

Move the decimal 6 places to the right:

6.700000


= 6,700,000

$$6.7 * 10^6 = 6,700,000$$

This is too small.

- Next, try $6.7 * 10^{10}$. This is $6.7 * 10 * 10 * 10 * 10 * 10 * 10 * 10 * 10 * 10 * 10$

Move the decimal 10 places to the right:

6.7000000000


= 67,000,000,000

$$6.7 * 10^{10} = 67,000,000,000$$

This is too large

- Now try $6.7 * 10^9$. This is $6.7 * 10 * 10 * 10 * 10 * 10 * 10 * 10 * 10 * 10$

Move the decimal 9 places to the right:

6.700000000

= 6,700,000,000

$$6.7 * 10^9 = 6,700,000,000$$

This is the number you were looking for.

Therefore, you do not have to go any further.

Select $6.7 * 10^9$.

5) Assistent #31050 "31050 - 27970 Accentuate the Negative 7th- Absolute Value"

What is the value of the expression below?

$$|-9| + |7|$$

Fill in:

✓ 16

Scaffold:

The absolute value of a number is the distance that number is from zero.

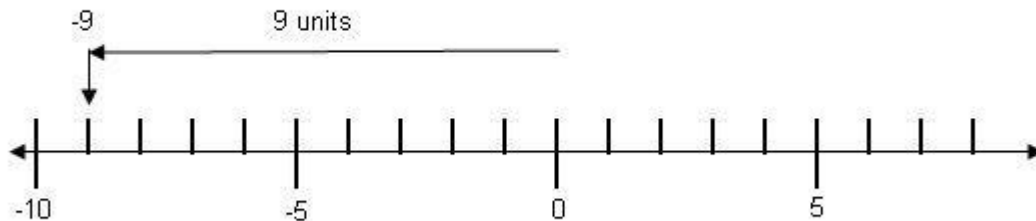
What is the value of $|-9|$?

Algebra:

✓ 9

Hints:

- Place -9 on a number line to see how far it is from zero.



- $|-9| = 9$ because -9 is 9 units away from zero.

Type in 9.

Scaffold:

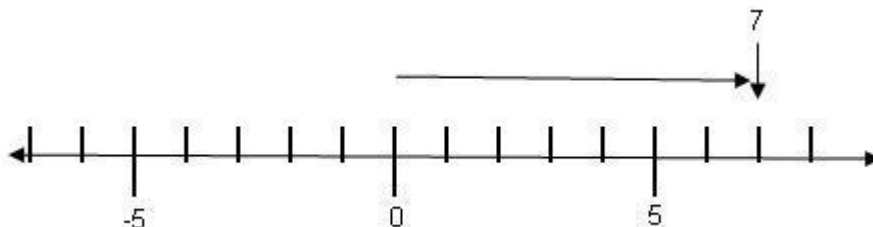
What is the value of $|7|$?

Algebra:

✓ 7

Hints:

- Place 7 on a number line to see how far it is from zero.



- $|7| = 7$ because 7 is 7 units away from zero.

Type in 7.

Scaffold:

Now try the original problem again.

What is the value of the expression below?

$$|-9| + |7|$$

Algebra:

✓ 16

Hints:

- Rewrite $|-9| + |7|$ without the absolute values.
- $|-9| + |7| = 9 + 7$
- Since,
 $|-9| + |7|$

$$= 9 + 7$$
$$= 16$$

The value of $|-9| + |7|$ is 16.
Type in 16.

6) Assistent #31053 "31053 - 27971 Accentuate the Negative 7th- Exponents"

What is the value of this expression?
 $(6-8)^2$

Fill in:

✓ 4

Scaffold:

You can use order of operations to find the value of the expression $(6-8)^2$.

Remember the Order of Operations

1. Parenthesis
2. Exponents (powers, roots, etc)
3. Multiplication & Division (from left to right)
4. Addition & Subtraction (from left to right)

This can be remembered as **PEMDAS**.

So first, simplify the expression, by simplifying what is inside the parentheses.

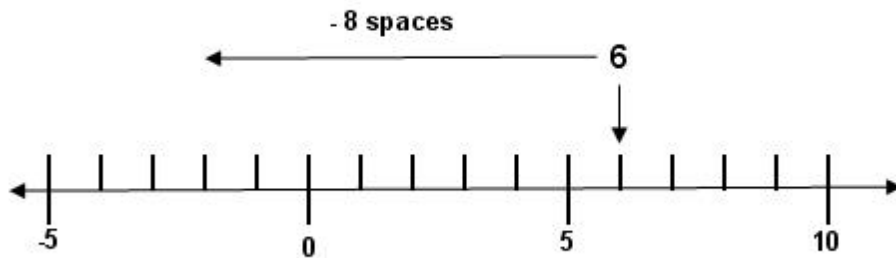
What is the value of $(6-8)$?

Algebra:

✓ -2

Hints:

- Use a number line. Start at 6 and go back 8 spaces.
- Your number line should look like this:



- 8 spaces to the left of 6 is -2.

Therefore, the value of $(6-8)$ is -2 . Type in -2

Scaffold:

Now let's go back to the original problem.

What is the value of the expression $(6-8)^2$?

Algebra:

✓ 4

Hints:

•

We found that when you solved inside the parentheses you get,

$$\begin{aligned}(6-8)^2 \\ = (-2)^2\end{aligned}$$

• Remember, $(-2)^2$ is the same as $-2 * -2$.

• A negative number times a negative number results in a positive product.

$$\begin{aligned}(6-8)^2 \\ (-2)^2 \\ -2 * -2 \\ =4\end{aligned}$$

Therefore, the value of the expression $(6-8)^2$ is 4.
Type in 4.

7) Assistent #31069 "31069 - 28760 Accentuate the Negative 7th- Addition and Subtraction"

A) Find the sum.

$$-4/5 + 2/5$$

Algebra:

✓ $-2/5$

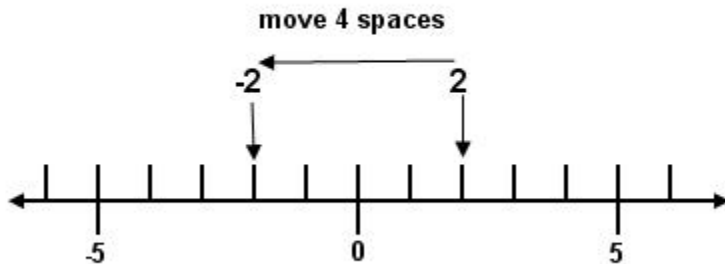
Hints:

- adding or subtracting fractions, you must first make sure that the denominators (bottom of the fraction) are equal. In this case they are both 5.

$$-\frac{4}{5} + \frac{2}{5}$$

- Now, we just have to evaluate the numerators (top of the fraction) like you would normal integers.

Use a numberline to help visualize the problem.



- $-4 + 2 = -2$

Now, all we have to do is replace the denominators.

$$\frac{-4}{5} + \frac{2}{5} = \frac{-2}{5}$$

Type in $-2/5$

B) Find the difference.

$$-20 - (-38)$$

Algebra:

✓ 18

Hints:

- To make this problem easier you should first simplify the signs.

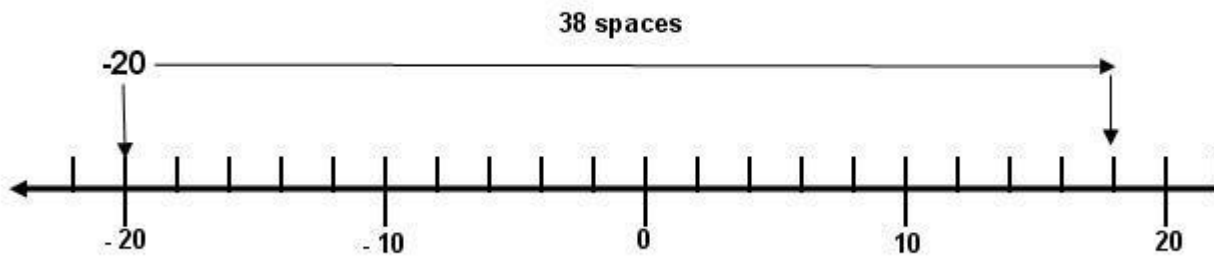
Subtracting a negative number is the same thing as adding a positive number

$$-20 - (-38)$$

$$-20 + 38$$

- Now we can use a number line to help solve the problem.

Start at -20 and move 38 places to the right (the positive direction)



- 38 places to the right of -20 is 18.

Therefore, $-20 - (-38) = 18$.

Type in 18.

You could also use the rule for adding integers, that is if two integers have different signs, subtract them and add the sign of the number with the highest absolute value (furthest from 0)

$$38 - 20 = 18$$

$38 > 20$ (therefore, positive sign)

18

C) Find the Sum.

$$6.9 + -3.5$$

Algebra:

✓ 3.4

Hints:

-

Adding a negative is the same as subtracting.

$$6.9 + -3.5$$

$$6.9 - 3.5$$

- This should be how the problem is set up on your paper.

$$\begin{array}{r} 6.9 \\ - 3.5 \\ \hline \end{array}$$

- Now, subtract 5 tenths from 9 tenths.

$$\begin{array}{r} 6.9 \\ - 3.5 \\ \hline .4 \end{array}$$

- Next subtract 3 from 6.

$$\begin{array}{r} 6.9 \\ - 3.5 \\ \hline 3.4 \end{array}$$

- The sum of $6.9 + -3.5$ is 3.4

Type in 3.4

8) Assisment #31075 "31075 - 28765 Accentuate the Negative 7th- Multiplication and Division"

A) Find the product:

$$\frac{1}{5} * -30 = ?$$

Algebra:

✓ -6

Hints:

even number of negatives $-1 * -1 = +1$

odd number of negatives $-1 * +1 = -1$

odd number of negatives $+1 * -1 = -1$

no negatives $+1 * +1 = +1$

-
- When you multiply two integers, remember to

First: Multiply the numbers while ignoring the signs

Then: Determine what the sign should be

- $\frac{1}{-} \times \frac{3}{+} = \frac{3}{-}$

Applying this process to 5

Multiply $\frac{1}{5} \times \frac{30}{1}$ to get $\frac{30}{5}$

- Then, determine the proper sign.

Since there is one negative (-30) and one positive (1/5), the sign is **negative**.

- Therefore,
 $\frac{1}{5} * -30$
 $= - 30/5$
 $= -6$

Type in -6

B) What is the value of p that makes the statement true?

$$-45 / p = -15$$

Fill in:

✓ 3

Hints:

even number of negatives $\frac{-1}{-1} = +1$

odd number of negatives $\frac{-1}{+1} = -1$

odd number of negatives $\frac{+1}{-1} = -1$

no negatives $\frac{+1}{+1} = +1$

•

You can use these rules to determine what sign P has to be.

• For the answer to be negative, P must be positive, just like the 2nd example above.

•

Ignoring the signs, we need to find 45 divided by what equals 15.

$$45 = 15$$

—
?

•

We know that $\frac{45}{3} = 15$

In order for the signs to work out, 3 must be positive.

Therefore $\frac{-45}{3} = -15$ and $p = 3$

Type in 3.

9) Assistentment #31054 "31054 - 27974 Accentuate the Negative 7th- Order of Operations"

Find the value:

$$(20 - 36) \div 2^2 - 7(-3)$$

Fill in:

✓ 17

Scaffold:

We can use order of operations to find the value of the expression

$$(20 - 36) \div 2^2 - 7(-3)$$

Remember the Order of Operations

1. **Parenthesis**
2. **Exponents** (powers, roots, etc)
3. **Multiplication & Division** (from left to right)
4. **Addition & Subtraction** (from left to right)

This can be remembered as **PEMDAS**.

So first, simplify what is in the parentheses.

What is the value of **20 - 36**?

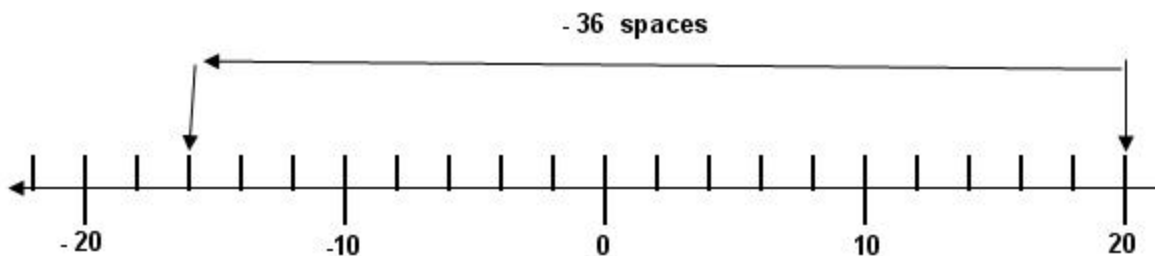
Algebra:

✓ -16

Hints:

- The easiest way to picture this is to use a number line.

Start at 20 and move 36 spaces to the left.



- After twenty steps to the left, you will reach zero and be in the negatives.
 - You will have to go $36 - 20 = 16$ steps into the negative side.

So, $20 - 36 = -16$. Type in -16

Scaffold:

Now, you should have this written on your paper:

$$(20 - 36) \div 2^2 - 7(-3)$$
$$= -16 \div 2^2 - 7(-3).$$

Next, the exponents must be simplified. What is the value of 2^2 ?

Algebra:

✓ 4

Hints:

- 2^2 is the same as $2 * 2$.
-
- $2 * 2 = 4$
- The value of 2^2 is 4. Type in 4

Scaffold:

After simplifying the exponents, you should have this written on your paper:

$$(20 - 36) \div 2^2 - 7(-3)$$
$$= -16 \div 2^2 - 7(-3)$$
$$= -16 \div 4 - 7(-3)$$

Next, perform multiplication and division operations in order from left to right.
What the expression be if all the multiplication and division steps are simplified?

Multiple choice:

- ✗ A. $4 - (-21)$
- ✗ B. $4 - 21$
- ✓ C. $-4 - (-21)$
- ✗ D. $-4 - 21$

Hints:

- To simplify the expression, move from left to right and do all division and multiplication operations.
- First look at $-16 \div 4$. $-16 \div 4$ is -4 . So we have $-4 - 7(-3)$
- Next, look at $7(-3)$. This is the same as $7 * -3$. $7 * -3 = -21$.
So we have $-4 - (-21)$.
- If all the multiplication and division steps are simplified, the expression is $-4 - (-21)$.
Choose $-4 - (-21)$.

Scaffold:

Now, we can return to the original problem.

What is the value of $(20 - 36) \div 2^2 - 7(-3)$?

Algebra:

✓ 17

Hints:

- So far, we have followed order of operations and done this much of the problem:

$$\begin{aligned}(20 - 36) \div 2^2 - 7(-3) \\ &= -16 \div 2^2 - 7(-3). \\ &= -16 \div 4 - 7(-3). \\ &= -4 - (-21)\end{aligned}$$

All we have left to do is add and subtract.

- $-4 - (-21)$ is the same as $-4 + 21$
- $-4 + 21 = 17$
- Therefore, the value of $(20 - 36) \div 2^2 - 7(-3)$ is 17.
Type 17.

10) Assistentment #31132 "31132 - 27975 Accentuate the Negative 7th- Order of Operations"

Find the value:

$$4 - [40 \div (-2 \times 4) - 3] \times 2^2$$

Fill in:

✓ 36

Scaffold:

Order of operations can be used to find the value of the expression

$$4 - [40 \div (-2 \times 4) - 3] \times 2^2$$

Remember the Order of Operations

1. Parenthesis
2. Exponents (powers, roots, etc)
3. Multiplication & Division (from left to right)
4. Addition & Subtraction (from left to right)

This can be remembered as **PEMDAS**.

So first work on what is inside the outer brackets, the part in blue.

$$4 - [40 \div (-2 \times 4) - 3] \times 2^2$$

Which part inside of the blue brackets needs to be done first?

Multiple choice:

- ✓ A. Multiplication inside Parentheses
- ✗ B. Division
- ✗ C. Subtraction

Scaffold:

We know we need to do the multiplication inside the parentheses first. Then, we can do the division.

So, what is the value of the part in blue?

$$4 - [40 \div (-2 \times 4) - 3] \times 2^2?$$

Algebra:

✓ -5

Hints:

- First, do what is inside the parentheses.

$$4 - [40 \div (-2 \times 4) - 3] \times 2^2$$

$$4 - [40 \div (-8) - 3] \times 2^2$$

- Now you simplify what is left in blue:

$$4 - [40 \div (-2 \times 4) - 3] \times 2^2$$

$$4 - [40 \div (-8) - 5] \times 2^2$$

- $4 - [40 \div (-2 \times 4) - 3] \times 2^2$

$$4 - [40 \div (-8) - 3] \times 2^2$$

$$4 - [-5 - 3] \times 2^2$$

The value of $40 \div (-2 \times 4)$ is -5 type in -5

Scaffold:

Now you can finish simplifying what is inside the brackets.

What is the value of the blue part inside the brackets?

$$4 - [40 \div (-2 \times 4) - 3] \times 2^2$$

Algebra:

✓ -8

Hints:

- We have done the part in red so far.

$$4 - [40 \div (-2 \times 4) - 3] \times 2^2$$

$$4 - [40 \div (-8) - 3] \times 2^2$$

$$4 - [-5 - 3] \times 2^2$$

- $-5 + -3 = -8$. so we can finish the part inside the bracket.

$$4 - [40 \div (-2 \times 4) - 3] \times 2^2$$

$$4 - [40 \div (-8) - 3] \times 2^2$$

$$4 - [-5 - 3] \times 2^2$$

$$4 - [-8] \times 2^2$$

- The part inside the brackets is -8. Type in -8

Scaffold:

Now that we know the value of what is inside the brackets, we can simplify the expression.

$$4 - [40 \div (-2 \times 4) - 3] \times 2^2$$

$$4 - [40 \div (-8) - 3] \times 2^2$$

$$4 - [-5 - 3] \times 2^2$$

$$4 - (-8) \times 2^2$$

So next, perform exponential operations. What is the value of 2^2 ?

Algebra:

✓ 4

Hints:

- 2^2 is the same as $2 * 2$.
- $4 - [40 \div (-2 \times 4) - 3] \times 2^2$
 $4 - [40 \div (-8) - 3] \times 2^2$
 $4 - [-5 - 3] \times 2^2$
 $4 - (-8) \times 2^2$
 $4 - (-8) \times (2 \times 2)$
- $2 * 2$ is 4.

$$4 - [40 \div (-2 \times 4) - 3] \times 2^2$$

$$4 - [40 \div (-8) - 3] \times 2^2$$

$$4 - [-5 - 3] \times 2^2$$

$$4 - (-8) \times 2^2$$

$$4 - (-8) \times (2 \times 2)$$

$$4 - (-8) \times 4$$

The value of 2^2 is 4. Type in 4

Scaffold:

Now, we can finish the original problem.

What is the value of $4 - [40 \div (-2 \times 4) - 3] \times 2^2$?

Algebra:

✓ 36

Hints:

- Now, you should have this on your paper:
 $4 - [40 \div (-2 \times 4) - 3] \times 2^2$
 $4 - [40 \div (-8) - 3] \times 2^2$

$$4 - [-5 - 3] \times 2^2$$

$$4 - (-8) \times 2^2$$

$$4 - (-8) \times (2 \times 2)$$

$$4 - (-8) \times 4$$

Now, we have to perform any multiplication/ division operations from left to right.
Then, add and subtract from left to right

- The only multiplication operation left in the expression $(-8) \times 4$.

$$-8 \times 4 = -32$$

- $4 - [40 \div (-2 \times 4) - 3] \times 2^2$

$$4 - [40 \div (-8) - 3] \times 2^2$$

$$4 - [-5 - 3] \times 2^2$$

$$4 - (-8) \times 2^2$$

$$4 - (-8) \times (2 \times 2)$$

$$4 - (-8) \times 4$$

$$4 - (-32)$$

- $4 - (-32)$ is the same as $4 + 32$ because a negative minus a negative is a positive.

- Now, this should be written on your paper:

$$4 - [40 \div (-2 \times 4) - 3] \times 2^2$$

$$4 - [40 \div (-8) - 3] \times 2^2$$

$$4 - [-5 - 3] \times 2^2$$

$$4 - (-8) \times 2^2$$

$$4 - (-8) \times (2 \times 2)$$

$$4 - (-8) \times 4$$

$$4 - (-32)$$

$$4 + 32$$

$$36$$

The value of $4 - [40 \div (-2 \times 4) - 3] \times 2^2$ is 36. Type in 36.

Mastery Learning 27974 Accentuate the Negative 7th Order of Operations: Difficult

id:[5942]

1) Assistent #32907 "32907 - 30267 –Order of Operations"

Find the value:

$$(19 - 10) \div 3^2 - 8(7)$$

2) Assistent #32909 "32909 - 30267 –Order of Operations"

Find the value:

$$(37 - 10) \div 3^2 - 5(7)$$

3) Assistent #32920 "32920 - 30267 –Order of Operations"

Find the value:

$$(37 - 19) \div 3^2 - 6(3)$$

4) Assistent #32932 "32932 - 30267–Order of Operations"

Find the value:

$$(1 - 19) \div 3^2 - 7(5)$$

5) Assisment #32916 "32916 - 30267–Order of Operations

Find the value:

$$(19 - 73) \div 3^2 - 3(5)$$

6) Assisment #32936 "32936 - 30267 –Order of Operations

Find the value:

$$(37 - 37) \div 3^2 - 5(7)$$

Assisment #30267 "30267 - 27974 - 7th Grade: Accentuate the Negative - Order of Operations"

Find the value:

$$(\%v\{a\} - \%v\{b\}) \div \%v\{c\}^2 - \%v\{d\}(\%v\{e\})$$

Algebra:

✓ $\%v\{((a-b)/(c*c))-(d*e)\}$

Hints:

- We can use order of operations to find the value of the expression $(\%v\{a\} - \%v\{b\}) \div \%v\{c\}^2 - \%v\{d\}(\%v\{e\})$

Remember the Order of Operations

1. Parenthesis

2. Exponents (powers, roots, etc)

3. Multiplication & Division (from left to right)

4. Addition & Subtraction (from left to right)

This can be remembered as **PEMDAS**.

So first, find the value inside the parentheses. $(\%v\{a\} - \%v\{b\}) \div \%v\{c\}^2 - \%v\{d\}(\%v\{e\})$
 $\%v\{a-b\} \div \%v\{c\}^2 - \%v\{d\}(\%v\{e\})$.

- Next, perform exponential operations.

$$\begin{aligned} &(\%v\{a\} - \%v\{b\}) \div \%v\{c\}^2 - \%v\{d\}(\%v\{e\}) \\ &\%v\{a-b\} \div \%v\{c\}^2 - \%v\{d\}(\%v\{e\}). \\ &\%v\{a-b\} \div (\%v\{c\} * \%v\{c\}) - \%v\{d\}(\%v\{e\}). \\ &\%v\{a-b\} \div \%v\{c*c\} - \%v\{d\}(\%v\{e\}). \end{aligned}$$

- Next, perform multiplication and division operations from left to right.

$$\begin{aligned} &(\%v\{a\} - \%v\{b\}) \div \%v\{c\}^2 - \%v\{d\}(\%v\{e\}) \\ &\%v\{a-b\} \div \%v\{c\}^2 - \%v\{d\}(\%v\{e\}). \\ &\%v\{a-b\} \div (\%v\{c\} * \%v\{c\}) - \%v\{d\}(\%v\{e\}). \\ &\%v\{a-b\} \div \%v\{c*c\} - \%v\{d\}(\%v\{e\}). \\ &\%v\{(a-b)/(c*c)\} - \%v\{d*e\} \end{aligned}$$

- Finally, add and subtract.

$$\begin{aligned} &(\%v\{a\} - \%v\{b\}) \div \%v\{c\}^2 - \%v\{d\}(\%v\{e\}) \\ &\%v\{a-b\} \div \%v\{c\}^2 - \%v\{d\}(\%v\{e\}). \\ &\%v\{a-b\} \div (\%v\{c\} * \%v\{c\}) - \%v\{d\}(\%v\{e\}). \\ &\%v\{a-b\} \div \%v\{c*c\} - \%v\{d\}(\%v\{e\}). \\ &\%v\{(a-b)/(c*c)\} - \%v\{d*e\} \\ &\%v\{((a-b)/(c*c))-(d*e)\} \end{aligned}$$

The value of $(\%v\{a\} - \%v\{b\}) \div \%v\{c\}^2 - \%v\{d\}(\%v\{e\})$ is $\%v\{((a-b)/(c*c))-(d*e)\}$
Enter $\%v\{((a-b)/(c*c))-(d*e)\}$

Mastery Learning 27975 Accentuate the Negative 7th Order of Operations: Difficult

id:[5945]

1) Assistent #32937"32937 - 30078 –Order of Operations"

Find the value:

$$6 - [6 \div (1 * 2) - 4] * 2^2$$

2) Assistent #32942"32942 - 30078 –Order of Operations"

Find the value:

$$7 - [9 \div (1 * 3) - 7] * 3^2$$

3) Assistent #32951"32951 - 30078 –Order of Operations"

Find the value:

$$7 - [36 \div (4 * 3) - 1] * 3^2$$

4) Assistent #32956"32956 - 30078 –Order of Operations"

Find the value:

$$8 - [60 \div (4 * 5) - 9] * 5^2$$

5) Assistent #32959"32959 - 30078 –Order of Operations"

Find the value:

$$8 - [45 \div (3 * 5) - 8] * 5^2$$

6) Assistent #32966"32966 - 30078 –Order of Operations"

Find the value:

$$3 - [75 \div (5 * 5) - 4] * 5^2$$

Assistent #30078 "30078 - Practice - Accentuate the Negative #27975"

Find the value:

$$\%v\{a\} - [\%v\{b\} \div (\%v\{c\} * \%v\{d\}) - \%v\{e\}] * \%v\{d\}^2$$

Algebra:

✓ $\%v\{a - (b / (c * d) - e) * (d * d)\}$

Scaffold:

Order of operations can be used to find the value of the expression

$$\%v\{a\} - [\%v\{b\} \div (\%v\{c\} * \%v\{d\}) - \%v\{e\}] * \%v\{d\}^2$$

Remember the Order of Operations

1. Parenthesis

2. Exponents (powers, roots, etc)

3. Multiplication & Division (from left to right)

4. Addition & Subtraction (from left to right)

This can be remembered as **PEMDAS**

st work on what is inside the outer brackets, the part in blue.

$$\%v\{a\} - [\%v\{b\} \div (\%v\{c\} * \%v\{d\}) - \%v\{e\}] * \%v\{d\}^2$$

What is the value inside the brackets?

Algebra:

✓ $\%v\{b / (c * d) - e\}$

Hints:

- First, do what is inside the parentheses.

$$\%v\{a\} - [\%v\{b\} \div (\%v\{c\} * \%v\{d\}) - \%v\{e\}] * \%v\{d\}^2$$

$$v\{a\} - [v\{b\} \div v\{c*d\} - v\{e\}] * v\{d\}^2$$

- Now you simplify what is left in the brackets.
The only two operations left inside the brackets are division and subtraction.
According to order of operations, division comes first.

$$v\{a\} - [v\{b\} \div (v\{c\} * v\{d\}) - v\{e\}] * v\{d\}^2$$

$$v\{a\} - [v\{b\} \div v\{c*d\} - v\{e\}] * v\{d\}^2$$

$$v\{a\} - [v\{b/(c*d)\} - v\{e\}] * v\{d\}^2$$

- Perform the last operation inside the brackets, subtraction.

$$v\{a\} - [v\{b\} \div (v\{c\} * v\{d\}) - v\{e\}] * v\{d\}^2$$

$$v\{a\} - [v\{b\} \div v\{c*d\} - v\{e\}] * v\{d\}^2$$

$$v\{a\} - [v\{b/(c*d)\} - v\{e\}] * v\{d\}^2$$

$$v\{a\} - [v\{b/(c*d) - e\}] * v\{d\}^2$$

The part inside the brackets is $v\{b/(c*d) - e\}$. Type in $v\{b/(c*d) - e\}$

Scaffold:

Now that we know the value of what is inside the brackets, we can simplify the expression.

$$v\{a\} - [v\{b\} \div (v\{c\} * v\{d\}) - v\{e\}] * v\{d\}^2$$

$$v\{a\} - [v\{b\} \div v\{c*d\} - v\{e\}] * v\{d\}^2$$

$$v\{a\} - [v\{b/(c*d)\} - v\{e\}] * v\{d\}^2$$

$$v\{a\} - (v\{b/(c*d) - e\}) * v\{d\}^2$$

So next, perform exponential operations. What is the value of $v\{d\}^2$?

Algebra:

✓ $v\{d*d\}$

Hints:

- $v\{d\}^2$ is the same as $v\{d\} * v\{d\}$
- $v\{a\} - [v\{b\} \div (v\{c\} * v\{d\}) - v\{e\}] * v\{d\}^2$
 $v\{a\} - [v\{b\} \div v\{c*d\} - v\{e\}] * v\{d\}^2$
 $v\{a\} - [v\{b/(c*d)\} - v\{e\}] * v\{d\}^2$
 $v\{a\} - (v\{b/(c*d) - e\}) * v\{d\}^2$
 $v\{a\} - (v\{b/(c*d) - e\}) * (v\{d\} * v\{d\})$
- $v\{d\} * v\{d\}$ is $v\{d*d\}$

$$v\{a\} - [v\{b\} \div (v\{c\} * v\{d\}) - v\{e\}] * v\{d\}^2$$

$$v\{a\} - [v\{b\} \div v\{c*d\} - v\{e\}] * v\{d\}^2$$

$$v\{a\} - [v\{b/(c*d)\} - v\{e\}] * v\{d\}^2$$

$$v\{a\} - [v\{b/(c*d) - e\}] * v\{d\}^2$$

$$v\{a\} - (v\{b/(c*d) - e\}) * (v\{d\} * v\{d\})$$

$$\%v\{a\} - (\%v\{b/(c*d)-e\}) * \%v\{d * d\}$$

The value of $\%v\{d\}^2$ is $\%v\{d * d\}$. Type in $\%v\{d * d\}$.

Scaffold:

Now we can finish the original problem.

What is the value of

$$\%v\{a\} - [\%v\{b\} \div (\%v\{c\} * \%v\{d\}) - \%v\{e\}] * \%v\{d\}^2$$

Algebra:

✓ $\%v\{a - (b/(c * d) - e) * (d * d)\}$

Hints:

- Now, you should have this on your paper:

$$\begin{aligned} &\%v\{a\} - [\%v\{b\} \div (\%v\{c\} * \%v\{d\}) - \%v\{e\}] * \%v\{d\}^2 \\ &\%v\{a\} - [\%v\{b\} \div \%v\{c*d\} - \%v\{e\}] * \%v\{d\}^2 \\ &\%v\{a\} - [\%v\{b/(c*d)\} - \%v\{e\}] * \%v\{d\}^2 \\ &\%v\{a\} - (\%v\{b/(c*d)-e\}) * \%v\{d\}^2 \\ &\%v\{a\} - (\%v\{b/(c*d)-e\}) * (\%v\{d\} * \%v\{d\}) \\ &\%v\{a\} - (\%v\{b/(c*d)-e\}) * \%v\{d * d\} \end{aligned}$$

Now, we have to perform any multiplication/ division operations from left to right.

Then, add and subtract from left to right

- The only multiplication operation left in the expression is $(\%v\{b/(c*d)-e\}) * \%v\{d * d\}$

$$(\%v\{b/(c*d)-e\}) * \%v\{d * d\} = \%v\{(b/(c * d) - e) * (d * d)\}$$

- $\%v\{a\} - [\%v\{b\} \div (\%v\{c\} * \%v\{d\}) - \%v\{e\}] * \%v\{d\}^2$
 $\%v\{a\} - [\%v\{b\} \div \%v\{c*d\} - \%v\{e\}] * \%v\{d\}^2$
 $\%v\{a\} - [\%v\{b/(c*d)\} - \%v\{e\}] * \%v\{d\}^2$
 $\%v\{a\} - (\%v\{b/(c*d)-e\}) * \%v\{d\}^2$
 $\%v\{a\} - (\%v\{b/(c*d)-e\}) * (\%v\{d\} * \%v\{d\})$
 $\%v\{a\} - (\%v\{b/(c*d)-e\}) * \%v\{d * d\}$
 $\%v\{a\} - (\%v\{(b/(c*d)-e) * (d * d)\})$

- Finally add and subtract from left to right.

$$\%v\{a\} - (\%v\{(b/(c*d)-e) * (d * d)\}) = \%v\{a - (b/(c * d) - e) * (d * d)\}.$$

The value of $\%v\{a\} - [\%v\{b\} \div (\%v\{c\} * \%v\{d\}) - \%v\{e\}] * \%v\{d\}^2$ is $\%v\{a - (b/(c * d) - e) * (d * d)\}$.

Type in $\%v\{a - (b/(c * d) - e) * (d * d)\}$.

Mastery Learning 27975 Accentuate the Negative 7th Order of Operations: Easy

id:[5946]

1) Assistent #32983"32983 - 29981 –Order of Operations" – 1st Instance

What is the solution to the expression below?

$$2 + 23 \times 17$$

2) Assistent #32986"32986 - 29981 –Order of Operations" – 1st Instance

What is the solution to the expression below?

$$13 + 8 \times 4$$

3) Assistent #32992"32992 - 29981 –Order of Operations" – 1st Instance

What is the solution to the expression below?

$$14 + 15 \times 3$$

4) Assistent #39836"39836 - 29982 –Order of Operations" – 2nd Instance

What is the solution to the expression below?

$$18 - 59 \times 45$$

5) Assistent #39844"39844 - 29982 –Order of Operations" -2nd Instance

What is the solution to the expression below?

$$48 - 80 \times 48$$

6) Assistent #39854"39854 - 29982–Order of Operations" - 2nd Instance

What is the solution to the expression below?

$$31 - 67 \times 10$$

Assistent #29981 "29981 - 27544 - Order of Operations: Addition & Multiplication"

What is the solution to the expression below?

$$\%v\{a\} + \%v\{b\} \times \%v\{c\}$$

Algebra:

✓ $\%v\{a + b * c\}$

Hints:

- Remember the *Order of Operations*

1. **Parenthesis**
2. **Exponents** (powers, roots, etc)
3. **Multiplication & Division** (from left to right)
4. **Addition & Subtraction** (from left to right)
- 5.

this can be remembered as **PEMDAS**

- According to **PEMDAS**, **Multiplication** comes before **Addition**.

Therefore $\%v\{b\}$ and $\%v\{c\}$ are **multiplied** before **adding** $\%v\{a\}$.

$$\%v\{a\} + \%v\{b\} \times \%v\{c\}$$

$$\begin{array}{c}
 \downarrow \\
 \%v\{a\} + \%v\{b*c\} \\
 \bullet \%v\{a\} + \%v\{b\} \times \%v\{c\} \\
 \downarrow \\
 \%v\{a\} + \%v\{b*c\} \\
 \downarrow \\
 \%v\{a+b*c\}
 \end{array}$$

Scaffold:

You did not solve the expression in the correct order.

The correct *Order of Operations* is:

1. perform all operations with sets of **parenthesis** first
2. solve all **exponents** second (powers, roots, etc)
3. perform all **multiplication & division** (from left to right) third
4. perform all **addition & subtraction** (from left to right) last

the *Order of Operations* can easily be remembered as...

PEMDAS: **p**arenthesis, **e**xponents, **m**ultiplication & **d**ivision, **a**ddition & **s**ubtraction

Looking again at the original expression.

$$\%v\{a\} + \%v\{b\} \times \%v\{c\}$$

What is the solution to the very first operation?

Algebra:

- ✓ $\%v\{b*c\}$
- ✗ $\%v\{a+b\}$
- ✗ $\%v\{a*c\}$
- ✗ $\%v\{a+c\}$

Scaffold:

What is the final solution?

$$\begin{array}{c}
 \%v\{a\} + \%v\{b\} \times \%v\{c\} \\
 \downarrow \\
 \%v\{a\} + \%v\{b*c\}
 \end{array}$$

Algebra:

- ✓ $\%v\{a + b * c\}$

Assistment #29982 "29982 - 27545 - Order of Operations: Subtraction & Multiplication"

What is the solution to the expression below?

$$\%v\{a\} - \%v\{b\} \times \%v\{c\}$$

Algebra:

✓ $\%v\{a-b*c\}$

Scaffold:

To solve this problem you must remember the order of operations.

The correct *Order of Operations* is:

1. perform all operations with sets of **parenthesis** first
2. solve all **exponents** second (powers, roots, etc)
3. perform all **multiplication & division** (from left to right) third
4. perform all **addition & subtraction** (from left to right) last
- 5.

the *Order of Operations* can easily be remembered as...

PEMDAS: **parenthesis**, **exponents**, **multiplication & division**, **addition & subtraction**

Looking again at the original expression.

$$\%v\{a\} - \%v\{b\} \times \%v\{c\}$$

What is the solution to the very first operation?

Algebra:

✓ $\%v\{b*c\}$

Hints:

- The first operation is **multiplication**, because there are no **exponents** or **parenthesis**.

So what is $\%v\{b\} \times \%v\{c\}$?

- $\%v\{b\} \times \%v\{c\} = \%v\{b*c\}$ and type in $\%v\{b*c\}$

Scaffold:

What is the final solution?

$$\%v\{a\} - \%v\{b\} \times \%v\{c\}$$

↓

$$\%v\{a\} - \%v\{b^*c\}$$

Algebra:

✓ $\%v\{a-b^*c\}$

Hints:

- Since $\%v\{b^*c\}$ larger than $\%v\{a\}$ you know your answer will be negative.
- Now just do $\%v\{b^*c\} - \%v\{a\}$ and then add a negative sign because you know the answer is negative.
- $\%v\{b^*c\} - \%v\{a\} = \%v\{b^*c-a\}$

Therefore $\%v\{a\} - \%v\{b^*c\} = \%v\{a-b^*c\}$. type in $\%v\{a-b^*c\}$

Mastery Learning 27971 Accentuate the Negative 7th Exponents/Order of Operations

id:[5950]

1) Assisment #33228"33228 - 30310 –Exponents/Order of Operations" – 1st Instance

What is the value of this expression?

$$(9-1)^2$$

2) Assisment #33233"33233 - 30310 –Exponents/Order of Operations" – 1st Instance

What is the value of this expression?

$$(6-6)^2$$

3) Assisment #33272"33272 -30453 –Exponents/Order of Operations" – 2nd Instance

What is the value of this expression?

$$(-6+2)^2$$

4) Assisment #33286"33286 - 30453 –Exponents/Order of Operations" – 2nd Instance

What is the value of this expression?

$$(-10+5)^2$$

5) Assisment #37209"37209 - 30454 –Exponents/Order of Operations" -3rd Instance

What is the value of this expression?

$$(3-7+5)^2$$

6) Assisment #37211"37211 - 30454–Exponents/Order of Operations" - 3rd Instance

What is the value of this expression?

$$(8-8+10)^2$$

Assisment #30310 "30310 - 27971 - 7th Grade: Accentuate the Negative - Evaluate the expression"

What is the value of this expression?

$$(\%v\{a\}-\%v\{b\})^2$$

Algebra:

✓ $\%v\{(a-b)*(a-b)\}$

Hints:

- You can use order of operations to find the value of the expression $(4-7)^2$.

Remember the Order of Operations

1. Parenthesis
2. Exponents (powers, roots, etc)
3. Multiplication & Division (from left to right)
4. Addition & Subtraction (from left to right)

This can be remembered as **PEMDAS**.

So first, simplify the expression, by simplifying what is inside the parentheses.

$$(\%v\{a\}-\%v\{b\})^2$$

$$(\%v\{a-b\})^2$$

- • Remember, $(\%v\{a-b\})^2$ is the same as $\%v\{a-b\} * \%v\{a-b\}$

- $(\sqrt{a}-\sqrt{b})^2$
 $(\sqrt{a-b})^2$
 $\sqrt{a-b} * \sqrt{a-b}$
 $\sqrt{(a-b) * (a-b)}$

The value of $(\sqrt{a}-\sqrt{b})^2$ is $\sqrt{(a-b) * (a-b)}$.
 Type in $\sqrt{(a-b) * (a-b)}$.

Assistment #30453 "30453 - 27971 - 7th Grade: Accentuate the Negative - Evaluate the expression"

What is the value of this expression?

$$(-\sqrt{a}+\sqrt{b})^2$$

Algebra:

✓ $\sqrt{(-a+b)*(-a+b)}$

Hints:

- You can use order of operations to find the value of the expression $(4-7)^2$.

Remember the Order of Operations

1. Parenthesis
2. Exponents (powers, roots, etc)
3. Multiplication & Division (from left to right)
4. Addition & Subtraction (from left to right)

This can be remembered as **PEMDAS**.

So first, simplify the expression, by simplifying what is inside the parentheses.

$$(-\sqrt{a}+\sqrt{b})^2$$

$$(\sqrt{-a+b})^2$$

- Remember, $(\sqrt{-a+b})^2$ is the same as $\sqrt{-a+b} * \sqrt{-a+b}$
- Also remember the rules for multiplying integers:

even number of negatives $-1 * -1 = +1$

odd number of negatives $-1 * +1 = -1$

odd number of negatives $+1 * -1 = -1$

no negatives $+1 * +1 = +1$

- $(-\sqrt{a}+\sqrt{b})^2$
 $(\sqrt{-a+b})^2$
 $\sqrt{-a+b} * \sqrt{-a+b}$

$$\sqrt{(-a+b) * (-a+b)}$$

The value of $(-\sqrt{a} + \sqrt{b})^2$ is $\sqrt{(-a+b) * (-a+b)}$.
Type in $\sqrt{(-a+b) * (-a+b)}$.

Assistment #30454 "30454 - 27971 - 7th Grade: Accentuate the Negative - Evaluate the expression"

What is the value of this expression?

$$(\sqrt{a} - \sqrt{b} + \sqrt{c})^2$$

Algebra:

✓ $\sqrt{(a-b+c)*(a-b+c)}$

Hints:

- You can use order of operations to find the value of the expression $(4-7)^2$.

Remember the Order of Operations

1. Parenthesis
2. Exponents (powers, roots, etc)
3. Multiplication & Division (from left to right)
4. Addition & Subtraction (from left to right)

This can be remembered as **PEMDAS**.

So first, simplify the expression, by simplifying what is inside the parentheses.

$$(\sqrt{a} - \sqrt{b} + \sqrt{c})^2$$

- Add and Subtract what is inside the parentheses from left to right.

$$(\sqrt{a} - \sqrt{b} + \sqrt{c})^2$$

$$(\sqrt{a-b} + \sqrt{c})^2$$

$$(\sqrt{a-b+c})^2$$

- Next, perform exponential operations.

Remember, $(\sqrt{a-b+c})^2$ is the same as $\sqrt{a-b+c} * \sqrt{a-b+c}$

- Also remember the rules for multiplying integers:

even number of negatives $-1 * -1 = +1$

odd number of negatives $-1 * +1 = -1$

odd number of negatives $+1 * -1 = -1$

no negatives $+1 * +1 = +1$

- $(\sqrt{a}-\sqrt{b}+\sqrt{c})^2$
 $(\sqrt{a-b+c})^2$
 $\sqrt{a-b+c} * \sqrt{a-b+c}$
 $\sqrt{(a-b+c) * (a-b+c)}$

The value of $(\sqrt{a}-\sqrt{b}+\sqrt{c})^2$ is $\sqrt{(a-b+c) * (a-b+c)}$.
 Type in $\sqrt{(a-b+c) * (a-b+c)}$.

Mastery Learning 27965 Accentuate the Negative 7th Ordering Fractions and Decimals

id:[6039]

1) Assistent #39052"39052 - 30494 –Ordering Fractions and Decimals" – 1st Instance

Arrange these numbers from least to greatest.

$-1/2$, 15.2, -9.2, $-4/2$

- 9.2, 15.2, $-1/2$, $-4/2$
 - 15.2, $-4/2$, -9.2, $-1/2$
 - 9.2, $-4/2$, $-1/2$, 15.2
 - 9.2, $-1/2$, $-4/2$, 15.2
-

2) Assistent #39224"39224 - 30522 – Ordering Fractions and Decimals " – 2nd Instance

Arrange these numbers from least to greatest.

$1/5$, -8.07, $10/5$, -8.60

- 8.07, $10/5$, -8.60, $1/5$
 - 8.60, -8.07, $1/5$, $10/5$
 - 8.07, -8.60, $1/5$, $10/5$
 - 8.07, -8.60, $10/5$, $1/5$
-

3) Assistent #38613"38613 -30450 – Ordering Fractions and Decimals " – 3rd Instance

Arrange these numbers from least to greatest.

-12.8, $1/2$, 3.8, $-7/2$

- 3.8, -12.8, $1/2$, $-7/2$
- 12.8, $-7/2$, 3.8, $1/2$
- $-7/2$, -12.8, $1/2$, 3.8
- 12.8, $-7/2$, $1/2$, 3.8

Assistment #30450 "30450 - 27965 - 7th grade: Accentuate the Negative - Arrange from least to greatest"

Arrange these numbers from least to greatest.

$-\frac{1}{2}$, $\frac{1}{3}$, $\frac{2}{5}$, $-\frac{3}{4}$, $-\frac{1}{6}$

Multiple choice:

- $\frac{2}{5}$, $-\frac{1}{6}$, $\frac{1}{3}$, $-\frac{3}{4}$
- $-\frac{1}{6}$, $-\frac{3}{4}$, $\frac{2}{5}$, $\frac{1}{3}$
- $-\frac{3}{4}$, $-\frac{1}{6}$, $\frac{1}{3}$, $\frac{2}{5}$
- $-\frac{1}{6}$, $-\frac{3}{4}$, $\frac{1}{3}$, $\frac{2}{5}$

Scaffold:

One way to order the numbers from least to greatest is to convert them all to decimal.

Let's start by converting $\frac{1}{3}$ to a decimal. What is $\frac{1}{3}$ written as a decimal?

Algebra:

$\frac{1}{3}$

Hints:

- Divide 1 by $\frac{1}{3}$
- $1 \div \frac{1}{3} = \frac{1}{3}$
- $\frac{1}{3}$ is $\frac{1}{3}$. Type in $\frac{1}{3}$

Scaffold:

Now we have $-\frac{1}{2}$, $\frac{1}{3}$, $\frac{2}{5}$, $-\frac{3}{4}$

What is $-\frac{3}{4}$ written as a decimal?

Algebra:

$-\frac{3}{4}$

Hints:

- We know $\frac{1}{3}$ is equal to $\frac{1}{3}$
- So $-\frac{3}{4}$ would be $3 * \frac{1}{3}$ with a negative sign.

- $\frac{1}{b} + \frac{1}{b} + \frac{1}{b} + \frac{1}{b} + \frac{1}{b} + \frac{1}{b} + \frac{1}{b} = \frac{7}{b}$
So $\frac{7}{b}$ equals $\frac{7}{b}$
Replace the negative sign to get $-\frac{7}{b}$. Type in $-\frac{7}{b}$

Scaffold:

We know negative numbers are less than positive numbers.
Therefore, $\frac{1}{b}$ and $\frac{c}{f}$ are not the smallest.
Now, let's find what number is the smallest.

Which is smaller $-\frac{a}{e}$ or $-\frac{7}{b}$?

Multiple choice:

- ✓ $-\frac{a}{e}$,
- ✗ $-\frac{7}{b}$

Hints:

- Remember, $-\frac{7}{b}$ is the same as $-\frac{7}{b}$
- If you remove the negative signs you have $\frac{a}{e}$ and $\frac{7}{b}$.
 $\frac{a}{e}$ is a bigger number than $\frac{7}{b}$, so it is further away from zero.
Therefore if you replace the negative sign $-\frac{a}{e}$ is further from zero than $-\frac{7}{b}$ and is more negative.
- $-\frac{a}{e}$ is smaller than $-\frac{7}{b}$. Select $-\frac{a}{e}$.

Scaffold:

Which of the positive numbers is greater, $\frac{1}{b}$ or $\frac{c}{f}$?

Multiple choice:

- ✓ $\frac{c}{f}$
- ✗ $\frac{1}{b}$

Hints:

- Remember, $\frac{1}{b}$ is $\frac{1}{b}$ in decimal form.
- $\frac{c}{f}$ is greater than $\frac{1}{b}$.
Select $\frac{c}{f}$.

Scaffold:

Now, let's return to the original question.

What is the order of $-\frac{a}{e}$, $\frac{1}{b}$, $\frac{c}{f}$, $-\frac{7}{b}$ from least to greatest?

Multiple choice:

- ✗ $\frac{c}{f}$, $-\frac{a}{e}$, $\frac{1}{b}$, $-\frac{7}{b}$
- ✗ $-\frac{a}{e}$, $-\frac{7}{b}$, $\frac{c}{f}$, $\frac{1}{b}$
- ✗ $-\frac{7}{b}$, $-\frac{a}{e}$, $\frac{1}{b}$, $\frac{c}{f}$
- ✓ $-\frac{a}{e}$, $-\frac{7}{b}$, $\frac{1}{b}$, $\frac{c}{f}$

Hints:

- Because negative numbers are less than positive numbers we can exclude some of the options.
Choose from

$-\frac{1}{a}e, -\frac{7}{b}, \frac{1}{c}f, \frac{1}{b}$
 $-\frac{7}{b}, -\frac{1}{a}e, \frac{1}{b}, \frac{1}{c}f$
 $-\frac{1}{a}e, -\frac{7}{b}, \frac{1}{b}, \frac{1}{c}f$

•

We know $-\frac{1}{a}e$ is less than $-\frac{7}{b}$, so choose from these:

$-\frac{1}{a}e, -\frac{7}{b}, \frac{1}{c}f, \frac{1}{b}$
 $-\frac{1}{a}e, -\frac{7}{b}, \frac{1}{b}, \frac{1}{c}f$

• We know $\frac{1}{c}f$ is the largest number,
so the number order from least to greatest is $-\frac{1}{a}e, -\frac{7}{b}, \frac{1}{b}, \frac{1}{c}f$
Select $-\frac{1}{a}e, -\frac{7}{b}, \frac{1}{b}, \frac{1}{c}f$

Assistment #30494 "30494 - 27965 - 7th grade: Accentuate the Negative - Arrange from least to greatest"

Arrange these numbers from least to greatest.

$-\frac{1}{b}, \frac{1}{a}e, -\frac{1}{c}f, -\frac{4}{b}$

Multiple choice:

- $-\frac{1}{c}f, \frac{1}{a}e, -\frac{1}{b}, -\frac{4}{b}$
- $\frac{1}{a}e, -\frac{4}{b}, -\frac{1}{c}f, -\frac{1}{b}$
- $-\frac{1}{c}f, -\frac{4}{b}, -\frac{1}{b}, \frac{1}{a}e$
- $-\frac{1}{c}f, -\frac{1}{b}, -\frac{4}{b}, \frac{1}{a}e$

Scaffold:

One way to order the numbers from least to greatest is to convert them all to decimal.

Let's start by converting $-\frac{1}{b}$ to a decimal. What is $-\frac{1}{b}$ written as a decimal?

Algebra:

$-1 \cdot \frac{1}{b}$

Hints:

- Divide -1 by $\frac{1}{b}$
- Ignoring the signs,
 $1 \div \frac{1}{b} =$
 $\frac{1}{b}$
- Remember the rules for division of positive and negative numbers.

even number of negatives $\frac{-1}{-1} = +1$

odd number of negatives $\frac{-1}{+1} = -1$

odd number of negatives $\frac{+1}{-1} = -1$

no negatives $\frac{+1}{+1} = +1$

- Therefore,
 $-1/\sqrt{b}$ is $-\sqrt{1/b}$. Type in $-\sqrt{1/b}$

Scaffold:

Now we have $-\sqrt{1/b}$, $\sqrt{a}.\sqrt{e}$, $-\sqrt{c}.\sqrt{f}$, $-4/\sqrt{b}$

What is $-4/\sqrt{b}$ written as a decimal?

Algebra:

✓ $-1 * \sqrt{4/b}$

Hints:

- We know $-1/\sqrt{b}$ is equal to $-\sqrt{1/b}$
- So $-4/\sqrt{b}$ would be $4 * \sqrt{1/b}$ with a negative sign.
- $\sqrt{1/b} + \sqrt{1/b} + \sqrt{1/b} + \sqrt{1/b} = \sqrt{4/b}$
So $4/\sqrt{b}$ equals $\sqrt{4/b}$
Replace the negative sign to get $-\sqrt{4/b}$. Type in $-\sqrt{4/b}$

Scaffold:

We know negative numbers are less than positive numbers.
Therefore, $\sqrt{a}.\sqrt{e}$ is not the smallest.
Now, let's find what number is the smallest.

Which is the smallest $-1/\sqrt{b}$, $-\sqrt{c}.\sqrt{f}$, or $-4/\sqrt{b}$

Multiple choice:

✓ $-\sqrt{c}.\sqrt{f}$,

✗ $-7/\sqrt{b}$

✗ $-1/\sqrt{b}$

Hints:

- Remember, $-1/\sqrt{b}$ is the same as $-\sqrt{1/b}$ and $-4/\sqrt{b}$ is the same as $-\sqrt{4/b}$
- If you remove the negative signs you have $\sqrt{1/b}$, $\sqrt{c}.\sqrt{f}$, or $\sqrt{4/b}$

$\frac{c}{f}$ is a bigger number than $\frac{1}{b}$ and $\frac{4}{b}$, so it is further away from zero. Therefore if you replace the negative sign $-\frac{c}{f}$ is further from zero than $-\frac{1}{b}$ and $-\frac{4}{b}$ and is more negative.

- $-\frac{c}{f}$ is the smallest number. Select $-\frac{c}{f}$.

Scaffold:

Now we know $-\frac{c}{f}$ is the smallest number and negative numbers are smaller than positive numbers.

So which is the second smallest number $-\frac{1}{b}$ or $-\frac{4}{b}$

Multiple choice:

- $-\frac{1}{b}$
- $-\frac{4}{b}$

Hints:

- Remember in decimal form, $-\frac{1}{b}$ is the same as $-\frac{1}{b}$ and $-\frac{4}{b}$ is the same as $-\frac{4}{b}$
- If you remove the negative signs, $\frac{4}{b}$ further away from zero than $\frac{1}{b}$. This means that $-\frac{4}{b}$ is further away from zero than $-\frac{1}{b}$.
- $-\frac{4}{b}$ is smaller than $-\frac{1}{b}$. Select $-\frac{4}{b}$

Scaffold:

Now, lets return to the original question.

What is the order of $-\frac{1}{b}$, $\frac{a}{e}$, $-\frac{c}{f}$, $-\frac{4}{b}$ from least to greatest?

Multiple choice:

- $-\frac{c}{f}$, $\frac{a}{e}$, $-\frac{1}{b}$, $-\frac{4}{b}$
- $\frac{a}{e}$, $-\frac{4}{b}$, $-\frac{c}{f}$, $-\frac{1}{b}$
- $-\frac{c}{f}$, $-\frac{4}{b}$, $-\frac{1}{b}$, $\frac{a}{e}$
- $-\frac{c}{f}$, $-\frac{1}{b}$, $-\frac{4}{b}$, $\frac{a}{e}$

Hints:

- Because negative numbers are less than positive numbers we can exclude some of the options. Choose from $-\frac{c}{f}$, $-\frac{4}{b}$, $-\frac{1}{b}$, $\frac{a}{e}$ $-\frac{c}{f}$, $-\frac{1}{b}$, $-\frac{4}{b}$, $\frac{a}{e}$
- We know $-\frac{c}{f}$ is the smallest number and that $-\frac{4}{b}$ is smaller than $-\frac{1}{b}$
- The number order from least to greatest is $-\frac{c}{f}$, $-\frac{4}{b}$, $-\frac{1}{b}$, $\frac{a}{e}$ Select $-\frac{c}{f}$, $-\frac{4}{b}$, $-\frac{1}{b}$, $\frac{a}{e}$

Assistment #30522 "30522 - 27965 - 7th grade: Accentuate the Negative - Arrange from least to greatest"
 Arrange these numbers from least to greatest.

$1/\sqrt{b}$, $-\sqrt{a}.0\sqrt{e}$, $10/\sqrt{b}$, $-\sqrt{a}.\sqrt{f}0$

Multiple choice:

- ✗ $-\sqrt{a}.0\sqrt{e}$, $10/\sqrt{b}$, $-\sqrt{a}.\sqrt{f}0$, $1/\sqrt{b}$
- ✓ $-\sqrt{a}.\sqrt{f}0$, $-\sqrt{a}.0\sqrt{e}$, $1/\sqrt{b}$, $10/\sqrt{b}$
- ✗ $-\sqrt{a}.0\sqrt{e}$, $-\sqrt{a}.\sqrt{f}0$, $1/\sqrt{b}$, $10/\sqrt{b}$
- ✗ $-\sqrt{a}.0\sqrt{e}$, $-\sqrt{a}.\sqrt{f}0$, $10/\sqrt{b}$, $1/\sqrt{b}$

Scaffold:

One way to order the numbers from least to greatest is to convert them all to decimal.

Let's start by converting $1/\sqrt{b}$ to a decimal What is $1/\sqrt{b}$ written as a decimal

Algebra:

✓ $1/\sqrt{b}$

Hints:

- Divide 1 by \sqrt{b}
- $1 \div \sqrt{b} = 1/\sqrt{b}$
- Remember the rules for division of positive and negative numbers.

even number of negatives $\frac{-1}{-1} = +1$

odd number of negatives $\frac{-1}{+1} = -1$

odd number of negatives $\frac{+1}{-1} = -1$

no negatives $\frac{+1}{+1} = +1$

- Therefore,
 $1/\sqrt{b}$ is $1/\sqrt{b}$. Type in $1/\sqrt{b}$

Scaffold:

Now we have $1/\sqrt{b}$, $-\sqrt{a}.0\sqrt{e}$, $10/\sqrt{b}$, $-\sqrt{a}.\sqrt{f}0$,

What is $10/\sqrt{b}$ written as a decimal?

Algebra:

✓ $10/\sqrt{b}$

Hints:

- We know $1/\sqrt{b}$ is equal to $1/\sqrt{b}$

- So $10 \div b$ would be $10 * \frac{1}{b}$
- $\frac{1}{b} + \frac{1}{b} + \frac{1}{b} + \frac{1}{b} + \frac{1}{b} + \frac{1}{b} + \frac{1}{b} + \frac{1}{b} + \frac{1}{b} + \frac{1}{b} = \frac{10}{b}$
Therefore $10 \div b = \frac{10}{b}$. Type in $\frac{10}{b}$

Scaffold:

We know negative numbers are less than positive numbers.
Therefore $1 \div b$ and $10 \div b$, are not the smallest.
Now, let's find what number is the smallest.

Which is the smallest $-a.e$ or $-a.f0$?

Multiple choice:

- $-a.e$
- $-a.f0$

Hints:

- You can figure out what number is smaller by looking at the value of the tenths place.
 $-a.e$
 $-a.f0$
- $-a.e$ has a lower value in the tenths place then $-a.f0$
This means that $-a.f0$ is further away from zero then $-a.e$.
- Therefore, $-a.f0$ is smaller. Select $-a.f0$.

Scaffold:

Which of the positive numbers is greater, $1 \div b$ or $10 \div b$?

Multiple choice:

- $10 \div b$
- $1 \div b$

Hints:

- Remember in decimal form, $1 \div b$ is the same as $\frac{1}{b}$ and $10 \div b$ is the same as $\frac{10}{b}$
- $\frac{10}{b}$ is further away from zero then $\frac{1}{b}$.
- Therefore, $10 \div b$ is greater then $1 \div b$. Select $10 \div b$

Scaffold:

Now, lets return to the original question.

What is the order of $1 \div b$, $-a.e$, $10 \div b$, $-a.f0$ from least to greatest?

Multiple choice:

- $-a.e, 10 \div b, -a.f0, 1 \div b$
- $-a.f0, -a.e, 1 \div b, 10 \div b$
- $-a.e, -a.f0, 1 \div b, 10 \div b$
- $-a.e, -a.f0, 10 \div b, 1 \div b$

Hints:

-

Because negative numbers are less than positive numbers we can exclude some of the options.

Choose from:

$-\frac{a}{f}0$, $-\frac{a}{e}$, $\frac{1}{b}$, $\frac{10}{b}$

$-\frac{a}{e}$, $-\frac{a}{f}0$, $\frac{1}{b}$, $\frac{10}{b}$

$-\frac{a}{e}$, $-\frac{a}{f}0$, $\frac{10}{b}$, $\frac{1}{b}$

- We know $-\frac{a}{f}0$ is the smallest number and $\frac{10}{b}$ is the greatest number

- The number order from least to greatest is $-\frac{a}{f}0$, $-\frac{a}{e}$, $\frac{1}{b}$, $\frac{10}{b}$

Select $-\frac{a}{f}0$, $-\frac{a}{e}$, $\frac{1}{b}$, $\frac{10}{b}$

Mastery Learning 27965 Accentuate the Negative 7th Ordering Fractions

id:[5952]

1) Assistent #33418"33418 - 29892 –Ordering Fractions"

Which of the following **fractions** is the greatest?

$$\frac{1}{4}, \frac{1}{10}, \frac{3}{4}, \frac{2}{9}$$

2) Assistent #33430"33430 - 29892 –Ordering Fractions"

Which of the following **fractions** is the greatest?

$$\frac{1}{10}, \frac{3}{8}, \frac{2}{10}, \frac{4}{7}$$

3) Assistent #33442"33422 - 29892 –Ordering Fractions"

Which of the following **fractions** is the greatest?

$$3, 5, 6, 4$$

$$\frac{10}{6} \quad \frac{5}{10}$$

4) Assistent #33447"33447 - 29892 –Ordering Fractions"

Which of the following **fractions** is the greatest?

$$\frac{4}{5}, \frac{15}{2}, \frac{9}{2}, \frac{1}{10}$$

Assistent #29892 "29892 - Ordering Fractions - Multiple Fractions"

Which of the following **fractions** is the greatest?

$$\frac{\%v\{\text{num}\}}{\%v\{\text{den}\}}, \frac{\%v\{\text{num}2\}}{\%v\{\text{den}2\}}, \frac{\%v\{\text{num}3\}}{\%v\{\text{den}3\}}, \frac{\%v\{\text{num}4\}}{\%v\{\text{den}4\}}$$

Algebra:

✓ $\frac{\%v\{\text{ans_num}\}}{\%v\{\text{ans_den}\}}$

Scaffold:

Fractions can be easily compared when they are converted into **decimals**.

Start by converting the **fractions** into **decimals**.

Convert $\frac{\%v\{\text{num}\}}{\%v\{\text{den}\}}$ into a **decimal**. (Round to the nearest hundredths place)

$$\frac{\quad}{\%v\{\text{den}\}}$$

Algebra:

✓ $\%v\{\text{frac1}\}$

Hints:

• To convert a **fraction** to a **decimal**, we have to divide the **numerator** by the **denominator**.

• $\%v\{\text{num}\} \div \%v\{\text{den}\} = \%v\{\text{frac1}\}$

• The **decimal** form of $\frac{\%v\{\text{num}\}}{\%v\{\text{den}\}}$ is $\%v\{\text{frac1}\}$, so type in $\%v\{\text{frac1}\}$.

Scaffold:

Time for the second **fraction**.

Now, convert $\frac{\%v\{\text{num2}\}}{\%v\{\text{den2}\}}$ into a **decimal**. (Round to the nearest hundredths place)

Algebra:

✓ $\%v\{\text{frac2}\}$

Hints:

• To convert a **fraction** to a **decimal**, we have to divide the **numerator** by the **denominator**.

• $\%v\{\text{num2}\} \div \%v\{\text{den2}\} = \%v\{\text{frac2}\}$

• The **decimal** form of $\frac{\%v\{\text{num2}\}}{\%v\{\text{den2}\}}$ is $\%v\{\text{frac2}\}$, so type in $\%v\{\text{frac2}\}$.

Scaffold:

Next is the third **fraction**.

Convert $\frac{\%v\{\text{num3}\}}{\%v\{\text{den3}\}}$ into a **decimal**. (Round to the nearest hundredths place)

Algebra:

✓ $\%v\{\text{frac3}\}$

Hints:

- To convert a **fraction** to a **decimal**, we have to divide the **numerator** by the **denominator**.
- $\%v\{\text{num3}\} \div \%v\{\text{den3}\} = \%v\{\text{frac3}\}$

- The **decimal** form of $\frac{\%v\{\text{num3}\}}{\%v\{\text{den3}\}}$ is $\%v\{\text{frac3}\}$, so type in $\%v\{\text{frac3}\}$.

Scaffold:

And finally the last **fraction**.

Convert $\frac{\%v\{\text{num4}\}}{\%v\{\text{den4}\}}$ into a **decimal**. (Round to the nearest hundredths place)

Algebra:

✓ $\%v\{\text{frac4}\}$

Hints:

- To convert a **fraction** to a **decimal**, we have to divide the **numerator** by the **denominator**.
- $\%v\{\text{num4}\} \div \%v\{\text{den4}\} = \%v\{\text{frac4}\}$

- The **decimal** form of $\frac{\%v\{\text{num4}\}}{\%v\{\text{den4}\}}$ is $\%v\{\text{frac4}\}$, so type in $\%v\{\text{frac4}\}$.

Scaffold:

So far, we have converted the two **fractions** into **decimals**.

$$\frac{\%v\{\text{num}\}}{\%v\{\text{den}\}} = \frac{\%v\{\text{num1}\}}{\%v\{\text{den1}\}}, \quad \frac{\%v\{\text{num2}\}}{\%v\{\text{den2}\}} = \frac{\%v\{\text{num2}\}}{\%v\{\text{den2}\}}, \quad \frac{\%v\{\text{num3}\}}{\%v\{\text{den3}\}} = \frac{\%v\{\text{num3}\}}{\%v\{\text{den3}\}} \text{ and } \frac{\%v\{\text{num4}\}}{\%v\{\text{den4}\}} = \frac{\%v\{\text{num4}\}}{\%v\{\text{den4}\}}$$

Now, back to the original problem.

Which of the following **fractions** is the greatest?

$$\frac{\%v\{\text{num}\}}{\%v\{\text{den}\}}, \frac{\%v\{\text{num2}\}}{\%v\{\text{den2}\}}, \frac{\%v\{\text{num3}\}}{\%v\{\text{den3}\}}, \frac{\%v\{\text{num4}\}}{\%v\{\text{den4}\}}$$

Algebra:

✓ $\%v\{\text{ans_num}\}/\%v\{\text{ans_den}\}$

Hints:

- In order to figure out which **fraction** is larger, we have to first figure out which of its **decimal** form is larger
- Remember,

$$\frac{\%v\{\text{num}\}}{\%v\{\text{den}\}} = \%v\{\text{frac1}\}, \frac{\%v\{\text{num2}\}}{\%v\{\text{den2}\}} = \%v\{\text{frac2}\}, \frac{\%v\{\text{num3}\}}{\%v\{\text{den3}\}} = \%v\{\text{frac3}\}, \text{ and } \frac{\%v\{\text{num4}\}}{\%v\{\text{den4}\}} = \%v\{\text{frac4}\}$$

- **$\%v\{\text{larger}\}$** is the largest **decimal** from that list.

- Since **$\%v\{\text{larger}\}$** is the largest **decimal**, $\frac{\%v\{\text{ans_num}\}}{\%v\{\text{ans_den}\}}$ is the largest **fraction**, so type in $\%v\{\text{ans_num}\}/\%v\{\text{ans_den}\}$.

Mastery Learning 27965 Accentuate the Negative 7th Fractions <,>=

id:[6038]

1) Assistent #39111"39111 - 29885 –Ordering Fractions" -1st Instance

Fill in the **blank** to make the statement true.

$$\frac{1}{4} \quad \underline{\quad ? \quad} \quad \frac{1}{10}$$

- >
 - <
 - =
-

2) Assistent #39394"39394 - 30070 –Ordering Fractions" – 2nd Instance

What should be to make the following statement true?

$$\frac{17}{26} \quad \underline{\quad \square \quad} \quad \mathbf{1}$$

- <
 - =
 - >
-

3) Assistent #39282"39282 - 30770 –Ordering Fractions"-3rd Instance

Fill in the **blank** to make the statement true.

$$\frac{4}{5} \underline{\quad ? \quad} \frac{2}{5}$$

- >
 - <
 - =
-

4) Assistent #39312"39312 - 29897 –Ordering Fractions"-4th Instance

What should be to make the following statement true?

$$\frac{1}{4} \underline{\quad \square \quad} \frac{2}{9}$$

- <
 - >
 - =
-

Assistment #29885 "29885 - 27378 - Ordering Fractions - Which one is larger?"

Fill in the **blank** to make the statement true.

$$\frac{\%v\{\text{num}\}}{\%v\{\text{den}\}} \quad \color{red}{?} \quad \frac{\%v\{\text{num}2\}}{\%v\{\text{den}2\}}$$

Multiple choice:

>

<

=

Scaffold:

Fractions can be easily compared when they are converted into **decimals**.

Start by converting the **fractions** into **decimals**.

Convert $\frac{\%v\{\text{num}\}}{\%v\{\text{den}\}}$ into a **decimal**. (Round to the nearest hundredths place)

Algebra:

$\%v\{\text{frac}1\}$

Hints:

- To convert a **fraction** to a **decimal**, we have to divide the **numerator** by the **denominator**.
- $\%v\{\text{num}\} \div \%v\{\text{den}\} = \%v\{\text{frac}1\}$

- The **decimal** form of $\frac{\%v\{\text{num}\}}{\%v\{\text{den}\}}$ is $\%v\{\text{frac}1\}$, so type in $\%v\{\text{frac}1\}$.

Scaffold:

Time for the second fraction.

Now, convert $\frac{\%v\{\text{num2}\}}{\%v\{\text{den2}\}}$ into a **decimal**. (Round to the nearest hundredths place)

Algebra:

✓ $\%v\{\text{frac2}\}$

Hints:

- To convert a **fraction** to a **decimal**, we have to divide the **numerator** by the **denominator**.
- $\%v\{\text{num2}\} \div \%v\{\text{den2}\} = \%v\{\text{frac2}\}$
- The **decimal** form of $\frac{\%v\{\text{num2}\}}{\%v\{\text{den2}\}}$ is $\%v\{\text{frac2}\}$, so type in $\%v\{\text{frac2}\}$.

Scaffold:

So far, we have converted the two **fractions** into **decimals**.

$$\frac{\%v\{\text{num}\}}{\%v\{\text{den}\}} = \%v\{\text{frac1}\}, \text{ and } \frac{\%v\{\text{num2}\}}{\%v\{\text{den2}\}} = \%v\{\text{frac2}\}$$

Now, back to the original problem.

Fill in the blank to make the statement true.

$$\frac{\%v\{\text{num}\}}{\%v\{\text{den}\}} \text{ ? } \frac{\%v\{\text{num2}\}}{\%v\{\text{den2}\}}$$

Multiple choice:

- >
- <
- =

Hints:

- Figure out which **fraction** is larger, by first figuring out which of its **decimal** form is larger.
- Remember,

$$\frac{\%v\{\text{num}\}}{\%v\{\text{den}\}} = \%v\{\text{frac1}\}, \text{ and } \frac{\%v\{\text{num2}\}}{\%v\{\text{den2}\}} = \%v\{\text{frac2}\}$$

- **%v{larger}** is the larger **decimal**.

- Since $\%v\{\text{larger}\}$ is the larger **decimal**, $\frac{\%v\{\text{ans_num}\}}{\%v\{\text{ans_den}\}}$ is the larger **fraction**.

Therefore

$$\frac{\%v\{\text{num}\}}{\%v\{\text{den}\}} > \frac{\%v\{\text{num2}\}}{\%v\{\text{den2}\}}$$

Select >

Assistment #30766 "30766 - Fill in the blank..."

Fill in the **blank** to make the statement true.

$$\frac{\%v\{a\}}{\%v\{b\}} \quad ? \quad \frac{\%v\{c\}}{\%v\{d\}}$$

Multiple choice:

- >
- <
- =

Scaffold:

**One strategy for comparing is looking for patterns.
Let's first see if one of these fractions is greater than one.**

$\frac{\%v\{a\}}{\%v\{b\}}$ greater or less than one?

Is $\%v\{b\}$

Multiple choice:

- greater
- less

Hints:

- You can compare a **fraction** to **one** using the least common denominator

-

Convert **one** to a **fraction** by multiplying the numerator and denominator by the least common denominator

$$1 = \frac{\%v\{b\}}{\%v\{b\}}$$

- Now, you can compare the fraction to one by looking at the value of the numerator because the denominators are equal $\frac{\%v\{a\}}{\%v\{b\}}$ has a smaller numerator value than $\frac{\%v\{b\}}{\%v\{b\}}$

- $\frac{\%v\{a\}}{\%v\{b\}}$ is less than one. Select less.
Therefore, $\frac{\%v\{a\}}{\%v\{b\}}$

Scaffold:

Now, compare the second fraction to one.

$\frac{\%v\{c\}}{\%v\{d\}}$ greater or less than one?
Is $\frac{\%v\{c\}}{\%v\{d\}}$

Multiple choice:

- greater
- less

Hints:

- You can compare a **fraction** to **one** using the least common denominator

Convert **one** to a **fraction** by multiplying the numerator and denominator by the least common denominator $\frac{1}{1} = \frac{\%v\{d\}}{\%v\{d\}}$

- Now, you can compare the fraction to one by looking at the value of the numerator because the denominators are equal $\frac{\%v\{d\}}{\%v\{d\}}$ has a smaller numerator value than $\frac{\%v\{c\}}{\%v\{d\}}$

- $\frac{\%v\{c\}}{\%v\{d\}}$ is greater than one. Select greater.
 Therefore, $\frac{\%v\{a\}}{\%v\{b\}}$

Scaffold:

Now, let's return to the original question.

Fill in the blank to make the statement true.

$$\frac{\%v\{a\}}{\%v\{b\}} \quad ? \quad \frac{\%v\{c\}}{\%v\{d\}}$$

Multiple choice:

- >
- <
- =

Hints:

- In order to figure out which fraction is greater, look at how each **fraction** compares to the **one**.

- $\frac{\%v\{a\}}{\%v\{b\}}$ is **less** than one.
 We know $\frac{\%v\{a\}}{\%v\{b\}}$

- $\frac{\%v\{c\}}{\%v\{d\}}$ is **greater** than one.
 We also know $\frac{\%v\{c\}}{\%v\{d\}}$

- $\frac{\%v\{a\}}{\%v\{b\}}$ is less than $\frac{\%v\{c\}}{\%v\{d\}}$
 Therefore, $\frac{\%v\{a\}}{\%v\{b\}}$ Select <

Assistment #30767 "30767 - Fill in the blank..."

Fill in the **blank** to make the statement true.

$$\frac{\frac{\%v\{a\}}{\%v\{b\}}}{\frac{\%v\{c\}}{\%v\{d\}}} \quad ?$$

Multiple choice:

>

<

=

Hints:

- **One way to compare fractions is by looking for patterns.**

So first, **simplify** the fractions by reducing the numerator and denominator.

- $\frac{\%v\{a\}}{\%v\{b\}} \div \frac{\%v\{a\}}{\%v\{a\}} = \frac{\%v\{a\}}{\%v\{b\}}$
You can divide $\%v\{b\}$

- $\frac{\%v\{a\}}{\%v\{b\}} \div \frac{\%v\{a\}}{\%v\{a\}} = \frac{1}{2}$

- $\frac{\%v\{c\}}{\%v\{d\}} \div \frac{\%v\{c\}}{\%v\{c\}} = \frac{\%v\{c\}}{\%v\{d\}}$
Next, divide $\%v\{d\}$

- $\frac{\%v\{c\}}{\%v\{d\}} \div \frac{\%v\{c\}}{\%v\{c\}} = \frac{1}{2}$

- $\frac{\%v\{a\}}{\%v\{b\}} = \frac{1}{2}$ and $\frac{\%v\{c\}}{\%v\{d\}} = \frac{1}{2}$
Since $\%v\{b\}$

$$\frac{\%v\{a\}}{\%v\{b\}} = \frac{\%v\{c\}}{\%v\{d\}}$$

Select =

Assistment #30768 "30768 - Fill in the blank..."

Fill in the **blank** to make the statement true.

$$\frac{\%v\{a\}}{\%v\{b\}} \text{ ? } \frac{\%v\{c\}}{\%v\{d\}}$$

Multiple choice:

>

<

=

Hints:

- One way to compare fractions is by looking for patterns.

- $\frac{\%v\{a\}}{\%v\{b\}}$ and $\frac{\%v\{c\}}{\%v\{d\}}$ have the same denominator.

Both $\%v\{b\}$ and $\%v\{d\}$

- Therefore, compare the **numerators** to see which fraction is greater.

- $\%v\{a\}$ is less than $\%v\{c\}$ because $\%v\{c\}$ is further away from zero.

Therefore $\frac{\%v\{a\}}{\%v\{b\}}$ is less than $\frac{\%v\{c\}}{\%v\{d\}}$ Select <

Assistment #30770 "30770 - Fill in the blank..."

Fill in the **blank** to make the statement true.

$$\%v\{c\} \text{ ? } \frac{\%v\{a\}}{\%v\{b\}}$$

$$\frac{\quad}{\%v\{d\}}$$

Multiple choice:

>

<

=

Hints:

- **One way to compare fractions is by looking for patterns.**

- $\frac{\%v\{c\}}{\quad}$ and $\frac{\%v\{a\}}{\quad}$ have the same denominator.

Both $\frac{\%v\{d\}}{\quad}$ and $\frac{\%v\{b\}}{\quad}$

- Therefore, compare the **numerators** to see which fraction is greater.
- $\%v\{c\}$ is greater than $\%v\{a\}$ because $\%v\{c\}$ is further away from zero.

$\frac{\%v\{c\}}{\quad}$ is greater than $\frac{\%v\{a\}}{\quad}$ Select >
Therefore $\frac{\%v\{d\}}{\quad}$ is greater than $\frac{\%v\{b\}}{\quad}$

Assistment #29897 "29897 - Ordering Fractions - Greater Than"

What should be to make the following statement true?

$$\frac{\%v\{\text{num1}\}}{\%v\{\text{den1}\}} \quad \text{[]} \quad \frac{\%v\{\text{num2}\}}{\%v\{\text{den2}\}}$$

Multiple choice:

<

>

=

Hints:

- < means **less than**, > means **greater than**, and = means **equal to**.
- First, convert the **fractions** into **decimals** by dividing the **numerator** by the **denominator**.

(Don't forget to round the decimals to the nearest hundredths place.)

- $\frac{\%v\{\text{num1}\}}{\%v\{\text{den1}\}} \div \frac{\%v\{\text{den1}\}}{\%v\{\text{den1}\}} = \%v\{\text{dec1}\}$
 $\frac{\%v\{\text{num2}\}}{\%v\{\text{den2}\}} \div \frac{\%v\{\text{den2}\}}{\%v\{\text{den2}\}} = \%v\{\text{dec2}\}$

- From the **decimal** values, we know that $\%v\{\text{dec1}\}$ is greater than $\%v\{\text{dec2}\}$.

- This means that $\frac{\%v\{\text{num1}\}}{\%v\{\text{den1}\}}$ is **greater than** $\frac{\%v\{\text{num2}\}}{\%v\{\text{den2}\}}$, so choose option B.

Assistment #29899 "29899 - Ordering Fractions - Less Than"

What should be to make the following statement true?

$$\frac{\%v\{\text{num1}\}}{\%v\{\text{den1}\}} \quad \text{input} \quad \frac{\%v\{\text{num2}\}}{\%v\{\text{den2}\}}$$

Multiple choice:

- <
- >
- =

Hints:

- < means **less than**, > means **greater than**, and = means **equal to**.
- First, convert the **fractions** into **decimals** by dividing the **numerator** by the **denominator**.

(Don't forget to round the decimals to the nearest hundredths place.)

- $\frac{\%v\{\text{num1}\}}{\%v\{\text{den1}\}} \div \frac{\%v\{\text{den1}\}}{\%v\{\text{den1}\}} = \%v\{\text{dec1}\}$
 $\frac{\%v\{\text{num2}\}}{\%v\{\text{den2}\}} \div \frac{\%v\{\text{den2}\}}{\%v\{\text{den2}\}} = \%v\{\text{dec2}\}$

- From the **decimal** values, we know that $\%v\{\text{dec1}\}$ is less than $\%v\{\text{dec2}\}$.

- This means that $\%v\{\text{num1}\}$ is **less than** $\%v\{\text{num2}\}$, so choose option A.

$\frac{\quad}{\%v{\text{den1}}}$ $\frac{\quad}{\%v{\text{den2}}}$

Assistment #30070 "30070 - Ordering Fractions - Greater Than AND Less Than One"

What should be to make the following statement true?

$$\frac{\%v{\text{num}}}{\%v{\text{den}}} \quad \square \quad \mathbf{1}$$

Multiple choice:

- $\%v{\text{ans}}$
- $\%v{\text{v3}}$
- $\%v{\text{v4}}$

Hints:

- < means **less than**, > means **greater than**, and = means **equal to**.

Since we are comparing a **fraction** to **1**, all we have to do is check whether the **numerator** is greater than the **denominator** or the other way around.

- If the **numerator** is **greater than** the **denominator**, then the fraction is **greater than 1**.

If the **numerator** is **less than** the **denominator**, then the fraction is **less than 1**.

- The **numerator** is $\%v{\text{num}}$, and the **denominator** is $\%v{\text{den}}$.

$\%v{\text{num}}$ is $\%v{\text{ans1}} \%v{\text{den}}$, so the **fraction** is $\%v{\text{ans1}} \mathbf{1}$.

- If we divide $\%v{\text{num}}$ by $\%v{\text{den}}$, we get

$$\%v{\text{num}} \div \%v{\text{den}} = \%v{\text{ans2}} \text{ (decimal is rounded to the hundredths place)}$$

And, $\%v{\text{ans2}}$ is $\%v{\text{ans1}} \mathbf{1}$.

Choose the option with the $\%v{\text{ans1}}$ sign, $\%v{\text{ans}}$.

Mastery Learning 27966 Accentuate the Negative 7th Ordering Decimals

id:[5954]

1) Assistentment #33688"33688 - 29876 –Ordering Decimals-Easy" – 1st Instance

From the list of **numbers** below, which **number** is the largest?

1.3 3.1 5.1 4.7

2) Assistentment #37362"37362 - 29876 –Ordering Decimals-Easy" – 1st Instance

From the list of **numbers** below, which **number** is the largest?

2.5 1.1 4.4 3.7

3) Assistentment #33272"33272 -29879 –Ordering Decimals-Medium" – 2nd Instance

From the list of **numbers** below, which **number** is the largest?

4.2 2.4 7.5 7.7

4) Assistentment #33722"33722 - 29879 –Ordering Decimals - Medium" – 2nd Instance

From the list of **numbers** below, which **number** is the largest?

7.5 7.6 5.2 4.2



5) Assistent #33764"33764 - 29952 –Ordering Decimals - Difficult" -3rd Instance

From the list of **numbers** below, which **number** is the largest?

5.24 0.13 9 6.04



6) Assistent #33768"33768 - 29952–Ordering Decimals - Difficult" - 3rd Instance

From the list of **numbers** below, which **number** is the largest?

1.5 3 5.4 4.31



Assistment #29876 "29876 - 27362 - Ordering Decimals - Easy"

From the list of **numbers** below, which **number** is the largest?

$\%v\{a\}$ $\%v\{b\}$ $\%v\{c\}$ $\%v\{d\}$

Algebra:

✓ $\%v\{\text{ans}\}$

Hints:

- We can start by looking for the largest digit in the **ones place**.
- $\%v\{a\}$, $\%v\{b\}$, $\%v\{c\}$, $\%v\{d\}$

From the list, the largest digit in the **ones place** is $\%v\{\text{ans-subtract}\}$.

- Notice, there is only one **decimal** with $\%v\{\text{ans-subtract}\}$ in its **ones place**. Thus, we do not have to check the digits on the **tenths place**.
- The largest **decimal** is $\%v\{\text{ans}\}$, so type in $\%v\{\text{ans}\}$.

Assistment #29879 "29879 - 27370 - Ordering Decimals - Medium"

From the list of **numbers** below, which **number** is the largest?

$\%v\{a\}$ $\%v\{b\}$ $\%v\{c\}$ $\%v\{d\}$

Algebra:

✓ $\%v\{\text{ans}\}$

Scaffold:

In order to find the largest decimal, we have to first find the largest digit in the ones place.

What is the **largest whole number** on this list?

$\%v\{a\}$ $\%v\{b\}$ $\%v\{c\}$ $\%v\{d\}$

Algebra:

✓ $\%v\{\text{ans} - \text{subtract}\}$

Hints:

- List all the digits in the **ones place**.
- Your list should look something like this:

$\%v\{\text{whole}_a\}, \%v\{\text{whole}_b\}, \%v\{\text{whole}_c\}, \%v\{\text{whole}_d\}$

- From this list, find the **largest digit**.
- The **largest digit** is $\%v\{\text{ans} - \text{subtract}\}$, so type in $\%v\{\text{ans} - \text{subtract}\}$.

Scaffold:

You know that the **largest digit** in the **ones place** is $\%v\{\text{ans} - \text{subtract}\}$. Now try the original problem.

From the list of **decimals** below, which **decimal** is the largest?

$\%v\{a\}$ $\%v\{b\}$ $\%v\{c\}$ $\%v\{d\}$

Algebra:

✓ $\%v\{\text{ans}\}$

Hints:

- There are two **decimals** with the digit $\%v\{\text{ans} - \text{subtract}\}$ in its **ones place**. So, we have to find the **decimal** with the larger digit in the **tenths place**.
- $\%v\{\text{ans}\}$ has $\%v\{\text{subtract}\}$ in its **tenths place**, while $\%v\{\text{close}\}$ has $\%v\{\text{subtract}2\}$ in

its **tenths place**.

- $\%v\{\text{subtract}\}$ is larger than $\%v\{\text{subtract2}\}$.
- So the largest **decimal** is $\%v\{\text{ans}\}$, type in $\%v\{\text{ans}\}$.

Assistment #29952 "29952 - Ordering Decimals - Difficult"

From the list of **numbers** below, which **number** is the largest?

$\%v\{\text{num1}\}$ $\%v\{\text{num2}\}$ $\%v\{\text{num3}\}$ $\%v\{\text{num4}\}$

Algebra:

✓ ans

Scaffold:

In order to find the largest **decimal**, we have to find the largest digit in the ones place.

What is the **largest whole number** on this list?

$\%v\{\text{num1}\}$ $\%v\{\text{num2}\}$ $\%v\{\text{num3}\}$ $\%v\{\text{num4}\}$

Algebra:

✓ $\%v\{\text{big1}\}$

Hints:

- List all the digits in the **ones place** on a piece of paper.
- Your list should look something like this:

$\%v\{\text{num1_digit1}\}$ $\%v\{\text{num2_digit1}\}$ $\%v\{\text{num3_digit1}\}$ $\%v\{\text{num4_digit1}\}$

- From this list, find the **largest digit**.
- The **largest digit** is $\%v\{\text{big1}\}$, so type in $\%v\{\text{big1}\}$.

Scaffold:

You know that the **largest digit in the ones place** is $\%v\{\text{big1}\}$. Now try the original

problem.

From the list of **decimals** below, which **decimal** is the largest?

$\%v{\text{num1}}$ $\%v{\text{num2}}$ $\%v{\text{num3}}$ $\%v{\text{num4}}$

Algebra:

✓ $\%v{\text{ans}}$

Hints:

- Notice, there is only one decimal with $\%v{\text{big1}}$ in its **ones place**. Thus, we do not have to check the digits on the **tenths place**.
- The **largest decimal** is $\%v{\text{ans}}$, so type in $\%v{\text{ans}}$.

Mastery Learning 27966 Accentuate the Negative 7th Decimals <,>=

id:[6040]

1) Assistent #39402"39402 - 29893–Ordering Decimals " – 1st Instance

What should be to make the following statement true?

$$0.25 \text{ } 0.64$$

- <
 - >
 - =
-

2) Assistent #39492"39492 - 30055 –Ordering Decimals-Same Ones Place" – 2nd Instance

What should be to make the following statement true?

$$0.75 \text{ } 0.72$$

- <
 - >
 - =
-

3) Assistent #39552"39552 -30634 –Ordering Decimals- Equal to" –3rd Instance

Fill in the blank to make the statement true.

4.8 ? to 4.80

- >
 - <
 - =
-

4) Assistent #39612"39612 - 30642 –Ordering Decimals " – 4th Instance

Fill in the blank to make the statement true.

0.73 ? 0.75

- >
 - <
 - =
-

Assistent #29893 "29893 - 27386 - Ordering Decimals - Less Than"

What should be to make the following statement true?

$\%v\{\text{num1}\} \text{ } \%v\{\text{num2}\}$

Multiple choice:

- <
- >

X =

Hints:

- < means **less than**, > means **greater than**, and = means **equal to**.
- The way to compare **decimals** is to *see which decimal has a larger digit at their highest place*.

$$0.\text{\%v\{num1_digit1\}}\text{\%v\{num1_digit2\}}$$
$$0.\text{\%v\{num2_digit1\}}\text{\%v\{num2_digit2\}}$$

Now for this case, we have to compare the digits after the decimal place. So, start by comparing the digit at the **tenths place**, and then compare the digit on the **hundredths place**.

- So, let's look at the digit on the **tenths place**.

$0.\text{\%v\{num1_digit1\}}\text{\%v\{num1_digit2\}}$ has $\text{\%v\{num1_digit1\}}$ on its **tenths place**.

And, $0.\text{\%v\{num2_digit1\}}\text{\%v\{num2_digit2\}}$ has $\text{\%v\{num2_digit1\}}$ on its **tenths place**.

$0.\text{\%v\{num2_digit1\}}\text{\%v\{num2_digit2\}}$ has a larger digit on its **tenths place**.

- Since, $0.\text{\%v\{num2_digit1\}}\text{\%v\{num2_digit2\}}$ has a larger digit on its **tenths place**, which is the highest place from both numbers, we do not have to look at the **hundredths place** or at any other places.

This means that $\text{\%v\{num1\}}$ is **less than** $\text{\%v\{num2\}}$.

So, choose < .

Assistment #29894 "29894 - Ordering Decimals - Greater Than"

What should be to make the following statement true?

$$\text{\%v\{num1\}} \text{\%v\{num2\}}$$

Multiple choice:

X <

✓ >

X =

Hints:

- < means **less than**, > means **greater than**, and = means **equal to**.

- The way to compare **decimals** is to *see which decimal has a larger digit at their highest place.*

$$0.\text{\%v\{num1_digit1\}}\text{\%v\{num1_digit2\}}$$

$$0.\text{\%v\{num2_digit1\}}\text{\%v\{num2_digit2\}}$$

Now for this case, we have to compare the digits after the decimal place.

So, start by comparing the digit at the **tenths place**,
and then compare the digit on the **hundredths place**.

- So, let's look at the digit on the **tenths place**.

$0.\text{\%v\{num1_digit1\}}\text{\%v\{num1_digit2\}}$ has $\text{\%v\{num1_digit1\}}$ on its **tenths place**.

And, $0.\text{\%v\{num2_digit1\}}\text{\%v\{num2_digit2\}}$ has $\text{\%v\{num2_digit1\}}$ on its **tenths place**.

$0.\text{\%v\{num1_digit1\}}\text{\%v\{num1_digit2\}}$ has a larger digit on its **tenths place**.

- Since, $0.\text{\%v\{num1_digit1\}}\text{\%v\{num1_digit2\}}$ has a larger digit on its **tenths place**, which is the highest place from both numbers, we do not have to look at the **hundredths place** or at any other places.

This means that $\text{\%v\{num1\}}$ is **greater than** $\text{\%v\{num2\}}$.

So, choose $>$.

Assisment #30054 "30054 - Ordering Decimals - Less Than - Same Ones Place"

What should be to make the following statement true?

$$\text{\%v\{num1\}} \text{ } \text{\%v\{num2\}}$$

Multiple choice:

- $<$
- $>$
- $=$

Hints:

- $<$ means **less than**, $>$ means **greater than**, and $=$ means **equal to**.
- The way to compare **decimals** is to *see which decimal has a larger digit at their highest place.*

$$0.\text{\%v\{num1_digit1\}}\text{\%v\{num1_digit2\}}$$

$0.\text{\%v}\{\text{num1_digit1}\}\text{\%v}\{\text{num2_digit2}\}$

Now for this case, we have to compare the digits after the decimal place.

So, start by comparing the digit at the **tenths place**, and then compare the digit on the **hundredths place**.

- So, let's look at the digit on the **tenths place**.

$0.\text{\%v}\{\text{num1_digit1}\}\text{\%v}\{\text{num1_digit2}\}$ has $\text{\%v}\{\text{num1_digit1}\}$ on its **tenths place**.

And, $0.\text{\%v}\{\text{num1_digit1}\}\text{\%v}\{\text{num2_digit2}\}$ has $\text{\%v}\{\text{num1_digit1}\}$ on its **tenths place**.

They have the same digits on the **tenths place**, so we have to look at the **hundredths place**.

- Now, for the digit on the **hundredths place**.

$0.\text{\%v}\{\text{num1_digit1}\}\text{\%v}\{\text{num1_digit2}\}$ has $\text{\%v}\{\text{num1_digit2}\}$ on its **hundredths place**.

And, $0.\text{\%v}\{\text{num1_digit1}\}\text{\%v}\{\text{num2_digit2}\}$ has $\text{\%v}\{\text{num2_digit2}\}$ on its **hundredths place**.

$0.\text{\%v}\{\text{num1_digit1}\}\text{\%v}\{\text{num2_digit2}\}$ has a larger digit on its **hundredths place**.

- Since $0.\text{\%v}\{\text{num1_digit1}\}\text{\%v}\{\text{num1_digit2}\}$ and $0.\text{\%v}\{\text{num1_digit1}\}\text{\%v}\{\text{num2_digit2}\}$ has the same digit on the **tenths place**.

the number with the larger digit on its hundredths place is the larger number.

In this case, $0.\text{\%v}\{\text{num1_digit1}\}\text{\%v}\{\text{num2_digit2}\}$ has a larger digit on its **hundredths place** than $0.\text{\%v}\{\text{num1_digit1}\}\text{\%v}\{\text{num1_digit2}\}$.

This means that $\text{\%v}\{\text{num1}\}$ is **less than** $\text{\%v}\{\text{num2}\}$.

So, choose $<$.

Assistment #30055 "30055 - Ordering Decimals - Greater Than - Same Ones Place"

What should be to make the following statement true?

$$\text{\%v}\{\text{num1}\} \text{ } \text{\%v}\{\text{num2}\}$$

Multiple choice:

$<$

$>$

x =

Hints:

- < means **less than**, > means **greater than**, and = means **equal to**.
- The way to compare **decimals** is to *see which decimal has a larger digit at their highest place*.

$$0.\text{\%v\{num1_digit1\}\%v\{num1_digit2\}} \\ 0.\text{\%v\{num1_digit1\}\%v\{num2_digit2\}}$$

Now for this case, we have to compare the digits after the decimal place.
So, start by comparing the digit at the **tenths place**,
and then compare the digit on the **hundredths place**.

- So, let's look at the digit on the **tenths place**.

$0.\text{\%v\{num1_digit1\}\%v\{num1_digit2\}}$ has $\text{\%v\{num1_digit1\}}$ on its **tenths place**.

And, $0.\text{\%v\{num1_digit1\}\%v\{num2_digit2\}}$ has $\text{\%v\{num1_digit1\}}$ on its **tenths place**.

They have the same digits on the **tenths place**,
so we have to look at the **hundredths place**.

- Now, for the digit on the **hundredths place**.

$0.\text{\%v\{num1_digit1\}\%v\{num1_digit2\}}$ has $\text{\%v\{num1_digit2\}}$ on its **hundredths place**.

And, $0.\text{\%v\{num1_digit1\}\%v\{num2_digit2\}}$ has $\text{\%v\{num2_digit2\}}$ on its **hundredths place**.

$0.\text{\%v\{num1_digit1\}\%v\{num1_digit2\}}$ has a larger digit on its **hundredths place**.

- Since $0.\text{\%v\{num1_digit1\}\%v\{num1_digit2\}}$ and $0.\text{\%v\{num1_digit1\}\%v\{num2_digit2\}}$ has the same digit on the **tenths place**.

the number with the larger digit on its hundredths place is the larger number.

In this case, $0.\text{\%v\{num1_digit1\}\%v\{num1_digit2\}}$ has a larger digit on its **hundredths place** than $0.\text{\%v\{num1_digit1\}\%v\{num2_digit2\}}$.

This means that $\text{\%v\{num1\}}$ is **greater than** $\text{\%v\{num2\}}$.

So, choose >.

Assistment #29895 "29895 - Ordering Decimals - Equal To"

What should be to make the following statement true?

$$\%v\{\text{num1}\} \square \%v\{\text{num1}\}$$

Multiple choice:

 <

 >

 =

Hints:

- < means **less than**, > means **greater than**, and = means **equal to**.
- The way to compare **decimals** is to *see which decimal has a larger digit at their highest place*.

$$0.\%v\{\text{num1_digit1}\}\%v\{\text{num1_digit2}\}$$

$$0.\%v\{\text{num1_digit1}\}\%v\{\text{num1_digit2}\}$$

Now for this case, we have to compare the digits after the decimal place.

So, start by comparing the digit at the **tenths place**,
and then compare the digit on the **hundredths place**.

- So, let's look at the digit on the **tenths place**.

$0.\%v\{\text{num1_digit1}\}\%v\{\text{num1_digit2}\}$ has $\%v\{\text{num1_digit1}\}$ on its **tenths place**.

And, $0.\%v\{\text{num1_digit1}\}\%v\{\text{num1_digit2}\}$ has $\%v\{\text{num1_digit1}\}$ on its **tenths place**.

Neither **decimal** has a larger digit on its **tenths place**.

- Now, for the digit on the **hundredths place**.

$0.\%v\{\text{num1_digit1}\}\%v\{\text{num1_digit2}\}$ has $\%v\{\text{num1_digit2}\}$ on its **hundredths place**.

And, $0.\%v\{\text{num1_digit1}\}\%v\{\text{num1_digit2}\}$ has $\%v\{\text{num1_digit2}\}$ on its **hundredths place**.

Neither **decimal** has a larger digit on its **hundredths place**.

- Since $0.\%v\{\text{num1_digit1}\}\%v\{\text{num1_digit2}\}$ has the same digits as $0.\%v\{\text{num1_digit1}\}\%v\{\text{num1_digit2}\}$ on all their places,
 $0.\%v\{\text{num1_digit1}\}\%v\{\text{num1_digit2}\}$ is equal to $0.\%v\{\text{num1_digit1}\}\%v\{\text{num1_digit2}\}$.

So, choose "=" .

Assistment #30634 "30634 - Fill in the blank..."

Fill in the blank to make the statement true.

$$\%v\{\text{num1}\}.\%v\{\text{num2}\} \underline{\quad ? \quad} \text{ to } \%v\{\text{num1}\}.\%v\{\text{num2}\}0$$

Multiple choice:

-  >
-  <
-  =

Hints:

- < means **less than**, > means **greater than**, and = means **equal to**
- The way to compare **decimals** is to *see which decimal has a larger digit at their highest place.*

$$\%v\{\text{num1}\}.\%v\{\text{num2}\} \qquad \%v\{\text{num1}\}.\%v\{\text{num2}\}0$$

Now for this case, we have to compare the digits after the decimal place.
So, start by comparing the digit at the **tenths place**,
and then compare the digit on the **hundredths place**.

- Both $\%v\{\text{num1}\}.\%v\{\text{num2}\}$ and $\%v\{\text{num1}\}.\%v\{\text{num2}\}0$ have the same value in the **tenths** place. Therefore look at the **hundreths** place.
- $\%v\{\text{num1}\}.\%v\{\text{num2}\}$ has no number in the **hundreths** place, and $\%v\{\text{num1}\}.\%v\{\text{num2}\}0$ has a zero in the hundreths place.




- Therefore, $\%v\{\text{num1}\}.\%v\{\text{num2}\}$ is equal to $\%v\{\text{num1}\}.\%v\{\text{num2}\}0$.
Select =

Assistment #30640 "30640 - Fill in the blank..."

Fill in the blank to make the statement true.

$0.\%v\{\text{num2}\}\%v\{\text{num5}\}$ is ? to $0.\%v\{\text{num4}\}\%v\{\text{num6}\}$

Multiple choice:

-  >
-  <
-  =

Hints:

- < means **less than**, > means **greater than**, and = means **equal to**
- The way to compare **decimals** is to *see which decimal has a larger digit at their highest place.*

$$0.\%v\{\text{num2}\}\%v\{\text{num5}\} \qquad 0.\%v\{\text{num4}\}\%v\{\text{num6}\}$$

Now for this case, we have to compare the digits after the decimal place.
So, start by comparing the digit at the **tenths place**,
and then compare the digit on the **hundredths place**.

Therefore $0.\sqrt{\text{num2}}\sqrt{\text{num4}}$ is less than $0.\sqrt{\text{num2}}\sqrt{\text{num6}}$.
Select <

Mastery Learning 27967 Accentuate the Negative 7th Ordering Integers

id:[5956]

1) Assistent #34018"34018 - 29900 –Ordering Integers – Find the Largest Integer" – 1st Instance

From the following **integers**, which **integer** is the largest?

-4, 2, 8, -10

2) Assistent #34022"34022 - 29900 – Ordering Integers – Find the Largest Integer " – 1st Instance

From the following **integers**, which **integer** is the largest?

-4, 3, 8, -9

3) Assistent #34078"34078 - 29901 –Ordering Integers – Find the Smallest Integer" – 2nd Instance

From the following **integers**, which **integer** is the smallest?

-4, 1, 9, -7

5) Assistent #34099"34099 - 29901 –Ordering Integers – Find the Smallest Integer"-2nd Instance

From the following **integers**, which **integer** is the smallest?

-5, 4, 9, -8

3) Assistent #34048 "34048 -30730 –Ordering Decimals-Medium" –3rd Instance

The table below shows the low temperatures of four cities one winter night.

City	Temperature
Cambridge	-2
Paxton	9
Holden	-17
Malden	5

Which city had the lowest temperature that night?

- Cambridge
 - Paxton
 - Holden
 - Malden
-

Assistent #29900 "29900 - 27395 - Ordering Integers - Find Largest Integer"

From the following **integers**, which **integer** is the largest?

$\%v\{\text{int}3\}$, $\%v\{\text{int}2\}$, $\%v\{\text{int}1\}$, $\%v\{\text{int}4\}$

Algebra:

✓ $\%v\{\text{int}1\}$

Hints:

- Remember, **positive integers** are always greater than **negative integers**.

From the list, the **positive integers** are $\%v\{\text{int}2\}$, and $\%v\{\text{int}1\}$.

The **negative integers** are $\%v\{\text{int}3\}$, and $\%v\{\text{int}4\}$.

- The largest **integer** from the list is the larger number from the two **positive integer**.

This means that we only have to look at $\%v\{\text{int}2\}$ and $\%v\{\text{int}1\}$.

- $\%v\{\text{int}1\}$ is larger than $\%v\{\text{int}2\}$, so $\%v\{\text{int}1\}$ is the largest **integer** from the list. Type in $\%v\{\text{int}1\}$.

Assistment #30730 "30730 - The table below s..."

The table below shows the low temperatures of four cities one winter night.

City	Temperature
$\%v\{t\}$	$-\%v\{a\}$
$\%v\{u\}$	$\%v\{b\}$
$\%v\{v\}$	$-\%v\{c\}$
$\%v\{w\}$	$\%v\{d\}$

Which city had the lowest temperature that night?

Multiple choice:

- $\%v\{t\}$
- $\%v\{u\}$
- $\%v\{v\}$
- $\%v\{w\}$

Hints:

- We know **negative** numbers are less than **positive** numbers.
- Therefore, we can exclude $\%v\{u\}$ and $\%v\{w\}$.
- The temperature of $\%v\{t\}$ is $-\%v\{a\}$ and the temperature of $\%v\{v\}$ is $-\%v\{c\}$.

To figure out which number is less, determine the **distance of the number from zero**. The number **furthest away** from zero is the **smallest**.

- $-\%v\{a\}$ is $\%v\{a\}$ units from zero.
- $-\%v\{c\}$ is $\%v\{c\}$ units from zero.
- Therefore, $-\%v\{c\}$ is less than $-\%v\{a\}$ because it is further from zero.
- $\%v\{v\}$ has the lowest temperature. Select $\%v\{v\}$

Assistment #29901 "29901 - 27396 - Ordering Integers - Find Smallest Integer"

From the following **integers**, which **integer** is the smallest?

$\%v\{\text{int}3\}$, $\%v\{\text{int}2\}$, $\%v\{\text{int}1\}$, $\%v\{\text{int}4\}$

Algebra:

- $\%v\{\text{int}4\}$

Hints:

- Remember, **positive integers** are always greater than **negative integers**.

From the list, the **positive integers** are $\%v{\text{int}2}$, and $\%v{\text{int}1}$.

The **negative integers** are $\%v{\text{int}3}$, and $\%v{\text{int}4}$.

- The smallest **integer** from the list is the smaller number from the two **negative integers**.

This means that we only have to look at $\%v{\text{int}4}$ and $\%v{\text{int}3}$.

- $\%v{\text{int}4}$ is smaller than $\%v{\text{int}3}$, so $\%v{\text{int}4}$ is the smallest **integer** from the list. Type in $\%v{\text{int}4}$.

Mastery Learning 27967 Accentuate the Negative 7th Integers <,>=

id:[6041]

1) Assistent #39643"39643 - 29903–Ordering Integers " – 1st Instance

What should be to make the following statement true?

$$3 \text{ } -4$$

- <
 - >
 - =
-

2) Assistent #39673"39673 - 30056 –Ordering Integers" – 2nd Instance

What should be to make the following statement true?

$$-2 \text{ } -11$$

- <
 - >
 - =
-

3) Assistent #39733"39733 -30057 –Ordering Integers" –2nd Instance

What should be to make the following statement true?

$$-15 \quad \square \quad -9$$

- >
 - <
 - =
-

4) Assistent #39764"39764 - 29905 –Ordering Integers " – 3rd Instance

What should be to make the following statement true?

$$-5 \quad \square \quad -5$$

- >
 - <
 - =
-

Assistent #29903 "29903 - 27398 - Ordering Integers - Greater Than"

What should be to make the following statement true?

$$\%v\{int1\} \square \%v\{int2\}$$

Multiple choice:

- <
- >
- =

Hints:

- < means **less than**, > means **greater than**, and = means **equal to**.
- Remember, **positive integers** are always **greater than** **negative integers**. And zero is always **less than positive integers** but **greater than negative integers**.
- $\%v\{int1\}$ is a **positive integer**, and $\%v\{int2\}$ is a **negative integer**.
- This means that $\%v\{int1\}$ is **greater than** $\%v\{int2\}$, so choose >.

Assistment #30056 "30056 - Ordering Integers - Greater Than - Negative + Negative"

What should \square be to make the following statement true?

$$\%v\{int1\} \square \%v\{int2\}$$

Multiple choice:

- <
- >
- =

Hints:

- < means **less than**, > means **greater than**, and = means **equal to**.
 - Remember when comparing **negative integers**, the one that is the closest to zero is the larger one.
 - $\%v\{int1\}$ is $\%v\{int1.abs\}$ away from zero and $\%v\{int2\}$ is $\%v\{int2.abs\}$ from away zero.
- So, $\%v\{int1\}$ is closer to zero than $\%v\{int2\}$.
- This means that $\%v\{int1\}$ is **greater than** $\%v\{int2\}$, so choose >.

Assistment #29904 "29904 - Ordering Integers - Less Than"

What should be to make the following statement true?

$$\%v\{\text{int1}\} \text{ } \%v\{\text{int2}\}$$

Multiple choice:

- <
- >
- =

Hints:

- < means **less than**, > means **greater than**, and = means **equal to**.
- Remember, **positive integers** are always **greater than** **negative integers**. And zero is always **less than** **positive integers** but **greater than** **negative integers**.
- $\%v\{\text{int1}\}$ is a **negative integer**, and $\%v\{\text{int2}\}$ is a **positive integer**.
- This means that $\%v\{\text{int1}\}$ is **less than** $\%v\{\text{int2}\}$, so choose <.

Assistment #30057 "30057 - Ordering Integers - Less Than - Negative + Negative"

What should be to make the following statement true?

$$\%v\{\text{int2}\} \text{ } \%v\{\text{int1}\}$$

Multiple choice:

- <
- >
- =

Hints:

- < means **less than**, > means **greater than**, and = means **equal to**.
- Remember when comparing **negative integers**, the one that is the closest to zero is the larger one.
- $\%v\{\text{int2}\}$ is $\%v\{\text{int2.abs}\}$ away from zero and $\%v\{\text{int1}\}$ is $\%v\{\text{int1.abs}\}$ from away zero.

So, $\%v\{\text{int1}\}$ is closer to zero than $\%v\{\text{int2}\}$.

- This means that $\%v\{\text{int2}\}$ is **less than** $\%v\{\text{int1}\}$, so choose $<$.

Assistment #29905 "29905 - Ordering Integers - Equal To"

What should be to make the following statement true?

$\%v\{\text{int1}\}$ $\%v\{\text{int1}\}$

Multiple choice:

- $<$
- $>$
- $=$

Hints:

- $<$ means **less than**, $>$ means **greater than**, and $=$ means **equal to**.
- $\%v\{\text{int1}\}$ is the exact same value as $\%v\{\text{int1}\}$.
- So $\%v\{\text{int1}\}$ is equal to $\%v\{\text{int1}\}$, choose $=$.

Mastery Learning 27969 Accentuate the Negative 7th Scientific Notation

id:[5958]

1) Assistent #34258"34258 - 30809 –Scientific Notation"

The number 130,000 is written in expanded form.
What is the number written in scientific notation?

Fill in the **blank**: $1.3 \times 10^{-?}$

2) Assistent #34266"34266 - 30809 –Scientific Notation"

The number 96,000 is written in expanded form.
What is the number written in scientific notation?

Fill in the **blank**: $9.6 \times 10^{-?}$

3) Assistent #34275"34275 - 30809 –Scientific Notation"

The number 430,000 is written in expanded form.
What is the number written in scientific notation?

Fill in the **blank**: $4.3 \times 10^{-?}$

4) Assistent #34285"34285 - 30809 –Scientific Notation"

The number 430,000 is written in expanded form.
What is the number written in scientific notation?

Fill in the **blank**: $4.3 \times 10^{-?}$

5) Assistent #34280"34280 - 30809 –Scientific Notation"

The number 360,000 is written in expanded form.
What is the number written in scientific notation?

Fill in the **blank**: $3.6 \times 10^{-?}$

6) Assistent #34274"34274 - 30809 –Scientific Notation"

The number 340,000,000 is written in expanded form.
What is the number written in scientific notation?

Fill in the **blank**: $3.4 \times 10^{-?}$

Assistent #30809 "30809 - The number $\%v\{a\}$..."

The number $\%v\{a\}$ is written in expanded form.
What is the number written in scientific notation?

Fill in the **blank**: $\%v\{b\} \times 10^{-?}$

Algebra:

✓ $\%v\{c\}$

Hints:

- Scientific notation is a method of writing a number in terms of a decimal number between 1 and 10 multiplied by a power of 10.
- Move the **decimal point** over to the **left** until there the decimal point is **between the first two numbers**, $\%v\{b\}$
- Count **how many times you move the decimal point** over to get to $\%v\{b\}$ (when the decimal point is between the first two numbers).
- The amount of times you move the decimal over is the value of the blank.
Therefore, $\%v\{b\} \times 10^{-?} = \%v\{b\} \times 10^{\%v\{c\}}$

Select %v{c}

Mastery Learning 27970 Accentuate the Negative 7th Absolute Value

id:[5959]

1) Assistent #34288"34288 - 30524 –Absolute Value" -1st Instance

What is the value of the expression below?

$$|7| + |-18|$$

2) Assistent #34293"34293 - 30524 –Absolute Value" -1st Instance

What is the value of the expression below?

$$|14| + |-2|$$

3) Assistent #34300"34300 - 30809 –Scientific Notation" – 1st Instance

What is the value of the expression below?

$$|8| + |-17|$$

4) Assistent #34318"34318 - 30525 –Absolute Value" -2nd Instance

What is the value of the expression below?

$$|-7| - |-17|$$

5) Assistent #34322"34322 - 30525 –Absolute Value" -2nd Instance

What is the value of the expression below?

$$|-7| - |-18|$$

6) Assistent #34329"34329 - 30525 –Absolute Value" -2nd Instance

What is the value of the expression below?

$$|-14| - |-14|$$

Assistent #30524 "30524 - 27970 - 7th Grade: Accentuate the Negative - Morph 2006 grade 7 #12"

What is the value of the expression below?

$$|v\{a\}| + |-v\{b\}|$$

Algebra:

✓ $\sqrt{a+b}$

Scaffold:

What is the value of $|\sqrt{a}|$?

Algebra:

✓ \sqrt{a}

Hints:

- The absolute value of a number is the distance that number is from zero.
- $|\sqrt{a}| = \sqrt{a}$ because \sqrt{a} is \sqrt{a} units away from zero.

Type in \sqrt{a}

Scaffold:

What is the value of $|\sqrt{-b}|$?

Algebra:

✓ \sqrt{b}

Hints:

- Remember, the absolute value of a number is the distance that the number is from zero.
- $|\sqrt{-b}| = \sqrt{b}$ because $\sqrt{-b}$ is \sqrt{b} units away from zero.

Type in \sqrt{b} .

Scaffold:

Now try the original problem again.

What is the value of the expression below?

$$|\sqrt{a}| + |\sqrt{-b}|$$

Algebra:

✓ $\sqrt{a+b}$

Hints:

- Rewrite $|\sqrt{a}| + |\sqrt{-b}|$ without the absolute values.
- $|\sqrt{a}| + |\sqrt{-b}| = \sqrt{a} + \sqrt{b}$

• Since,

$$\begin{aligned} &|\sqrt{a}| + |\sqrt{-b}| \\ &= \sqrt{a} + \sqrt{b} \\ &= \sqrt{a+b} \end{aligned}$$

The value of $|\sqrt{a}| + |\sqrt{-b}|$ is $\sqrt{a+b}$.

Type in $\sqrt{a+b}$.

Assistment #30525 "30525 - 27970 - 7th Grade: Accentuate the Negative - Morph 2006 grade 7 #12"

What is the value of the expression below?

$$|-\%v\{a\}| - |-\%v\{b\}|$$

Algebra:

✓ $\%v\{a-b\}$

Scaffold:

What is the value of $|-\%v\{a\}|$?

Algebra:

✓ $\%v\{a\}$

Hints:

- The absolute value of a number is the distance that number is from zero.
- $|-\%v\{a\}| = \%v\{a\}$ because $-\%v\{a\}$ is $\%v\{a\}$ units away from zero.

Type in $\%v\{a\}$

Scaffold:

What is the value of $|-\%v\{b\}|$?

Algebra:

✓ $\%v\{b\}$

Hints:

- Remember, the absolute value of a number is the distance that the number is from zero.
- $|-\%v\{b\}| = \%v\{b\}$ because $-\%v\{b\}$ is $\%v\{b\}$ units away from zero.

Type in $\%v\{b\}$.

Scaffold:

Now try the original problem again.

What is the value of the expression below?

$$|-\%v\{a\}| - |-\%v\{b\}|$$

Algebra:

✓ $\%v\{a-b\}$

Hints:

- Rewrite $|-\%v\{a\}| - |-\%v\{b\}|$ without the absolute values.
- $|-\%v\{a\}| - |-\%v\{b\}| = \%v\{a\} - \%v\{b\}$
- Since,
 $|-\%v\{a\}| - |-\%v\{b\}|$
 $= \%v\{a\} - \%v\{b\}$
 $= \%v\{a-b\}$

The value of $|-\%v\{a\}| - |-\%v\{b\}|$ is $\%v\{a-b\}$.

Type in $\%v\{a-b\}$.

Mastery Learning 27972 Accentuate the Negative 7th Addition Fractions

id:[5960]

1) Assistent #34348"34348 - 30648 –Addition Fractions" -1st Instance

Find the sum.

$$\frac{-15}{19} + \frac{20}{19}$$

2) Assistent #34351"34351 - 30648 –Addition Fractions" -1st Instance

Find the sum.

$$\frac{-20}{14} + \frac{2}{14}$$

3) Assistent #34356"34356 - 30648 –Addition Fractions" -1st Instance

Find the sum.

$$\frac{-18}{12} + \frac{4}{12}$$

4) Assistent #37232"37232 - 30649 –Addition Fractions" -2nd Instance

Find the sum.

$$\frac{6}{9} + \frac{14}{9}$$

5) Assistent #37235"37235 - 30649 –Addition Fractions" -2nd Instance

Find the sum

$$\frac{15}{7} + \frac{10}{7}$$

6) Assistent #37241"37241 - 30649 –Addition Fractions" -2nd Instance

Find the Sum

$$\frac{7}{12} + \frac{18}{12}$$

Assistment #30648 "30648 - 12293 - Accentuate the Negative: Inv 2, 3a hints"

$$\frac{-\sqrt{a}}{\sqrt{b}} + \frac{\sqrt{c}}{\sqrt{b}}$$

Find the sum.

Algebra:

✓ $\sqrt{c-a}/\sqrt{b}$

Hints:

- When adding or subtracting fractions you must first make sure that the **denominators** (bottom of the fraction) are equal. In this case they are both \sqrt{b}

$$\frac{-\sqrt{a} + \sqrt{c}}{\sqrt{b}}$$

- Ignore the denominator and add the digits in the numerator.

$$-\sqrt{a} + \sqrt{c} = \sqrt{c-a}$$

- $$\frac{\sqrt{c-a}}{\sqrt{b}}$$

Now, put the denominator back and you get an answer of $\frac{\sqrt{c-a}}{\sqrt{b}}$

Enter $\sqrt{c-a}/\sqrt{b}$

Assistment #30649 "30649 - 12293 - Accentuate the Negative: Inv 2, 3a hints"

$$\frac{\sqrt{a}}{\sqrt{b}} + \frac{\sqrt{c}}{\sqrt{b}}$$

Find the sum.

Algebra:

✓ $\frac{\sqrt{c+a}}{\sqrt{b}}$

Hints:

- When adding or subtracting fractions you must first make sure that the **denominators** (bottom of the fraction) are equal. In this case they are both \sqrt{b}

$$\frac{\sqrt{a}}{\sqrt{b}} + \frac{\sqrt{c}}{\sqrt{b}}$$

- Ignore the denominator and add the digits in the numerator.

$$\sqrt{a} + \sqrt{c} = \sqrt{c+a}$$

- $$\frac{\sqrt{c+a}}{\sqrt{b}}$$
Now, put the denominator back and you get an answer of

Enter $\frac{\sqrt{c+a}}{\sqrt{b}}$

Mastery Learning 27972 Accentuate the Negative 7th Subtraction Integers

id:[5961]

1) Assistent #34408"34408 - 30650 –Subtraction Integers" -1st Instance

Find the difference.

$$-15 - (-24)$$

2) Assistent #34438"34438 - 29948 – Subtraction Integers – Positive minus Negative" -2nd Instance

What is $13 - (-12)$?

3) Assistent #34468"34468 - 29949– Subtraction Integers –Negative minus Positive"– 3rd Instance

What is $(-13) - 8$?

4) Assisment #34498"34498 - 29950– Subtraction Integers –Negative minus Negative"– 4th Instance

What is $(-12) - (-9)$?

5) Assisment #34528"34528 - 29951– Subtraction Integers –Positive minus Negative, Negative Answer"– 5th Instance

What is $9 - 20$?

Assisment #30650 "30650 - 12294 - Accentuate the Negative: Inv 2, 4a hints"

Find the difference.

$$-v\{a\} - (-v\{b\})$$

Algebra:

✓ $v\{b-a\}$

Hints:

- To make this problem easier you should first simplify the signs.
Subtracting a negative number is the same thing as adding a positive number

$$-v\{a\} - (-v\{b\})$$

$$-v\{a\} +v\{b\}$$

•

The rule for adding integers with different signs is to subtract them and then to use the sign of the number with the highest absolute value (furthest from 0).

- Therefore, subtract $v\{a\}$ from $v\{b\}$.

$$v\{b\} > v\{a\}$$

Therefore, use the sign of $v\{b\}$, which is positive.

- This is what you should have on your paper.

$$-v\{a\} - (-v\{b\})$$

$$-v\{a\} +v\{b\}$$

$$v\{b\} - v\{a\}$$

$$v\{b-a\}.$$

$$-v\{a\} - (-v\{b\}) = v\{b-a\}. \text{ Enter } v\{b-a\}$$

Assistment #29948 "29948 - Subtraction Integers : positive minus negative"

What is $a - (-b)$?

Algebra:

✓ $a + b$

Hints:

- Whenever you are subtracting a negative integer from a positive one, you can change the minus negative sign to a addition sign.



- In the problem you have,
 $a - (-b) = a + b$

Now add b to a .

- $a + b = a + b$

Therefore,

$$a - (-b) = a + b$$

Type in $a + b$

Assistment #29949 "29949 - 27490 - Subtracting - Integers : negative minus positive"

What is $(-a) - b$?

Algebra:

✓ $-a - b$

Hints:

- Here you have to subtract a positive integer from a negative one. You can add the absolute values of the numbers and keep them negative.

- So for $(-a) - b$, perform the following addition:

$$a + b$$

- $a + b = a + b$

Thus,

$$(-a) - b = -a - b$$

Type in $-a - b$

Assistment #29950 "29950 - Subtraction - Integers : negative minus negative"

What is $(-v\{a}) - (-v\{b})$?

Algebra:

✓ $v\{b-a}$

Hints:

- Here you have to subtract a negative integer from a negative one.

Whenever you have a negative integer minus a negative integer, you can change the minus negative sign to a addition sign.



- In the problem you have,
 $-v\{a} - (-v\{b}) = -v\{a} + v\{b}$
- Now you have a positive integer added to a negative integer. We can start at the positive value $v\{b}$ and count back the negative value $-v\{a}$.

This is the same as doing $v\{b} - v\{a}$.

So,

$$\begin{aligned} & -v\{a} - (-v\{b}) \\ &= -v\{a} + v\{b} \\ &= v\{b} - v\{a} \end{aligned}$$

(If the number being subtracted is larger then the answer will be negative!)

- $v\{b} - v\{a} = v\{b-a}$

Therefore,

$$-v\{a} - (-v\{b}) = v\{b-a}$$

Type in $v\{b-a}$.

Assistment #29951 "29951 - Subtraction - Integers : positive minus positive where answer is negative"

What is $v\{a} - v\{b}$?

Algebra:

✓ $v\{a-b}$

Hints:

- Here you have a positive integer subtracted from a positive integer.

You can start at the positive value $\%v\{a\}$ and count back the negative value $\%v\{b\}$.

You can count back by ones. If possible you can first count back by tens and then count back by ones.

(Here the number being subtracted is larger thus the answer will be negative!)

- $\%v\{a\} - \%v\{b\} = \%v\{a-b\}$

Type in $\%v\{a-b\}$

Mastery Learning 27972 Accentuate the Negative 7th Addition Decimals

id:[5962]

1) Assistent #34558"34558 – 30677 - Addition Decimals: carry over of tenths"

What is $9.1 + -7.9$?

2) Assistent #34563"34563 – 30677 - Addition Decimals: carry over of tenths"

What is $4.6 + -7.6$?

3) Assistent #34569"34569 – 30677 - Addition Decimals: carry over of tenths"

What is $4.2 + -1.8$?

4) Assistent #34573"34573 – 30677 - Addition Decimals: carry over of tenths"

What is $8.6 + -1.4$?

5) Assistent #34579"34579 – 30677 - Addition Decimals: carry over of tenths"

What is $7.2 + -4.8$?

6) Assistent #34587"34587 – 30677 - Addition Decimals: carry over of tenths"

What is $7.9 + -1.1$?

Assistent #30677 "30677 - Addition - Decimals: carry over of tenths"

What is $\%v\{w1+(d1/10)\} + -\%v\{w2+(d2/10)\}$?

Algebra:

✓ $\%v\{w1-w2+(d1-d2)/10\}$

Scaffold:

First, you can simplify this problem, by simplifying the signs.

$\%v\{w1+(d1/10)\} + -\%v\{w2+(d2/10)\}$ is the same as $\%v\{w1+(d1/10)\} - \%v\{w2+(d2/10)\}$

Next, to subtract the decimals, you can start by subtracting their digits at the tenths place.

What is $\%v\{d1/10\} - \%v\{d2/10\}$?

Algebra:

✓ $\%v\{(d1-d2)/10\}$

Hints:

- Let us remove the decimal points from the sum and subtract them.
Subtract $\%v\{d2\}$ from $\%v\{d1\}$.
- $\%v\{d1\} - \%v\{d2\} = \%v\{d1-d2\}$
Now, put the decimal points back.
- When we put the decimal points back we get,
 $\%v\{(d1)/10\} - \%v\{d2/10\} = \%v\{(d1-d2)/10\}$

Type in $\%v\{(d1-d2)/10\}$.

Scaffold:

You know the difference of the tenths digits is $\%v\{(d1-d2)/10\}$.

Now subtract the whole numbers of the two decimals.

What is $\%v\{w1\} - \%v\{w2\}$?

Algebra:

✓ $\%v\{w1-w2\}$

Hints:

- Start at $\%v\{w1\}$ and count down $\%v\{w2\}$
- $\%v\{w1\} - \%v\{w2\} = \%v\{w1-w2\}$
Type in $\%v\{w1-w2\}$.

Scaffold:

You know the difference of the tenths digits is $\%v\{(d1-d2)/10\}$,

and the difference of the whole numbers is $\%v\{w1-w2\}$.

Now try the original problem.

What is $\%v\{w1+(d1/10)\} - \%v\{w2+(d2/10)\}$?

Algebra:

✓ $\%v\{w1-w2+(d1-d2)/10\}$

Hints:

- The difference of the tenths digits is $\%v\{(d1-d2)/10\}$,
and the difference of the whole numbers is $\%v\{w1-w2\}$.
- Add the above two differences to get the result.
- $\%v\{w1+w2\} - \%v\{(d1+d2)/10\} = \%v\{w1-w2+(d1-d2)/10\}$

Thus,

$$\%v\{w1+(d1/10)\} - \%v\{w2+(d2/10)\} = \%v\{w1-w2+(d1-d2)/10\}$$

Type in $\%v\{w1-w2+(d1-d2)/10\}$.

Mastery Learning 27973 Accentuate the Negative 7th Multiplying Fractions

id:[5964]

1) Assistent #34588"34588 – 29862 – Multiplying Fractions" – 1st Instance

What is the product of $\frac{3}{1} \times \frac{2}{9}$?

2) Assistent #34595"34595 – 29862 – Multiplying Fractions" – 1st Instance

What is the product of $\frac{6}{1} \times \frac{4}{9}$?

3) Assistent #34599"34599 – 29862 – Multiplying Fractions" – 1st Instance

What is the product of $\frac{3}{9} \times \frac{6}{5}$?

4) Assistent #34618"34618 –30682 – Multiplying Fractions" – 2nd Instance

Find the product:

$$\frac{1}{9} \times -26$$

5) Assistent #34623"34623 –30682 – Multiplying Fractions" – 2nd Instance

Find the product:

$$\frac{1}{6} \times -6$$

Assistent #29862 "29862 - 27348 - Multiplying Fractions"

What is the product of $\frac{\%v\{\text{num1}\}}{\%v\{\text{denom1}\}} \times \frac{\%v\{\text{num2}\}}{\%v\{\text{denom2}\}} ?$

Algebra:

✓ $\%v\{(\text{num1}/\text{denom1}) * (\text{num2}/\text{denom2})\}$

Hints:

- When multiplying fractions, simply multiply the numerators together and the denominators together.

- $\frac{\%v\{\text{num1}\}}{\underline{\hspace{2cm}}} \times \frac{\%v\{\text{num2}\}}{\underline{\hspace{2cm}}}$

$$\frac{\sqrt{\text{denom1}}}{\sqrt{\text{num1}}} \times \frac{\sqrt{\text{denom2}}}{\sqrt{\text{num2}}} = \frac{\sqrt{\text{num1} * \text{num2}}}{\sqrt{\text{denom1} * \text{denom2}}}$$

Though you may be able to reduce this fraction, you can go ahead and type in $\sqrt{\text{num1} * \text{num2}} / \sqrt{\text{denom1} * \text{denom2}}$.

Assistment #30682 "30682 - #2 Accentuate the Negative: Investigation 3"

Find the product:

$$\frac{1}{\sqrt{b}} \times \sqrt{-a}$$

Algebra:

✓ $\sqrt{-a} / \sqrt{b}$

Hints:

even number of negatives $-1 * -1 = +1$

odd number of negatives $-1 * +1 = -1$

odd number of negatives $+1 * -1 = -1$

no negatives $+1 * +1 = +1$

- When you multiply two integers, remember to
First: Multiply the numbers while ignoring the signs
Then: Determine what the sign should be

- $\frac{1}{\sqrt{b}} \times \sqrt{-a}$

Applying this process to \sqrt{b}

$\sqrt{a} = \sqrt{a}$ multiply $\frac{1}{\sqrt{a}}$ × \sqrt{a} to get \sqrt{a}

First since, 1 \sqrt{b} 1 \sqrt{b}

- Then determine the proper sign.

Since there is one negative, $-\sqrt{a}$, and one positive, $\frac{1}{\sqrt{b}}$ the sign is negative. Making the answer $\frac{-\sqrt{a}}{\sqrt{b}}$

Mastery Learning 27973 Accentuate the Negative 7th Multiplication of Positive and Negative Integers

id:[5965]

1) Assistent #34648"34648– 30015 – Multiplication – Positive times Negative” – 1st Instance

What is $1 * (-4)$?

2) Assistent #34656"34656– 30015 – Multiplication – Positive times Negative” – 1st Instance

What is $8 * (-9)$?

3) Assistent #34668"34668– 30016 – Multiplication – Negative times Positive” – 2nd Instance

What is $(-3) * 1$?

4) Assistent #34688"34688– 30016 – Multiplication – Negative times Positive” – 2nd Instance

What is $(-6) * 3$?

5) Assistent #34708"34708– 30017 – Multiplication – Negative times Negative” – 3rd Instance

What is $(-6) * (-10)$?

6) Assistent #34727"34727– 30017 – Multiplication – Negative times Negative” – 3rd Instance

What is $(-1) * (-4)$?

Assistent #30015 "30015 - 27632 - Multiplication-Integers: Positive Times Negative"

What is $\%v\{a\} * (-\%v\{b\})$?

Algebra:

✓ $-\%v\{a*b\}$

Scaffold:

Let us first ignore the signs of the factors and try to perform the multiplication.

Go ahead and compute,

$\%v\{a\} * \%v\{b\}$

Algebra:

✓ $\%v\{a*b\}$

Hints:

- Below are the multiplication tables of $\%v\{a\}$ and $\%v\{b\}$.

You can use them to compute $\%v\{a\} * \%v\{b\}$.

Table 1				Table 2			
$\%v\{a\}$	*	0	= $\%v\{a*0\}$	$\%v\{b\}$	*	0	= $\%v\{b*0\}$
$\%v\{a\}$	*	1	= $\%v\{a*1\}$	$\%v\{b\}$	*	1	= $\%v\{b*1\}$
$\%v\{a\}$	*	2	= $\%v\{a*2\}$	$\%v\{b\}$	*	2	= $\%v\{b*2\}$
$\%v\{a\}$	*	3	= $\%v\{a*3\}$	$\%v\{b\}$	*	3	= $\%v\{b*3\}$
$\%v\{a\}$	*	4	= $\%v\{a*4\}$	$\%v\{b\}$	*	4	= $\%v\{b*4\}$
$\%v\{a\}$	*	5	= $\%v\{a*5\}$	$\%v\{b\}$	*	5	= $\%v\{b*5\}$
$\%v\{a\}$	*	6	= $\%v\{a*6\}$	$\%v\{b\}$	*	6	= $\%v\{b*6\}$
$\%v\{a\}$	*	7	= $\%v\{a*7\}$	$\%v\{b\}$	*	7	= $\%v\{b*7\}$
$\%v\{a\}$	*	8	= $\%v\{a*8\}$	$\%v\{b\}$	*	8	= $\%v\{b*8\}$
$\%v\{a\}$	*	9	= $\%v\{a*9\}$	$\%v\{b\}$	*	9	= $\%v\{b*9\}$
$\%v\{a\}$	*	10	= $\%v\{a*10\}$	$\%v\{b\}$	*	10	= $\%v\{b*10\}$

- Look at the row in table 1 that shows,

$$\%v\{a\} * \%v\{b\} = \%v\{a*b\}$$

And at the row in table 2 that shows,

$$\%v\{b\} * \%v\{a\} = \%v\{a*b\}$$

- $\%v\{a\} * \%v\{b\} = \%v\{a*b\}$

Thus, type in $\%v\{a*b\}$.

Scaffold:

We know,

$$\%v\{a\} * \%v\{b\} = \%v\{a*b\}$$

Now try the original problem again.

What is $\%v\{a\} * (-\%v\{b\})$?

Algebra:

✓ $-\%v\{a*b\}$

Hints:

- We know,
 $\%v\{a\} * \%v\{b\} = \%v\{a*b\}$

We need to consider the signs of the factors as well.

- Remember the rule of multiplying signs which says,

$$+ \times + = +$$

$$+ \times - = -$$

$$- \times + = -$$

$$- \times - = +$$

- We have, the second case where,

$$+ \times - = -$$

Thus using this rule we get,

$$\sqrt{a} * (-\sqrt{b})$$

$$= \sqrt{-a*b}$$

Type in $\sqrt{-a*b}$

Assistment #30016 "30016 - Multiplication-Integers: Negative Times Positive"

What is $(-\sqrt{a}) * \sqrt{b}$?

Algebra:

✓ $-\sqrt{a*b}$

Scaffold:

Let us first ignore the signs of the factors and try to perform the multiplication.

Go ahead and compute,

$$\%v\{a\} * \%v\{b\}$$

Algebra:

✓ $\%v\{a*b\}$

Hints:

- Below are the multiplication tables of $\%v\{a\}$ and $\%v\{b\}$.

You can use them to compute $\%v\{a\} * \%v\{b\}$.

Table 1				Table 2			
$\%v\{a\}$	*	0	= $\%v\{a*0\}$	$\%v\{b\}$	*	0	= $\%v\{b*0\}$
$\%v\{a\}$	*	1	= $\%v\{a*1\}$	$\%v\{b\}$	*	1	= $\%v\{b*1\}$
$\%v\{a\}$	*	2	= $\%v\{a*2\}$	$\%v\{b\}$	*	2	= $\%v\{b*2\}$
$\%v\{a\}$	*	3	= $\%v\{a*3\}$	$\%v\{b\}$	*	3	= $\%v\{b*3\}$
$\%v\{a\}$	*	4	= $\%v\{a*4\}$	$\%v\{b\}$	*	4	= $\%v\{b*4\}$
$\%v\{a\}$	*	5	= $\%v\{a*5\}$	$\%v\{b\}$	*	5	= $\%v\{b*5\}$
$\%v\{a\}$	*	6	= $\%v\{a*6\}$	$\%v\{b\}$	*	6	= $\%v\{b*6\}$
$\%v\{a\}$	*	7	= $\%v\{a*7\}$	$\%v\{b\}$	*	7	= $\%v\{b*7\}$
$\%v\{a\}$	*	8	= $\%v\{a*8\}$	$\%v\{b\}$	*	8	= $\%v\{b*8\}$
$\%v\{a\}$	*	9	= $\%v\{a*9\}$	$\%v\{b\}$	*	9	= $\%v\{b*9\}$
$\%v\{a\}$	*	10	= $\%v\{a*10\}$	$\%v\{b\}$	*	10	= $\%v\{b*10\}$

- Look at the row in table 1 that shows,

$$\%v\{a\} * \%v\{b\} = \%v\{a*b\}$$

And at the row in table 2 that shows,

$$\%v\{b\} * \%v\{a\} = \%v\{a*b\}$$

- $\%v\{a\} * \%v\{b\} = \%v\{a*b\}$

Thus, type in $\%v\{a*b\}$.

Scaffold:

We know,

$\%v\{a\} * \%v\{b\} = \%v\{a*b\}$
Now try the original problem again.

What is $(-\%v\{a\}) * \%v\{b\}$?

Algebra:

✓ $-\%v\{a*b\}$

Hints:

- We know,
 $\%v\{a\} * \%v\{b\} = \%v\{a*b\}$

We need to consider the signs of the factors as well.

- Remember the rule of multiplying signs which says,

$$+ \times + = +$$

$$+ \times - = -$$

$$- \times + = -$$

$$- \times - = +$$

- We have, the third case where,

$$- \times + = -$$

Thus using this rule we get,

$$(-\%v\{a\}) * \%v\{b\}$$

$$= \%v\{-a*b\}$$

Type in $\%v\{-a*b\}$

Assistment #30017 "30017 - Multiplication - Integers: Negative times Negative"

What is $(-\%v\{a\}) * (-\%v\{b\})$?

Algebra:

✓ $\%v\{a*b\}$

Scaffold:

Let us first ignore the signs of the factors and try to perform the multiplication.

Go ahead and compute,

$\%v\{a\} * \%v\{b\}$

Algebra:

✓ $\%v\{a*b\}$

Hints:

- Below are the multiplication tables of $\%v\{a\}$ and $\%v\{b\}$.

You can use them to compute $\%v\{a\} * \%v\{b\}$.

Table 1			Table 2		
$\%v\{a\} * 0 = \%v\{a*0\}$			$\%v\{b\} * 0 = \%v\{b*0\}$		
$\%v\{a\} * 1 = \%v\{a*1\}$			$\%v\{b\} * 1 = \%v\{b*1\}$		
$\%v\{a\} * 2 = \%v\{a*2\}$			$\%v\{b\} * 2 = \%v\{b*2\}$		
$\%v\{a\} * 3 = \%v\{a*3\}$			$\%v\{b\} * 3 = \%v\{b*3\}$		
$\%v\{a\} * 4 = \%v\{a*4\}$			$\%v\{b\} * 4 = \%v\{b*4\}$		
$\%v\{a\} * 5 = \%v\{a*5\}$			$\%v\{b\} * 5 = \%v\{b*5\}$		
$\%v\{a\} * 6 = \%v\{a*6\}$			$\%v\{b\} * 6 = \%v\{b*6\}$		
$\%v\{a\} * 7 = \%v\{a*7\}$			$\%v\{b\} * 7 = \%v\{b*7\}$		
$\%v\{a\} * 8 = \%v\{a*8\}$			$\%v\{b\} * 8 = \%v\{b*8\}$		
$\%v\{a\} * 9 = \%v\{a*9\}$			$\%v\{b\} * 9 = \%v\{b*9\}$		
$\%v\{a\} * 10 = \%v\{a*10\}$			$\%v\{b\} * 10 = \%v\{b*10\}$		

- Look at the row in table 1 that shows,
 $\%v\{a\} * \%v\{b\} = \%v\{a*b\}$

And at the row in table 2 that shows,

$$\%v\{b\} * \%v\{a\} = \%v\{a*b\}$$

- $\%v\{a\} * \%v\{b\} = \%v\{a*b\}$

Thus, type in $\%v\{a*b\}$.

Scaffold:

We know,

$$\%v\{a\} * \%v\{b\} = \%v\{a*b\}$$

Now try the original problem again.

What is $(-\%v\{a\}) * (-\%v\{b\})$?

Algebra:

✓ $\%v\{a*b\}$

Hints:

- We know,
 $\%v\{a\} * \%v\{b\} = \%v\{a*b\}$

We need to consider the signs of the factors as well.

- Our first factor, $-\%v\{a\}$, is negative and our second factor, $-\%v\{b\}$, is negative as well.

We are multiplying a negative number to a negative one.

We must consider the multiplication of the signs as well.

- Remember the rule of multiplying signs which says,

$$+ \times + = +$$

$$+ \times - = -$$

$$- \times + = -$$

$$- \times - = +$$

- We have, the fourth case where,

$$- \times - = +$$

Thus using this rule we get,

$$(-v\{a\}) * (-v\{b\})$$

$$= v\{a*b\}$$

Type in $v\{a*b\}$.

Mastery Learning 27973 Accentuate the Negative 7th Division, Find Divisor

id:[5966]

1) Assistent #34738"34738– 30726 – Division – Find divisor"

What is the value of p that makes the statement true?

$$-24 / p = -10$$

2) Assistent #34756"34756– 30726 – Division – Find divisor"

What is the value of p that makes the statement true?

$$-56 / p = -6$$

3) Assistent #34761"34761– 30726 – Division – Find divisor"

What is the value of p that makes the statement true?

$$-8 / p = -2$$

4) Assistent #34765"34765– 30726 – Division – Find divisor"

What is the value of p that makes the statement true?

$$-16 / p = -8$$

5) Assistent #34759"34759– 30726 – Division – Find divisor"

What is the value of p that makes the statement true?

$$-8 / p = -4$$

6) Assistent #34753"34753– 30726 – Division – Find divisor"

What is the value of p that makes the statement true?

$$-8 / p = -4$$

Assistent #30726 "30726 - #4 Accentuate the Negative: Investigation 3"

What is the value of p that makes the statement true?

$$-\sqrt{a} / p = -\sqrt{b}$$

Algebra:

✓ $\sqrt{a/b}$

Hints:

even number of negatives $\frac{-1}{-1} = +1$

odd number of negatives $\frac{-1}{+1} = -1$

odd number of negatives $\frac{+1}{-1} = -1$

no negatives $\frac{+1}{+1} = +1$

- You can use these rules to determine what sign P has to be.
- For the answer to be negative, P must be positive, just like the 2nd example above.
- Ignoring the signs, we need to find \sqrt{a} divided by what equals \sqrt{b} .
 $\sqrt{a}/? = \sqrt{b}$
- We know that $\sqrt{a} / \sqrt{a/b} = \sqrt{b}$
Therefore $-\sqrt{a} / \sqrt{a/b} = -\sqrt{b}$
Since P has to be positive for the signs to work out,
 $p = \sqrt{a/b}$. Enter $\sqrt{a/b}$

Mastery Learning 27973 Accentuate the Negative 7th Division

id:[5967]

1) Assistent #34768"34768–29924 – Division –positive/negative” – 1st Instance

What is $21 \div (-7)$?

2) Assistent #34774"34774–29924 – Division –positive/negative” – 1st Instance

What is $36 \div (-4)$?

3) Assistent #34798"34798–31001– Division –negative/positive” – 2nd Instance

What is $(-40) \div 4$?

4) Assistent #34804"34804–31001– Division –negative/positive” – 2nd Instance

What is $(-35) \div 5$?

5) Assistent #34828"34828–29926– Division –negative/negative” – 3rd Instance

What is $(-6) \div (-1)$?

6) Assistent #34842"34842–29926– Division –negative/negative” – 3rd Instance

What is $(-4) \div (-2)$?

Assistent #29924 "29924 - 27443 - Division-Integers: positive / negative : Easy using table"

What is $\%v\{a*b\} \div (-\%v\{b\})$?

Algebra:

✓ $\%v\{-a\}$

Hints:

- Let us first ignore the signs of the dividend and the divisor and try to perform the division.

Go ahead and compute,

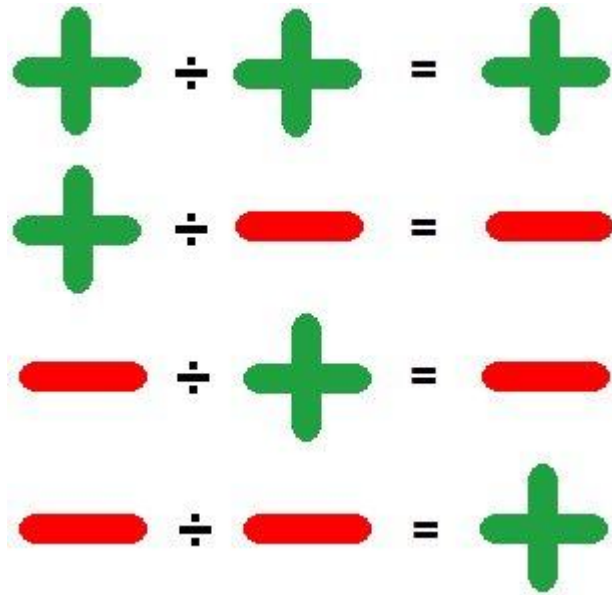
$\%v\{a\} \div \%v\{b\}$

Remember, you need to round your answer to the hundredths place.

- $\%v\{a\} \div \%v\{b\} = \%v\{c\}$

Since we are performing a division of integers, we need to consider the signs of the dividend and the divisor.

- Our dividend, $\%v\{a\}$, is positive and our divisor, $-\%v\{b\}$, is negative. We are dividing a positive number by a negative one.
- Remember the rule of dividing signs which says,



- We have, the second case where,



Thus using this rule we get,

$$\%v\{a\} \div (-\%v\{b\}) = -\%v\{c\}$$

Type in $-\%v\{c\}$.

Scaffold:

Let us first ignore the signs of the dividend and the divisor and try to perform the division.

What is $\%v\{a \cdot b\} \div \%v\{b\}$?

Algebra:

✓ $\%v\{a\}$

Hints:

- Here is the multiplication table of $\%v\{b\}$.

Try to use it to find the value of $\%v\{a*b\} \div \%v\{b\}$.

$\%v\{b\}$	*	0	=	$\%v\{b*0\}$
$\%v\{b\}$	*	1	=	$\%v\{b*1\}$
$\%v\{b\}$	*	2	=	$\%v\{b*2\}$
$\%v\{b\}$	*	3	=	$\%v\{b*3\}$
$\%v\{b\}$	*	4	=	$\%v\{b*4\}$
$\%v\{b\}$	*	5	=	$\%v\{b*5\}$
$\%v\{b\}$	*	6	=	$\%v\{b*6\}$
$\%v\{b\}$	*	7	=	$\%v\{b*7\}$
$\%v\{b\}$	*	8	=	$\%v\{b*8\}$
$\%v\{b\}$	*	9	=	$\%v\{b*9\}$
$\%v\{b\}$	*	10	=	$\%v\{b*10\}$

- Look at the row that shows:

$$\%v\{b\} * \%v\{a\} = \%v\{a*b\}.$$

- $\%v\{b\} * \%v\{a\} = \%v\{a*b\}$, can also be represented as:

$$\%v\{a*b\} \div \%v\{b\} = \%v\{a\}$$

Thus, type in $\%v\{a\}$.

Scaffold:

Now we know that,

$$\%v\{a*b\} \div \%v\{b\} = \%v\{a\}$$

What is $\%v\{a*b\} \div (-\%v\{b\})$?

Algebra:

✓ $\%v\{-a\}$

Hints:

- Since we are performing a division of integers, we need to consider the signs of the **dividend** and the **divisor**.
- Our **dividend**, $\%v\{a*b\}$, is positive and our **divisor**, $-\%v\{b\}$, is negative. We are dividing a positive number by a negative one.
- Remember the rule of dividing signs which says,

$$+ \div + = +$$

$$+ \div - = -$$

$$- \div + = -$$

$$- \div - = +$$

- We have, the second case where,

$$+ \div - = -$$

Thus using this rule we get,

$$\begin{aligned} & \%v\{a*b\} \div (-\%v\{b\}) \\ = & - \%v\{a\} \end{aligned}$$

Type in $-\%v\{a\}$.

Assistment #31001 "31001 - 27444 - Division-Integers: negative / positive : Easy using table"

What is $(-\%v\{a*b\}) \div \%v\{b\}$?

Algebra:

✓ $\%v\{-a\}$

Hints:

- Let us first ignore the signs of the dividend and the divisor and try to perform the division.

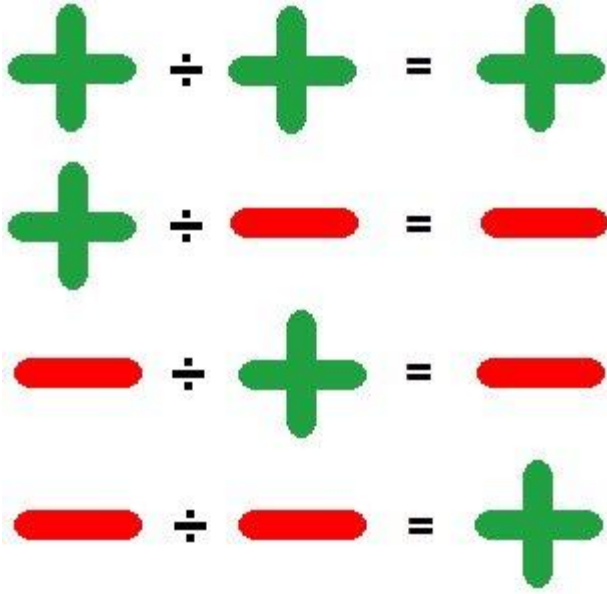
Go ahead and compute,

$$\%v\{a\} \div \%v\{b\}$$

- $\%v\{a*b\} \div \%v\{b\} = \%v\{a\}$

Since we are performing a division of integers, we need to consider the signs of the dividend and the divisor.

- Remember the rule of dividing signs which says,



- We have, the third case where,



Thus using this rule we get,

$$\begin{aligned} & (-\%v\{a*b\}) \div \%v\{b\} \\ & = -\%v\{a\} \end{aligned}$$

Type in $-\%v\{a\}$

Assistment #29926 "29926 - 27445 - Division - Integers : negative / negative : Easy using table"

What is $(-\%v\{a*b\}) \div (-\%v\{b\})$?

Algebra:

✓ $\%v\{a\}$

Hints:

- Let us first ignore the signs of the dividend and the divisor and try to perform the division.

Go ahead and compute,

$$\%v\{a*b\} \div \%v\{b\}$$

Remember, you need to round your answer to the hundredths place.

- $\%v\{a*b\} \div \%v\{b\} = \%v\{a\}$

Since we are performing a division of integers, we need to consider the signs of the dividend and the divisor.

- Our dividend, $-\%v\{a*b\}$, is negative and our divisor, $-\%v\{b\}$, is also negative. We are dividing a negative number by a negative one.
- Remember the rule of dividing signs which says,

$$+ \div + = +$$

$$+ \div - = -$$

$$- \div + = -$$

$$- \div - = +$$

- We have, the fourth case where,

$$- \div - = +$$

Thus using this rule we get,

$$\begin{aligned} & (-\%v\{a*b\}) \div (-\%v\{b\}) \\ & = \%v\{a\} \end{aligned}$$

Type in $\%v\{a\}$.

11 Appendix B: Comparing and Scaling

Problem Set "7th Grade Comparing and Scaling Test v1.0 With Tutoring (11 items)" id:[5538]

1) Assisment #28781 "28781 - New Comparing_and_scaling_1_1_a_Hints"

At the local aquarium one fish tank contained 1140 clown fish and 60 parrot fish, for a total of 1200 fish all together.

What percent of the fish in the tank were parrot fish?

Algebra:

✓ 5

✓ 5%

Hints:

- In order to get a percent, we need to find the fraction **Part/Whole**
- In the phrase: "**What percent of the fish in the fish tank were parrot fish**"

The fish are the **whole** and the parrot fish are the **part**.

•

The fraction is

Parrot fish 60
_____ or _____
fish 1200

Reduce the fraction, convert it into a decimal and the decimal into a percent to find out what percent of the fish in the tank were parrot fish.

- $\frac{60}{1200} = \frac{60 \div 10}{1200 \div 10} = \frac{6}{120} = \frac{6 \div 6}{120 \div 6} = \frac{1}{20}$

Convert this fraction into a decimal, and the decimal into a percent to find out what percent of the fish in the tank were parrot fish.

- $\frac{1}{20} = 1 \div 20 = 0.05$

Convert this decimal into a percent to find out what percent of the fish in the tank were parrot fish.

- .05 is 5%, so 5% of the fish in the tank were parrot fish. Type in 5

2) Assistent #28782 "28782 - New Comparing_and_scaling_1_2_a_Hints"

At the local aquarium one fish tank contained 1080 clown fish and 60 parrot fish, for a total of 1140 fish all together.

What is the most reduced ratio of fish to parrot fish? Fill in the blank ____ : 1

Fill in:

- ✓ 19
- ✓ 19 to 1
- ✓ 19:1

Hints:

- We are asked to find a ratio of fish to parrot fish. Start by writing the ratio using the numbers we know:

fish : parrot fish = 1140 : 60

- Now we need to reduce that ratio so that it is in the form ____:1
- If we divide both parts by 60 we get $1140 \div 60 : 60 \div 60$ or 19 : 1
- The ratio of fish to parrot fish is 19:1. Type in 19

3) Assisment #28783 "28783 - New Comparing_and_scaling_1_3_a_Hints"

Mark went to the zoo for a research project. He wrote down the height and weight of each giraffe and each elephant, and used the average height and weight of the two kinds of animal to make the table below.

Average Height and Weight of Animals

Type of Animal	Height in Feet	Weight in Pounds
Elephant	10	3000
Giraffe	18	1800

Use the table to answer the following question:

The giraffes' weight is what percent of the elephants' weight? (Round to the nearest percent)

Algebra:

- ✓ 60%
- ✓ 60

Hints:

- To answer this question, we first need to find the fraction between the weight of the elephants and the giraffes.
We wish to know the percentage of the giraffe's weight **with respect to the elephant's weight**, so the **bottom (denominator)** of the fraction should be the **elephant's weight** and the **top (numerator)** of the fraction should be the **giraffe's weight**.
- giraffes' weight/elephants' weight = 1800/3000.

Convert this fraction into a decimal, then move the decimal point two places to the right to turn it

into a percent.

- $1800/3000 = 0.6$

Now move the decimal point two places to the right to turn the decimal into a percent.

- $0.6 = 60\%$

The giraffes' weight is 60% of the elephants' weight. Type in 60

4) Assistent #28784 "28784 - New Comparing_and_Scaling_2_1_a_Hints"

A) Freddy, the owner of a local restaurant, was mixing orange juice and apple juice together to make the restaurant's new Freddy's famous fruit punch.

Here are the different mixes he made:

Mix K: 4 cup orange juice and 5 cups apple juice

Mix L: 2 cups orange juice and 8 cups apple juice

Mix M: 5 cups orange juice and 9 cups apple juice

Mix N: 4 cups orange juice and 8 cups apple juice

Which mix will taste **the most like orange juice**? (You will be asked to explain your answer)

Multiple choice:

A) Mix K

B) Mix L

C) Mix M

D) Mix N

Hints:

- The mix that will be taste the most like orange juice will be the mix with the highest portion of orange juice in it. One way to solve this problem is to find the fraction of orange juice in each whole recipe (orange juice and apple juice) and then select the mix with the greatest portion of orange

juice in it.

Mix	K	L	M	N
Cups of orange juice	4	2	5	4
Total cups of juice	(4+5)	(2+8)	(5+9)	(4+8)
Fraction of orange juice	$\frac{4}{9}$	$\frac{2}{10}$	$\frac{5}{14}$	$\frac{4}{12}$

Now that you have the fraction of orange juice for each mix, convert the fraction of orange juice to a decimal to make it easier to compare. Then select the mix with the greatest portion of orange juice in it.

Mix	K	L	M	N
Cups of orange juice	4	2	5	4
Total cups of juice	(4+5)	(2+8)	(5+9)	(4+8)
Fraction of orange juice	$\frac{4}{9}$	$\frac{2}{10}$	$\frac{5}{14}$	$\frac{4}{12}$
Fraction of orange juice	0.444	0.2	0.357	0.333

In the chart above, each fraction has been converted into a decimal. The mix that will taste the most like orange juice will have the largest decimal.

Mix	K	L	M	N
Cups of orange juice	4	2	5	4
Total cups of juice	(4+5)	(2+8)	(5+9)	(4+8)
Fraction of orange juice	$\frac{4}{9}$	$\frac{2}{10}$	$\frac{5}{14}$	$\frac{4}{12}$
Fraction of orange juice	0.444	0.2	0.357	0.333

Since K is the largest fraction (determined by looking at the decimals) it must have the **greatest** amount of orange juice compared to the whole, so it tastes the most like orange juice.

Select A) Mix K.

B) Explain your answer in the box below.

Ungraded open response:

5) Assistentment #28884 "28884 - New Comparing_and_Scaling_2_2_a_Hints"

A) Freddy, the owner of a local restaurant, was mixing orange juice and apple juice together to make the restaurant's new Freddy's famous fruit punch.

Here are the different mixes he made:

Mix K: 4 cups orange juice and 5 cups apple juice

Mix L: 2 cups orange juice and 8 cups apple juice

Mix M: 5 cups orange juice and 9 cups apple juice

Mix N: 4 cups orange juice and 8 cups apple juice

Suppose you make a single batch of Mix N. **What fraction of the total cups** of juice in the batch is orange juice?

Algebra:

✓ $1/3$

✗ $1/2$

Hints:

- Remember that we're only dealing with Mix N in this question.

Mix N: 4 cups orange juice and 8 cups apple juice

- Determine the total number of cups in the batch of Mix N when the cups of orange juice and of apple juice are mixed together.

Then determine what fraction of the batch of Mix N is orange juice.

- There are 4 cups of orange juice and 8 cups of apple juice in the batch, so there is a total of 12 cups of juice in the batch.

Out of those 12 cups, 4 are orange juice. Determine what fraction of the batch of Mix N is orange juice.

- The fraction of orange juice in the batch is $4/12$, which can be reduced to $1/3$. Type in either $4/12$ or $1/3$

B) Mix K: 4 cup orange juice and 5 cups apple juice

Mix L: 2 cups orange juice and 8 cups apple juice

Mix M: 5 cups orange juice and 9 cups apple juice

Mix N: 4 cups orange juice and 8 cups apple juice

Good, now **what percent of the total number of cups** in the batch of mix N is orange juice? (round to the nearest percent)

Algebra:

✓ 33%

✓ 33

✗ 50%

✗ 50

✗ 34%

✗ 34

Hints:

- We know from the answer to the previous question that $\frac{4}{12}$, or $\frac{1}{3}$ of the total number of cups in the batch of Mix N is orange juice. $\frac{1}{3}$ can be converted into a decimal, which can then be converted into a percent.
- To convert a fraction into a decimal, divide the numerator by the denominator. $\frac{1}{3} = 1 \div 3 = 0.33333$. Convert this into a percent. Don't forget to round.
- To convert a decimal into a percent, move the decimal two places to the left. $0.33333 = 33.3333\%$. Don't forget to round this to the nearest percent.
- 33.333% rounded to the nearest percent is 33%, so 33% of the total number of cups in the batch of Mix N is orange juice. Type in 33

6) Assistentment #28787 "28787 - New Comparing_and_Scaling_2_4_a_Hints"

It's the end of the school year, and the three math teachers each decide to throw a pizza party for their students.

There were 9 students in Mrs. Red's class and they got to share 4 pizzas.
There were 11 students in Mrs. Blue's class and they got to share 5 pizzas.
There were 15 students in Mr. Orange's class and they got to share 7 pizzas.
The pizzas in each room were shared equally.
In which class did the kids get the least pizza?

Multiple choice:

- A) Mr. Orange's class
- B) Mrs. Blue's class
- C) Mrs. Red's class

Hints:

- Two ways to solve this problem are either to set up ratios of students to pizzas OR pizzas to students. Pick one way and find the ratios and compare them to determine the class in which the students get the least pizza.

•

Teacher	Red	Blue	Orange
Number of Students	9	11	15
Number of Pizzas	4	5	7
Students/Pizzas	9 / 4	11 / 5	15 / 7
Pizzas/Students	4 / 9	5 / 11	7 / 15

Here are the ratios as fractions for the two ways to solve the problem. Since the fractions have different denominators you should change them to decimals and then compare the numbers. (You only need to consider one of these ways)

•

Teacher	Red	Blue	Orange
Number of Students	9	11	15
Number of Pizzas	4	5	7
Students/Pizzas	$9/4=9\div4=2.25$	$11/5=11\div5=2.2$	$15/7=15\div7=2.14$
Pizzas/Students	$4/9=4\div9=0.44$	$5/11=5\div11=0.45$	$7/15=7\div15=0.47$

Now all the fractions are in decimals. In which class do the students get the least pizza?

- Since there are 2.25 students per pizza in Mrs. Red's class, Mrs. Red's class has the largest number of students per pizza so the students get the least pizza.

Or


you could say there are 0.44 pizzas per student in Mrs. Red's class which is the least pizza per student so Mrs. Red's class is the class where the students get the least pizza.


In either case, the kids in Mrs. Red's class get the least pizza. Select C) Mrs. Red's class.

7) Assisment #27880 "27880 - 7th Grade - Comparing, and Scaling #7"

A) It takes Tom 2 hours to mow 3 lawns. It takes Carol 3 hours to mow 5 lawns.
Who mows lawns faster, Tom or Carol? (you will be asked to explain your answer)

Multiple choice:

 A) Tom

 B) Carol

Hints:

- Two ways to solve this problem are either to set up ratios of **lawns per hour** OR **hours per lawn**. Pick one way and find the ratios and compare them to determine who mows lawns faster.

Name	Tom	Carol
Number of Lawns	3	5
Hours	2	3
Lawns/Hour	$3/2$	$5/3$
Hours/Lawn	$2/3$	$3/5$

Here are the ratios as fractions for the two ways to solve the problem. Since the fractions have different denominators you should change them to decimals and then compare the numbers. (You

only need to consider one of these ways)

Name	Tom	Carol
Number of Lawns	3	5
Hours	2	3
Lawns/Hour	$3/2 = 3 \div 2 = 1.5$	$5/3 = 5 \div 3 = 1.67$
Hours/Lawn	$2/3 = 2 \div 3 = 0.67$	$3/5 = 3 \div 5 = 0.6$

•

Now all the fractions are in decimals. Who mowed lawns faster?

- Carol mows 1.67 lawns per hour and Tom only mows 1.5 lawns per hour, so Carol mows the most lawns per hour so mows lawns faster.

Or

Carol takes 0.6 hours per lawn, and Tom takes 0.67 hours per lawn. So Carol takes the least amount of time to mow lawns, so mows lawns faster.

In either case, Carol mows lawns faster. Select B) Carol.

B) Explain your answer in the box below.

Ungraded open response:

8) Assistent #27881 "27881 - 7th Grade - Comparing and Scaling - #8"

It took a ball 2 minutes to roll 90 feet. What was this ball's average speed, in feet per second?

Algebra:

✓ $3/4$

Scaffold:

We know that the ball rolled 90 feet in 2 minutes, but the question asks for the ball's speed in feet per second. So first, we must determine how long the ball rolled in seconds. How long did it

take, in seconds, for the ball to roll 90 feet?

Fill in:

✓ 120

Hints:

- There are 60 seconds in a minute, and the ball rolled for 2 minutes.
- 60 seconds per minute * 2 minutes = 120 seconds. The ball rolled for 120 seconds. Type in 120

Scaffold:

[Now let's return to the original question.](#)

It took a ball 2 minutes to roll 90 feet. What was this ball's average speed, in feet per second?

Algebra:

✓ 3/4

Hints:

- We determined above that it took the ball 120 seconds to roll 90 feet.
- To find an object's average speed in feet per second, divide the **distance it covered (in feet)** by the **length of time (in seconds) that it took to cover that distance**. In other words:

distance

average speed = _____

time

90

• speed = _____

120

Reduce this fraction to determine the speed in feet per second.

• $90 \div 10 = 9$ $9 \div 3 = 3$

$\frac{120}{90} = \frac{120 \div 10}{90 \div 10} = \frac{12}{9} = \frac{12 \div 3}{9 \div 3} = \frac{4}{3} = ?$

$120 \div 10 = 12$ $9 \div 3 = 3$

• $9 \div 3 = 3$

$\frac{12}{9} = \frac{4}{3}$ feet per second

$12 \div 3 = 4$

The ball's average speed was $\frac{4}{3}$ feet per second. Type in $\frac{4}{3}$

Problem Set "7th grade Comparing and Scaling Post Post test with Tutoring (11 items)" id:[5991]

1) Assistent #31073 "31073 - 27880 - 7th Grade - Comparing, and Scaling # 7"

A) It takes Mike 3 hours to eat 5 sandwiches. It takes Sarah 5 hours to eat 7 sandwiches.
Who eats sandwiches faster, Mike or Sarah? (you will be asked to explain your answer)

Multiple choice:

A) Mike

B) Sarah

Hints:

- Two ways to solve this problem are either to set up ratios of **sandwiches per hour** OR **hours per sandwich**. Pick one way and find the ratios and compare them to determine who eats sandwiches faster.

Here are the ratios as fractions for the two ways to solve the problem. Since the fractions have different denominators you should change them to decimals and then compare the numbers. (You only need to consider one of these ways)

-

Name	Mike	Sarah
Number of Sandwiches	5	7
Hours	3	5
Sandwiches/Hour	5/3	7/5
Hours/Sandwiches	3/5	5/7

-

Name	Mike	Sarah
Number of Sandwiches	5	7
Hours	3	5
Sandwiches/Hour	5/3 = 5÷3 = 1.67	7/5 = 7÷5 = 1.4
Hours/Sandwiches	3/5 = 3÷5 = 0.6	5/7 = 5÷7 = 0.71

Now all the fractions are in decimals. Who eats sandwiches faster?

- Mike eats **1.67 sandwiches per hour** and Sarah eats **1.4 sandwiches per hour**, so Mike eats the most sandwiches per hour so eats sandwiches faster.

Or

Mike takes 0.6 hours per sandwich and Sarah takes 0.71 hours per sandwich. So Mike takes the least amount of time to eat sandwiches, so eats sandwiches faster.

In either case, Mike eats sandwiches faster. Select A) Mike.

B) Explain your answer in the box below.

Ungraded open response:

2) Assistent #31077 "31077 - 27881 - 7th Grade - Comparing and Scaling - # 8"

It took a car 2 days to drive 2880 miles. What was this car's average speed, in miles per hour?

Multiple choice:

- A) 40 miles per hour
- B) 120 miles per hour
- C) 60 miles per hour
- D) 1440 miles per hour

Scaffold:

We know that the car drove 2880 miles in 2 days, but the question asks for the car's speed in miles per hour. So first, we must determine how long the car drove in hours.

How long did it take, in hours, for the car to drive 2880 miles?

Fill in:

48

Hints:

- There are 24 hours in a day, and the car drove for 2 days.
- 24 hours per day * 2 days = ?
- 24 hours per day * 2 days = 48 hours. The car drove for 48 hours. Type in 48

Scaffold:

Now let's return to the original question.

It took a car 2 days to drive 2880 miles. What was this car's average speed, in miles per hour?

Multiple choice:

- A) 40 miles per hour
- B) 120 miles per hour
- C) 60 miles per hour
- D) 1440 miles per hour

Hints:

- We determined above that it took the car 48 hours to drive 2880 miles.
- To find an object's average speed in feet per second, divide the distance it covered (in feet) by the length of time (in seconds) that it took to cover that distance. In other words:

distance

average speed = _____

time

2880

• speed = _____

48

Reduce this fraction to determine the speed in miles per hour.

• $2880 \div 8 = 360$ $360 \div 6 = ?$

$\frac{2880}{48} = \frac{2880 \div 8}{48 \div 8} = \frac{360}{6} = \frac{360 \div 6}{6 \div 6} = ?$

• $360 \div 6 = 60$

$\frac{360}{6} = \frac{360 \div 6}{6 \div 6} = \frac{60}{1} = 60$ miles per hour

The car's average speed was 60 miles per hour. Select C) 60 miles per hour

3) Assistent #31090 "31090 - 28781 - 7th Grade - Comparing and Scaling #1"

Martin went to the circus. At the circus, there were 15 mimes and 35 jugglers, for a total of 50 clowns all together.

What percent of the clowns at the circus were mimes?

Algebra:

✓ 30

✓ 30%

Hints:

- In order to get a percent, we need to find the fraction **Part/Whole**
- In the phrase: "**What percent of the clowns at the circus were mimes**"

The clowns are the **whole** and the mimes are the **part**.

•

The fraction is

mimes 15

_____ or _____

clowns 50

Reduce the fraction, convert it into a decimal and the decimal into a percent to find out what percent of the clowns at the circus were mimes.

- 15 15 ÷ 5 3

_____ = _____ = _____

50 50 ÷ 5 10

Convert this fraction into a decimal, and the decimal into a percent to find out what percent of the clowns at the circus were mimes.

- 3

_____ = 3 ÷ 10 = 0.3

10

Convert this decimal into a percent to find out what percent of the clowns at the circus were mimes.

- .3 is 30%, so 30% of the clowns at the circus were mimes. Type in 30

4) Assistent #31092 "31092 - 28782 - 7th Grade - Comparing and Scaling # 2"

Martin went to the circus. At the circus, there were 42 mimes and 84 jugglers, for a total of 126 clowns all together.

What is the ratio of clowns to mimes?

Fill in:

- ✓ 3
- ✓ 3 to 1
- ✓ 3:1

Hints:

- We are asked to find a ratio of clowns to mimes. Start by writing the ratio using the numbers we know:
clowns : mimes = 126 : 42
- Now we need to reduce that ratio so that it is in the form ____:1
- If we divide both parts by 42 we get $126 \div 42 : 42 \div 42$ or 3 : 1
- The ratio of clowns to mimes is 3:1. Type in 3

5) Assisment #31113 "31113 - 28783 - 7th Grade - Comparing and Scaling # 3"

Mark went to the zoo for a research project. He wrote down the height and weight of each giraffe and each elephant, and used the average height and weight of the two kinds of animal to make the table below.

Average Height and Weight of Animals

Type of Animal	Height in Feet	Weight in Pounds
Elephant	10	3000
Giraffe	18	1800

Use the table to answer the following question:

The giraffes' weight is what percent of the elephants' weight? (Round to the nearest percent)

Algebra:

- ✓ 60%

✓ 60

Hints:

- To answer this question, we first need to find the fraction between the weight of the elephants and the giraffes.

We wish to know the percentage of the giraffe's weight **with respect to the elephant's weight**, so the **bottom (denominator)** of the fraction should be the **elephant's weight** and the **top (numerator)** of the fraction should be the **giraffe's weight**.

- $\text{giraffes' weight} / \text{elephants' weight} = 1800 / 3000$.

Convert this fraction into a decimal, then move the decimal point two places to the right to turn it into a percent.

- $1800 / 3000 = 0.6$

Now move the decimal point two places to the right to turn the decimal into a percent.

- $0.6 = 60\%$

The giraffes' weight is 60% of the elephants' weight. Type in 60

6) Assisment #31186 "31186 - 28784 - 7th Grade - Comparing and Scaling #4"

A) Mr. Evans the science teacher was mixing fresh water and salt water together to fill an aquarium for the new class pet.

Here are the different mixes he made:

Mix A: 7 cups fresh water and 12 cups salt water

Mix B: 1 cup fresh water and 3 cups salt water

Mix C: 3 cup fresh water and 4 cups salt water

Mix D: 4 cups fresh water and 9 cups salt water

Which mix will be **the least salty?** (You will be asked to explain your answer)

Multiple choice:

✘ A) Mix A

✘ B) Mix B

✔ C) Mix C

✘ D) Mix D

Hints:

- The mix that will be the least salty will be the mix with the highest portion of fresh water in it. One way to solve this problem is to find the fraction of fresh water in each whole recipe (fresh water and salt water) and then select the mix with the greatest portion of fresh water in it.

Mix	A	B	C	D
Cups of fresh water	7	1	3	4
Total cups of water	(7+12)	(1+3)	(3+4)	(4+9)
Fraction of fresh water	7/19	1/4	3/7	4/13

Now that you have the fraction of fresh water for each mix, convert the fraction of fresh water to a decimal to make it easier to compare. Then select the mix with the greatest portion of fresh water in it.

Mix	A	B	C	D
Cups of fresh water	7	1	3	4
Total cups of water	(7+12)	(1+3)	(3+4)	(4+9)
Fraction of fresh water	7/19	1/4	3/7	4/13
Fraction of fresh water	0.368	0.25	0.429	0.308

In the chart above, each fraction has been converted into a decimal. The mix that will be the least salty will have the largest decimal.

-

Mix	A	B	C	D
Cups of fresh water	7	1	3	4
Total cups of water	(7+12)	(1+3)	(3+4)	(4+9)
Fraction of fresh water	7/19	1/4	3/7	4/13
Fraction of fresh water	0.368	0.25	0.429	0.308

Since mix C is the largest fraction (determined by looking at the decimals) it must have the **greatest** amount of fresh water compared to the whole, so it is the least salty.

Select C) Mix C.

B) Explain your answer in the box below.

Ungraded open response:

7) Assisment #31197 "31197 - 28884 - 7th Grade - Comparing and Scaling #5"

A) Mr. Evans the science teacher was mixing fresh water and salt water together to fill an aquarium for the new class pet.

Here are the different mixes he made:

Mix A: 7 cups fresh water and 12 cups salt water

Mix B: 1 cup fresh water and 3 cups salt water

Mix C: 3 cup fresh water and 4 cups salt water

Mix D: 4 cups fresh water and 9 cups salt water

Suppose you make a single batch of Mix D. **What fraction of the total cups** of water in the batch is

fresh water?

Algebra:

✓ 4/13

✗ 4/9

Hints:

- Remember that we're only dealing with Mix D in this question.

Mix D: 4 cups fresh water and 9 cups salt water

- Determine the total number of cups in the batch of Mix D when the cups of fresh water and of salt water are mixed together.

Then determine what fraction of the batch of Mix D is fresh water.

- There are 4 cups of fresh water and 9 cups of salt water in the batch, so there is a total of 13 cups of water in the batch.

Out of those 13 cups, 4 are fresh water. Determine what fraction of the batch of Mix D is fresh water.

- The fraction of fresh water in the batch is 4/13. Type in 4/13

B) Mix A: 7 cups fresh water and 12 cups salt water

Mix B: 1 cup fresh water and 3 cups salt water

Mix C: 3 cup fresh water and 4 cups salt water

Mix D: 4 cups fresh water and 9 cups salt water

Good, now **what percent of the total number of cups** in the batch of mix D is fresh water? (round to the nearest percent)

Algebra:

✓ 31%

✓ 31

✗ 44%

✗ 44

✗ 30%

✗ 30

Hints:

- We know from the answer to the previous question that $\frac{4}{13}$ of the total number of cups in the batch of Mix D is fresh water. $\frac{4}{13}$ can be converted into a decimal, which can then be converted into a percent.
- To convert a fraction into a decimal, divide the numerator by the denominator. $\frac{4}{13} = 4 \div 13 = 0.30769$. Convert this into a percent. Don't forget to round.
- To convert a decimal into a percent, move the decimal two places to the left. $0.30769 = 30.769\%$. Don't forget to round this to the nearest percent.
- 30.769% rounded to the nearest percent is 31% , so 31% of the total number of cups in the batch of Mix D is fresh water. Type in 31

8) Assisment #31200 "31200 - 28787 - 7th Grade - Comparing and Scaling #6"

It's the end of the school year, and the three math teachers each decide to throw a pizza party for their students.

There were 12 students in Mrs. Red's class and they got to share 4 pizzas.

There were 24 students in Mrs. Blue's class and they got to share 6 pizzas.

There were 18 students in Mr. Orange's class and they got to share 5 pizzas.

The pizzas in each room were shared equally.

In which class did the kids get the least pizza?

Multiple choice:

✘ A) Mr. Orange's class

✔ B) Mrs. Blue's class

✘ C) Mrs. Red's class

Hints:

- Two ways to solve this problem are either to set up ratios of students to pizzas OR pizzas to students. Pick one way and find the ratios and compare them to determine the class in which the students get the least pizza.

•

Teacher	Red	Blue	Orange
Number of Students	12	24	18
Number of Pizzas	4	6	5
Students/Pizzas	12/4	24/6	18/5
Pizzas/Students	4/12	6/24	5/18

Here are the ratios as fractions for the two ways to solve the problem. Since the fractions have different denominators you should change them to decimals and then compare the numbers. (You only need to consider one of these ways)

•

Teacher	Red	Blue	Orange
Number of Students	12	24	18
Number of Pizzas	4	6	5
Students/Pizzas	12/4=12÷4=3	24/6=24÷6=4	18/5=18÷5=3.6
Pizzas/Students	4/12=4÷12=0.33	6/24=6÷24=0.25	5/18=5÷18=0.278

Now all the fractions are in decimals. In which class do the students get the least pizza?

- Since there are 4 students per pizza in Mrs. Blue's class, Mrs. Blue's class has the largest number of students per pizza so the students get the least pizza.

Or

you could say there are 0.25 pizzas per student in Mrs. Blue's class which is the least pizza per student so Mrs. Blue's class is the class where the students get the least pizza.

In either case, the kids in Mrs. Blue's class get the least pizza. Select B) Mrs. Blue's class.

Mastery Learning 28781 Finding Percents 1

id:[6009]

1) Assistent #37572 "37572 - 30204 - 28781 - Variabilized Finding-Percents 1" – 1st Instance

At the aquarium there are 846 sharks and 870 lion fish, for a total of 1716 fish all together.
What percent of the fish were sharks? (round to the nearest percent)

2) Assistent #37573 "37573 - 30204 - 28781 - Variabilized Finding-Percents 1" – 2nd Instance

In the parking lot there are 226 convertibles and 710 minivans, for a total of 936 cars all together.
What percent of the cars were convertibles? (round to the nearest percent)

3) Assistent #37602 "37602 - 30483 - 28781 - Variabilized Finding-Percents 2" – 1st Instance

At the aquarium there are 371 sharks and 100 lion fish, for a total of 471 fish all together. What percent of the fish were lion fish? (round to the nearest percent)

4) Assistent #37603 "37603 - 30483 - 28781 - Variabilized Finding-Percents 2" – 2nd Instance

In the parking lot there are 804 convertibles and 914 minivans, for a total of 1718 cars all together.
What percent of the cars were minivans? (round to the nearest percent)

5) Assistent #37632 "37632 - 30485 - 28781 - Variabilized Finding-Percents 3" – 1st Instance

At the aquarium there are 1039 fish: 562 sharks and 477 lion fish.
What percent of the fish were sharks? (round to the nearest percent)

6) Assisment #37633 "37633 - 30485 - 28781 - Variabilized Finding-Percents 3"- 2nd Instance

In the parking lot there are 783 cars: 301 convertibles and 482 minivans.

What percent of the cars were convertibles? (round to the nearest percent)

7) Assisment #37662 "37662 - 30486 - 28781 - Variabilized Finding-Percents 4"- 1st Instance

At the aquarium there are 1706 fish: 877 sharks and 829 lion fish.

What percent of the fish were lion fish? (round to the nearest percent)

8) Assisment #37663 "37663 - 30486 - 28781 - Variabilized Finding-Percents 4"- 2nd Instance

In the parking lot there are 1273 cars: 868 convertibles and 405 minivans.

What percent of the cars were minivans? (round to the nearest percent)

Assisment #30204 "30204 - 28781 - Variabilized Finding-Percents 1"

$\%v\{v1\}$ the $\%v\{v2\}$ there are $\%v\{v3\}$ $\%v\{v5\}$ and $\%v\{v4\}$ $\%v\{v6\}$, for a total of $\%v\{v8\}$ $\%v\{v7\}$ all together.

What percent of the $\%v\{v7\}$ were $\%v\{v5\}$? (round to the nearest percent)

Algebra:

✓ $\%v\{vans\}$

Hints:

- In order to get a percent, we need to find the fraction **Part/Whole**
- In the phrase: "What percent of **the %v{v7} %v{v10} the %v{v2} were %v{v5}**"

The %v{v7} are the **whole** and the %v{v5} are the **part**.

-

The fraction is

$$\frac{\%v\{v5\}}{\%v\{v7\}} \quad \frac{\%v\{v3\}}{\%v\{v8\}}$$

_____ or _____

$$\frac{\%v\{v3\}}{\%v\{v8\}}$$

Convert it into a decimal and the decimal into a percent to find out what percent of the %v{v7} %v{v10} the %v{v2} were %v{v5}.

- %v{v3}

$$\frac{\%v\{v3\}}{\%v\{v8\}} = \%v\{v3\} \div \%v\{v8\} = \%v\{v9\}$$

$$\%v\{v8\}$$

Convert this decimal into a percent to find out what percent of the %v{v7} %v{v10} the %v{v2} were %v{v5}.

- %v{v9} is %v{v9*100}%, which rounds to %v{vans}%. %v{vans}% of the %v{v7} %v{v10} the %v{v2} were %v{v5}. Type in %v{vans}

Assistment #30483 "30483 - 28781 - Variabilized Finding-Percents 2"

%v{v1} the %v{v2} there are %v{v4} %v{v5} and %v{v3} %v{v6}, for a total of %v{v8} %v{v7} all together. What percent of the %v{v7} were %v{v6}? (round to the nearest percent)

Algebra:

✓ %v{vans}

Hints:

- In order to get a percent, we need to find the fraction **Part/Whole**
- In the phrase: "What percent of **the %v{v7} %v{v10} the %v{v2} were %v{v6}**"

The %v{v7} are the **whole** and the %v{v6} are the **part**.

•

The fraction is

%v{v6} **%v{v3}**

_____ or _____

%v{v7} **%v{v8}**

Convert it into a decimal and the decimal into a percent to find out what percent of the %v{v7} %v{v10} the %v{v2} were %v{v6}.

- **%v{v3}**

$$\frac{\text{_____}}{\text{_____}} = \frac{\text{\%v\{v3\}}}{\text{\%v\{v8\}}} = \text{\%v\{v9\}}$$

%v{v8}

Convert this decimal into a percent to find out what percent of the %v{v7} %v{v10} the %v{v2} were %v{v6}.

- %v{v9} is %v{v9*100}%, which rounds to %v{vans}%. %v{vans}% of the %v{v7} %v{v10} the %v{v2} were %v{v6}. Type in %v{vans}

Assistment #30485 "30485 - 28781 - Variabilized Finding-Percents 3"

%v{v1} the %v{v2} there are %v{v8} %v{v7}: %v{v3} %v{v5} and %v{v4} %v{v6}.

What percent of the v_7 were v_5 ? (round to the nearest percent)

Algebra:

✓ v_{ans}

Hints:

- In order to get a percent, we need to find the fraction **Part/Whole**
- In the phrase: "What percent of **the v_7** v_{10} the v_2 were **v_5** "

The v_7 are the **whole** and the v_5 are the **part**.

-

The fraction is

v_5 v_3

_____ or _____

v_7 v_8

Convert it into a decimal and the decimal into a percent to find out what percent of the v_7 v_{10} the v_2 were v_5 .

- v_3

_____ = $v_3 \div v_8 = v_9$

v_8

Convert this decimal into a percent to find out what percent of the v_7 v_{10} the v_2 were v_5 .

- v_9 is $v_9 * 100\%$, which rounds to $v_{\text{ans}}\%$. $v_{\text{ans}}\%$ of the v_7 v_{10} the v_2 were v_5 . Type in v_{ans}

Assistment #30486 "30486 - 28781 - Variabilized Finding-Percents 4"

v_1 the v_2 there are v_8 v_7 : v_4 v_5 and v_3 v_6 .
What percent of the v_7 were v_6 ? (round to the nearest percent)

Algebra:

✓ $vans$

Hints:

- In order to get a percent, we need to find the fraction **Part/Whole**
- In the phrase: "What percent of **the v_7** v_{10} the v_2 were **v_6** "

The v_7 are the **whole** and the v_6 are the **part**.

•

The fraction is

v_6 v_3

_____ or _____

v_7 v_8

Convert it into a decimal and the decimal into a percent to find out what percent of the v_7 v_{10} the v_2 were v_6 .

- v_3

$$\frac{\quad}{\quad} = v_3 \div v_8 = v_9$$

v_8

Convert this decimal into a percent to find out what percent of the v_7 v_{10} the v_2 were v_6 .

- v_9 is $v_9 * 100\%$, which rounds to $vans\%$. $vans\%$ of the v_7 v_{10} the

%v{v2} were %v{v6}. Type in %v{vans}

Mastery Learning 28781 Comparing and Scaling Rounding

id:[6010]

1) Assistent #37692 "37692 - Rounding - Ones Place" – 1st Instance

Round the following number to the **ones place**.

9.6

2) Assistent #37693 "37693 - Rounding - Ones Place" – 2nd Instance

Round the following number to the **ones place**.

3.9

3) Assistent #37694 "37694 - Rounding - Ones Place" – 3rd Instance

Round the following number to the **ones place**.

4.3

4) Assistent #37695 "37695 - Rounding - Ones Place" – 4th Instance

Round the following number to the **ones place**.

8.7

5) Assisment #37696 "37696 - Rounding - Ones Place"– 5th Instance

Round the following number to the **ones place**.

3.7

6) Assisment #37722 "37722 - Rounding - Hundredths Place" – 1st Instance

Round the following number to the **hundredths place**.

1.353

7) Assisment #37723 "37723 - Rounding - Hundredths Place" – 2nd Instance

Round the following number to the **hundredths place**.

3.262

8) Assisment #37724 "37724 - Rounding - Hundredths Place" – 3rd Instance

Round the following number to the **hundredths place**.

3.997

9) Assisment #37725 "37725 - Rounding - Hundredths Place"– 4th Instance

Round the following number to the **hundredths place**.

4.956

10) Assistentment #37726 "37726 - Rounding - Hundredths Place"– 5th Instance

Round the following number to the **hundredths place**.

2.381

Assistentment #29906 "29906 - Rounding - Ones Place"

Round the following number to the **ones place**.

$\%v\{v3\}$

Algebra:

✓ $\%v\{\text{ans}\}$

Hints:

- Since we are rounding to the **ones place**, we have to use the digit on the **tenths place**.

- $\%v\{v0/1000\}.\%v\{(v1/100)\}$

Remember, the **ones place** digit is the first digit to the left of the **decimal**.

The **tenths place** digit is the first digit to the right of the **decimal**.

And, the **hundredths place** digit is the second digit to the right of the **decimal**.

- The number on the **tenths place** of $\%v\{v3\}$ is $\%v\{v1/1000\}$.

Remember, we round up if $\%v\{v1/1000\}$ is greater than or equal to **0.5**, and we round down if $\%v\{v1/1000\}$ is less than **0.5**.

- This means that $\%v\{v1/1000\}$ rounds into $\%v\{v8\}$. And now all we have to do is add $\%v\{v8\}$ to $\%v\{v0/1000\}$.

$$\%v\{v8\} + \%v\{v0/1000\} = \%v\{ans\}$$

So type in $\%v\{ans\}$.

Assistment #29908 "29908 - Rounding - Hundredths Place"

Round the following number to the **hundredths place**.

$$\%v\{v3\}$$

Algebra:

✓ $\%v\{ans\}$

Hints:

- Since we are rounding to the **hundredths place**, we have to use the digit on the **thousandths place**.

- $$\%v\{v0/1000\}.\%v\{(v1/100)}\%v\{(v2/10)}\}\%v\{v4\}$$

Remember, the **ones place** digit is the first digit to the left of the **decimal**.

The **tenths place** digit is the first digit to the right of the **decimal**.

And, the **hundredths place** digit is the second digit to the right of the **decimal**.

Lastly, the **thousandths place** digit is the third digit to the right of the decimal.

- The number on the **thousandths place** of $\%v\{v3\}$ is $\%v\{v4/1000\}$.

Remember, we round up if $\%v\{v4/1000\}$ is greater than or equal to **0.005**, and we round down if $\%v\{v4/1000\}$ is less than **0.005**.

- This means that $\%v\{v4/1000\}$ rounds into $\%v\{v9\}$.
And now all we have to do is add $\%v\{v9\}$ to $\%v\{(v0 + v1 + v2)/1000\}$.

$$\%v\{v9\} + \%v\{(v0 + v1 + v2)/1000\} = \%v\{ans\}$$

So type in $\%v\{ans\}$.

Mastery Learning 28782 Comparing and Scaling Finding Fractions

id:[6011]

1) Assistent #37752 "37752 - 30305 - 28782 - Variabilized Finding-Fractions 1" – 1st Instance

At the aquarium there are 140 sharks and 1680 lion fish, for a total of 1820 fish all together. What is the ratio of fish to sharks? (Reduce your ratio to lowest terms, for example reduce 15:6 to 5:2)

2) Assistent #37753 "37753 - 30305 - 28782 - Variabilized Finding-Fractions 1" – 2nd Instance

In the parking lot there are 240 convertibles and 180 minivans, for a total of 420 cars all together. What is the ratio of cars to convertibles? (Reduce your ratio to lowest terms, for example reduce 15:6 to 5:2)

3) Assistent #37782 "37782 - 30478 - 28782 - Variabilized Finding-Fractions 2" – 1st Instance

At the aquarium there are 2640 sharks and 220 lion fish, for a total of 2860 fish all together. What is the ratio of fish to lion fish? (Reduce your ratio to lowest terms, for example reduce 15:6 to 5:2)

4) Assistent #37783 "37783 - 30478 - 28782 - Variabilized Finding-Fractions 2" – 2nd Instance

In the parking lot there are 6050 convertibles and 1100 minivans, for a total of 7150 cars all together. What is the ratio of cars to minivans? (Reduce your ratio to lowest terms, for example reduce 15:6 to 5:2)

5) Assistent #37812 "37812 - 30479 - 28782 - Variabilized Finding-Fractions 3" – 1st Instance

At the aquarium there are 2750 fish: 550 sharks and 2200 lion fish. What is the ratio of fish to lion fish?
(Reduce your ratio to lowest terms, for example reduce 15:6 to 5:2)

6) Assistent #37813 "37813 - 30479 - 28782 - Variabilized Finding-Fractions 3" – 2nd Instance

In the parking lot there are 1950 cars: 1800 convertibles and 150 minivans. What is the ratio of cars to minivans? (Reduce your ratio to lowest terms, for example reduce 15:6 to 5:2)

7) Assistent #37842 "37842 - 30480 - 28782 - Variabilized Finding-Fractions 4" – 1st Instance

At the aquarium there are 7150 fish, 1100 sharks and 6050 lion fish. What is the ratio of fish to sharks?
(Reduce your ratio to lowest terms, for example reduce 15:6 to 5:2)

8) Assistent #37843 "37843 - 30480 - 28782 - Variabilized Finding-Fractions 4" – 2nd Instance

In the parking lot there are 1650 cars, 990 convertibles and 660 minivans. What is the ratio of cars to convertibles? (Reduce your ratio to lowest terms, for example reduce 15:6 to 5:2)

Assistent #30305 "30305 - 28782 - Variabilized Finding-Fractions 1"

$\%v\{v1\}$ the $\%v\{v2\}$ there are $\%v\{v11\}$ $\%v\{v5\}$ and $\%v\{v4\}$ $\%v\{v6\}$, for a total of $\%v\{v12\}$ $\%v\{v7\}$ all together. What is the ratio of $\%v\{v7\}$ to $\%v\{v5\}$? (Reduce your ratio to lowest terms, for example reduce 15:6 to 5:2)

Fill in:

✓ $\%v\{v8\}:\%v\{v3\}$

✓ $\%v\{v8\} : \%v\{v3\}$

✓ $\%v\{v8\}: \%v\{v3\}$

✓ $\%v\{v8\} : \%v\{v3\}$

Hints:

- We are asked to find a ratio of $\%v\{v7\}$ to $\%v\{v5\}$. Start by writing the ratio using the numbers we know:

$$\%v\{v7\} : \%v\{v5\} = \%v\{v12\} : \%v\{v11\}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of $\%v\{v7\}$ to $\%v\{v5\}$.

- Since both numbers end in 0, we can divide both by 10.

$$\%v\{v12\} \div 10 : \%v\{v11\} \div 10 = \%v\{v12/10\} : \%v\{v11/10\}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of $\%v\{v7\}$ to $\%v\{v5\}$.

- Both sides are divisible by $\%v\{v13\}$. If we divide both sides by $\%v\{v13\}$ we get:

$$\%v\{v12/10\} \div \%v\{v13\} : \%v\{v11/10\} \div \%v\{v13\} \text{ or } \%v\{v12/10/v13\} : \%v\{v11/10/v13\}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of $\%v\{v7\}$ to $\%v\{v5\}$.

- Both sides can be divided by $\%v\{v14\}$. If we divide both sides by $\%v\{v14\}$ we get:

$$\%v\{v12/10/v13\} \div \%v\{v14\} : \%v\{v11/10/v13\} \div \%v\{v14\} \text{ or } \%v\{v8\} : \%v\{v3\}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of $\%v\{v7\}$ to $\%v\{v5\}$.

- The two sides of the ratio don't have any other common multiples, so the ratio has been reduced

as far as it can be.

- The ratio of v_7 to v_5 is $v_8:v_3$. Type in $v_8:v_3$

Assistment #30478 "30478 - 28782 - Variabilized Finding-Fractions 2"

v_1 the v_2 there are v_4 v_5 and v_{11} v_6 , for a total of v_{12} v_7 all together. What is the ratio of v_7 to v_6 ? (Reduce your ratio to lowest terms, for example reduce 15:6 to 5:2)

Fill in:

✓ $v_8:v_3$

✓ $v_8 :v_3$

✓ $v_8): v_3\}$

✓ $v_8} : v_3\}$

Hints:

- We are asked to find a ratio of v_7 to v_6 . Start by writing the ratio using the numbers we know:

$$v_7 : v_6 = v_{12} : v_{11}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of v_7 to v_6 .

- Since both numbers end in 0, we can divide both by 10.

$$v_{12} \div 10 : v_{11} \div 10 = v_{12/10} : v_{11/10}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of v_7 to v_6 .

- Both sides are divisible by v_{13} . If we divide both sides by v_{13} we get:

$$v_{12/10} \div v_{13} : v_{11/10} \div v_{13} \text{ or } v_{12/10/v_{13}} : v_{11/10/v_{13}}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of v_7 to v_6 .

- Both sides can be divided by v_{14} . If we divide both sides by v_{14} we get:

$$\frac{v_{12}/10/v_{13}}{v_{14}} : \frac{v_{11}/10/v_{13}}{v_{14}} \text{ or } v_8 : v_3$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of v_7 to v_6 .

- The two sides of the ratio don't have any other common multiples, so the ratio has been reduced as far as it can be.
- The ratio of v_7 to v_6 is $v_8 : v_3$. Type in $v_8 : v_3$

Assistment #30479 "30479 - 28782 - Variabilized Finding-Fractions 3"

v_1 the v_2 there are $v_{12} v_7 : v_4 v_5$ and $v_{11} v_6$. What is the ratio of v_7 to v_6 ? (Reduce your ratio to lowest terms, for example reduce 15:6 to 5:2)

Fill in:

✓ $v_8 : v_3$

✓ $v_8 : v_3$

✓ $v_8 : v_3$

✓ $v_8 : v_3$

Hints:

- We are asked to find a ratio of v_7 to v_6 . Start by writing the ratio using the numbers we know:

$$v_7 : v_6 = v_{12} : v_{11}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to

find the ratio of v_7 to v_6 .

- Since both numbers end in 0, we can divide both by 10.

$$v_{12} \div 10 : v_{11} \div 10 = v_{12/10} : v_{11/10}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of v_7 to v_6 .

- Both sides are divisible by v_{13} . If we divide both sides by v_{13} we get:

$$v_{12/10} \div v_{13} : v_{11/10} \div v_{13} \text{ or } v_{12/10/v13} : v_{11/10/v13}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of v_7 to v_6 .

- Both sides can be divided by v_{14} . If we divide both sides by v_{14} we get:

$$v_{12/10/v13} \div v_{14} : v_{11/10/v13} \div v_{14} \text{ or } v_8 : v_3$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of v_7 to v_6 .

- The two sides of the ratio don't have any other common multiples, so the ratio has been reduced as far as it can be.

- The ratio of v_7 to v_6 is $v_8 : v_3$. Type in $v_8 : v_3$

Assistment #30480 "30480 - 28782 - Variabilized Finding-Fractions 4"

v_1 the v_2 there are v_{12} v_7 , v_{11} v_5 and v_4 v_6 . What is the ratio of v_7 to v_5 ? (Reduce your ratio to lowest terms, for example reduce 15:6 to 5:2)

Fill in:

✓ $v_8 : v_3$

✓ $v_8 : v_3$

✓ $\%v\{v8\} : \%v\{v3\}$

✓ $\%v\{v8\} : \%v\{v3\}$

Hints:

- We are asked to find a ratio of $\%v\{v7\}$ to $\%v\{v5\}$. Start by writing the ratio using the numbers we know:

$$\%v\{v7\} : \%v\{v5\} = \%v\{v12\} : \%v\{v11\}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of $\%v\{v7\}$ to $\%v\{v5\}$.

- Since both numbers end in 0, we can divide both by 10.

$$\%v\{v12\} \div 10 : \%v\{v11\} \div 10 = \%v\{v12/10\} : \%v\{v11/10\}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of $\%v\{v7\}$ to $\%v\{v5\}$.

- Both sides are divisible by $\%v\{v13\}$. If we divide both sides by $\%v\{v13\}$ we get:

$$\%v\{v12/10\} \div \%v\{v13\} : \%v\{v11/10\} \div \%v\{v13\} \text{ or } \%v\{v12/10/v13\} : \%v\{v11/10/v13\}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of $\%v\{v7\}$ to $\%v\{v5\}$.

- Both sides can be divided by $\%v\{v14\}$. If we divide both sides by $\%v\{v14\}$ we get:

$$\%v\{v12/10/v13\} \div \%v\{v14\} : \%v\{v11/10/v13\} \div \%v\{v14\} \text{ or } \%v\{v8\} : \%v\{v3\}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of $\%v\{v7\}$ to $\%v\{v5\}$.

- The two sides of the ratio don't have any other common multiples, so the ratio has been reduced as far as it can be.

- The ratio of $\%v\{v7\}$ to $\%v\{v5\}$ is $\%v\{v8\} : \%v\{v3\}$. Type in $\%v\{v8\} : \%v\{v3\}$

Mastery Learning 28783 Comparing and Scaling Finding Percents 2

id:[6012]

1) Assistent #37574 "37574 - 30204 - 28781 - Variabilized Finding-Percents 1" – 1st Instance

At the candy store there are 469 gumdrops and 730 chocolate bars, for a total of 1199 candies all together.

What percent of the candies were gumdrops? (round to the nearest percent)

2) Assistent #37575 "37575 - 30204 - 28781 - Variabilized Finding-Percents 1" – 2nd Instance

At the pet shop there are 966 cats and 311 dogs, for a total of 1277 pets all together.

What percent of the pets were cats? (round to the nearest percent)

3) Assistent #37604 "37604 - 30483 - 28781 - Variabilized Finding-Percents 2"– 1st Instance

At the candy store there are 793 gumdrops and 680 chocolate bars, for a total of 1473 candies all together. What percent of the candies were chocolate bars? (round to the nearest percent)

4) Assistent #37605 "37605 - 30483 - 28781 - Variabilized Finding-Percents 2"– 2nd Instance

At the pet shop there are 983 cats and 641 dogs, for a total of 1624 pets all together. What percent of the pets were dogs? (round to the nearest percent)

5) Assistent #37634 "37634 - 30485 - 28781 - Variabilized Finding-Percents 3"– 1st Instance

At the candy store there are 1298 candies: 827 gumdrops and 471 chocolate bars.
What percent of the candies were gumdrops? (round to the nearest percent)

6) Assistent #37635 "37635 - 30485 - 28781 - Variabilized Finding-Percents 3"- 2nd Instance

At the pet shop there are 677 pets: 555 cats and 122 dogs.
What percent of the pets were cats? (round to the nearest percent)

7) Assistent #37664 "37664 - 30486 - 28781 - Variabilized Finding-Percents 4"- 1st Instance

At the candy store there are 1254 candies: 482 gumdrops and 772 chocolate bars.
What percent of the candies were chocolate bars? (round to the nearest percent)

8) Assistent #37665 "37665 - 30486 - 28781 - Variabilized Finding-Percents 4"- 2nd Instance

At the pet shop there are 602 pets: 481 cats and 121 dogs.
What percent of the pets were dogs? (round to the nearest percent)

Mastery Learning 28783 Comparing and Scaling Finding Rounding 2

id:[6013]

1) Assistent #37697 "37697 - Rounding - Ones Place" – 1st Instance

Round the following number to the **ones place**.

5.6

2) Assistent #37698 "37698 - Rounding - Ones Place" – 2nd Instance

Round the following number to the **ones place**.

1.6

3) Assistent #37699 "37699 - Rounding - Ones Place" – 3rd Instance

Round the following number to the **ones place**.

4.9

4) Assistent #37700 "37700 - Rounding - Ones Place" – 4th Instance

Round the following number to the **ones place**.

6.8

5) Assisment #37701 "37701 - Rounding - Ones Place" – 5th Instance

Round the following number to the **ones place**.

8.7

6) Assisment #37727 "37727 - Rounding - Hundredths Place" – 1st Instance

Round the following number to the **hundredths place**.

2.335

7) Assisment #37728 "37728 - Rounding - Hundredths Place" – 2nd Instance

Round the following number to the **hundredths place**.

5.763

8) Assisment #37729 "37729 - Rounding - Hundredths Place" – 3rd Instance

Round the following number to the **hundredths place**.

3.729

9) Assisment #37730 "37730 - Rounding - Hundredths Place" – 4th Instance

Round the following number to the **hundredths place**.

2.124

10) Assistentment #37731 "37731 - Rounding - Hundredths Place" – 5th Instance

Round the following number to the **hundredths place**.

1.679

Assistentment #30204 "30204 - 28781 - Variabilized Finding-Percents 1"

v_1 the v_2 there are v_3 v_5 and v_4 v_6 , for a total of v_8 v_7 all together.

What percent of the v_7 were v_5 ? (round to the nearest percent)

Algebra:

✓ $vans$

Hints:

- In order to get a percent, we need to find the fraction **Part/Whole**
- In the phrase: "What percent of **the v_7** v_{10} the v_2 were **v_5** "

The v_7 are the **whole** and the v_5 are the **part**.

•

The fraction is

$\frac{v_5}{v_7}$ or $\frac{v_3}{v_8}$

$\%v\{v7\}$ $\%v\{v8\}$

Convert it into a decimal and the decimal into a percent to find out what percent of the $\%v\{v7\}$ $\%v\{v10\}$ the $\%v\{v2\}$ were $\%v\{v5\}$.

- $\%v\{v3\}$

$$\frac{\text{_____}}{\%v\{v8\}} = \%v\{v3\} \div \%v\{v8\} = \%v\{v9\}$$

$\%v\{v8\}$

Convert this decimal into a percent to find out what percent of the $\%v\{v7\}$ $\%v\{v10\}$ the $\%v\{v2\}$ were $\%v\{v5\}$.

- $\%v\{v9\}$ is $\%v\{v9*100\}\%$, which rounds to $\%v\{vans\}\%$. $\%v\{vans\}\%$ of the $\%v\{v7\}$ $\%v\{v10\}$ the $\%v\{v2\}$ were $\%v\{v5\}$. Type in $\%v\{vans\}$

Assistment #30483 "30483 - 28781 - Variabilized Finding-Percents 2"

$\%v\{v1\}$ the $\%v\{v2\}$ there are $\%v\{v4\}$ $\%v\{v5\}$ and $\%v\{v3\}$ $\%v\{v6\}$, for a total of $\%v\{v8\}$ $\%v\{v7\}$ all together. What percent of the $\%v\{v7\}$ were $\%v\{v6\}$? (round to the nearest percent)

Algebra:

✓ $\%v\{vans\}$

Hints:

- In order to get a percent, we need to find the fraction **Part/Whole**
- In the phrase: "**What percent of the $\%v\{v7\}$ $\%v\{v10\}$ the $\%v\{v2\}$ were $\%v\{v6\}$** "

The $\%v\{v7\}$ are the **whole** and the $\%v\{v6\}$ are the **part**.

-

The fraction is

$$\frac{\%v\{v6\}}{\%v\{v7\}} \quad \frac{\%v\{v3\}}{\%v\{v8\}}$$

_____ or _____

$$\frac{\%v\{v6\}}{\%v\{v7\}} \quad \frac{\%v\{v3\}}{\%v\{v8\}}$$

Convert it into a decimal and the decimal into a percent to find out what percent of the $\%v\{v7\}$ $\%v\{v10\}$ the $\%v\{v2\}$ were $\%v\{v6\}$.

- $\%v\{v3\}$

$$\frac{\%v\{v3\}}{\%v\{v8\}} = \%v\{v3\} \div \%v\{v8\} = \%v\{v9\}$$

$$\%v\{v8\}$$

Convert this decimal into a percent to find out what percent of the $\%v\{v7\}$ $\%v\{v10\}$ the $\%v\{v2\}$ were $\%v\{v6\}$.

- $\%v\{v9\}$ is $\%v\{v9*100\}\%$, which rounds to $\%v\{vans\}\%$. $\%v\{vans\}\%$ of the $\%v\{v7\}$ $\%v\{v10\}$ the $\%v\{v2\}$ were $\%v\{v6\}$. Type in $\%v\{vans\}$

Assistment #30485 "30485 - 28781 - Variabilized Finding-Percents 3"

$\%v\{v1\}$ the $\%v\{v2\}$ there are $\%v\{v8\}$ $\%v\{v7\}$: $\%v\{v3\}$ $\%v\{v5\}$ and $\%v\{v4\}$ $\%v\{v6\}$.

What percent of the $\%v\{v7\}$ were $\%v\{v5\}$? (round to the nearest percent)

Algebra:

✓ $\%v\{vans\}$

Hints:

- In order to get a percent, we need to find the fraction **Part/Whole**

- In the phrase: "What percent of the v_7 v_{10} the v_2 were v_5 "

The v_7 are the whole and the v_5 are the part.

-

The fraction is

$$\frac{v_5}{v_7} \quad \frac{v_3}{v_8}$$

_____ or _____

Convert it into a decimal and the decimal into a percent to find out what percent of the v_7 v_{10} the v_2 were v_5 .

- v_3

$$\frac{v_3}{v_8} = v_3 \div v_8 = v_9$$

Convert this decimal into a percent to find out what percent of the v_7 v_{10} the v_2 were v_5 .

- v_9 is $v_9 * 100\%$, which rounds to $v_{ans}\%$. $v_{ans}\%$ of the v_7 v_{10} the v_2 were v_5 . Type in v_{ans}

Assistment #30486 "30486 - 28781 - Variabilized Finding-Percents 4"

v_1 the v_2 there are v_8 v_7 : v_4 v_5 and v_3 v_6 .
 What percent of the v_7 were v_6 ? (round to the nearest percent)

Algebra:

✓ %v{vans}

Hints:

- In order to get a percent, we need to find the fraction **Part/Whole**
- In the phrase: "What percent of **the %v{v7} %v{v10} the %v{v2} were %v{v6}**"

The %v{v7} are the **whole** and the %v{v6} are the **part**.

•

The fraction is

%v{v6} %v{v3}

_____ or _____

%v{v7} %v{v8}

Convert it into a decimal and the decimal into a percent to find out what percent of the %v{v7} %v{v10} the %v{v2} were %v{v6}.

- %v{v3}

$$\frac{\text{_____}}{\text{_____}} = \frac{\%v\{v3\}}{\%v\{v8\}} = \%v\{v9\}$$

%v{v8}

Convert this decimal into a percent to find out what percent of the %v{v7} %v{v10} the %v{v2} were %v{v6}.

- %v{v9} is %v{v9*100}%, which rounds to %v{vans}%. %v{vans}% of the %v{v7} %v{v10} the %v{v2} were %v{v6}. Type in %v{vans}

Assistment #29906 "29906 - Rounding - Ones Place"

Round the following number to the **ones place**.

$$\%v\{v3\}$$

Algebra:

✓ $\%v\{\text{ans}\}$

Hints:

- Since we are rounding to the **ones place**, we have to use the digit on the **tenths place**.

- $\%v\{v0/1000\}.\%v\{(v1/100)\}$

Remember, the **ones place** digit is the first digit to the left of the **decimal**.

The **tenths place** digit is the first digit to the right of the **decimal**.

And, the **hundredths place** digit is the second digit to the right of the **decimal**.

- The number on the **tenths place** of $\%v\{v3\}$ is $\%v\{v1/1000\}$.

Remember, we round up if $\%v\{v1/1000\}$ is greater than or equal to **0.5**, and we round down if $\%v\{v1/1000\}$ is less than **0.5**.

- This means that $\%v\{v1/1000\}$ rounds into $\%v\{v8\}$. And now all we have to do is add $\%v\{v8\}$ to $\%v\{v0/1000\}$.

$$\%v\{v8\} + \%v\{v0/1000\} = \%v\{\text{ans}\}$$

So type in $\%v\{\text{ans}\}$.

Assistment #29908 "29908 - Rounding - Hundredths Place"

Round the following number to the **hundredths place**.

$$\%v\{v3\}$$

Algebra:

✓ $\%v\{\text{ans}\}$

Hints:

- Since we are rounding to the **hundredths place**, we have to use the digit on the **thousandths place**.

- $$\%v\{v_0/1000\}.\%v\{(v_1/100)\}\%v\{(v_2/10)\}\%v\{v_4\}$$

Remember, the **ones place** digit is the first digit to the left of the **decimal**.

The **tenths place** digit is the first digit to the right of the **decimal**.

And, the **hundredths place** digit is the second digit to the right of the **decimal**.

Lastly, the **thousandths place** digit is the third digit to the right of the decimal.

- The number on the **thousandths place** of $\%v\{v_3\}$ is $\%v\{v_4/1000\}$.

Remember, we round up if $\%v\{v_4/1000\}$ is greater than or equal to **0.005**, and we round down if $\%v\{v_4/1000\}$ is less than **0.005**.

- This means that $\%v\{v_4/1000\}$ rounds into $\%v\{v_9\}$.

And now all we have to do is add $\%v\{v_9\}$ to $\%v\{(v_0 + v_1 + v_2)/1000\}$.

$$\%v\{v_9\} + \%v\{(v_0 + v_1 + v_2)/1000\} = \%v\{\text{ans}\}$$

So type in $\%v\{\text{ans}\}$.

Mastery Learning 28784 Comparing and Scaling Finding Mixing 1

id:[6014]

1) Assistent #37752 "37752 - 30305 - 28782 - Variabilized Finding-Fractions 1" – 1st Instance

At the aquarium there are 140 sharks and 1680 lion fish, for a total of 1820 fish all together. What is the ratio of fish to sharks? (Reduce your ratio to lowest terms, for example reduce 15:6 to 5:2)

2) Assistent #37782 "37782 - 30478 - 28782 - Variabilized Finding-Fractions 2" – 1st Instance

At the aquarium there are 2640 sharks and 220 lion fish, for a total of 2860 fish all together. What is the ratio of fish to lion fish? (Reduce your ratio to lowest terms, for example reduce 15:6 to 5:2)

3) Assistent #37812 "37812 - 30479 - 28782 - Variabilized Finding-Fractions 3" – 1st Instance

At the aquarium there are 2750 fish: 550 sharks and 2200 lion fish. What is the ratio of fish to lion fish? (Reduce your ratio to lowest terms, for example reduce 15:6 to 5:2)

4) Assistent #37662 "37662 - 30486 - 28781 - Variabilized Finding-Percents 4"- 1st Instance

At the aquarium there are 1706 fish: 877 sharks and 829 lion fish.
What percent of the fish were lion fish? (round to the nearest percent)

5) Assistent #37872 "37872 - Ordering Fractions - Multiple Fractions" – 1st Instance

Which of the following **fractions** is the greatest?

$$\frac{1}{4}, \frac{1}{10}, \frac{3}{4}, \frac{2}{9}$$

6) Assistent #37873 "37873 - Ordering Fractions - Multiple Fractions"– 2nd Instance

Which of the following **fractions** is the greatest?

$$\frac{3}{4}, \frac{2}{9}, \frac{3}{8}, \frac{2}{10}$$

7) Assistent #37874 "37874 - Ordering Fractions - Multiple Fractions"– 3rd Instance

Which of the following **fractions** is the greatest?

$$\frac{1}{10}, \frac{3}{8}, \frac{2}{10}, \frac{4}{7}$$

Assistment #30305 "30305 - 28782 - Variabilized Finding-Fractions 1"

v_1 the v_2 there are v_{11} v_5 and v_4 v_6 , for a total of v_{12} v_7 all together. What is the ratio of v_7 to v_5 ? (Reduce your ratio to lowest terms, for example reduce 15:6 to 5:2)

Fill in:

✓ $v_8:v_3$

✓ $v_8 :v_3$

✓ v_8 : v_3

✓ v_8 : v_3

Hints:

- We are asked to find a ratio of v_7 to v_5 . Start by writing the ratio using the numbers we know:

$$v_7 : v_5 = v_{12} : v_{11}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of v_7 to v_5 .

- Since both numbers end in 0, we can divide both by 10.

$$v_{12} \div 10 : v_{11} \div 10 = v_{12/10} : v_{11/10}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of v_7 to v_5 .

- Both sides are divisible by v_{13} . If we divide both sides by v_{13} we get:

$$v_{12/10} \div v_{13} : v_{11/10} \div v_{13} \text{ or } v_{12/10/v_{13}} : v_{11/10/v_{13}}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of v_7 to v_5 .

- Both sides can be divided by v_{14} . If we divide both sides by v_{14} we get:

$$\frac{v_{12}/10/v_{13}}{v_{14}} : \frac{v_{11}/10/v_{13}}{v_{14}} \text{ or } v_8 : v_3$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of v_7 to v_5 .

- The two sides of the ratio don't have any other common multiples, so the ratio has been reduced as far as it can be.
- The ratio of v_7 to v_5 is $v_8 : v_3$. Type in $v_8 : v_3$

Assistment #30478 "30478 - 28782 - Variabilized Finding-Fractions 2"

v_1 the v_2 there are v_4 v_5 and v_{11} v_6 , for a total of v_{12} v_7 all together. What is the ratio of v_7 to v_6 ? (Reduce your ratio to lowest terms, for example reduce 15:6 to 5:2)

Fill in:

✓ $v_8 : v_3$

✓ $v_8 : v_3$

✓ $v_8 : v_3$

✓ $v_8 : v_3$

Hints:

- We are asked to find a ratio of v_7 to v_6 . Start by writing the ratio using the numbers we know:

$$v_7 : v_6 = v_{12} : v_{11}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to

find the ratio of v_7 to v_6 .

- Since both numbers end in 0, we can divide both by 10.

$$v_{12} \div 10 : v_{11} \div 10 = v_{12/10} : v_{11/10}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of v_7 to v_6 .

- Both sides are divisible by v_{13} . If we divide both sides by v_{13} we get:

$$v_{12/10} \div v_{13} : v_{11/10} \div v_{13} \text{ or } v_{12/10/v13} : v_{11/10/v13}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of v_7 to v_6 .

- Both sides can be divided by v_{14} . If we divide both sides by v_{14} we get:

$$v_{12/10/v13} \div v_{14} : v_{11/10/v13} \div v_{14} \text{ or } v_8 : v_3$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of v_7 to v_6 .

- The two sides of the ratio don't have any other common multiples, so the ratio has been reduced as far as it can be.

- The ratio of v_7 to v_6 is $v_8 : v_3$. Type in $v_8 : v_3$

Assistment #30479 "30479 - 28782 - Variabilized Finding-Fractions 3"

v_1 the v_2 there are $v_{12} v_7 : v_4 v_5$ and $v_{11} v_6$. What is the ratio of v_7 to v_6 ? (Reduce your ratio to lowest terms, for example reduce 15:6 to 5:2)

Fill in:

✓ $v_8 : v_3$

✓ $v_8 : v_3$

✓ $\%v\{v8\} : \%v\{v3\}$

✓ $\%v\{v8\} : \%v\{v3\}$

Hints:

- We are asked to find a ratio of $\%v\{v7\}$ to $\%v\{v6\}$. Start by writing the ratio using the numbers we know:

$$\%v\{v7\} : \%v\{v6\} = \%v\{v12\} : \%v\{v11\}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of $\%v\{v7\}$ to $\%v\{v6\}$.

- Since both numbers end in 0, we can divide both by 10.

$$\%v\{v12\} \div 10 : \%v\{v11\} \div 10 = \%v\{v12/10\} : \%v\{v11/10\}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of $\%v\{v7\}$ to $\%v\{v6\}$.

- Both sides are divisible by $\%v\{v13\}$. If we divide both sides by $\%v\{v13\}$ we get:

$$\%v\{v12/10\} \div \%v\{v13\} : \%v\{v11/10\} \div \%v\{v13\} \text{ or } \%v\{v12/10/v13\} : \%v\{v11/10/v13\}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of $\%v\{v7\}$ to $\%v\{v6\}$.

- Both sides can be divided by $\%v\{v14\}$. If we divide both sides by $\%v\{v14\}$ we get:

$$\%v\{v12/10/v13\} \div \%v\{v14\} : \%v\{v11/10/v13\} \div \%v\{v14\} \text{ or } \%v\{v8\} : \%v\{v3\}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of $\%v\{v7\}$ to $\%v\{v6\}$.

- The two sides of the ratio don't have any other common multiples, so the ratio has been reduced as far as it can be.

- The ratio of $\%v\{v7\}$ to $\%v\{v6\}$ is $\%v\{v8\} : \%v\{v3\}$. Type in $\%v\{v8\} : \%v\{v3\}$

Assistment #30480 "30480 - 28782 - Variabilized Finding-Fractions 4"

v_1 the v_2 there are v_{12} v_7 , v_{11} v_5 and v_4 v_6 . What is the ratio of v_7 to v_5 ? (Reduce your ratio to lowest terms, for example reduce 15:6 to 5:2)

Fill in:

✓ $v_8 : v_3$

✓ $v_8 : v_3$

✓ $v_8 : v_3$

✓ $v_8 : v_3$

Hints:

- We are asked to find a ratio of v_7 to v_5 . Start by writing the ratio using the numbers we know:

$$v_7 : v_5 = v_{12} : v_{11}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of v_7 to v_5 .

- Since both numbers end in 0, we can divide both by 10.

$$v_{12} \div 10 : v_{11} \div 10 = v_{12/10} : v_{11/10}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of v_7 to v_5 .

- Both sides are divisible by v_{13} . If we divide both sides by v_{13} we get:

$$v_{12/10} \div v_{13} : v_{11/10} \div v_{13} \text{ or } v_{12/10/v_{13}} : v_{11/10/v_{13}}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of v_7 to v_5 .

- Both sides can be divided by v_{14} . If we divide both sides by v_{14} we get:

$$\frac{\frac{12}{10} \div \frac{13}{14}}{\frac{11}{10} \div \frac{13}{14}} \text{ or } \frac{8}{3}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of $\frac{7}{5}$ to $\frac{5}{5}$.

- The two sides of the ratio don't have any other common multiples, so the ratio has been reduced as far as it can be.
- The ratio of $\frac{7}{5}$ to $\frac{5}{5}$ is $\frac{8}{3}$. Type in $\frac{8}{3}$.

Assistment #29892 "29892 - Ordering Fractions - Multiple Fractions"

Which of the following **fractions** is the greatest?

$$\frac{\text{num}}{\text{den}}, \frac{\text{num2}}{\text{den2}}, \frac{\text{num3}}{\text{den3}}, \frac{\text{num4}}{\text{den4}}$$

_____ , _____ , _____ , _____

$$\frac{\text{den}}{\text{den}}, \frac{\text{den2}}{\text{den2}}, \frac{\text{den3}}{\text{den3}}, \frac{\text{den4}}{\text{den4}}$$

Algebra:

✓ $\frac{\text{ans_num}}{\text{ans_den}}$

Scaffold:

Fractions can be easily compared when they are converted into **decimals**.

Start by converting the **fractions** into **decimals**.

$$\frac{\text{num}}{\text{den}}$$

Convert _____ into a **decimal**. (Round to the nearest hundredths place)

$$\frac{\text{den}}{\text{den}}$$

Algebra:

✓ $\frac{\text{frac1}}{\text{den}}$

Hints:

- To convert a **fraction** to a **decimal**, we have to divide the **numerator** by the **denominator**.
- $\frac{\%v{\text{num}}}{\%v{\text{den}}} = \%v{\text{frac1}}$

$$\frac{\%v{\text{num}}}{\%v{\text{den}}}$$

- The **decimal** form of $\frac{\%v{\text{num}}}{\%v{\text{den}}}$ is $\%v{\text{frac1}}$, so type in $\%v{\text{frac1}}$.

Scaffold:

Time for the second **fraction**.

$$\frac{\%v{\text{num2}}}{\%v{\text{den2}}}$$

Now, convert $\frac{\%v{\text{num2}}}{\%v{\text{den2}}}$ into a **decimal**. (Round to the nearest hundredths place)

$$\frac{\%v{\text{num2}}}{\%v{\text{den2}}}$$

Algebra:

✓ $\%v{\text{frac2}}$

Hints:

- To convert a **fraction** to a **decimal**, we have to divide the **numerator** by the **denominator**.
- $\frac{\%v{\text{num2}}}{\%v{\text{den2}}} = \%v{\text{frac2}}$

$$\frac{\%v{\text{num2}}}{\%v{\text{den2}}}$$

- The **decimal** form of $\frac{\%v{\text{num2}}}{\%v{\text{den2}}}$ is $\%v{\text{frac2}}$, so type in $\%v{\text{frac2}}$.

Scaffold:

Next is the third **fraction**.

$\frac{\%v{\text{num3}}}{\%v{\text{den3}}}$

Convert _____ into a **decimal**. (Round to the nearest hundredths place)

$\frac{\%v{\text{num3}}}{\%v{\text{den3}}}$

Algebra:

✓ $\frac{\%v{\text{num3}}}{\%v{\text{den3}}}$

Hints:

- To convert a **fraction** to a **decimal**, we have to divide the **numerator** by the **denominator**.

- $\frac{\%v{\text{num3}}}{\%v{\text{den3}}} \div \frac{\%v{\text{num3}}}{\%v{\text{den3}}} = \frac{\%v{\text{num3}}}{\%v{\text{den3}}}$

$\frac{\%v{\text{num3}}}{\%v{\text{den3}}}$

- The **decimal** form of _____ is $\frac{\%v{\text{num3}}}{\%v{\text{den3}}}$, so type in $\frac{\%v{\text{num3}}}{\%v{\text{den3}}}$.

$\frac{\%v{\text{num3}}}{\%v{\text{den3}}}$

Scaffold:

And finally the last **fraction**.

$\frac{\%v{\text{num4}}}{\%v{\text{den4}}}$

Convert _____ into a **decimal**. (Round to the nearest hundredths place)

$\frac{\%v{\text{num4}}}{\%v{\text{den4}}}$

Algebra:

✓ $\frac{\%v{\text{num4}}}{\%v{\text{den4}}}$

Hints:

- To convert a **fraction** to a **decimal**, we have to divide the **numerator** by the **denominator**.
- $\frac{\%v{\text{num4}}}{\%v{\text{den4}}} = \%v{\text{frac4}}$

$$\frac{\%v{\text{num4}}}{\%v{\text{den4}}}$$

- The **decimal** form of _____ is $\frac{\%v{\text{num4}}}{\%v{\text{den4}}}$, so type in $\frac{\%v{\text{num4}}}{\%v{\text{den4}}}$.

$$\frac{\%v{\text{num4}}}{\%v{\text{den4}}}$$

Scaffold:

So far, we have converted the two **fractions** into **decimals**.

$$\frac{\%v{\text{num}}}{\%v{\text{den}}} = \frac{\%v{\text{num2}}}{\%v{\text{den2}}} = \frac{\%v{\text{num3}}}{\%v{\text{den3}}} = \%v{\text{frac3}}, \text{ and } \frac{\%v{\text{num4}}}{\%v{\text{den4}}} = \frac{\%v{\text{num}}}{\%v{\text{den}}} = \%v{\text{frac1}}, \frac{\%v{\text{num2}}}{\%v{\text{den2}}} = \%v{\text{frac2}}, \frac{\%v{\text{num3}}}{\%v{\text{den3}}} = \%v{\text{frac3}}, \text{ and } \frac{\%v{\text{num4}}}{\%v{\text{den4}}} = \%v{\text{frac4}}$$

Now, back to the original problem.

Which of the following **fractions** is the greatest?

$$\frac{\%v{\text{num}}}{\%v{\text{den}}}, \frac{\%v{\text{num2}}}{\%v{\text{den2}}}, \frac{\%v{\text{num3}}}{\%v{\text{den3}}}, \frac{\%v{\text{num4}}}{\%v{\text{den4}}}$$

Algebra:

✓ $\frac{\%v{\text{ans_num}}}{\%v{\text{ans_den}}}$

Hints:

- In order to figure out which **fraction** is larger,

we have to first figure out which of its **decimal** form is larger

- Remember,

$$\frac{\%v\{\text{num}\}}{\%v\{\text{den}\}} = \frac{\%v\{\text{num2}\}}{\%v\{\text{den2}\}} = \frac{\%v\{\text{num3}\}}{\%v\{\text{den3}\}} = \%v\{\text{frac3}\}, \text{ and } \frac{\%v\{\text{num4}\}}{\%v\{\text{den4}\}} = \%v\{\text{frac4}\}$$

- **$\%v\{\text{larger}\}$** is the largest **decimal** from that list.

- Since **$\%v\{\text{larger}\}$** is the largest **decimal**,

$$\frac{\%v\{\text{ans_num}\}}{\%v\{\text{ans_den}\}} \text{ is the largest } \mathbf{\text{fraction}}, \text{ so type in } \%v\{\text{ans_num}\}/\%v\{\text{ans_den}\}.$$

Mastery Learning 28884 Comparing and Scaling Finding Mixing 2

id:[6018]

1) Assistent #38041 "38041 - Fraction Conversion - Frac -> Perc - w/o bench" – 1st Instance

7

Convert $\frac{7}{14}$ into a percent.

14

2) Assistent #38042 "38042 - Fraction Conversion - Frac -> Perc - w/o bench" – 2nd Instance

7

Convert $\frac{7}{12}$ into a percent.

12

3) Assistent #38043 "38043 - Fraction Conversion - Frac -> Perc - w/o bench" – 3rd Instance

7

Convert $\frac{7}{7}$ into a percent.

7

3) Assisment #38044 "38044 - Fraction Conversion - Frac -> Perc - w/o bench" – 4th Instance

9

Convert $\frac{\quad}{8}$ into a **percent**.

8

Assisment #29866 "29866 - Fraction Conversion - Frac -> Perc - w/o bench"

$\frac{\%v\{\text{num1}\}}{\%v\{\text{den1}\}}$

Convert $\frac{\quad}{\quad}$ into a **percent**.

$\%v\{\text{den1}\}$

(round to the nearest percent)

Algebra:

✓ $\%v\{\text{var2}\}$

✓ $\%v\{\text{var2}\} \%$

✓ $\%v\{\text{var2}\} \%$

Hints:

•

To convert a **fraction** to a **percent** you need to divide the **numerator** by the **denominator** and then convert the **decimal** to a **percent**.

•

For this problem you need to find $\%v\{\text{num1}\} \div \%v\{\text{den1}\}$.

Next you have to round the result to the nearest hundredth and then convert it into a **percent**.

- $\%v\{\text{num1}\} \div \%v\{\text{den1}\} = \%v\{\text{var6}\}$

Now, round to the nearest hundredth and convert to a **percent**.

- $\%v\{\text{num1}\} \div \%v\{\text{den1}\}$ rounded is $\%v\{\text{var3}\}$.

Now convert $\%v\{\text{var3}\}$ into a **percent**.

- To convert a **decimal** to a **percent** you must multiply the **decimal** by 100. To do this move the **decimal** to the right two places and add the **percent sign**.

$\%v\{\text{num1}\} \div \%v\{\text{den1}\}$ is about $\%v\{\text{var3}\}$

$\%v\{\text{var3}\}$ is equal to $\%v\{\text{var2}\}\%$. Type in $\%v\{\text{var2}\}$.

Mastery Learning 28884 Comparing and Scaling Finding ratios and fractions

id:[6019]

1) Assistent #38071 "38071 - 30305 - 28782 - Variabilized Finding-Fractions 1" – 1st Instance

At the aquarium there are 1960 sharks and 490 lion fish, for a total of 2450 fish all together. What is the ratio of fish to sharks? (Reduce your ratio to lowest terms, for example reduce 15:6 to 5:2)

2) Assistent #38072 "38072 - 30305 - 28782 - Variabilized Finding-Fractions 1" – 2nd Instance

In the parking lot there are 1540 convertibles and 2310 minivans, for a total of 3850 cars all together. What is the ratio of cars to convertibles? (Reduce your ratio to lowest terms, for example reduce 15:6 to 5:2)

3) Assistent #38101 "38101 - 30478 - 28782 - Variabilized Finding-Fractions 2"– 1st Instance

At the aquarium there are 150 sharks and 600 lion fish, for a total of 750 fish all together. What is the ratio of fish to lion fish? (Reduce your ratio to lowest terms, for example reduce 15:6 to 5:2)

4) Assistent #38102 "38102 - 30478 - 28782 - Variabilized Finding-Fractions 2" – 2nd Instance

In the parking lot there are 630 convertibles and 420 minivans, for a total of 1050 cars all together. What is the ratio of cars to minivans? (Reduce your ratio to lowest terms, for example reduce 15:6 to 5:2)

5) Assistent #38141 "38141 - 30479 - 28782 - Variabilized Finding-Fractions 3" – 1st Instance

At the aquarium there are 1100 fish: 440 sharks and 660 lion fish. What is the ratio of fish to lion fish?
(Reduce your ratio to lowest terms, for example reduce 15:6 to 5:2)

6) Assistent #38142 "38142 - 30479 - 28782 - Variabilized Finding-Fractions 3" – 2nd Instance

In the parking lot there are 1820 cars: 1260 convertibles and 560 minivans. What is the ratio of cars to minivans? (Reduce your ratio to lowest terms, for example reduce 15:6 to 5:2)

7) Assistent #38171 "38171 - 30480 - 28782 - Variabilized Finding-Fractions 4" – 1st Instance

At the aquarium there are 2730 fish, 210 sharks and 2520 lion fish. What is the ratio of fish to sharks?
(Reduce your ratio to lowest terms, for example reduce 15:6 to 5:2)

8) Assistent #38172 "38172 - 30480 - 28782 - Variabilized Finding-Fractions 4" – 2nd Instance

In the parking lot there are 980 cars, 420 convertibles and 560 minivans. What is the ratio of cars to convertibles? (Reduce your ratio to lowest terms, for example reduce 15:6 to 5:2)

Assistent #30305 "30305 - 28782 - Variabilized Finding-Fractions 1"

v_1 the v_2 there are v_{11} v_5 and v_4 v_6 , for a total of v_{12} v_7 all together. What is the ratio of v_7 to v_5 ? (Reduce your ratio to lowest terms, for example reduce 15:6 to 5:2)

Fill in:

✓ $\%v\{v8\}:\%v\{v3\}$

✓ $\%v\{v8\} : \%v\{v3\}$

✓ $\%v\{v8\}: \%v\{v3\}$

✓ $\%v\{v8\} : \%v\{v3\}$

Hints:

- We are asked to find a ratio of $\%v\{v7\}$ to $\%v\{v5\}$. Start by writing the ratio using the numbers we know:

$$\%v\{v7\} : \%v\{v5\} = \%v\{v12\} : \%v\{v11\}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of $\%v\{v7\}$ to $\%v\{v5\}$.

- Since both numbers end in 0, we can divide both by 10.

$$\%v\{v12\} \div 10 : \%v\{v11\} \div 10 = \%v\{v12/10\} : \%v\{v11/10\}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of $\%v\{v7\}$ to $\%v\{v5\}$.

- Both sides are divisible by $\%v\{v13\}$. If we divide both sides by $\%v\{v13\}$ we get:

$$\%v\{v12/10\} \div \%v\{v13\} : \%v\{v11/10\} \div \%v\{v13\} \text{ or } \%v\{v12/10/v13\} : \%v\{v11/10/v13\}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of $\%v\{v7\}$ to $\%v\{v5\}$.

- Both sides can be divided by $\%v\{v14\}$. If we divide both sides by $\%v\{v14\}$ we get:

$$\%v\{v12/10/v13\} \div \%v\{v14\} : \%v\{v11/10/v13\} \div \%v\{v14\} \text{ or } \%v\{v8\} : \%v\{v3\}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of $\%v\{v7\}$ to $\%v\{v5\}$.

- The two sides of the ratio don't have any other common multiples, so the ratio has been reduced

as far as it can be.

- The ratio of v_7 to v_5 is $v_8:v_3$. Type in $v_8:v_3$

Assistment #30478 "30478 - 28782 - Variabilized Finding-Fractions 2"

v_1 the v_2 there are v_4 v_5 and v_{11} v_6 , for a total of v_{12} v_7 all together. What is the ratio of v_7 to v_6 ? (Reduce your ratio to lowest terms, for example reduce 15:6 to 5:2)

Fill in:

✓ $v_8:v_3$

✓ $v_8 :v_3$

✓ $v_8: v_3$

✓ $v_8 : v_3$

Hints:

- We are asked to find a ratio of v_7 to v_6 . Start by writing the ratio using the numbers we know:

$$v_7 : v_6 = v_{12} : v_{11}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of v_7 to v_6 .

- Since both numbers end in 0, we can divide both by 10.

$$v_{12} \div 10 : v_{11} \div 10 = v_{12/10} : v_{11/10}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of v_7 to v_6 .

- Both sides are divisible by v_{13} . If we divide both sides by v_{13} we get:

$$v_{12/10} \div v_{13} : v_{11/10} \div v_{13} \text{ or } v_{12/10/v_{13}} : v_{11/10/v_{13}}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of v_7 to v_6 .

- Both sides can be divided by v_{14} . If we divide both sides by v_{14} we get:

$$\frac{v_{12}/10/v_{13}}{v_{14}} : \frac{v_{11}/10/v_{13}}{v_{14}} \text{ or } v_8 : v_3$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of v_7 to v_6 .

- The two sides of the ratio don't have any other common multiples, so the ratio has been reduced as far as it can be.
- The ratio of v_7 to v_6 is $v_8 : v_3$. Type in $v_8 : v_3$

Assistment #30479 "30479 - 28782 - Variabilized Finding-Fractions 3"

v_1 the v_2 there are $v_{12} v_7 : v_4 v_5$ and $v_{11} v_6$. What is the ratio of v_7 to v_6 ? (Reduce your ratio to lowest terms, for example reduce 15:6 to 5:2)

Fill in:

✓ $v_8 : v_3$

✓ $v_8 : v_3$

✓ $v_8 : v_3$

✓ $v_8 : v_3$

Hints:

- We are asked to find a ratio of v_7 to v_6 . Start by writing the ratio using the numbers we know:

$$v_7 : v_6 = v_{12} : v_{11}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to

find the ratio of v_7 to v_6 .

- Since both numbers end in 0, we can divide both by 10.

$$v_{12} \div 10 : v_{11} \div 10 = v_{12/10} : v_{11/10}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of v_7 to v_6 .

- Both sides are divisible by v_{13} . If we divide both sides by v_{13} we get:

$$v_{12/10} \div v_{13} : v_{11/10} \div v_{13} \text{ or } v_{12/10/v13} : v_{11/10/v13}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of v_7 to v_6 .

- Both sides can be divided by v_{14} . If we divide both sides by v_{14} we get:

$$v_{12/10/v13} \div v_{14} : v_{11/10/v13} \div v_{14} \text{ or } v_8 : v_3$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of v_7 to v_6 .

- The two sides of the ratio don't have any other common multiples, so the ratio has been reduced as far as it can be.

- The ratio of v_7 to v_6 is $v_8 : v_3$. Type in $v_8 : v_3$

Assistment #30480 "30480 - 28782 - Variabilized Finding-Fractions 4"

v_1 the v_2 there are v_{12} v_7 , v_{11} v_5 and v_4 v_6 . What is the ratio of v_7 to v_5 ? (Reduce your ratio to lowest terms, for example reduce 15:6 to 5:2)

Fill in:

✓ $v_8 : v_3$

✓ $v_8 : v_3$

✓ $\%v\{v8\} : \%v\{v3\}$

✓ $\%v\{v8\} : \%v\{v3\}$

Hints:

- We are asked to find a ratio of $\%v\{v7\}$ to $\%v\{v5\}$. Start by writing the ratio using the numbers we know:

$$\%v\{v7\} : \%v\{v5\} = \%v\{v12\} : \%v\{v11\}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of $\%v\{v7\}$ to $\%v\{v5\}$.

- Since both numbers end in 0, we can divide both by 10.

$$\%v\{v12\} \div 10 : \%v\{v11\} \div 10 = \%v\{v12/10\} : \%v\{v11/10\}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of $\%v\{v7\}$ to $\%v\{v5\}$.

- Both sides are divisible by $\%v\{v13\}$. If we divide both sides by $\%v\{v13\}$ we get:

$$\%v\{v12/10\} \div \%v\{v13\} : \%v\{v11/10\} \div \%v\{v13\} \text{ or } \%v\{v12/10/v13\} : \%v\{v11/10/v13\}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of $\%v\{v7\}$ to $\%v\{v5\}$.

- Both sides can be divided by $\%v\{v14\}$. If we divide both sides by $\%v\{v14\}$ we get:

$$\%v\{v12/10/v13\} \div \%v\{v14\} : \%v\{v11/10/v13\} \div \%v\{v14\} \text{ or } \%v\{v8\} : \%v\{v3\}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of $\%v\{v7\}$ to $\%v\{v5\}$.

- The two sides of the ratio don't have any other common multiples, so the ratio has been reduced as far as it can be.

- The ratio of $\%v\{v7\}$ to $\%v\{v5\}$ is $\%v\{v8\} : \%v\{v3\}$. Type in $\%v\{v8\} : \%v\{v3\}$

Mastery Learning 28787 Comparing and Scaling Finding Comparing Divisions

id:[6020]

1) Assistent #37572 "37572 - 30204 - 28781 - Variabilized Finding-Percents 1" – 1st Instance

At the aquarium there are 846 sharks and 870 lion fish, for a total of 1716 fish all together.
What percent of the fish were sharks? (round to the nearest percent)

2) Assistent #37602 "37602 - 30483 - 28781 - Variabilized Finding-Percents 2" – 1st Instance

At the aquarium there are 371 sharks and 100 lion fish, for a total of 471 fish all together. What percent of the fish were lion fish? (round to the nearest percent)

3) Assistent #37632 "37632 - 30485 - 28781 - Variabilized Finding-Percents 3"– 1st Instance

At the aquarium there are 1039 fish: 562 sharks and 477 lion fish.
What percent of the fish were sharks? (round to the nearest percent)

4) Assistent #37662 "37662 - 30486 - 28781 - Variabilized Finding-Percents 4"- 1st Instance

At the aquarium there are 1706 fish: 877 sharks and 829 lion fish.
What percent of the fish were lion fish? (round to the nearest percent)

5) Assistent #38211 "38211 - Ordering Decimals - Less Than - Same Ones Place" – 1st Instance

What should be to make the following statement true?

$0.24 \square 0.26$

A. <

B. >

C. =

6) Assisment #38241 "38241 - Ordering Decimals - Greater Than - Same Ones Place"– 1st Instance

What should \square be to make the following statement true?

$0.75 \square 0.72$

A. <

B. >

C. =

7) Assisment #38271 "38271 - 27378 - Ordering Fractions - Which one is larger?"– 1st Instance

Fill in the blank to make the statement true.

$$\frac{1}{4} \quad \frac{1}{10}$$

$\frac{\quad ? \quad}{\quad}$

A. <

B. >

C. =

Assisment #30204 "30204 - 28781 - Variabilized Finding-Percents 1"

$\%v\{v1\}$ the $\%v\{v2\}$ there are $\%v\{v3\}$ $\%v\{v5\}$ and $\%v\{v4\}$ $\%v\{v6\}$, for a total of $\%v\{v8\}$ $\%v\{v7\}$ all

together.

What percent of the $\%v\{v7\}$ were $\%v\{v5\}$? (round to the nearest percent)

Algebra:

✓ $\%v\{vans\}$

Hints:

- In order to get a percent, we need to find the fraction **Part/Whole**
- In the phrase: "**What percent of the $\%v\{v7\}$ $\%v\{v10\}$ the $\%v\{v2\}$ were $\%v\{v5\}$** "

The $\%v\{v7\}$ are the **whole** and the $\%v\{v5\}$ are the **part**.

•

The fraction is

$\%v\{v5\}$ $\%v\{v3\}$

_____ or _____

$\%v\{v7\}$ $\%v\{v8\}$

Convert it into a decimal and the decimal into a percent to find out what percent of the $\%v\{v7\}$ $\%v\{v10\}$ the $\%v\{v2\}$ were $\%v\{v5\}$.

- $\%v\{v3\}$

$$\frac{\%v\{v3\}}{\%v\{v8\}} = \%v\{v3\} \div \%v\{v8\} = \%v\{v9\}$$

$\%v\{v8\}$

Convert this decimal into a percent to find out what percent of the $\%v\{v7\}$ $\%v\{v10\}$ the $\%v\{v2\}$ were $\%v\{v5\}$.

- $\%v\{v9\}$ is $\%v\{v9*100\}\%$, which rounds to $\%v\{vans\}\%$. $\%v\{vans\}\%$ of the $\%v\{v7\}$ $\%v\{v10\}$ the $\%v\{v2\}$ were $\%v\{v5\}$. Type in $\%v\{vans\}$

Assistment #30483 "30483 - 28781 - Variabilized Finding-Percents 2"

v_1 the v_2 there are v_4 v_5 and v_3 v_6 , for a total of v_8 v_7 all together. What percent of the v_7 were v_6 ? (round to the nearest percent)

Algebra:

✓ $vans$

Hints:

- In order to get a percent, we need to find the fraction **Part/Whole**
- In the phrase: "What percent of **the v_7** v_{10} the v_2 were **v_6** "

The v_7 are the **whole** and the v_6 are the **part**.

•

The fraction is

v_6 v_3

_____ or _____

v_7 v_8

Convert it into a decimal and the decimal into a percent to find out what percent of the v_7 v_{10} the v_2 were v_6 .

- v_3

_____ = $v_3 \div v_8 = v_9$

v_8

Convert this decimal into a percent to find out what percent of the v_7 v_{10} the v_2 were v_6 .

- v_9 is $v_9 * 100\%$, which rounds to $vans\%$. $vans\%$ of the v_7 v_{10} the v_2 were v_6 . Type in $vans$

Assistment #30485 "30485 - 28781 - Variabilized Finding-Percents 3"

v_1 the v_2 there are v_8 v_7 : v_3 v_5 and v_4 v_6 .
What percent of the v_7 were v_5 ? (round to the nearest percent)

Algebra:

✓ $vans$

Hints:

- In order to get a percent, we need to find the fraction **Part/Whole**
- In the phrase: "What percent of **the v_7** v_{10} the v_2 were **v_5** "

The v_7 are the **whole** and the v_5 are the **part**.

•

The fraction is

v_5 v_3

_____ or _____

v_7 v_8

Convert it into a decimal and the decimal into a percent to find out what percent of the v_7 v_{10} the v_2 were v_5 .

- v_3

$$\frac{\quad}{\quad} = v_3 \div v_8 = v_9$$

v_8

Convert this decimal into a percent to find out what percent of the v_7 v_{10} the v_2 were v_5 .

- $\%v\{v9\}$ is $\%v\{v9*100\}\%$, which rounds to $\%v\{vans\}\%$. $\%v\{vans\}\%$ of the $\%v\{v7\}$ $\%v\{v10\}$ the $\%v\{v2\}$ were $\%v\{v5\}$. Type in $\%v\{vans\}$

Assistment #30486 "30486 - 28781 - Variabilized Finding-Percents 4"

$\%v\{v1\}$ the $\%v\{v2\}$ there are $\%v\{v8\}$ $\%v\{v7\}$: $\%v\{v4\}$ $\%v\{v5\}$ and $\%v\{v3\}$ $\%v\{v6\}$.
 What percent of the $\%v\{v7\}$ were $\%v\{v6\}$? (round to the nearest percent)

Algebra:

✓ $\%v\{vans\}$

Hints:

- In order to get a percent, we need to find the fraction **Part/Whole**
- In the phrase: "What percent of **the $\%v\{v7\}$ $\%v\{v10\}$ the $\%v\{v2\}$ were $\%v\{v6\}$** "

The $\%v\{v7\}$ are the **whole** and the $\%v\{v6\}$ are the **part**.

-

The fraction is

$\%v\{v6\}$ $\%v\{v3\}$

_____ or _____

$\%v\{v7\}$ $\%v\{v8\}$

Convert it into a decimal and the decimal into a percent to find out what percent of the $\%v\{v7\}$ $\%v\{v10\}$ the $\%v\{v2\}$ were $\%v\{v6\}$.

- $\%v\{v3\}$

$$\frac{\%v\{v3\}}{\%v\{v8\}} = \%v\{v3\} \div \%v\{v8\} = \%v\{v9\}$$

$\%v\{v8\}$

Convert this decimal into a percent to find out what percent of the $\%v\{v7\}$ $\%v\{v10\}$ the $\%v\{v2\}$ were $\%v\{v6\}$.

- $\%v\{v9\}$ is $\%v\{v9*100\}\%$, which rounds to $\%v\{vans\}\%$. $\%v\{vans\}\%$ of the $\%v\{v7\}$ $\%v\{v10\}$ the $\%v\{v2\}$ were $\%v\{v6\}$. Type in $\%v\{vans\}$

Assistment #30054 "30054 - Ordering Decimals - Less Than - Same Ones Place"

What should be to make the following statement true?

$$\%v\{\text{num1}\} \text{ } \%v\{\text{num2}\}$$

Multiple choice:

<

>

=

Hints:

- < means **less than**, > means **greater than**, and = means **equal to**.
- The way to compare **decimals** is to *see which decimal has a larger digit at their highest place*.

$$0.\%v\{\text{num1_digit1}\}\%v\{\text{num1_digit2}\}$$

$$0.\%v\{\text{num1_digit1}\}\%v\{\text{num2_digit2}\}$$

Now for this case, we have to compare the digits after the decimal place.

So, start by comparing the digit at the **tenths place**,
and then compare the digit on the **hundredths place**.

- So, let's look at the digit on the **tenths place**.

$$0.\%v\{\text{num1_digit1}\}\%v\{\text{num1_digit2}\} \text{ has } \%v\{\text{num1_digit1}\} \text{ on its } \text{tenths place}.$$

And, $0.\text{\%}\{\text{num1_digit1}\}\text{\%}\{\text{num2_digit2}\}$ has $\text{\%}\{\text{num1_digit1}\}$ on its **tenths place**.

They have the same digits on the **tenths place**,
so we have to look at the **hundredths place**.

- Now, for the digit on the **hundredths place**.

$0.\text{\%}\{\text{num1_digit1}\}\text{\%}\{\text{num1_digit2}\}$ has $\text{\%}\{\text{num1_digit2}\}$ on its **hundredths place**.

And, $0.\text{\%}\{\text{num1_digit1}\}\text{\%}\{\text{num2_digit2}\}$ has $\text{\%}\{\text{num2_digit2}\}$ on its **hundredths place**.

$0.\text{\%}\{\text{num1_digit1}\}\text{\%}\{\text{num2_digit2}\}$ has a larger digit on its **hundredths place**.

- Since $0.\text{\%}\{\text{num1_digit1}\}\text{\%}\{\text{num1_digit2}\}$ and $0.\text{\%}\{\text{num1_digit1}\}\text{\%}\{\text{num2_digit2}\}$ has the same digit on the **tenths place**.

the number with the larger digit on its hundredths place is the larger number.

In this case, $0.\text{\%}\{\text{num1_digit1}\}\text{\%}\{\text{num2_digit2}\}$ has a larger digit on its **hundredths place** than $0.\text{\%}\{\text{num1_digit1}\}\text{\%}\{\text{num1_digit2}\}$.

This means that $\text{\%}\{\text{num1}\}$ is **less than** $\text{\%}\{\text{num2}\}$.

So, choose $<$.

Assistment #30055 "30055 - Ordering Decimals - Greater Than - Same Ones Place"

What should be to make the following statement true?

$$\text{\%}\{\text{num1}\} \text{ } \text{\%}\{\text{num2}\}$$

Multiple choice:

X $<$

✓ >

✗ =

Hints:

- < means **less than**, > means **greater than**, and = means **equal to**.
- The way to compare **decimals** is to *see which decimal has a larger digit at their highest place*.

$0.\text{\%v\{num1_digit1\}}\text{\%v\{num1_digit2\}}$

$0.\text{\%v\{num1_digit1\}}\text{\%v\{num2_digit2\}}$

Now for this case, we have to compare the digits after the decimal place.

So, start by comparing the digit at the **tenths place**,
and then compare the digit on the **hundredths place**.

- So, let's look at the digit on the **tenths place**.

$0.\text{\%v\{num1_digit1\}}\text{\%v\{num1_digit2\}}$ has $\text{\%v\{num1_digit1\}}$ on its **tenths place**.

And, $0.\text{\%v\{num1_digit1\}}\text{\%v\{num2_digit2\}}$ has $\text{\%v\{num1_digit1\}}$ on its **tenths place**.

They have the same digits on the **tenths place**,
so we have to look at the **hundredths place**.

- Now, for the digit on the **hundredths place**.

$0.\text{\%v\{num1_digit1\}}\text{\%v\{num1_digit2\}}$ has $\text{\%v\{num1_digit2\}}$ on its **hundredths place**.

And, $0.\text{\%v\{num1_digit1\}}\text{\%v\{num2_digit2\}}$ has $\text{\%v\{num2_digit2\}}$ on its **hundredths place**.

$0.\text{\%v\{num1_digit1\}}\text{\%v\{num1_digit2\}}$ has a larger digit on its **hundredths place**.

- Since $0.\text{\%v\{num1_digit1\}}\text{\%v\{num1_digit2\}}$ and $0.\text{\%v\{num1_digit1\}}\text{\%v\{num2_digit2\}}$ has the same digit on the **tenths place**.

the number with the larger digit on its hundredths place is the larger number.

In this case, $0.\text{\%v\{num1_digit1\}}\text{\%v\{num1_digit2\}}$ has a larger digit on its **hundredths place** than $0.\text{\%v\{num1_digit1\}}\text{\%v\{num2_digit2\}}$.

This means that $\frac{\%v{\text{num1}}}{\%v{\text{den1}}}$ is **greater than** $\frac{\%v{\text{num2}}}{\%v{\text{den2}}}$.

So, choose >.

Assistment #29885 "29885 - 27378 - Ordering Fractions - Which one is larger?"

Fill in the **blank** to make the statement true.

$$\frac{\%v{\text{num}}}{\%v{\text{den}}} \quad \frac{\%v{\text{num2}}}{\%v{\text{den2}}}$$

 ?

Multiple choice:

>

<

=

Scaffold:

Fractions can be easily compared when they are converted into **decimals**.

Start by converting the **fractions** into **decimals**.

$$\frac{\%v{\text{num}}}{\%v{\text{den}}}$$

Convert into a **decimal**. (Round to the nearest hundredths place)

$$\frac{\%v{\text{den}}}{\%v{\text{den}}}$$

Algebra:

$\frac{\%v{\text{num}}}{\%v{\text{den}}}$

Hints:

- To convert a **fraction** to a **decimal**, we have to divide the **numerator** by the **denominator**.

- $\%v\{\text{num}\} \div \%v\{\text{den}\} = \%v\{\text{frac1}\}$

$\%v\{\text{num}\}$

- The **decimal** form of _____ is $\%v\{\text{frac1}\}$, so type in $\%v\{\text{frac1}\}$.

$\%v\{\text{den}\}$

Scaffold:

Time for the second fraction.

$\%v\{\text{num2}\}$

Now, convert _____ into a **decimal**. (Round to the nearest hundredths place)

$\%v\{\text{den2}\}$

Algebra:

✓ $\%v\{\text{frac2}\}$

Hints:

- To convert a **fraction** to a **decimal**, we have to divide the **numerator** by the **denominator**.
- $\%v\{\text{num2}\} \div \%v\{\text{den2}\} = \%v\{\text{frac2}\}$

$\%v\{\text{num2}\}$

- The **decimal** form of _____ is $\%v\{\text{frac2}\}$, so type in $\%v\{\text{frac2}\}$.

$\%v\{\text{den2}\}$

Scaffold:

So far, we have converted the two **fractions** into **decimals**.

$$\frac{\%v{\text{num}}}{\%v{\text{den}}} = \%v{\text{frac1}}, \text{ and } \frac{\%v{\text{num2}}}{\%v{\text{den2}}} = \%v{\text{frac2}}$$

Now, back to the original problem.

Fill in the blank to make the statement true.

$$\frac{\%v{\text{num}}}{\%v{\text{den}}} \quad \underline{\quad ? \quad} \quad \frac{\%v{\text{num2}}}{\%v{\text{den2}}}$$

Multiple choice:

>

<

=

Hints:

- Figure out which **fraction** is larger, by first figuring out which of its **decimal** form is larger.
- Remember,

$$\frac{\%v{\text{num}}}{\%v{\text{den}}} = \%v{\text{frac1}}, \text{ and } \frac{\%v{\text{num2}}}{\%v{\text{den2}}} = \%v{\text{frac2}}$$

- **%v{larger}** is the larger **decimal**.

$\%v\{\text{ans_num}\}$

- Since $\%v\{\text{larger}\}$ is the larger **decimal**, _____ is the larger **fraction**.

$\%v\{\text{ans_den}\}$

Therefore

$\%v\{\text{num}\}$ $\%v\{\text{num2}\}$

_____ > _____

$\%v\{\text{den}\}$ $\%v\{\text{den2}\}$

Select >

Mastery Learning 27880 Comparing and Scaling Finding Comparing Rates

id:[6021]

1) Assistent #38071 "38071 - 30305 - 28782 - Variabilized Finding-Fractions 1" – 1st Instance

At the aquarium there are 1960 sharks and 490 lion fish, for a total of 2450 fish all together. What is the ratio of fish to sharks? (Reduce your ratio to lowest terms, for example reduce 15:6 to 5:2)

2) Assistent #38101 "38101 - 30478 - 28782 - Variabilized Finding-Fractions 2" – 1st Instance

At the aquarium there are 150 sharks and 600 lion fish, for a total of 750 fish all together. What is the ratio of fish to lion fish? (Reduce your ratio to lowest terms, for example reduce 15:6 to 5:2)

3) Assistent #38141 "38141 - 30479 - 28782 - Variabilized Finding-Fractions 3" – 1st Instance

At the aquarium there are 1100 fish: 440 sharks and 660 lion fish. What is the ratio of fish to lion fish? (Reduce your ratio to lowest terms, for example reduce 15:6 to 5:2)

4) Assistent #38171 "38171 - 30480 - 28782 - Variabilized Finding-Fractions 4" – 1st Instance

At the aquarium there are 2730 fish, 210 sharks and 2520 lion fish. What is the ratio of fish to sharks? (Reduce your ratio to lowest terms, for example reduce 15:6 to 5:2)

5) Assistent #38211 "38211 - Ordering Decimals - Less Than - Same Ones Place" – 1st Instance

What should be to make the following statement true?

$0.24 \square 0.26$

A. <

B. >

C. =

6) Assisment #38241 "38241 - Ordering Decimals - Greater Than - Same Ones Place"– 1st Instance

What should \square be to make the following statement true?

$0.75 \square 0.72$

A. <

B. >

C. =

7) Assisment #38271 "38271 - 27378 - Ordering Fractions - Which one is larger?"– 1st Instance

Fill in the **blank** to make the statement true.

$$\frac{1}{4} \quad \frac{1}{10}$$

$\frac{\quad ? \quad}{\quad}$

A. <

B. >

C. =

Assisment #30305 "30305 - 28782 - Variabilized Finding-Fractions 1"

v_1 the v_2 there are v_{11} v_5 and v_4 v_6 , for a total of v_{12} v_7 all together. What is the ratio of v_7 to v_5 ? (Reduce your ratio to lowest terms, for example reduce 15:6 to 5:2)

Fill in:

✓ $v_8:v_3$

✓ $v_8 :v_3$

✓ v_8 : v_3

✓ v_8 : v_3

Hints:

- We are asked to find a ratio of v_7 to v_5 . Start by writing the ratio using the numbers we know:

$$v_7 : v_5 = v_{12} : v_{11}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of v_7 to v_5 .

- Since both numbers end in 0, we can divide both by 10.

$$v_{12} \div 10 : v_{11} \div 10 = v_{12/10} : v_{11/10}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of v_7 to v_5 .

- Both sides are divisible by v_{13} . If we divide both sides by v_{13} we get:

$$v_{12/10} \div v_{13} : v_{11/10} \div v_{13} \text{ or } v_{12/10/v_{13}} : v_{11/10/v_{13}}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of v_7 to v_5 .

- Both sides can be divided by v_{14} . If we divide both sides by v_{14} we get:

$$v_{12/10/v_{13}} \div v_{14} : v_{11/10/v_{13}} \div v_{14} \text{ or } v_8 : v_3$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of v_7 to v_5 .

- The two sides of the ratio don't have any other common multiples, so the ratio has been reduced as far as it can be.
- The ratio of v_7 to v_5 is $v_8:v_3$. Type in $v_8:v_3$

Assistment #30478 "30478 - 28782 - Variabilized Finding-Fractions 2"

v_1 the v_2 there are $v_4 v_5$ and $v_{11} v_6$, for a total of $v_{12} v_7$ all together. What is the ratio of v_7 to v_6 ? (Reduce your ratio to lowest terms, for example reduce 15:6 to 5:2)

Fill in:

✓ $v_8:v_3$

✓ $v_8 : v_3$

✓ $v_8 : v_3$

✓ $v_8 : v_3$

Hints:

- We are asked to find a ratio of v_7 to v_6 . Start by writing the ratio using the numbers we know:

$$v_7 : v_6 = v_{12} : v_{11}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of v_7 to v_6 .

- Since both numbers end in 0, we can divide both by 10.

$$v_{12} \div 10 : v_{11} \div 10 = v_{12/10} : v_{11/10}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to

find the ratio of v_7 to v_6 .

- Both sides are divisible by v_{13} . If we divide both sides by v_{13} we get:

$$\frac{v_{12}/10}{v_{13}} \div v_{13} : \frac{v_{11}/10}{v_{13}} \div v_{13} \text{ or } \frac{v_{12}/10/v_{13}}{v_{13}} : \frac{v_{11}/10/v_{13}}{v_{13}}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of v_7 to v_6 .

- Both sides can be divided by v_{14} . If we divide both sides by v_{14} we get:

$$\frac{v_{12}/10/v_{13}}{v_{14}} \div v_{14} : \frac{v_{11}/10/v_{13}}{v_{14}} \div v_{14} \text{ or } \frac{v_8}{v_3} : \frac{v_3}{v_3}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of v_7 to v_6 .

- The two sides of the ratio don't have any other common multiples, so the ratio has been reduced as far as it can be.
- The ratio of v_7 to v_6 is $v_8:v_3$. Type in $v_8:v_3$

Assistment #30479 "30479 - 28782 - Variabilized Finding-Fractions 3"

v_1 the v_2 there are v_{12} v_7 : v_4 v_5 and v_{11} v_6 . What is the ratio of v_7 to v_6 ? (Reduce your ratio to lowest terms, for example reduce 15:6 to 5:2)

Fill in:

✓ $v_8:v_3$

✓ $v_8 : v_3$

✓ v_8 : v_3

✓ v_8 : v_3

Hints:

- We are asked to find a ratio of v_7 to v_6 . Start by writing the ratio using the numbers we know:

$$\%v\{v7\} : \%v\{v6\} = \%v\{v12\} : \%v\{v11\}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of $\%v\{v7\}$ to $\%v\{v6\}$.

- Since both numbers end in 0, we can divide both by 10.

$$\%v\{v12\} \div 10 : \%v\{v11\} \div 10 = \%v\{v12/10\} : \%v\{v11/10\}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of $\%v\{v7\}$ to $\%v\{v6\}$.

- Both sides are divisible by $\%v\{v13\}$. If we divide both sides by $\%v\{v13\}$ we get:

$$\%v\{v12/10\} \div \%v\{v13\} : \%v\{v11/10\} \div \%v\{v13\} \text{ or } \%v\{v12/10/v13\} : \%v\{v11/10/v13\}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of $\%v\{v7\}$ to $\%v\{v6\}$.

- Both sides can be divided by $\%v\{v14\}$. If we divide both sides by $\%v\{v14\}$ we get:

$$\%v\{v12/10/v13\} \div \%v\{v14\} : \%v\{v11/10/v13\} \div \%v\{v14\} \text{ or } \%v\{v8\} : \%v\{v3\}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of $\%v\{v7\}$ to $\%v\{v6\}$.

- The two sides of the ratio don't have any other common multiples, so the ratio has been reduced as far as it can be.
- The ratio of $\%v\{v7\}$ to $\%v\{v6\}$ is $\%v\{v8\} : \%v\{v3\}$. Type in $\%v\{v8\} : \%v\{v3\}$

Assistment #30480 "30480 - 28782 - Variabilized Finding-Fractions 4"

$\%v\{v1\}$ the $\%v\{v2\}$ there are $\%v\{v12\}$ $\%v\{v7\}$, $\%v\{v11\}$ $\%v\{v5\}$ and $\%v\{v4\}$ $\%v\{v6\}$. What is the ratio of $\%v\{v7\}$ to $\%v\{v5\}$? (Reduce your ratio to lowest terms, for example reduce 15:6 to 5:2)

Fill in:

✓ $\%v\{v8\}:\%v\{v3\}$

✓ $\%v\{v8\} : \%v\{v3\}$

✓ $\%v\{v8\}: \%v\{v3\}$

✓ $\%v\{v8\} : \%v\{v3\}$

Hints:

- We are asked to find a ratio of $\%v\{v7\}$ to $\%v\{v5\}$. Start by writing the ratio using the numbers we know:

$$\%v\{v7\} : \%v\{v5\} = \%v\{v12\} : \%v\{v11\}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of $\%v\{v7\}$ to $\%v\{v5\}$.

- Since both numbers end in 0, we can divide both by 10.

$$\%v\{v12\} \div 10 : \%v\{v11\} \div 10 = \%v\{v12/10\} : \%v\{v11/10\}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of $\%v\{v7\}$ to $\%v\{v5\}$.

- Both sides are divisible by $\%v\{v13\}$. If we divide both sides by $\%v\{v13\}$ we get:

$$\%v\{v12/10\} \div \%v\{v13\} : \%v\{v11/10\} \div \%v\{v13\} \text{ or } \%v\{v12/10/v13\} : \%v\{v11/10/v13\}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of $\%v\{v7\}$ to $\%v\{v5\}$.

- Both sides can be divided by $\%v\{v14\}$. If we divide both sides by $\%v\{v14\}$ we get:

$$\%v\{v12/10/v13\} \div \%v\{v14\} : \%v\{v11/10/v13\} \div \%v\{v14\} \text{ or } \%v\{v8\} : \%v\{v3\}$$

Check to see if both sides of the ratio have a common multiple. If so, reduce both sides of the ratio to find the ratio of $\%v\{v7\}$ to $\%v\{v5\}$.

- The two sides of the ratio don't have any other common multiples, so the ratio has been reduced

as far as it can be.

- The ratio of $\frac{7}{5}$ to $\frac{8}{3}$ is $\frac{8}{3}:\frac{7}{5}$. Type in $\frac{8}{3}:\frac{7}{5}$

Assistment #30054 "30054 - Ordering Decimals - Less Than - Same Ones Place"

What should be to make the following statement true?

$$\frac{\text{num1}}{\text{num2}} \quad \square \quad \frac{\text{num2}}{\text{num1}}$$

Multiple choice:

<

>

=

Hints:

- < means **less than**, > means **greater than**, and = means **equal to**.
- The way to compare **decimals** is to *see which decimal has a larger digit at their highest place*.

$$0.\frac{\text{num1_digit1}}{\text{num1_digit2}}$$

$$0.\frac{\text{num1_digit1}}{\text{num2_digit2}}$$

Now for this case, we have to compare the digits after the decimal place.

So, start by comparing the digit at the **tenths place**,
and then compare the digit on the **hundredths place**.

- So, let's look at the digit on the **tenths place**.

$0.\frac{\text{num1_digit1}}{\text{num1_digit2}}$ has $\frac{\text{num1_digit1}}{\text{num1_digit2}}$ on its **tenths place**.

And, $0.\frac{\text{num1_digit1}}{\text{num2_digit2}}$ has $\frac{\text{num1_digit1}}{\text{num2_digit2}}$ on its **tenths place**.

They have the same digits on the **tenths place**, so we have to look at the **hundredths place**.

- Now, for the digit on the **hundredths place**.

$0.\text{\%v{num1_digit1}}\text{\%v{num1_digit2}}$ has $\text{\%v{num1_digit2}}$ on its **hundredths place**.

And, $0.\text{\%v{num1_digit1}}\text{\%v{num2_digit2}}$ has $\text{\%v{num2_digit2}}$ on its **hundredths place**.

$0.\text{\%v{num1_digit1}}\text{\%v{num2_digit2}}$ has a larger digit on its **hundredths place**.

- Since $0.\text{\%v{num1_digit1}}\text{\%v{num1_digit2}}$ and $0.\text{\%v{num1_digit1}}\text{\%v{num2_digit2}}$ has the same digit on the **tenths place**.

the number with the larger digit on its hundredths place is the larger number.

In this case, $0.\text{\%v{num1_digit1}}\text{\%v{num2_digit2}}$ has a larger digit on its **hundredths place** than $0.\text{\%v{num1_digit1}}\text{\%v{num1_digit2}}$.

This means that $\text{\%v{num1}}$ is **less than** $\text{\%v{num2}}$.

So, choose $<$.

Assistment #30055 "30055 - Ordering Decimals - Greater Than - Same Ones Place"

What should be to make the following statement true?

$$\text{\%v{num1}} \text{ } \text{\%v{num2}}$$

Multiple choice:

$<$

$>$

$=$

Hints:

- < means **less than**, > means **greater than**, and = means **equal to**.
- The way to compare **decimals** is to *see which decimal has a larger digit at their highest place*.

$0.\text{\%v\{num1_digit1\}}\text{\%v\{num1_digit2\}}$

$0.\text{\%v\{num1_digit1\}}\text{\%v\{num2_digit2\}}$

Now for this case, we have to compare the digits after the decimal place.

So, start by comparing the digit at the **tenths place**,
and then compare the digit on the **hundredths place**.

- So, let's look at the digit on the **tenths place**.

$0.\text{\%v\{num1_digit1\}}\text{\%v\{num1_digit2\}}$ has $\text{\%v\{num1_digit1\}}$ on its **tenths place**.

And, $0.\text{\%v\{num1_digit1\}}\text{\%v\{num2_digit2\}}$ has $\text{\%v\{num1_digit1\}}$ on its **tenths place**.

They have the same digits on the **tenths place**,
so we have to look at the **hundredths place**.

- Now, for the digit on the **hundredths place**.

$0.\text{\%v\{num1_digit1\}}\text{\%v\{num1_digit2\}}$ has $\text{\%v\{num1_digit2\}}$ on its **hundredths place**.

And, $0.\text{\%v\{num1_digit1\}}\text{\%v\{num2_digit2\}}$ has $\text{\%v\{num2_digit2\}}$ on its **hundredths place**.

$0.\text{\%v\{num1_digit1\}}\text{\%v\{num1_digit2\}}$ has a larger digit on its **hundredths place**.

- Since $0.\text{\%v\{num1_digit1\}}\text{\%v\{num1_digit2\}}$ and $0.\text{\%v\{num1_digit1\}}\text{\%v\{num2_digit2\}}$ has the same digit on the **tenths place**.

the number with the larger digit on its hundredths place is the larger number.

In this case, $0.\text{\%v\{num1_digit1\}}\text{\%v\{num1_digit2\}}$ has a larger digit on its **hundredths place** than $0.\text{\%v\{num1_digit1\}}\text{\%v\{num2_digit2\}}$.

This means that $\text{\%v\{num1\}}$ is **greater than** $\text{\%v\{num2\}}$.

So, choose >.

Assistment #29885 "29885 - 27378 - Ordering Fractions - Which one is larger?"

Fill in the **blank** to make the statement true.

$$\frac{\%v{\text{num}}}{\%v{\text{den}}} \quad \frac{\%v{\text{num2}}}{\%v{\text{den2}}}$$

 ?

Multiple choice:

>

<

=

Scaffold:

Fractions can be easily compared when they are converted into **decimals**.

Start by converting the **fractions** into **decimals**.

$$\%v{\text{num}}$$

Convert _____ into a **decimal**. (Round to the nearest hundredths place)

$$\%v{\text{den}}$$

Algebra:

$\%v{\text{frac1}}$

Hints:

- To convert a **fraction** to a **decimal**, we have to divide the **numerator** by the **denominator**.
- $\%v{\text{num}} \div \%v{\text{den}} = \%v{\text{frac1}}$

$\frac{\%v{\text{num}}}{\%v{\text{den}}}$

- The **decimal** form of _____ is $\frac{\%v{\text{frac1}}}{\%v{\text{den}}}$, so type in $\frac{\%v{\text{frac1}}}{\%v{\text{den}}}$.

$\frac{\%v{\text{den}}}{\%v{\text{den}}}$

Scaffold:

Time for the second fraction.

$\frac{\%v{\text{num2}}}{\%v{\text{den2}}}$

Now, convert _____ into a **decimal**. (Round to the nearest hundredths place)

$\frac{\%v{\text{den2}}}{\%v{\text{den2}}}$

Algebra:

✓ $\frac{\%v{\text{frac2}}}{\%v{\text{den2}}}$

Hints:

- To convert a **fraction** to a **decimal**, we have to divide the **numerator** by the **denominator**.
- $\frac{\%v{\text{num2}}}{\%v{\text{den2}}} \div \frac{\%v{\text{den2}}}{\%v{\text{den2}}} = \frac{\%v{\text{frac2}}}{\%v{\text{den2}}}$

$\frac{\%v{\text{num2}}}{\%v{\text{den2}}}$

- The **decimal** form of _____ is $\frac{\%v{\text{frac2}}}{\%v{\text{den2}}}$, so type in $\frac{\%v{\text{frac2}}}{\%v{\text{den2}}}$.

$\frac{\%v{\text{den2}}}{\%v{\text{den2}}}$

Scaffold:

So far, we have converted the two **fractions** into **decimals**.

$\frac{\%v{\text{num}}}{\%v{\text{den}}} = \frac{\%v{\text{frac1}}}{\%v{\text{den}}}$, and $\frac{\%v{\text{num2}}}{\%v{\text{den2}}} = \frac{\%v{\text{frac2}}}{\%v{\text{den2}}}$

$\%v{\text{den}}$

$\%v{\text{den2}}$

Now, back to the original problem.

Fill in the blank to make the statement true.

$\%v{\text{num}}$

$\%v{\text{num2}}$

_____ **?** _____

$\%v{\text{den}}$

$\%v{\text{den2}}$

Multiple choice:

>

<

=

Hints:

- Figure out which **fraction** is larger, by first figuring out which of its **decimal** form is larger.
- Remember,

$\%v{\text{num}}$

$\%v{\text{num2}}$

_____ = $\%v{\text{frac1}}$, and _____ = $\%v{\text{frac2}}$

$\%v{\text{den}}$

$\%v{\text{den2}}$

- $\%v{\text{larger}}$ is the larger **decimal**.

$\%v\{\text{ans_num}\}$

- Since $\%v\{\text{larger}\}$ is the larger **decimal**, _____ is the larger **fraction**.

$\%v\{\text{ans_den}\}$

Therefore

$\%v\{\text{num}\}$ $\%v\{\text{num2}\}$

_____ > _____

$\%v\{\text{den}\}$ $\%v\{\text{den2}\}$

Select >

Mastery Learning 27881 Comparing and Scaling Finding Unit-rate

id:[6022]

1) Assistent #38301 "38301 - 30306 - 27881 - Variabilized Unit-Rate 1" – 1st Instance

It took a ball 3 minutes to roll 233 feet. What was this ball's average speed, in feet per second? (round to the nearest hundredth)

2) Assistent #38302 "38302 - 30306 - 27881 - Variabilized Unit-Rate 1" – 2nd Instance

It took a ball 3 hours to roll 262 miles. What was this ball's average speed, in miles per minute? (round to the nearest hundredth)

3) Assistent #38303 "38303 - 30306 - 27881 - Variabilized Unit-Rate 1" – 3rd Instance

It took a ball 5 minutes to roll 100 feet. What was this ball's average speed, in feet per second? (round to the nearest hundredth)

4) Assistent #38331 "38331 - 30482 - 27881 - Variabilized Unit-Rate 2" – 1st Instance

A ball rolled 200 feet in 4 minutes. What was this ball's average speed, in feet per second? (round to the nearest hundredth)

5) Assistent #38332 "38332 - 30482 - 27881 - Variabilized Unit-Rate 2" – 2nd Instance

A ball rolled 55 miles in 2 hours. What was this ball's average speed, in miles per minute? (round to the nearest hundredth)

6) Assisment #38333 "38333 - 30482 - 27881 - Variabilized Unit-Rate 2"– 3rd Instance

A ball rolled 185 feet in 4 minutes. What was this ball's average speed, in feet per second? (round to the nearest hundredth)

7) Assisment #38361 "38361 - 30488 - 27881 - Variabilized Unit-Rate 3"– 1st Instance

It took a car 5 days to travel 4639 miles. What was this car's average speed, in miles per hour? (round to the nearest mile per hour)

8) Assisment #38362 "38362 - 30488 - 27881 - Variabilized Unit-Rate 3" – 2nd Instance

It took a car 5 days to travel 899 miles. What was this car's average speed, in miles per hour? (round to the nearest mile per hour)

9) Assisment #38363 "38363 - 30488 - 27881 - Variabilized Unit-Rate 3"– 3rd Instance

It took a car 3 days to travel 4452 miles. What was this car's average speed, in miles per hour? (round to the nearest mile per hour)

Assistment #30306 "30306 - 27881 - Variabilized Unit-Rate 1"

It took a ball v_1 v_6 s to roll v_2 v_8 . What was this ball's average speed, in v_8 per v_7 ? (round to the nearest hundredth)

Algebra:

✓ v_5

Scaffold:

We know that the ball rolled v_2 v_8 in v_1 v_6 s, but the question asks for the ball's speed in v_8 per v_7 . So first, we must determine how long the ball rolled in v_7 s.

How long did it take, in v_7 s, for the ball to roll v_2 v_8 ?

Fill in:

✓ v_3

Hints:

- There are 60 v_7 s in v_9 v_6 , and the ball rolled for v_1 v_6 s.
- 60 v_7 s per v_6 * v_1 v_6 s = ?
- 60 v_7 s per v_6 * v_1 v_6 s = v_3 v_7 s. The ball rolled for v_3 v_7 s.
Type in v_3

Scaffold:

Now let's return to the original question. It took a ball v_1 v_6 s to roll v_2 v_8 . What was this ball's average speed, in v_8 per v_7 ? (round to the nearest hundredth)

Algebra:

✓ v_5

Hints:

- We determined above that it took the ball v_3 v_7 s to roll v_2 v_8 .

- To find an object's average speed in $\%v\{v8\}$ per $\%v\{v7\}$, divide the **distance it covered (in $\%v\{v8\}$)** by the **length of time (in $\%v\{v7\}$ s) that it took to cover that distance**. In other words:

$$\text{average speed} = \frac{\text{distance}}{\text{time}}$$

- $\text{speed} = \frac{\%v\{v2\}}{\%v\{v3\}}$

Convert this fraction into a decimal to determine the speed in $\%v\{v8\}$ per $\%v\{v7\}$.

- $\frac{\%v\{v2\}}{\%v\{v3\}} = \%v\{v2\} \div \%v\{v3\} = \%v\{v4\} \%v\{v8\} \text{ per } \%v\{v7\}$

The ball's average speed was $\%v\{v4\} \%v\{v8\}$ per $\%v\{v7\}$. Don't forget to round to the nearest hundredth.

- $\%v\{v4\} \%v\{v8\}$ per $\%v\{v7\}$ rounded to the nearest hundredth is $\%v\{vans\} \%v\{v8\}$ per $\%v\{v7\}$. Type in $\%v\{vans\}$

Assistment #30482 "30482 - 27881 - Variabilized Unit-Rate 2"

A ball rolled $\%v\{v2\} \%v\{v8\}$ in $\%v\{v1\} \%v\{v6\}$ s. What was this ball's average speed, in $\%v\{v8\}$ per $\%v\{v7\}$? (round to the nearest hundredth)

Algebra:

✓ $\%v\{vans\}$

Scaffold:

We know that the ball rolled $\%v\{v2\} \%v\{v8\}$ in $\%v\{v1\} \%v\{v6\}$ s, but the question asks for the ball's speed in $\%v\{v8\}$ per $\%v\{v7\}$. So first, we must determine how long the ball rolled in $\%v\{v7\}$ s.

How long did it take, in v_7 s, for the ball to roll v_2 v_8 ?

Fill in:

✓ v_3

Hints:

- There are $60 v_7$ s in $v_9 v_6$, and the ball rolled for $v_1 v_6$ s.
- $60 v_7$ s per v_6 * $v_1 v_6$ s = ?
- $60 v_7$ s per v_6 * $v_1 v_6$ s = $v_3 v_7$ s. The ball rolled for $v_3 v_7$ s. Type in v_3

Scaffold:

Now let's return to the original question. A ball rolled $v_2 v_8$ in $v_1 v_6$ s. What was this ball's average speed, in v_8 per v_7 ? (round to the nearest hundredth)

Algebra:

✓ $vans$

Hints:

- We determined above that it took the ball $v_3 v_7$ s to roll $v_2 v_8$.
- To find an object's average speed in v_8 per v_7 , divide the distance it covered (in v_8) by the length of time (in v_7 s) that it took to cover that distance. In other words:

distance

average speed = _____

time

- speed = $\frac{v_2 v_8}{v_3 v_7}$

$\frac{\%v\{v2\}}{\%v\{v3\}}$

Convert this fraction into a decimal to determine the speed in $\%v\{v8\}$ per $\%v\{v7\}$.

$\%v\{v2\}$

- $\frac{\%v\{v2\}}{\%v\{v3\}} = \%v\{v4\} \%v\{v8\} \text{ per } \%v\{v7\}$

$\%v\{v3\}$

The ball's average speed was $\%v\{v4\} \%v\{v8\}$ per $\%v\{v7\}$. Don't forget to round to the nearest hundredth.

- $\%v\{v4\} \%v\{v8\}$ per $\%v\{v7\}$ rounded to the nearest hundredth is $\%v\{vans\} \%v\{v8\}$ per $\%v\{v7\}$.
Type in $\%v\{vans\}$

Assistment #30488 "30488 - 27881 - Variabilized Unit-Rate 3"

It took a car $\%v\{v1\}$ days to travel $\%v\{v2\}$ miles. What was this car's average speed, in miles per hour?
(round to the nearest mile per hour)

Algebra:

✓ $\%v\{vans\}$

Scaffold:

We know that the car traveled $\%v\{v2\}$ miles in $\%v\{v1\}$ days, but the question asks for the car's speed in miles per hour. So first, we must determine how long the car traveled in hours.

How long did it take, in hours, for the car to travel $\%v\{v2\}$ miles?

Fill in:

✓ $\%v\{v3\}$

Hints:

- There are 24 hours in a day, and the car traveled for $\%v\{v1\}$ days.

- 24 hours per day * $\%v\{v1\}$ days = ?
- 24 hours per day * $\%v\{v1\}$ days = $\%v\{v3\}$ hours. The car traveled for $\%v\{v3\}$ hours. Type in $\%v\{v3\}$

Scaffold:

Now let's return to the original question. It took a car $\%v\{v1\}$ days to travel $\%v\{v2\}$ miles. What was this car's average speed, in miles per hour? (round to the nearest mile)

Algebra:

✓ $\%v\{vans\}$

Hints:

- We determined above that it took the car $\%v\{v3\}$ hours to travel $\%v\{v2\}$ miles.
- To find an object's average speed in miles per hour, divide the **distance it covered (in miles)** by the **length of time (in hours) that it took to cover that distance**. In other words:

$$\text{average speed} = \frac{\text{distance}}{\text{time}}$$

- speed = $\frac{\%v\{v2\}}{\%v\{v3\}}$

Convert this fraction into a decimal to determine the speed in miles per hour.

- $\frac{\%v\{v2\}}{\%v\{v3\}} = \%v\{v2\} \div \%v\{v3\} = \%v\{v4\}$ miles per hour

The car's average speed was $\%v\{v4\}$ miles per hour. Don't forget to round to the nearest mile.

- v^4 miles per hour rounded to the nearest mile is $vans$ miles per hour. Type in $vans$

12 Appendix C: Probability Review

Assistment #27927 "27927 - Probability 16 - 2000 Morph"

A bag contains 3 red, 4 green, and 3 blue balls.

John is going to draw out a ball without looking in the bag.

What is the probability that he will draw either a green or a blue ball?

Algebra:

✓ .7

Scaffold:

First let's understand that the problem is asking about probability. What is probability?

- A. The number of possible outcomes

- B. The number of outcomes for the event

- C. the number of outcomes for the event

the number of possible outcomes

- D. the number of possible outcomes

the number of outcomes for the event

Multiple choice:

 A

 B

 C

 D

Hints:

- Probability is how we represent the chance of something occurring. This is expressed with a **fraction or decimal**, both of which will have a value between 0 and 1.

Since answers A and B are not fractions or decimals, the definition of probability is either C or D.

- Probability is

the number of outcomes for the event

the number of possible outcomes

Please select C.

Scaffold:

We are going to start by finding "**the number of possible outcomes**".

The problem states:

A bag contains 3 red, 4 green, and 3 blue balls.

John is going to draw out a ball without looking in the bag.

What is the probability that he will draw either a green or a blue ball?

The "**possible outcomes**" here is the total number of balls that can be picked.

How many different balls can be picked?

Fill in:

✓ 10

Hints:

- How many balls are in the bag?
- The problem says we have 3 red, 4 green, and 3 blue balls, and we are trying to draw one of them.

How many total balls are there?

- $3+4+3 = 10$. We can draw 10 different balls. Type in 10.

Scaffold:

Now we are going to find "**the number of outcomes for the event**".

The problem states:

A bag contains 3 red, 4 green, and 3 blue balls.

John is going to draw out a ball without looking in the bag.

What is the probability that he will draw either a green or a blue ball?

The "**event**" here is "that he will draw either a green or a blue ball".

How many outcomes are there for this event?

Fill in:

✓ 7

Hints:

- We can split our event in two: drawing out a **green** ball or drawing out a **blue** ball.

Find the number of outcomes for drawing out a **green** ball, and add it to the number of outcomes for drawing out a **blue** ball.

- He can draw out **4 green** balls and **3 blue** balls.
- $3+4 = 7$ The number of **green** or **blue** balls is **7**. Type in **7**.

Scaffold:

Now we are going to repeat the original question:

A bag contains **3 red**, **4 green**, and **3 blue** balls.

John is going to draw out a ball without looking in the bag.

What is the probability that he will draw either a **green** or a **blue** ball?

Algebra:

✓ .7

Hints:

- Probability is

The number of outcomes for the event

The number of possible outcomes

- The number of outcomes for the event is the total number of **green** and **blue** balls, which is **7**
- The number of possible outcomes is the **total** number of balls in the bag, which is **10**

- The probability that he will draw either a green or blue ball is $\frac{7}{10}$

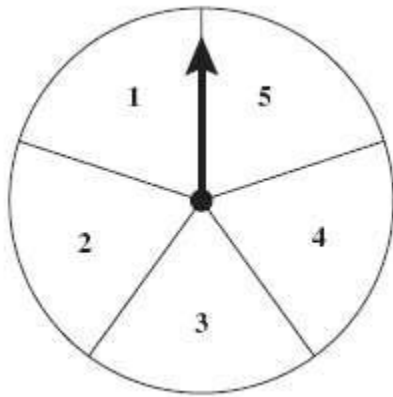
Type in $\frac{7}{10}$ or 0.7

Assistment #27928 "27928 - 2005-16"

To win a game, Yepa must get a sum of 7 on her next two spins of the arrow on the spinner shown below. All the sections of the spinner are of equal size.

What is the **probability** that the result of Yepa's next two spins will have a sum of 7?

The answer can be given as a fraction OR a decimal.



Algebra:





✓ .16

Scaffold:

First lets understand that the problem is asking about probability. What is probability?

- A. The number of possible outcomes
- B. The number of outcomes for the event
- C. $\frac{\text{the number of outcomes for the event}}{\text{the number of possible outcomes}}$
- D. $\frac{\text{the number of possible outcomes}}{\text{the number of outcomes for the event}}$

Multiple choice:

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

Hints:

- Probability is how we represent the chance of something occurring. This is represented with a decimal or fraction, both of which will have a value between 0 and 1.

Since answers A and B are not fractions or decimals, the definition of probability is either C or D.

- Probability is

the number of outcomes for the event

the number of possible outcomes

Please select C.

Scaffold:

We are now going to find "the number of possible outcomes".

The problem states:

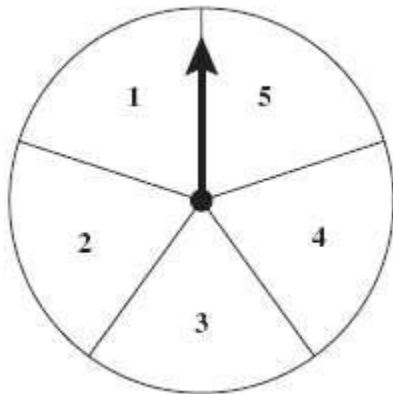
To win a game, Yepa must get a sum of 7 on her next two spins of the arrow on the spinner shown below. All the sections of the spinner are of equal size.

What is the probability that the result of Yepa's next two spins will have a sum of 7?

"The number of possible outcomes" is the total number of results from two spins.

How many results can there be from two spins?

Here is the spinner.



Algebra:

✓ 25

✗ 10

X 5

Hints:

- If each spin has 5 **outcomes**, how many total **outcomes** can there be for **two spins**?
- Each first spin can be paired with any of the 5 possible second spins. How many total outcomes are there?

For example: (1,1) and (1,2) are two of the possible **outcomes** for **two spins**.

Try writing down all the possible **outcomes** for **2 spins**.

- Here is a list of all the possible **outcomes** for **two spins**:

(1,1) (1,2) (1,3) (1,4) (1,5)

(2,1) (2,2) (2,3) (2,4) (2,5)

(3,1) (3,2) (3,3) (3,4) (3,5)

(4,1) (4,2) (4,3) (4,4) (4,5)

(5,1) (5,2) (5,3) (5,4) (5,5)

- There are $5 \times 5 = 25$ different results from spinning the spinner twice.

Type in 25

Scaffold:

We are now going to find "**the number of outcomes for the event**".

The problem states:

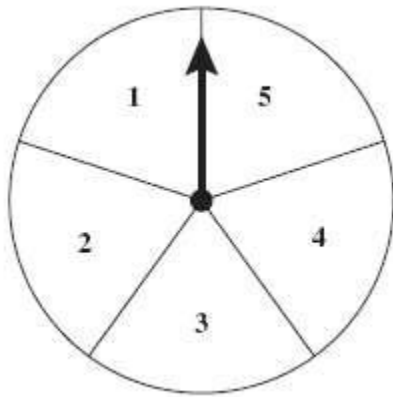
To win a game, Yepa must get a sum of 7 on her next two spins of the arrow on the spinner shown below. All the sections of the spinner are of equal size.

What is the probability that the result of Yepa's **next two spins will have a sum of 7?**

"The number of outcomes for the event" is highlighted in yellow in the text.

How many results from two spins will have a sum of 7?

Here is the spinner.



Fill in:

✓ 4

✗ 2

Hints:

- How many pairs of numbers on the list add up to 7?

This is the list of **all possible outcomes** for two spins.

(1,1) (1,2) (1,3) (1,4) (1,5)

(2,1) (2,2) (2,3) (2,4) (2,5)

(3,1) (3,2) (3,3) (3,4) (3,5)

(4,1) (4,2) (4,3) (4,4) (4,5)

(5,1) (5,2) (5,3) (5,4) (5,5)

- (1,1) (1,2) (1,3) (1,4) (1,5)

(2,1) (2,2) (2,3) (2,4) (2,5)

(3,1) (3,2) (3,3) (3,4) (3,5)

(4,1) (4,2) (4,3) (4,4) (4,5)

(5,1) (5,2) (5,3) (5,4) (5,5)

Here we see that the different ways of getting a 7 on two spins are as follows: (2 then 5, 5 then 2, 3 then 4, 4 then 3)

How many ways can Yepa's next two spins add up to 7?

- There are 4 ways can Yepa's next two spins add up to 7. Type in 4.

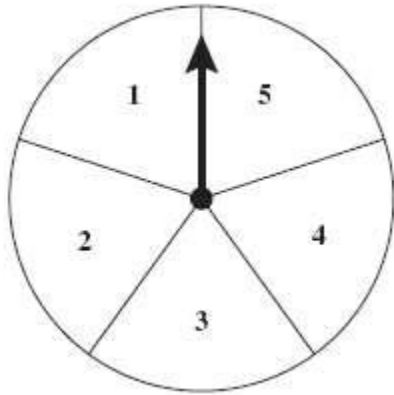
Scaffold:

Now we are going to return to the original question:

To win a game, Yepa must get a sum of 7 on her next two spins of the arrow on the spinner shown below. All the sections of the spinner are of equal size.

What is the probability that the result of Yepa's next two spins will have a sum of 7?

The answer can be given as a fraction OR a decimal.



Algebra:

✓ .16

Hints:

- Probability is

the number of outcomes for the event

the number of possible outcomes

- There are 25 possible outcomes for the spinner to land in two spins.

These are:

(1,1) (1,2) (1,3) (1,4) (1,5)

(2,1) (2,2) (2,3) (2,4) (2,5)

(3,1) (3,2) (3,3) (3,4) (3,5)

(4,1) (4,2) (4,3) (4,4) (4,5)

(5,1) (5,2) (5,3) (5,4) (5,5)

- There are 4 ways for Yepa to spin a sum of 7.

Each of these is considered an "event" mentioned in the top part of the fraction.

(1,1) (1,2) (1,3) (1,4) (1,5)

(2,1) (2,2) (2,3) (2,4) (2,5)

(3,1) (3,2) (3,3) (3,4) (3,5)

(4,1) (4,2) (4,3) (4,4) (4,5)

(5,1) (5,2) (5,3) (5,4) (5,5)

What is the probability that the result of Yepa's next two spins will have a sum of 7?

- The probability that the results of Yepa's next two spins will have a sum of 7 is **4/25**. Type in 4/25 or 0.16

Assistment #27929 "27929 - 8th Grade - Probability Review - 2006 grade 8 #18 Morph"

In Mr. Montgomery's class, there are 6 boys and 14 girls. Mr. Montgomery is going to pick 1 student at random. What is the probability that the student he picks is a girl?

Algebra:

✓ 14/20

Scaffold:

First lets understand that the problem is asking about probability. What is probability?

- A. The number of possible outcomes
- B. The number of outcomes for the event
- C. $\frac{\text{the number of outcomes for the event}}{\text{the number of possible outcomes}}$
- D. $\frac{\text{the number of possible outcomes}}{\text{the number of outcomes for the event}}$

Multiple choice:

- ✗ A.
- ✗ B.
- ✓ C.
- ✗ D.

Hints:

- Probability is how we represent the chance of something occurring. This is represented with a decimal or fraction, both of which will have a value between 0 and 1.

Since answers A and B are not fractions or decimals, the definition of probability is either C or D.

- Probability is

the number of outcomes for the event

the number of possible outcomes

Please select C.

Scaffold:

Let's now figure out "the number of possible outcomes" for this problem

The problem says:

In Mr. Montgomery's class, there are 6 boys and 14 girls. Mr. Montgomery is going to pick 1 student at random. What is the probability that the student he picks is a girl?

The number of possible outcomes is equal to the total number of students in the class, since any one of them can be picked.

How many students are there in the class?

Fill in:

✓ 20

Hints:

- The total number of students in the class is the sum of the boys and girls in the class.
- The highlighted text shows us that there are 6 boys and 14 girls in the class.
- There are $6+14 = 20$ students in the class.
Type in 20.

Scaffold:

Now we'll figure out "**the number of outcomes for the event**" for this problem.

The problem states:

In Mr. Montgomery's class, there are 6 boys and 14 girls. Mr. Montgomery is going to pick 1 student at random. What is the probability that the student he picks is a girl?

The **event** here is "**that the student he picks is a girl**"

What is the number of outcomes for this event?

Algebra:

✓ 14

Hints:

- How many girls are there in Mr. Montgomery's class?
- There are 14 girls in Mr. Montgomery's class.
Type in 14.

Scaffold:

Now we are going to repeat the original question:

In Mr. Montgomery's class, there are 6 boys and 14 girls. Mr. Montgomery is going to pick 1

student at random. What is the probability that the student he picks is a girl?

Algebra:

✓ 14/20

Hints:

- Probability is:

The number of outcomes for the event

The number of possible outcomes

- There are 14 girls in the class of 20 students.
- The probability that the student he picks is a girl is 14/20.
Type in 14/20.

Assistment #27930 "27930 - Probability 28 - 2001 Morph"

In how many ways can 4 different vases be arranged on a shelf?

Algebra:

✓ 24

Scaffold:

Let's break the problem in smaller parts. In how many ways can 2 different vases be arranged on a shelf?

Algebra:

✓ 2

✗ 4

Hints:

- Let **A** be one vase and **B** be the other. Now list the ways you can arrange them.
- They can be arranged **AB** or **BA**
- For 2 vases, there are 2 different arrangements.

Type in 2.

.

Scaffold:

Let's use 3 vases this time. In how many ways can 3 different vases be arranged on a shelf?

Algebra:

✓ 6

Hints:

- We can label the vases **A**, **B**, and **C**

Now list the ways you can arrange them.

- Start with the arrangements **AB** and **BA**, and list how many new ways there are when you include **C**

For Example: **ABC**, and **BAC** are 2 of the possible arrangements. Now find the rest.

- The arrangements are:

ABC	BAC	CAB
ACB	BCA	CBA

- For 3 vases there are 6 different arrangements.

Type in 6.

.

Scaffold:

In how many ways can 4 different vases be arranged on a shelf?

Algebra:

✓ 24

Hints:

- Try making a list of all the possible arrangements.
- Here is a list of all the arrangements for 4 vases:

ABCD	BACD	CABD	DABC
ABDC	BADC	CADB	DACB
ACBD	BCAD	CBAD	DBAC
ACDB	BCDA	CBDA	DBCA

A D B C	B D A C	C D A B	D C A B
A D C B	B D C A	C D B A	D C B A

- Look at the table below. We see that 2 vases can be arranged in 2 ways, 3 vases in 6 ways.

No. of ways	No. of vases
2	$2*1 = 2$ ways
3	$3*2*1 = 6$ ways
4	?

In how many ways can 4 different vases be arranged on a shelf?

- Four vases can be arranged in 24 ways.

Type in 24.

Assistment #27931 "27931 - Probability 15 - 1999 Morph"

Luis is going to toss **four coins**. What is the probability that he gets **four heads** in a row?

Type your answer as a fraction.

Algebra:

✓ 1/16

Scaffold:

Let's examine a single coin toss first. What is the probability of getting heads when you toss **one coin**?

Algebra:

✓ 1/2

Hints:

- The probability of getting the outcome we want is equal to:

number of outcomes for the event

number of possible outcomes

- Think of the number of possible outcomes.
- The number of possible outcomes is 2: either heads or tails.
- The number of outcomes for the event is 1 (heads).

• the number of outcomes for the event 1

----- = --

the number of possible outcomes 2

The probability of getting heads when you toss 1 coin is $1/2$. Type in $1/2$.

Scaffold:

Good, the probability of getting heads when you toss **one** coin is $1/2$. Now let's examine tossing two coins.

What is the probability of getting **two heads** in a row when you toss **two coins**?

Algebra:

✓ $1/4$

Hints:

-

the number of outcomes for the event

The probability of an event is = -----

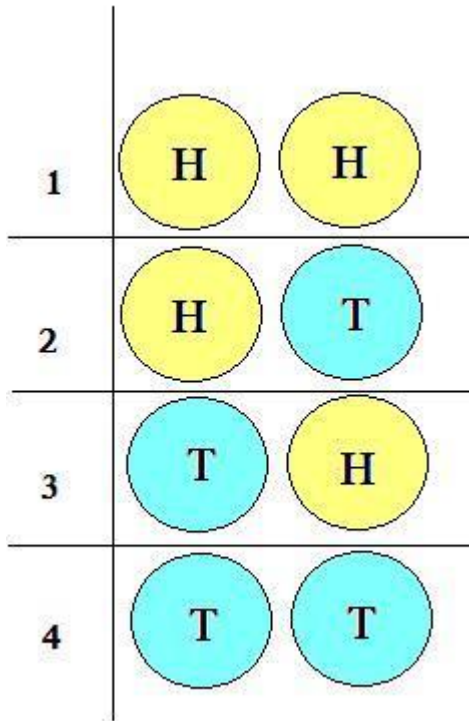
the number of possible outcomes

-

Try to make a list of **all the possible outcomes** for flipping **two coins**.

Count how many **outcomes** are on your list.

- The image below shows all possible outcomes of 2 coin flips. H = heads, T = tails.



- Count how many **outcomes** on the list are the same as **the outcomes we want** (HH).
- **The number of outcomes for the event we want** is 1 (the event is getting two heads in a row).
- **the number of outcomes for the event** 1

----- = --

the number of possible outcomes 4

The probability of getting two heads in a row when you toss two coins is 1/4. Type in 1/4.

Scaffold:

Good, the probability of getting **two heads** in a row when you toss **two coins** is **1/4**. Now let's examine tossing four coins.

What is the probability of getting four heads in a row when you toss four coins?

Fill in:

✓ 1/16

Hints:

- Try making a list of all the possibilities for flipping **4 coins**, and count them.
- Here is a list of all the possible outcomes:

HHHH	HHHT	HHTT	HHTH	HTHH	HTTH	HTTT	HTHT
TTTT	TTTH	TTHH	TTHT	THTT	THHT	THHH	THTH

- There are 16 possible outcomes.

Now count how many outcomes are there that have 4 heads (HHHH)

- The number of outcomes with 4 heads, is 1.

- the number of outcomes for the event 1

----- = ---

the number of possible outcomes 16

The probability of getting four heads in a row is **1/16**. Type in **1/16**.

Assistment #27924 "27924 - 24752 - #1 What Do You Expect, Investigation 1"

A) Danielle took her little cousin to the "Dress a Dragon" store. Here you can choose to dress your dragon from a choice of hats, pants, and shirts. Here are the choices:

Hat A	Pants A	Shirt A
Hat B	Pants B	Shirt B
Hat C	Pants C	
Hat D		
Hat E		

An **outfit** is defined as a combination of 1 Shirt, 1 Pants, and 1 Hat.
How many different combinations of **outfits** are there?

Algebra:

✓ 30

Hints:

- There are 5 Hats, 3 Pants, and 2 Shirts. Knowing that an outfit has 1 of each of these, we need to figure out how many different outfits we can make.

One example of an outfit is

Hat A, Pants A, and Shirt A

Know that the order of hats, pants, and shirts doesn't matter. "Hat A, Pants A, Shirt A" is the SAME as "Pants A, Shirt A, Hat A"

- With just Hat A alone, we can use these combinations of Pants and Shirts for unique outfits.

Hat A, Pants A, Shirt A

Hat A, Pants A, Shirt B

Hat A, Pants B, Shirt A

Hat A, Pants B, Shirt B

Hat A, Pants C, Shirt A

Hat A, Pants C, Shirt B

For 1 Hat, there are 6 outfits. This can be calculated as such: $1(\text{hat}) \cdot 3(\text{pants}) \cdot 2(\text{shirts}) = 1 \cdot 3 \cdot 2 = 6$

- Keeping the Pants and Shirts the same from each of the above 6 outfits, we have 5 options (A,B,C,D,E) for Hats to go with them.

Hat ?, Pants A, Shirt A
 Hat ?, Pants A, Shirt B
 Hat ?, Pants B, Shirt A
 Hat ?, Pants B, Shirt B
 Hat ?, Pants C, Shirt A
 Hat ?, Pants C, Shirt B

To figure out the number of total outfits, we just need to use the multiplication above, but replace 1(hat) with 5(hat), since we are now considering ALL outfits. Try making a list of all the different outfits.

- Here is a list of all the outfits:

The first letter is the hat, the second is the pants, and the third is the shirt.

AAA	AAB	ABA	ABB	ACA	ACB
BAA	BAB	BBA	BBB	BCA	BCB
CAA	CAB	CBA	CBB	CCA	CCB
DAA	DAB	DBA	DBB	DCA	DCB
EAA	EAB	EBA	EBB	ECA	ECB

- $5 \cdot 3 \cdot 2 = 5 \cdot 6 = 30$

There are 30 different combinations of outfits. Type in 30.

B) Danielle took her little cousin to the "Dress a Dragon" store. Here you can choose to dress your dragon from a choice of hats, pants, and shirts. Here are the choices:

Hat A Pants A Shirt A
 Hat B Pants B Shirt B
 Hat C Pants C
 Hat D
 Hat E

An outfit is defined as a combination of 1 Shirt, 1 Pants, and 1 Hat.

What is the probability that Danielle's cousin will dress her dragon in Hat C, Pants B and Shirt A?

Algebra:

✓ 1/30

Scaffold:

How many different outfits are there?

Fill in:

✓ 30

Hints:

- This is the same question that was asked in the first part of the problem.
- Lets look at all the possibilities:

The first letter is the hat, the second is the pants, and the third is the shirt.

AAA	AAB	ABA	ABB	ACA	ACB
BAA	BAB	BBA	BBB	BCA	BCB
CAA	CAB	CBA	CBB	CCA	CCB
DAA	DAB	DBA	DBB	DCA	DCB
EAA	EAB	EBA	EBB	ECA	ECB

- There are 30 different outfits. Type in 30

Scaffold:

We represent probability as a fraction,

The number of possible outcomes for the event

The number of possible outcomes

The **event** here is "that Danielle's cousin will dress her dragon in Hat C, Pants B and Shirt A"
How many outfits include {Hat C, Pants B, **and** Shirt A}?

Fill in:

✓ 1

Hints:

- Hat C, Pants B, and Shirt A is a complete outfit. It is unlike any other combination of outfits.
- Lets look at how many outfits match this description:
- This combination includes 1 outfit. Type in 1.

Scaffold:

Now we are going to repeat the original question:

Danielle took her little cousin to the "Dress a Dragon" store. Here you can choose to dress your dragon from a choice of hats, pants, and shirts. Here are the choices:

Hat A Pants A Shirt A
Hat B Pants B Shirt B
Hat C Pants C
Hat D
Hat E

An outfit is defined as a combination of 1 Shirt, 1 Pants, and 1 Hat.

What is the probability that Danielle's cousin will dress her dragon in Hat C, Pants B and Shirt A?

Fill in:

✓ 1/30

Hints:

- Remember that the answer must be a fraction, like x/y .
- There is 1 event and 30 possible outcomes.
- The probability that Danielle's cousin will dress her dragon in Hat C, Pants B and Shirt A is $1/30$.
Type in $1/30$.

Assistment #31126 "31126 - Morph 27927"

A bag contains 5 red, 6 green, and 3 blue balls.

John is going to draw out a ball without looking in the bag.

What is the probability that he will draw either a green or a blue ball?

Algebra:

✓ 9/14

Scaffold:

First let's understand that the problem is asking about probability. What is probability?

- A. The number of possible outcomes

- B. The number of outcomes for the event

- C. the number of outcomes for the event

the number of possible outcomes

- D. the number of possible outcomes

the number of outcomes for the event

Multiple choice:

 A

 B

 C

 D

Hints:

- Probability is how we represent the chance of something occurring. This is expressed with a **fraction or decimal**, both of which will have a value between 0 and 1.

Since answers A and B are not fractions or decimals, the definition of probability is either C or D.

- Probability is

the number of outcomes for the event

the number of possible outcomes

Please select C.

Scaffold:

We are going to start by finding "the number of possible outcomes".

The problem states:

A bag contains 5 red, 6 green, and 3 blue balls.

John is going to draw out a ball without looking in the bag.

What is the probability that he will draw either a green or a blue ball?

The "**possible outcomes**" here is the total number of balls that can be picked.

How many different balls can be picked?

Fill in:

✓ 14

Hints:

- How many balls are in the bag?
- The problem says we have 5 red, 6 green, and 3 blue balls, and we are trying to draw one of them.

How many total balls are there?

- $5+6+3 = 14$. We can draw 14 different balls.

Type in 14.

Scaffold:

Now we are going to find "**the number of outcomes for the event**".

The problem states:

A bag contains 5 red, 6 green, and 3 blue balls.

John is going to draw out a ball without looking in the bag.

What is the probability that he will draw either a green or a blue ball?

The "**event**" here is "that he will draw either a green or a blue ball".

How many outcomes are there for this event?

Fill in:

✓ 9

Hints:

- We can split our event in two: drawing out a **green** ball or drawing out a **blue** ball.

Find the number of outcomes for drawing out a **green** ball, and add it to the number of outcomes for drawing out a **blue** ball.

- He can draw out **6 green** balls and **3 blue** balls.
- $3+6 = 9$ The number of **green** or **blue** balls is **9**.

Type in **9**.

Scaffold:

Now we are going to repeat the original question:

A bag contains **5 red**, **6 green**, and **3 blue** balls.
John is going to draw out a ball without looking in the bag.
What is the probability that he will draw either a **green** or a **blue** ball?

Algebra:

✓ 9/14

Hints:

- Probability is

The number of outcomes for the event

The number of possible outcomes

- The number of outcomes for the event is the total number of **green** and **blue** balls, which is **9**
- The number of possible outcomes is the **total** number of balls in the bag, which is **14**

- The probability that he will draw either a green or blue ball is $\frac{9}{14}$

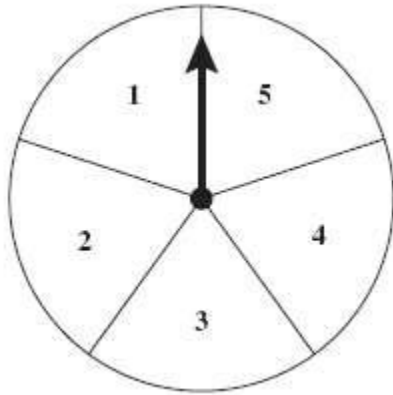
Type in $\frac{9}{14}$.

Assistment #31127 "31127 - Morph 27928"

To win a game, Yepa must get a sum of 8 on her next two spins of the arrow on the spinner shown below. All the sections of the spinner are of equal size.

What is the **probability** that the result of Yepa's next two spins will have a sum of 8?

The answer can be given as a fraction OR a decimal.



Algebra:





✓ 3/25

Scaffold:

First lets understand that the problem is asking about probability. What is probability?

- A. The number of possible outcomes
- B. The number of outcomes for the event
- C. $\frac{\text{the number of outcomes for the event}}{\text{the number of possible outcomes}}$
- D. $\frac{\text{the number of possible outcomes}}{\text{the number of outcomes for the event}}$

Multiple choice:

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

Hints:

- Probability is how we represent the chance of something occurring. This is represented with a decimal or fraction, both of which will have a value between 0 and 1.

Since answers A and B are not fractions or decimals, the definition of probability is either C or D.

- Probability is

the number of outcomes for the event

the number of possible outcomes

Please select C.

Scaffold:

We are now going to find "the number of possible outcomes".

The problem states:

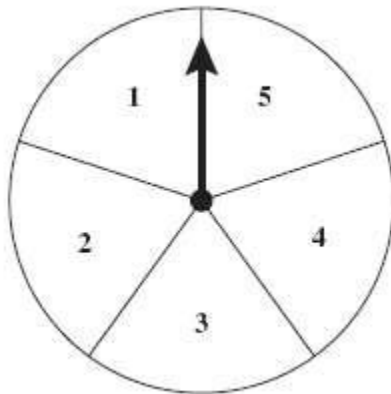
To win a game, Yepa must get a sum of 8 on her next two spins of the arrow on the spinner shown below. All the sections of the spinner are of equal size.

What is the probability that the result of Yepa's next two spins will have a sum of 8?

"The number of possible outcomes" is the total number of results from two spins.

How many results can there be from two spins?

Here is the spinner.



Algebra:

✓ 25

✗ 10

X 5

Hints:

- If each spin has 5 **outcomes**, how many total **outcomes** can there be for **two spins**?
- Each first spin can be paired with any of the 5 possible second spins. How many total outcomes are there?

For example: (1,1) and (1,2) are two of the possible **outcomes** for **two spins**.

Try writing down all the possible **outcomes** for **2 spins**.

- Here is a list of all the possible **outcomes** for **two spins**:

(1,1) (1,2) (1,3) (1,4) (1,5)

(2,1) (2,2) (2,3) (2,4) (2,5)

(3,1) (3,2) (3,3) (3,4) (3,5)

(4,1) (4,2) (4,3) (4,4) (4,5)

(5,1) (5,2) (5,3) (5,4) (5,5)

- There are $5 \times 5 = 25$ different results from spinning the spinner twice.

Type in 25

Scaffold:

We are now going to find "**the number of outcomes for the event**".

The problem states:

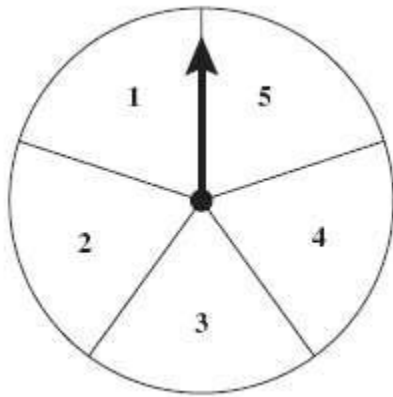
To win a game, Yepa must get a sum of 8 on her next two spins of the arrow on the spinner shown below. All the sections of the spinner are of equal size.

What is the probability that the result of Yepa's **next two spins will have a sum of 8?**

"The number of outcomes for the event" is highlighted in yellow in the text.

How many results from two spins will have a sum of 8?

Here is the spinner.



Fill in:

✓ 3

✗ 2

Hints:

- How many pairs of numbers on the list add up to 8?

This is the list of **all possible outcomes** for two spins.

(1,1) (1,2) (1,3) (1,4) (1,5)

(2,1) (2,2) (2,3) (2,4) (2,5)

(3,1) (3,2) (3,3) (3,4) (3,5)

(4,1) (4,2) (4,3) (4,4) (4,5)

(5,1) (5,2) (5,3) (5,4) (5,5)

- (1,1) (1,2) (1,3) (1,4) (1,5)

(2,1) (2,2) (2,3) (2,4) (2,5)

(3,1) (3,2) (3,3) (3,4) (3,5)

(4,1) (4,2) (4,3) (4,4) (4,5)

(5,1) (5,2) (5,3) (5,4) (5,5)

Here we see that the different ways of getting an 8 on two spins are as follows: (3 then 5, 5 then 3, 4 then 4)

How many ways can Yepa's next two spins add up to 8?

- There are 3 ways can Yepa's next two spins add up to 8.

Type in 3.

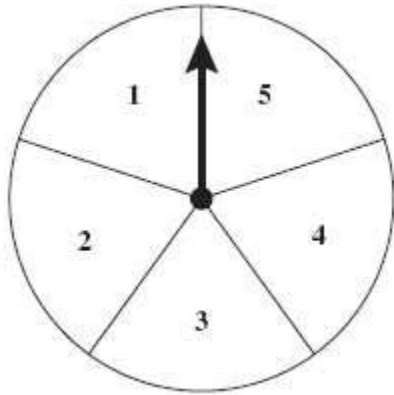
Scaffold:

Now we are going to return to the original question:

To win a game, Yepa must get a sum of 8 on her next two spins of the arrow on the spinner shown bellow. All the sections of the spinner are of equal size.

What is the probability that the result of Yepa's next two spins will have a sum of 8?

The answer can be given as a fraction OR a decimal.



Algebra:

✓ $3/25$

Hints:

- Probability is

the number of outcomes for the event

the number of possible outcomes

- There are 25 possible outcomes for the spinner to land in two spins.

These are:

(1,1) (1,2) (1,3) (1,4) (1,5)

(2,1) (2,2) (2,3) (2,4) (2,5)

(3,1) (3,2) (3,3) (3,4) (3,5)

(4,1) (4,2) (4,3) (4,4) (4,5)

(5,1) (5,2) (5,3) (5,4) (5,5)

- There are 3 ways for Yepa to spin a sum of 8.

Each of these is considered an "event" mentioned in the top part of the fraction.

(1,1) (1,2) (1,3) (1,4) (1,5)

(2,1) (2,2) (2,3) (2,4) (2,5)

(3,1) (3,2) (3,3) (3,4) (3,5)

(4,1) (4,2) (4,3) (4,4) (4,5)

(5,1) (5,2) (5,3) (5,4) (5,5)

What is the probability that the result of Yepa's next two spins will have a sum of 8?

- The probability that the results of Yepa's next two spins will have a sum of 8 is $\frac{3}{25}$.

Type in $\frac{3}{25}$ or 0.12

Assistment #31128 "31128 - Morph 27929"

In Mr. Smith's class, there are 8 boys and 12 girls. Mr. Smith is going to pick 1 student at random. What is the probability that the student he picks is a boy?

Algebra:

✓ 8/20

Scaffold:

First lets understand that the problem is asking about probability. What is probability?

- A. The number of possible outcomes
- B. The number of outcomes for the event
- C. $\frac{\text{the number of outcomes for the event}}{\text{the number of possible outcomes}}$
- D. $\frac{\text{the number of possible outcomes}}{\text{the number of outcomes for the event}}$

Multiple choice:

- ✗ A.
- ✗ B.
- ✓ C.
- ✗ D.

Hints:

- Probability is how we represent the chance of something occurring. This is represented with a decimal or fraction, both of which will have a value between 0 and 1.

Since answers A and B are not fractions or decimals, the definition of probability is either C or D.

- Probability is

the number of outcomes for the event

the number of possible outcomes

Please select C.

Scaffold:

Let's now figure out "**the number of possible outcomes**" for this problem

The problem says:

In Mr. Smith's class, there are 8 boys and 12 girls. Mr. Smith is going to pick 1 student at random.

What is the probability that the student he picks is a boy?

The number of possible outcomes is equal to the total number of students in the class, since any one of them can be picked.

How many students are there in the class?

Fill in:

✓ 20

Hints:

- The total number of students in the class is the sum of the boys and girls in the class.
- The highlighted text shows us that there are 8 boys and 12 girls in the class.
- There are $8+12 = 20$ students in the class.

Type in 20.

Scaffold:

Now we'll figure out "**the number of outcomes for the event**" for this problem.

The problem states:

In Mr. Smith's class, there are 8 boys and 12 girls. Mr. Smith is going to pick 1 student at random. What is the probability that the student he picks is a boy?

The **event** here is "**that the student he picks is a boy**"

What is the number of outcomes for this event?

Algebra:

✓ 8

Hints:

- How many boys are there in Mr. Smith's class?
- There are 8 boys in Mr. Smith's class.

Type in 8.

Scaffold:

Now we are going to repeat the original question:

In Mr. Smith's class, there are 8 boys and 12 girls. Mr. Smith is going to pick 1 student at random. What is the probability that the student he picks is a boy?

Algebra:

✓ 8/20

Hints:

- Probability is:

The number of outcomes for the event

The number of possible outcomes

- There are 8 boys in the class of 20 students.
- The probability that the student he picks is a boy is 8/20.

Type in 8/20.

Assistment #31129 "31129 - Morph 27924"

A) Danielle took her little cousin to the "Dress a Dragon" store. Here you can choose to dress your dragon from a choice of hats, pants, and shirts. Here are the choices:

Hat A	Pants A	Shirt A
Hat B	Pants B	Shirt B
Hat C	Pants C	
Hat D		

An **outfit** is defined as a combination of 1 Shirt, 1 Pants, and 1 Hat.
How many different combinations of **outfits** are there?

Algebra:

✓ 24

Hints:

- There are 4 Hats, 3 Pants, and 2 Shirts. Knowing that an outfit has 1 of each of these, we need to figure out how many different outfits we can make.

One example of an outfit is
[Hat A, Pants A, and Shirt A]

Know that the order of hats, pants, and shirts doesn't matter. "Hat A, Pants A, Shirt A" is the SAME as "Pants A, Shirt A, Hat A"

- With just Hat A alone, we can use these combinations of Pants and Shirts for unique outfits.

Hat A, Pants A, Shirt A
Hat A, Pants A, Shirt B
Hat A, Pants B, Shirt A
Hat A, Pants B, Shirt B
Hat A, Pants C, Shirt A
Hat A, Pants C, Shirt B

For 1 Hat, there are 6 outfits. This can be calculated as such: $1(\text{hat}) * 3(\text{pants}) * 2(\text{shirts}) = 1 * 3 * 2 = 6$

- Keeping the Pants and Shirts the same from each of the above 6 outfits, we have 4 options (A,B,C,D) for Hats to go with them.

Hat ?, Pants A, Shirt A
 Hat ?, Pants A, Shirt B
 Hat ?, Pants B, Shirt A
 Hat ?, Pants B, Shirt B
 Hat ?, Pants C, Shirt A
 Hat ?, Pants C, Shirt B

To figure out the number of total outfits, we just need to use the multiplication above, but replace 1(hat) with 4(hat), since we are now considering ALL outfits. Try making a list of all the different outfits.

- Here is a list of all the outfits:
 The first letter is the Hat, the 2nd letter is the pants, and the 3rd letter is the shirt

AAA	AAB	ABA	ABB	ACA	ACB
BAA	BAB	BBA	BBB	BCA	BCB
CAA	CAB	CBA	CBB	CCA	CCB
DAA	DAB	DBA	DBB	DCA	DCB

How many are there?

- $4 \times 3 \times 2 = 4 \times 6 = 24$
 There are 24 different combinations of outfits.

Type in 24.

B) Danielle took her little cousin to the "Dress a Dragon" store. Here you can choose to dress your dragon from a choice of hats, pants, and shirts. Here are the choices:

Hat A Pants A Shirt A
Hat B Pants B Shirt B
Hat C Pants C
Hat D

An outfit is defined as a combination of 1 Shirt, 1 Pants, and 1 Hat.

What is the probability that Danielle's cousin will dress her dragon in Hat C, Pants B and Shirt A?

Algebra:

✓ 1/24

Scaffold:

How many different outfits are there?

Fill in:

✓ 24

Hints:

- This is the same question that was asked in the first part of the problem.
- Lets look at all the possibilities:

AAA	AAB	ABA	ABB	ACA	ACB
BAA	BAB	BBA	BBB	BCA	DCB
CAA	CAB	CBA	CBB	CCA	CCB
DAA	DAB	DBA	DBB	DCA	DCB

- There are 24 different outfits.

Type in24

Scaffold:

The number of outcomes for the event

Probability = _____

The number of possible outcomes

The **event** here is "that Danielle's cousin will dress her dragon in Hat C, Pants B and Shirt A"
How many outfits include {Hat C, Pants B, **and** Shirt A}?

Fill in:

✓ 1

Hints:

- Hat C, Pants B, and Shirt A is a complete outfit. It is unlike any other combination of outfits.
- Lets look at how many outfits match this description:

AAA	AAB	ABA	ABB	ACA	ACB
BAA	BAB	BBA	BBB	BCA	BCB
CAA	CAB	CBA	CBB	CCA	CCB
DAA	DAB	DBA	DBB	DCA	DCB

- This combination includes 1 outfit. Type in 1.

Scaffold:

Now we are going to repeat the original question:

Danielle took her little cousin to the "Dress a Dragon" store. Here you can choose to dress your dragon from a choice of hats, pants, and shirts. Here are the choices:

Hat A Pants A Shirt A

Hat B Pants B Shirt B

Hat C Pants C

Hat D

An outfit is defined as a combination of 1 Shirt, 1 Pants, and 1 Hat.

What is the probability that Danielle's cousin will dress her dragon in Hat C, Pants B and Shirt A?

Fill in:

✓ 1/24

Hints:

- Remember that the answer must be a fraction, like x/y .
- There is 1 event and 24 possible outcomes.
- The probability that Danielle's cousin will dress her dragon in Hat C, Pants B and Shirt A is $1/24$.

Type in 1/24.

Assistment #31130 "31130 - Morph 27930 "

In how many ways can 4 different boxes be arranged on a shelf?

Algebra:

✓ 24

Scaffold:

Let's break the problem in smaller parts. In how many ways can 2 different boxes be arranged on a shelf?

Algebra:

✓ 2

✗ 4

Hints:

- Let **A** be one box and **B** be the other. Now list the ways you can arrange them.
- They can be arranged **AB** or **BA**
- For 2 boxes, there are 2 different arrangements.

Type in 2.

.

Scaffold:

Let's use 3 boxes this time. In how many ways can 3 different boxes be arranged on a shelf?

Algebra:

✓ 6

Hints:

- We can label the boxes **A**, **B**, and **C**

Now list the ways you can arrange them.

- Start with the arrangements **AB** and **BA**, and list how many new ways there are when you include **C**

For Example: **ABC**, and **BAC** are 2 of the possible arrangements. Now find the rest.

- The arrangements are:

ABC	BAC	CAB
ACB	BCA	CBA

- For 3 boxes there are 6 different arrangements.

Type in 6.

.

Scaffold:

In how many ways can 4 different boxes be arranged on a shelf?

Algebra:

✓ 24

Hints:

- Try making a list of all the possible arrangements.
- Here is a list of all the arrangements for 4 boxes:

ABCD	BACD	CABD	DACB
ABDC	BADC	CADB	DACB
ACBD	BCAD	CBAD	DBAC
ACDB	BCDA	CBDA	DBCA

A D B C	B D A C	C D A B	D C A B
A D C B	B D C A	C D B A	D C B A

- Look at the table below. We see that 2 boxes can be arranged in 2 ways, 3 boxes in 6 ways.

No. of ways	No. of boxes
2	$2*1 = 2$ ways
3	$3*2*1 = 6$ ways
4	?

In how many ways can 4 different boxes be arranged on a shelf?

- Four boxes can be arranged in 24 ways.

Type in 24.

Assistment #31131 "31131 - Morph 27931"

Luis is going to toss **five coins**. What is the probability that he gets **five heads** in a row?

Type your answer as a fraction.

Algebra:

✓ 1/32

Scaffold:

Let's examine a single coin toss first. What is the probability of getting heads when you toss **one coin**?

Algebra:

✓ 1/2

Hints:

- The probability of getting the outcome we want is equal to:

number of outcomes for the event

number of possible outcomes

- Think of the number of possible outcomes.
- The number of possible outcomes is 2: either heads or tails.
- The number of outcomes for the event is 1 (heads).

• the number of outcomes for the event 1

----- = --

the number of possible outcomes 2

The probability of getting heads when you toss 1 coin is $1/2$. Type in $1/2$.

Scaffold:

Good, the probability of getting heads when you toss **one** coin is $1/2$. Now let's examine tossing two coins.

What is the probability of getting **two heads** in a row when you toss **two coins**?

Algebra:

✓ $1/4$

Hints:

-

the number of outcomes for the event

The probability of an event is = -----

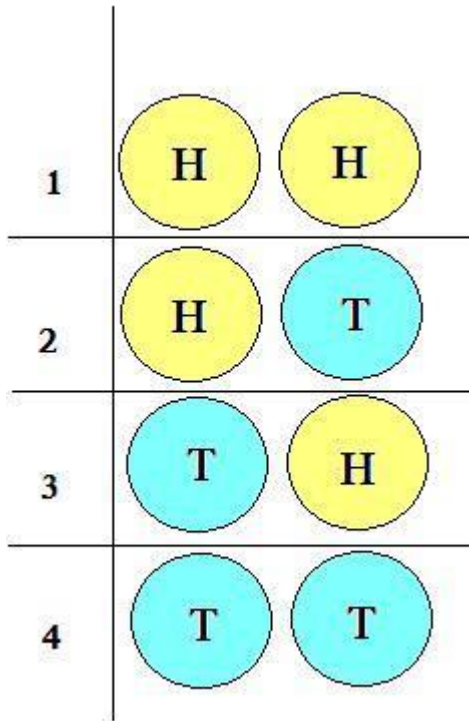
the number of possible outcomes

-

Try to make a list of **all the possible outcomes** for flipping **two coins**.

Count how many **outcomes** are on your list.

- The image below shows all possible outcomes of 2 coin flips. H = heads, T = tails.



- Count how many **outcomes** on the list are the same as **the outcomes we want** (HH).
- **The number of outcomes for the event we want** is 1 (the event is getting two heads in a row).
- **the number of outcomes for the event** 1

$$\frac{\text{the number of outcomes for the event}}{\text{the number of possible outcomes}} = \frac{1}{4}$$

The probability of getting two heads in a row when you toss two coins is 1/4. Type in 1/4.

Scaffold:

Good, the probability of getting **two heads** in a row when you toss **two coins** is **1/4**. Now let's examine tossing four coins.

What is the probability of getting **five heads** in a row when you toss **five coins**?

Fill in:

✓ 1/32

Hints:

- Try making a list of all the possibilities for flipping **5 coins**, and count them.
- Here is a list of all the possible outcomes:

HTTTT	THTTT	TTHTT	TTTHT	TTTTH
THHHH	HTHHH	HHTHH	HHHTH	HHHHT
HHTTT	HTHTT	HTTHT	HTTTH	HTTTH
TTHHH	THTHH	THTHT	THTTH	HTHHT
TTHTH	TTTHH	TTTHT	THTHT	THTTT
HHTHT	HHHTT	HHTTH	HTHTH	HHTHH
HHHHH	TTTTT			

- There are 32 possible outcomes.

Now count how many outcomes are there that have 5 heads (**HHHHH**)

- The number of outcomes with 5 heads, is 1.
-

The number of outcomes for the event 1

_____ = _____

The number of possible outcomes 32

The probability of getting five heads in a row is **1/32**.

Type in **1/32**.

Mastery Learning 27927 Probability Review 8th Probability – Simple

id:[6093]

1) Assistent #41670 "41670 - 30246 - Probability with Marbles"

A bag contains 8 red, 2 green, and 2 blue balls. John is going to draw out a ball without looking in the bag.

What is the probability that he will draw either a green or a blue ball?

2) Assistent #41671 "41671 - 30246 - Probability with Marbles"

A bag contains 4 red, 3 green, and 9 blue balls. John is going to draw out a ball without looking in the bag.

What is the probability that he will draw either a green or a blue ball?

3) Assistent #41673 "41673 - 30246 - Probability with Marbles"

A bag contains 4 red, 2 green, and 2 blue marbles. John is going to draw out a marble without looking in the bag.

What is the probability that he will draw either a green or a blue marble?

4) Assistent #41674 "41674 - 30246 - Probability with Marbles"

A bag contains 1 red, 1 green, and 5 blue pens. John is going to draw out a pen without looking in the bag.

What is the probability that he will draw either a green or a blue pen?

5) Assistent #41675 "41675 - 30246 - Probability with Marbles"

A bag contains 6 red, 1 green, and 6 blue balls. John is going to draw out a ball without looking in the bag.

What is the probability that he will draw **either a green or a blue** ball?

Assistent #30246 "30246 - Probability with Marbles"

A bag contains $\%v\{r\}$ red, $\%v\{g\}$ green, and $\%v\{b\}$ blue $\%v\{set\}$ s. John is going to draw out a $\%v\{set\}$ without looking in the bag.

What is the probability that he will draw **either a green or a blue** $\%v\{set\}$?

Algebra:

✓ $\%v\{g+b\}/\%v\{r+g+b\}$

Scaffold:

Probability is

The number of outcomes for the event

The number of possible outcomes

Let's assign some meaning to the **event** in this problem. Note that an **event** is a collection of outcomes of an experiment.

The problem states: A bag contains r red, g green, and b blue balls. John is going to draw out a ball without looking in the bag. What is the probability that he will draw either a green or a blue ball?

The **event** in this problem is "draw either a green or a blue ball"
How many outcomes are there for this event?

Algebra:

✓ $g+b$

Hints:

- We can split our event in two: "Drawing out a green ball" or "Drawing out a blue ball".

Find the number of outcomes for drawing out green ball and add it to the number of outcomes for drawing out a blue ball.

- He can draw out g green balls and b blue balls.
- There are $g + b$ green or blue balls total.

Type in $g+b$

Scaffold:

The Problem states: A bag contains r red, g green, and b blue balls. John is going to draw out a ball without looking in the bag. What is the probability that he will draw either a green or a blue ball?

What is the number of possible outcomes?

Algebra:

✓ $r+g+b$

Hints:

- How many different $\%v{\text{set}}s$ do we have in the bag?
- If we have $\%v{r}$ red, $\%v{g}$ green, and $\%v{b}$ blue $\%v{\text{set}}s$ and we are trying to draw one of them. How many different $\%v{\text{set}}s$ can we draw?
- There are $\%v{r}+\%v{g}+\%v{b} = \%v{r+g+b}$ $\%v{\text{set}}s$ in the bag.

Type in $\%v{r+g+b}$

Scaffold:

Now we are going to repeat the original problem:

A bag contains $\%v{r}$ red, $\%v{g}$ green, and $\%v{b}$ blue $\%v{\text{set}}s$. John is going to draw out a $\%v{\text{set}}$ without looking in the bag. What is the probability that he will draw either a green or a blue $\%v{\text{set}}$?

Algebra:

✓ $\%v{g+b}/\%v{r+g+b}$

Hints:

- Divide the number of outcomes for the event by the total number of outcomes.
- Divide the total number of green and blue $\%v{\text{set}}s$ by the total number of $\%v{\text{set}}s$.
- There are $\%v{g+b}$ green and blue $\%v{\text{set}}s$, and there are $\%v{r+g+b}$ $\%v{\text{set}}s$ in the bag.
- The probability that he will draw either a green or a blue $\%v{\text{set}}$ is $\%v{g+b}/\%v{r+g+b}$.

Type in $\%v{g+b}/\%v{r+g+b}$

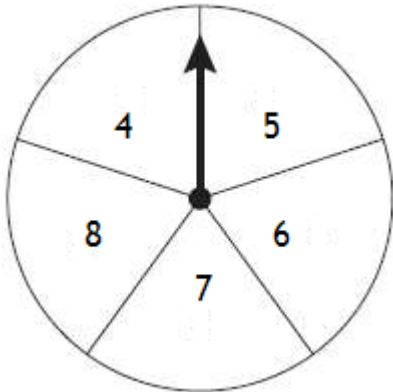
Mastery Learning 27928 Probability Review 8th Probability-Compound, Counting Methods

id:[6094]

1) Assistentment #41710 "41710 - 30419 - Spinner 1"

To win a game, Yepa must get a sum of 12 on her next two spins of the arrow on the spinner shown below. All the sections of the spinner are of equal size.

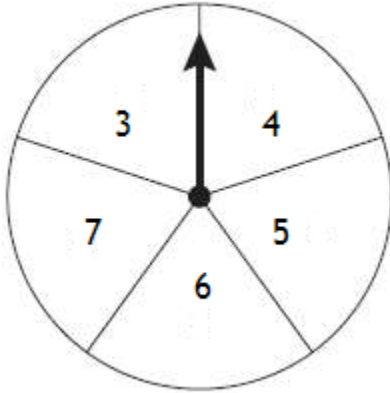
What is the probability that the results of Yepa's next two spins will have a sum of 12?



2) Assistentment #41721 "41721 - 30421 - Spinner 2"

To win a game, Yepa must get a sum of 11 on her next two spins of the arrow on the spinner shown below. All the sections of the spinner are of equal size.

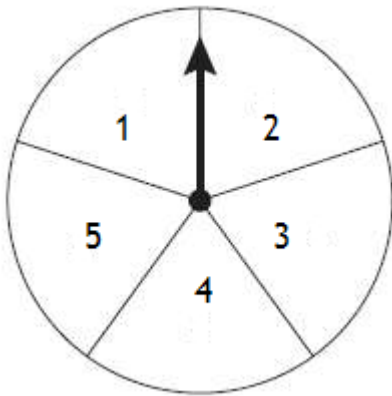
What is the probability that the results of Yepa's next two spins will have a sum of 11?



3) Assistent #41733 "41733 - 30422 - Spinner 3"

To win a game, Yepa must get a sum of 8 on her next two spins of the arrow on the spinner shown below. All the sections of the spinner are of equal size.

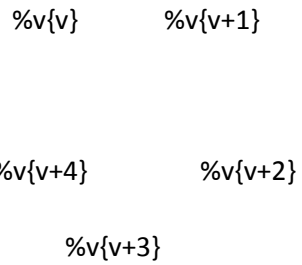
What is the probability that the results of Yepa's next two spins will have a sum of 8?



Assistent #30419 "30419 - Spinner 1"

To win a game, Yepa must get a sum of \sqrt{x} on her next two spins of the arrow on the spinner shown below. All the sections of the spinner are of equal size.

What is the probability that the results of Yepa's next two spins will have a sum of x ?



Algebra:

✓ 5/25

Scaffold:

How many possible outcomes are there from two spins.

Note: count all the outcomes, even if 2 or more have the same sum.

Fill in:

✓ 25

Hints:

- Try making a list of all the outcomes, by pairing each 1st spin with each 2nd spin.

- Here is a list of all the possible outcomes for two spins:

SPINS	v	$v+1$	$v+2$	$v+3$	$v+4$
v	(v, v)	$(v, v+1)$	$(v, v+2)$	$(v, v+3)$	$(v, v+4)$
$v+1$	$(v+1, v)$	$(v+1, v+1)$	$(v+1, v+2)$	$(v+1, v+3)$	$(v+1, v+4)$
$v+2$	$(v+2, v)$	$(v+2, v+1)$	$(v+2, v+2)$	$(v+2, v+3)$	$(v+2, v+4)$
$v+3$	$(v+3, v)$	$(v+3, v+1)$	$(v+3, v+2)$	$(v+3, v+3)$	$(v+3, v+4)$
$v+4$	$(v+4, v)$	$(v+4, v+1)$	$(v+4, v+2)$	$(v+4, v+3)$	$(v+4, v+4)$

There are $5 \times 5 = 25$ possible outcomes for 2 spins.

Type in 25.

Scaffold:

How many ways can 2 spins add up to x ?

Fill in:

 5

Hints:

- One way for the sum of the two spins to equal x is to roll $(x-4, v+4)$.

Try making a list of all the ways the sums can add up to x

- Here is a list of all the possible outcomes for two spins:

SPINS	v	$v+1$	$v+2$	$v+3$	$v+4$
v	(v, v)	$(v, v+1)$	$(v, v+2)$	$(v, v+3)$	$(v, v+4)$
$v+1$	$(v+1, v)$	$(v+1, v+1)$	$(v+1, v+2)$	$(v+1, v+3)$	$(v+1, v+4)$
$v+2$	$(v+2, v)$	$(v+2, v+1)$	$(v+2, v+2)$	$(v+2, v+3)$	$(v+2, v+4)$
$v+3$	$(v+3, v)$	$(v+3, v+1)$	$(v+3, v+2)$	$(v+3, v+3)$	$(v+3, v+4)$
$v+4$	$(v+4, v)$	$(v+4, v+1)$	$(v+4, v+2)$	$(v+4, v+3)$	$(v+4, v+4)$

How many pairs of numbers on this list add up to x ?

- Here is a list of all the sums for 2 spins:

SUMS	v	$v+1$	$v+2$	$v+3$	$v+4$
v	$2v$	$2v+1$	$2v+2$	$2v+3$	$2v+4$
$v+1$	$2v+1$	$2v+2$	$2v+3$	$2v+4$	$2v+5$
$v+2$	$2v+2$	$2v+3$	$2v+4$	$2v+5$	$2v+6$
$v+3$	$2v+3$	$2v+4$	$2v+5$	$2v+6$	$2v+7$
$v+4$	$2v+4$	$2v+5$	$2v+6$	$2v+7$	$2v+8$

Note that the red part shows all the possible ways that the 2 spins add up to x

- There are 5 ways for 2 spins to have a sum of x .

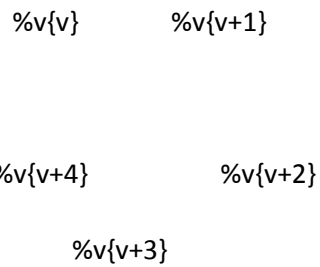
Type in 5.

Scaffold:

Now we are going to repeat the original question:

To win a game, Yepa must get a sum of x on her next two spins of the arrow on the spinner shown below. All the sections of the spinner are of equal size.

What is the probability that the results of Yepa's next two spins will have a sum of x ?



Algebra:

✓ $5/25$

Hints:

- The probability of an event can be written as a fraction of

The number of outcomes for the event

The number of possible outcomes

What is the probability that the results of Yepa's next two spins will have a sum of x ?

- There are 5 ways for Yepa to spin a sum of x .

What is the probability that the results of Yepa's next two spins will have a sum of x ?

- There are 25 different ways for the spinner to land in two spins.

What is the probability that the results of Yepa's next two spins will have a sum of x ?

- The probability that the results of Yepa's next two spins will have a sum of x is $\frac{5}{25}$

Type in $\frac{5}{25}$, or $\frac{1}{5}$.

Assistment #30421 "30421 - Spinner 2"

To win a game, Yepa must get a sum of x on her next two spins of the arrow on the spinner shown below. All the sections of the spinner are of equal size.

What is the probability that the results of Yepa's next two spins will have a sum of x ?

v $v+1$

$v+4$ $v+2$

$v+3$

Algebra:

✓ 4/25

Scaffold:

How many possible outcomes are there from two spins.

Note: count all the outcomes, even if 2 or more have the same sum.

Fill in:

✓ 25

Hints:

- Try making a list of all the outcomes, by pairing each 1st spin with each 2nd spin.
- Here is a list of all the possible outcomes for two spins:

SPINS	v	$v+1$	$v+2$	$v+3$	$v+4$
v	(v, v)	$(v, v+1)$	$(v, v+2)$	$(v, v+3)$	$(v, v+4)$
$v+1$	$(v+1, v)$	$(v+1, v+1)$	$(v+1, v+2)$	$(v+1, v+3)$	$(v+1, v+4)$
$v+2$	$(v+2, v)$	$(v+2, v+1)$	$(v+2, v+2)$	$(v+2, v+3)$	$(v+2, v+4)$
$v+3$	$(v+3, v)$	$(v+3, v+1)$	$(v+3, v+2)$	$(v+3, v+3)$	$(v+3, v+4)$
$v+4$	$(v+4, v)$	$(v+4, v+1)$	$(v+4, v+2)$	$(v+4, v+3)$	$(v+4, v+4)$

There are $5 \times 5 = 25$ possible outcomes for 2 spins.

Type in 25.

Scaffold:

How many ways can 2 spins add up to x ?

Fill in:

✓ 4

Hints:

- One way for the sum of the two spins to equal x is to roll $(x-4, 4)$.

Try making a list of all the ways the sums can add up to x

- Here is a list of all the possible outcomes for two spins:

SPINS	v	$v+1$	$v+2$	$v+3$	$v+4$
v	(v, v)	$(v, v+1)$	$(v, v+2)$	$(v, v+3)$	$(v, v+4)$
$v+1$	$(v+1, v)$	$(v+1, v+1)$	$(v+1, v+2)$	$(v+1, v+3)$	$(v+1, v+4)$
$v+2$	$(v+2, v)$	$(v+2, v+1)$	$(v+2, v+2)$	$(v+2, v+3)$	$(v+2, v+4)$
$v+3$	$(v+3, v)$	$(v+3, v+1)$	$(v+3, v+2)$	$(v+3, v+3)$	$(v+3, v+4)$
$v+4$	$(v+4, v)$	$(v+4, v+1)$	$(v+4, v+2)$	$(v+4, v+3)$	$(v+4, v+4)$

How many pairs of numbers on this list add up to x ?

- Here is a list of all the sums for 2 spins:

SUMS	v	$v+1$	$v+2$	$v+3$	$v+4$
------	-----	-------	-------	-------	-------

$\%v\{v\}$	$\%v\{2*v\}$	$\%v\{2*v+1\}$	$\%v\{2*v+2\}$	$\%v\{2*v+3\}$	$\%v\{2*v+4\}$
$\%v\{v+1\}$	$\%v\{2*v+1\}$	$\%v\{2*v+2\}$	$\%v\{2*v+3\}$	$\%v\{2*v+4\}$	$\%v\{2*v+5\}$
$\%v\{v+2\}$	$\%v\{2*v+2\}$	$\%v\{2*v+3\}$	$\%v\{2*v+4\}$	$\%v\{2*v+5\}$	$\%v\{2*v+6\}$
$\%v\{v+3\}$	$\%v\{2*v+3\}$	$\%v\{2*v+4\}$	$\%v\{2*v+5\}$	$\%v\{2*v+6\}$	$\%v\{2*v+7\}$
$\%v\{v+4\}$	$\%v\{2*v+4\}$	$\%v\{2*v+5\}$	$\%v\{2*v+6\}$	$\%v\{2*v+7\}$	$\%v\{2*v+8\}$

Note that the red part shows all the possible ways that the 2 spins add up to $\%v\{x\}$

- There are 4 ways for 2 spins to have a sum of $\%v\{x\}$.

Type in 4.

Scaffold:

Now we are going to repeat the original question:

To win a game, Yepa must get a sum of $\%v\{x\}$ on her next two spins of the arrow on the spinner shown below. All the sections of the spinner are of equal size.

What is the probability that the results of Yepa's next two spins will have a sum of $\%v\{x\}$?

$\%v\{v\}$ $\%v\{v+1\}$

$\%v\{v+4\}$ $\%v\{v+2\}$

$\%v\{v+3\}$

Algebra:

✓ 4/25

Hints:

- The probability of an event can be written as a fraction of

The number of outcomes for the event

The number of possible outcomes

What is the probability that the results of Yepa's next two spins will have a sum of $\%v\{x\}$?

- There are 4 ways for Yepa to spin a sum of $\%v\{x\}$.

What is the probability that the results of Yepa's next two spins will have a sum of $\%v\{x\}$?

- There are 25 different ways for the spinner to land in two spins.

What is the probability that the results of Yepa's next two spins will have a sum of $\%v\{x\}$?

- The probability that the results of Yepa's next two spins will have a sum of $\%v\{x\}$ is 4/25

Type in 4/25

Assistment #30422 "30422 - Spinner 3"

To win a game, Yepa must get a sum of $\%v\{x\}$ on her next two spins of the arrow on the spinner shown below. All the sections of the spinner are of equal size.

What is the probability that the results of Yepa's next two spins will have a sum of $\%v\{x\}$?

$\%v\{v\}$ $\%v\{v+1\}$

$\%v\{v+4\}$ $\%v\{v+2\}$

$\%v\{v+3\}$

Algebra:

✓ 3/25

Scaffold:

How many possible outcomes are there from two spins.

Note: count all the outcomes, even if 2 or more have the same sum.

Fill in:

✓ 25

Hints:

- Try making a list of all the outcomes, by pairing each 1st spin with each 2nd spin.
- Here is a list of all the possible outcomes for two spins:

SPINS	v	$v+1$	$v+2$	$v+3$	$v+4$
v	(v, v)	$(v, v+1)$	$(v, v+2)$	$(v, v+3)$	$(v, v+4)$
$v+1$	$(v+1, v)$	$(v+1, v+1)$	$(v+1, v+2)$	$(v+1, v+3)$	$(v+1, v+4)$
$v+2$	$(v+2, v)$	$(v+2, v+1)$	$(v+2, v+2)$	$(v+2, v+3)$	$(v+2, v+4)$
$v+3$	$(v+3, v)$	$(v+3, v+1)$	$(v+3, v+2)$	$(v+3, v+3)$	$(v+3, v+4)$
$v+4$	$(v+4, v)$	$(v+4, v+1)$	$(v+4, v+2)$	$(v+4, v+3)$	$(v+4, v+4)$

There are $5 \times 5 = 25$ possible outcomes for 2 spins.

Type in 25.

Scaffold:

How many ways can 2 spins add up to x ?

Fill in:

✓ 3

Hints:

- One way for the sum of the two spins to equal x is to roll $(x-4, v+4)$.

Try making a list of all the ways the sums can add up to x

- Here is a list of all the possible outcomes for two spins:

SPINS	v	$v+1$	$v+2$	$v+3$	$v+4$
-------	-----	-------	-------	-------	-------

v	(v, v)	$(v, v+1)$	$(v, v+2)$	$(v, v+3)$	$(v, v+4)$
$v+1$	$(v+1, v)$	$(v+1, v+1)$	$(v+1, v+2)$	$(v+1, v+3)$	$(v+1, v+4)$
$v+2$	$(v+2, v)$	$(v+2, v+1)$	$(v+2, v+2)$	$(v+2, v+3)$	$(v+2, v+4)$
$v+3$	$(v+3, v)$	$(v+3, v+1)$	$(v+3, v+2)$	$(v+3, v+3)$	$(v+3, v+4)$
$v+4$	$(v+4, v)$	$(v+4, v+1)$	$(v+4, v+2)$	$(v+4, v+3)$	$(v+4, v+4)$

How many pairs of numbers on this list add up to x ?

- Here is a list of all the sums for 2 spins:

SUMS	v	$v+1$	$v+2$	$v+3$	$v+4$
v	$2v$	$2v+1$	$2v+2$	$2v+3$	$2v+4$
$v+1$	$2v+1$	$2v+2$	$2v+3$	$2v+4$	$2v+5$
$v+2$	$2v+2$	$2v+3$	$2v+4$	$2v+5$	$2v+6$
$v+3$	$2v+3$	$2v+4$	$2v+5$	$2v+6$	$2v+7$
$v+4$	$2v+4$	$2v+5$	$2v+6$	$2v+7$	$2v+8$

Note that the highlighted part shows all the possible ways that the 2 spins add up to x

- There are 3 ways for 2 spins to have a sum of x .

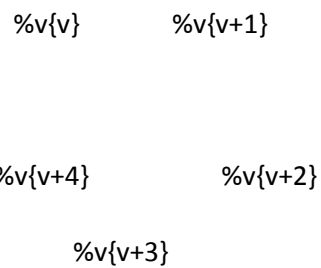
Type in 3.

Scaffold:

Now we are going to repeat the original question:

To win a game, Yepa must get a sum of x on her next two spins of the arrow on the spinner shown below. All the sections of the spinner are of equal size.

What is the probability that the results of Yepa's next two spins will have a sum of x ?



Algebra:

✓ $3/25$

Hints:

- The probability of an event can be written as a fraction of

The number of outcomes for the event

The number of possible outcomes

What is the probability that the results of Yepa's next two spins will have a sum of x ?

- There are 3 ways for Yepa to spin a sum of $v\{x\}$.

What is the probability that the results of Yepa's next two spins will have a sum of $v\{x\}$?

- There are 25 different ways for the spinner to land in two spins.

What is the probability that the results of Yepa's next two spins will have a sum of $v\{x\}$?

- The probability that the results of Yepa's next two spins will have a sum of $v\{x\}$ is $\frac{3}{25}$

Type in $\frac{3}{25}$.

Assistment #30423 "30423 - Spinner 4"

To win a game, Yepa must get a sum of $v\{x\}$ on her next two spins of the arrow on the spinner shown below. All the sections of the spinner are of equal size.

What is the probability that the results of Yepa's next two spins will have a sum of $v\{x\}$?

$v\{v\}$ $v\{v+1\}$

$v\{v+4\}$ $v\{v+2\}$

$v\{v+3\}$

Algebra:

✓ 2/25

Scaffold:

How many possible outcomes are there from two spins.

Note: count all the outcomes, even if 2 or more have the same sum.

Fill in:

✓ 25

Hints:

- Try making a list of all the outcomes, by pairing each 1st spin with each 2nd spin.
- Here is a list of all the possible outcomes for two spins:

SPINS	v	$v+1$	$v+2$	$v+3$	$v+4$
v	(v, v)	$(v, v+1)$	$(v, v+2)$	$(v, v+3)$	$(v, v+4)$
$v+1$	$(v+1, v)$	$(v+1, v+1)$	$(v+1, v+2)$	$(v+1, v+3)$	$(v+1, v+4)$
$v+2$	$(v+2, v)$	$(v+2, v+1)$	$(v+2, v+2)$	$(v+2, v+3)$	$(v+2, v+4)$
$v+3$	$(v+3, v)$	$(v+3, v+1)$	$(v+3, v+2)$	$(v+3, v+3)$	$(v+3, v+4)$
$v+4$	$(v+4, v)$	$(v+4, v+1)$	$(v+4, v+2)$	$(v+4, v+3)$	$(v+4, v+4)$

There are $5 \times 5 = 25$ possible outcomes for 2 spins.

Type in 25.

Scaffold:

How many ways can 2 spins add up to $v{x}$?

Fill in:

✓ 2

Hints:

- One way for the sum of the two spins to equal $v{x}$ is to roll $(v{x-v-4}, v{v+4})$.

Try making a list of all the ways the sums can add up to $v{x}$

- Here is a list of all the possible outcomes for two spins:

SPINS	$v{v}$	$v{v+1}$	$v{v+2}$	$v{v+3}$	$v{v+4}$
$v{v}$	$(v{v}, v{v})$	$(v{v}, v{v+1})$	$(v{v}, v{v+2})$	$(v{v}, v{v+3})$	$(v{v}, v{v+4})$
$v{v+1}$	$(v{v+1}, v{v})$	$(v{v+1}, v{v+1})$	$(v{v+1}, v{v+2})$	$(v{v+1}, v{v+3})$	$(v{v+1}, v{v+4})$
$v{v+2}$	$(v{v+2}, v{v})$	$(v{v+2}, v{v+1})$	$(v{v+2}, v{v+2})$	$(v{v+2}, v{v+3})$	$(v{v+2}, v{v+4})$
$v{v+3}$	$(v{v+3}, v{v})$	$(v{v+3}, v{v+1})$	$(v{v+3}, v{v+2})$	$(v{v+3}, v{v+3})$	$(v{v+3}, v{v+4})$
$v{v+4}$	$(v{v+4}, v{v})$	$(v{v+4}, v{v+1})$	$(v{v+4}, v{v+2})$	$(v{v+4}, v{v+3})$	$(v{v+4}, v{v+4})$

How many pairs of numbers on this list add up to $v{x}$?

- Here is a list of all the sums for 2 spins:

SUMS	$v{v}$	$v{v+1}$	$v{v+2}$	$v{v+3}$	$v{v+4}$
$v{v}$	$v{2*v}$	$v{2*v+1}$	$v{2*v+2}$	$v{2*v+3}$	$v{2*v+4}$

$\%v\{v+1\}$	$\%v\{2*v+1\}$	$\%v\{2*v+2\}$	$\%v\{2*v+3\}$	$\%v\{2*v+4\}$	$\%v\{2*v+5\}$
$\%v\{v+2\}$	$\%v\{2*v+2\}$	$\%v\{2*v+3\}$	$\%v\{2*v+4\}$	$\%v\{2*v+5\}$	$\%v\{2*v+6\}$
$\%v\{v+3\}$	$\%v\{2*v+3\}$	$\%v\{2*v+4\}$	$\%v\{2*v+5\}$	$\%v\{2*v+6\}$	$\%v\{2*v+7\}$
$\%v\{v+4\}$	$\%v\{2*v+4\}$	$\%v\{2*v+5\}$	$\%v\{2*v+6\}$	$\%v\{2*v+7\}$	$\%v\{2*v+8\}$

Note that the red part shows all the possible ways that the 2 spins add up to $\%v\{x\}$

- There are 2 ways for 2 spins to have a sum of $\%v\{x\}$.

Type in 2.

Scaffold:

Now we are going to repeat the original question:

To win a game, Yepa must get a sum of $\%v\{x\}$ on her next two spins of the arrow on the spinner shown below. All the sections of the spinner are of equal size.

What is the probability that the results of Yepa's next two spins will have a sum of $\%v\{x\}$?

$\%v\{v\}$ $\%v\{v+1\}$

$\%v\{v+4\}$ $\%v\{v+2\}$

$\%v\{v+3\}$

Algebra:

✓ 2/25

Hints:

- The probability of an event can be written as a fraction of

The number of outcomes for the event

The number of possible outcomes

What is the probability that the results of Yepa's next two spins will have a sum of x ?

- There are 2 ways for Yepa to spin a sum of x .

What is the probability that the results of Yepa's next two spins will have a sum of x ?

- There are 25 different ways for the spinner to land in two spins.

What is the probability that the results of Yepa's next two spins will have a sum of x ?

- The probability that the results of Yepa's next two spins will have a sum of x is $\frac{2}{25}$

Type in $\frac{2}{25}$.

Assistment #30424 "30424 - Spinner 5"

To win a game, Yepa must get a sum of x on her next two spins of the arrow on the spinner shown below. All the sections of the spinner are of equal size.

What is the probability that the results of Yepa's next two spins will have a sum of x ?

v $v+1$

$v+4$ $v+2$

$v+3$

Algebra:

✓ 1/25

Scaffold:

How many possible outcomes are there from two spins.

Note: count all the outcomes, even if 2 or more have the same sum.

Fill in:

✓ 25

Hints:

- Try making a list of all the outcomes, by pairing each 1st spin with each 2nd spin.
- Here is a list of all the possible outcomes for two spins:

SPINS	v	$v+1$	$v+2$	$v+3$	$v+4$
v	(v, v)	$(v, v+1)$	$(v, v+2)$	$(v, v+3)$	$(v, v+4)$
$v+1$	$(v+1, v)$	$(v+1, v+1)$	$(v+1, v+2)$	$(v+1, v+3)$	$(v+1, v+4)$
$v+2$	$(v+2, v)$	$(v+2, v+1)$	$(v+2, v+2)$	$(v+2, v+3)$	$(v+2, v+4)$
$v+3$	$(v+3, v)$	$(v+3, v+1)$	$(v+3, v+2)$	$(v+3, v+3)$	$(v+3, v+4)$
$v+4$	$(v+4, v)$	$(v+4, v+1)$	$(v+4, v+2)$	$(v+4, v+3)$	$(v+4, v+4)$

There are $5 \times 5 = 25$ possible outcomes for 2 spins.

Type in 25.

Scaffold:

How many ways can 2 spins add up to x ?

Fill in:

 1

Hints:

- Here is a list of all the possible outcomes for two spins:

SPINS	v	$v+1$	$v+2$	$v+3$	$v+4$
v	(v, v)	$(v, v+1)$	$(v, v+2)$	$(v, v+3)$	$(v, v+4)$
$v+1$	$(v+1, v)$	$(v+1, v+1)$	$(v+1, v+2)$	$(v+1, v+3)$	$(v+1, v+4)$
$v+2$	$(v+2, v)$	$(v+2, v+1)$	$(v+2, v+2)$	$(v+2, v+3)$	$(v+2, v+4)$
$v+3$	$(v+3, v)$	$(v+3, v+1)$	$(v+3, v+2)$	$(v+3, v+3)$	$(v+3, v+4)$

$v+4$	$(v+4, v)$	$(v+4, v+1)$	$(v+4, v+2)$	$(v+4, v+3)$	$(v+4, v+4)$
-------	------------	--------------	--------------	--------------	--------------

How many pairs of numbers on this list add up to x ?

- Here is a list of all the sums for 2 spins:

SUMS	v	$v+1$	$v+2$	$v+3$	$v+4$
v	$2v$	$2v+1$	$2v+2$	$2v+3$	$2v+4$
$v+1$	$2v+1$	$2v+2$	$2v+3$	$2v+4$	$2v+5$
$v+2$	$2v+2$	$2v+3$	$2v+4$	$2v+5$	$2v+6$
$v+3$	$2v+3$	$2v+4$	$2v+5$	$2v+6$	$2v+7$
$v+4$	$2v+4$	$2v+5$	$2v+6$	$2v+7$	$2v+8$

There is only one way that the 2 spins can add up to x .

Type in 1.

Scaffold:

Now we are going to repeat the original question:

To win a game, Yepa must get a sum of x on her next two spins of the arrow on the spinner shown below. All the sections of the spinner are of equal size.

What is the probability that the results of Yepa's next two spins will have a sum of x ?

$\%v\{v\}$ $\%v\{v+1\}$

$\%v\{v+4\}$ $\%v\{v+2\}$

$\%v\{v+3\}$

Algebra:

✓ 1/25

Hints:

- The probability of an event can be written as a fraction of

The number of outcomes for the event

The number of possible outcomes

What is the probability that the results of Yepa's next two spins will have a sum of $\%v\{x\}$?

- There is **1 way** for Yepa to spin a sum of $\%v\{x\}$.

What is the probability that the results of Yepa's next two spins will have a sum of $\%v\{x\}$?

- There are **25 different ways** for the spinner to land in two spins.

What is the probability that the results of Yepa's next two spins will have a sum of $\%v\{x\}$?

- The probability that the results of Yepa's next two spins will have a sum of x is $\frac{1}{25}$

Type in $\frac{1}{25}$.

Mastery Learning 27929 Probability Review 8th Probability - Simple

id:[6101]

1) Assistent #41845 "41845 - 30247 - Random selection"

Of the 21 students in the class, 15 of them are boys.

If one student is picked at random, what is the probability that the student will be a boy?

2) Assistent #41846 "41846 - 30247 - Random selection"

Of the 44 students in the class, 13 of them are girls.

If one student is picked at random, what is the probability that the student will be a girl?

3) Assistent #41847 "41847 - 30247 - Random selection"

Of the 21 crates in the warehouse, 8 of them are heavy.

If one crate is picked at random, what is the probability that the crate will be heavy?

4) Assistent #41848 "41848 - 30247 - Random selection"

Of the 45 crates in the warehouse, 13 of them are light.

If one crate is picked at random, what is the probability that the crate will be light?

5) Assistent #41849 "41849 - 30247 - Random selection"

Of the 23 cars in the parking lot, 12 of them are used.

If one car is picked at random, what is the probability that the car will be used?

6) Assistent #41850 "41850 - 30247 - Random selection"

Of the 35 cars in the parking lot, 10 of them are new.

If one car is picked at random, what is the probability that the car will be new?

Assistent #30247 "30247 - Random selection"

Of the a cars in the parking lot, b of them are c .

If one car is picked at random, what is the probability that the car will be d ?

Algebra:

✓ $\frac{b}{a}$

Hints:

- Probability is

The number of outcomes for an event

The number of possible outcomes

- The event here is that the car picked will be d

- The number of possible outcomes = the number of $\{aa\}$ s that can be picked
- There are $\{b\}$ $\{aa\}$ s in the $\{zz\}$, and $\{a\}$ $\{aa\}$ s in total.

If one $\{aa\}$ is picked at random, what is the probability that the $\{aa\}$ will be $\{d\}$?

- The probability that it will be $\{d\}$ is $\{b\}/\{a\}$.

Type in $\{b\}/\{a\}$

Mastery Learning 27930 Probability Review 8th Probability-Compound, Counting Methods

id:[6109]

1) Assistentment #41949 "41949 - 31125 - Permutations"

If there are 4 different cups on a shelf, how many different ways can they be arranged in a line?

2) Assistentment #41959 "41959 - 31062 - Permutations Part 2"

There are 4 balls: A, B, C, D on a shelf.

If they are in a random order, what is the probability that A will be next to B?

Simplify your answer, and type it as a fraction.

3) Assistentment #41960 "41960 - 31062 - Permutations Part 2"

There are 4 balls: A, B, C, D on a shelf.

If they are in a random order, what is the probability that A will not be next to C or D?

Simplify your answer, and type it as a fraction.

4) Assistentment #41961 "41961 - 31062 - Permutations Part 2"

There are 4 balls: A, B, C, D on a shelf.

If they are in a random order, what is the probability that B will be next to C?

Simplify your answer, and type it as a fraction.

5) Assisment #41978 "41978 - 31062 - Permutations Part 2"

There are 4 students: Albert, Bob, Chris, & Dan standing in line.

If they are in a random order, what is the probability that Albert will not be next to Bob or Chris?

Simplify your answer, and type it as a fraction.

Assisment #31125 "31125 - Permutations"

If there are 4 different %v{obj}s on a shelf, how many different ways can they be arranged in a line?

Algebra:

✓ 24

Scaffold:

Let's break the problem in smaller parts.

In how many ways can 2 different %v{obj}s be arranged on a shelf?

Algebra:

✓ 2

✗ 4

Hints:

- Let **A** be one %v{obj} and **B** be the other. Now list the ways you can arrange them.
- They can be arranged **AB** or **BA**

- For 2 %v{obj}s, there are 2 different arrangements.

Type in 2.

.

Scaffold:

Let's use 3 %v{obj}s this time. In how many ways can 3 different %v{obj}s be arranged on a shelf?

Algebra:

✓ 6

Hints:

- We can label the %v{obj}s **A**, **B**, and **C**
Now list the ways you can arrange them.
- Start with the arrangements **AB** and **BA**, and list how many new ways there are when you include **C**

For Example: **ABC**, and **BAC** are 2 of the possible arrangements. Now find the rest.

- The arrangements are:

ABC	BAC	CAB
ACB	BCA	CBA

- For 3 %v{obj}s there are 6 different arrangements.

Type in 6.

.

Scaffold:

Now we are going to repeat the original question

If there are 4 different %v{obj}s on a shelf, how many different ways can they be arranged in a line?

Algebra:

✓ 24

Hints:

- Try making a list of all the possible arrangements.
- Here is a list of all the arrangements for 4 %v{obj}s:

ABCD	BACD	CABD	DACB
ABDC	BADC	CADB	DACB
ACBD	BCAD	CBAD	DBAC
ACDB	BCDA	CBDA	DBCA
ADBC	BDAC	CDAB	DCAB
ADCB	BDCA	CDBA	DCBA

- Look at the table below. We see that 2 %v{obj}s can be arranged in 2 ways, 3 %v{obj}s in 6 ways.

No. of ways	No. of %v{obj}s
2	$2*1 = 2\text{ways}$
3	$3*2*1 = 6\text{ ways}$
4	?

If there are 4 different %v{obj}s on a shelf, how many different ways can they be arranged in a line?

- Four %v{obj}s can be arranged in $4*3*2*1 = 24$ ways.

Type in 24.

Assistment #31062 "31062 - Permutations Part 2"

There are 4 objects: name place.

If they are in a random order, what is the probability that p will e p²?

Simplify your answer, and type it as a fraction.

Fill in:

✓ %v{ans}

✗ 12/24

✗ 6/12

✗ 3/6

✗ 2/4

✗ 4/24

✗ 2/12

Scaffold:

The number of outcomes for the event

Probability = _____

The number of possible outcomes

If there are 4 objects place, what is the total number of ways they can be arranged? (the

number of possible outcomes)

Fill in:

✓ 24

✗ $4 \times 3 \times 2 \times 1$

✗ $4 \times 3 \times 2$

Hints:

- Try making a list of all the ways the 4 %v{obj}s can be arranged in a line.
- If we put %v{a} in the front of the line, then the list would start to look like this:
%v{filler}

ABCD
ABDC
ACBD
ACDB
ADBC
ADCB

Now make the entire list, and count how many arrangements there are.

- Here is a list of all the ways 4 %v{obj}s can be arranged in a line.

ABCD	BACD	CABD	DACB
ABDC	BADC	CADB	DACB
ACBD	BCAD	CBAD	DBAC
ACDB	BCDA	CBDA	DBCA
ADBC	BDAC	CDAB	DCAB
ADCB	BDCA	CDBA	DCBA

There are 24 ways to arrange 4 %v{obj}s in a line.
Type in 24.

Scaffold:

Good, now the only other thing you need to find is the number of arrangements where $v_p \in v_{p2}$ (The number of outcomes for the event).

How many arrangements are there in which $v_p \in v_{p2}$?

Fill in:

✓ v_{top}

Hints:

- Look at your list of arrangements, and count all of the ones where $v_p \in v_{p2}$
- Here is the list
 v_{filler}

ABCD	BACD	CABD	DABC
ABDC	BADC	CADB	DACB
ACBD	BCAD	CBAD	DBAC
ACDB	BCDA	CBDA	DBCA
ADBC	BDAC	CDAB	DCAB
ADCB	BDCA	CDBA	DCBA

How many arrangements are there in which $v_p \in v_{p2}$?

- There are v_{top} arrangements in which $v_p \in v_{p2}$.

Type in v_{top}

Scaffold:

Now we are going to repeat the original question:

There are 4 v_{obj} s: v_{name} v_{place} .

If they are in a random order, what is the probability that p will be p_2 ?

Simplify your answer, and type it as a fraction.

Fill in:

✓ $\text{\%v\{ans\}}$

Hints:

- There are 24 ways that the $\text{\%v\{obj\}}$ s can be arranged.
- There are $\text{\%v\{top\}}$ arrangements in which p is p_2 .
- The probability that p will be p_2 is $\text{\%v\{top\}}/24$.

Simplify $\text{\%v\{top\}}/24$

- $\text{\%v\{top\}}/24$ simplifies to $\text{\%v\{ans\}}$.

Type in $\text{\%v\{ans\}}$.

Mastery Learning 27931 Probability Review 8th Probability-Compound, Counting Methods

id:[6110]

1) Assistentment #41990 "41990 - 30870 - Multiple Coin Tossing"

Luis is going to toss **4 coins**. What is the probability that he gets **4 heads** in a row?

Type your answer as a fraction.

2) Assistentment #41999 "41999 - 30871 - Coin tossing, different outcomes"

Luis is going to toss **3 coins**. What is the probability that he gets **only one tail**?

Type your answer as a fraction.

3) Assistentment #42004 "42004 - 30871 - Coin tossing, different outcomes"

Luis is going to toss **3 coins**. What is the probability that he gets **only two tails**?

Type your answer as a fraction.

4) Assistentment #42008 "42008 - 30871 - Coin tossing, different outcomes"

Luis is going to toss **5 coins**. What is the probability that he gets **only one head**?

Type your answer as a fraction.

5) Assistent #42010 "42010 - 30871 - Coin tossing, different outcomes"

Luis is going to toss **4 coins**. What is the probability that he gets **only one tail**?

Type your answer as a fraction.

6) Assistent #42018 "42018 - 30871 - Coin tossing, different outcomes"

Luis is going to toss **5 coins**. What is the probability that he gets **only one head**?

Type your answer as a fraction.

Assistent #30870 "30870 - Multiple Coin Tossing"

Luis is going to toss **$v\{c\}$ coins**. What is the probability that he gets **$v\{c\}$ heads** in a row?

Type your answer as a fraction.

Algebra:

✓ $v\{ans\}$

Scaffold:

Let's examine a single coin toss first. What is the probability of getting heads when you toss **one coin**?

Algebra:

✓ 1/2

Hints:

- The probability of getting the outcome we want is equal to:

number of outcomes for the event

number of possible outcomes

- Think of the number of possible outcomes.
- The number of possible outcomes is 2: either heads or tails.
- The number of outcomes for the event is 1 (heads).
-

The number of outcomes for the event 1

_____ =

The number of possible outcomes 2

The probability of getting heads when you toss 1 coin is 1/2. Type in 1/2.

Scaffold:

Good, the probability of getting heads when you toss **one** coin is **1/2**. Now let's examine tossing two coins.

What is the probability of getting **two heads** in a row when you toss **two coins**?

Algebra:

✓ 1/4

Hints:

-

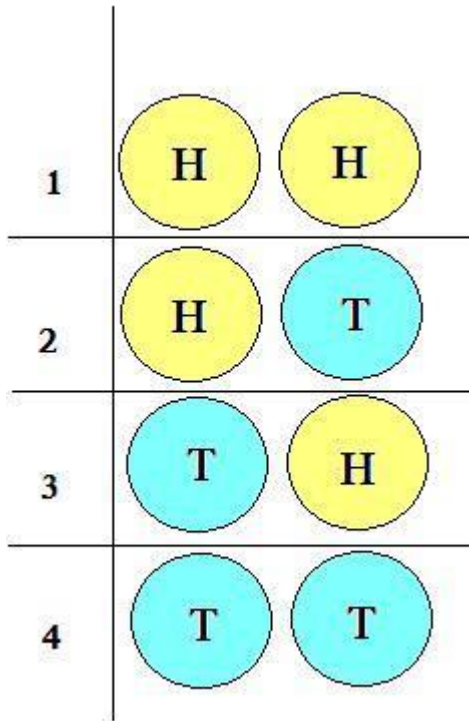
$$\begin{array}{ccc} & \text{The number of outcomes for the} & \\ & \text{event} & \\ \text{The Probability of an} & = & \\ \text{event} & & \hline & \text{The number of possible outcomes} & \end{array}$$

-

Try to make a list of **all the possible outcomes** for flipping **two coins**.

Count how many **outcomes** are on your list.

- The image below shows all possible outcomes of 2 coin flips. H = heads, T = tails.



- Count how many outcomes on the list are the same as **the outcomes we want** (HH).
- **The number of outcomes for the event we want** is 1 (the event is getting two heads in a row).
-

$$\frac{\text{The number of outcomes for the event } 1}{\text{The number of possible outcomes } 4} = \frac{1}{4}$$

The probability of getting two heads in a row when you toss two coins is 1/4. Type in 1/4.

Scaffold:

Good, the probability of getting **two heads** in a row when you toss **two coins** is **1/4**. Now let's examine tossing $\%v\{c\}$ coins.

What is the probability of getting $\%v\{c\}$ heads in a row when you toss $\%v\{c\}$ coins?

Fill in:

✓ $\%v\{\text{ans}\}$

Hints:

- Try making a list of **all the possible outcomes** for $\%v\{c\}$ flips.

Start by listing $\%v\{c\}$ possible outcomes

- Here are some examples.

HHH	HHT	HTH
-----	-----	-----

Notice that there is a pattern beginning to form here.

The table starts with 0 Tails, and then begins to replace 1 flip with Tails.

Now try and see if you can list all the possible outcomes for $\%v\{c\}$ flips.

- Here is a list of **all the possible outcomes** for $\%v\{c\}$ flips.

HHH	HHT	HTH	HTT
TTT	TTH	THT	THT

There are $\%v\{\text{tot}\}$ outcomes for $\%v\{c\}$ coin flips. **What is the probability of getting $\%v\{c\}$ heads in a row when you toss $\%v\{c\}$ coins?**

- Only one cell in the table has $\%v\{c\}$ heads.
- The probability of getting $\%v\{c\}$ heads in a row when you toss $\%v\{c\}$ coins is $\%v\{\text{ans}\}$

Type in %v{ans}

Assistment #30871 "30871 - Coin tossing, different outcomes"

Luis is going to toss $\%v\{c\}$ coins. What is the probability that he gets **only** $\%v\{var\}$?

Type your answer as a fraction.

Algebra:

✓ $\%v\{ans\}$

Scaffold:

Let's examine a single coin toss first. What is the probability of getting tails when you toss **one** coin?

Algebra:

✓ $1/2$

Hints:

- The probability of getting the outcome we want is equal to:

number of outcomes for the event

number of possible outcomes

- Think of the number of possible outcomes.
- The number of possible outcomes is 2: either heads or tails.
- The number of outcomes for the event is 1 (tails).
-

The number of outcomes for the event 1

=

_____ -

The probability of getting tails when you toss 1 coin is $1/2$. Type in $1/2$.

Scaffold:

To determine the probability of getting only $\%v\{var\}$ when flipping $\%v\{c\}$ coins, lets first figure out how many possible outcomes there are for $\%v\{c\}$ coin flips.

How many [possible outcomes](#) there are for $\%v\{c\}$ coin flips?

Fill in:

✓ $\%v\{tot\}$

Hints:

- For every coin flip, there are 2 possible outcomes.
- Try making a list of all the [possible outcomes](#) for $\%v\{c\}$ flips.

Start by listing $\%v\{c\}$ possible outcomes

- Here are some examples.

HHHH	HHHT	HHTH	HTHH
------	------	------	------

Notice that there is a pattern beginning to form here.

The table starts with 0 Tails, and then begins to replace 1 flip with Tails.

Now try and see if you can list all the [possible outcomes](#) for $\%v\{c\}$ flips.

- Here is a list of [all the possible outcomes](#) for $\%v\{c\}$ flips.

HHHH	HHHT	HHTT	HHTH	HTHH	HTTH	HTTT	HTHT
TTTT	TTTH	TTHH	TTHT	THTT	THHT	THHH	THTH

There are $\%v\{\text{tot}\}$ outcomes for $\%v\{c\}$ coin flips.

Type in $\%v\{\text{tot}\}$

Scaffold:

How many ways can $\%v\{c\}$ coin flips result in **only $\%v\{\text{var}\}$** ?

Algebra:

✓ $\%v\{\text{num}\}$

Hints:

- Here is a list of all possible outcomes.

HHHH	HHHT	HHTT	HHTH	HTHH	HTTH	HTTT	HTHT
TTTT	TTTH	TTHH	TTHT	THTT	THHT	THHH	THTH

Notice that The 2nd row is just a mirror image of the 1st row, (meaning H and T's are swapped)

How many of these outcomes have only $\%v\{\text{var}\}$ in them?

Note: Try writing this list on a piece of paper and circle or highlight all the outcomes that have only $\%v\{\text{var}\}$

- There are $\%v\{\text{num}\}$ ways that only $\%v\{\text{var}\}$ will be flipped when $\%v\{c\}$ total coins are flipped.

Type in $\%v\{\text{num}\}$

Scaffold:

Now we are going to repeat the original question:

Luis is going to toss $\%v\{c\}$ coins. What is the probability that he gets only $\%v\{\text{var}\}$?

Type your answer as a fraction.

Algebra:

✓ $\%v\{\text{ans}\}$

Hints:

- Probability is represented as x/y
- There are $\%v\{\text{num}\}$ ways for $\%v\{c\}$ coins flips to result in only $\%v\{\text{var}\}$.
- There are $\%v\{\text{tot}\}$ possible outcomes for $\%v\{c\}$ coin flips.
- The probability that he gets only $\%v\{\text{var}\}$, on $\%v\{c\}$ coin flips is $\%v\{\text{ans}\}$

Type in $\%v\{\text{ans}\}$

Mastery Learning 27924 Probability Review 8th Probability-Compound

id:[6111]

1) Assistentment #42019 "42019 - 30449 - Combinations"

Danielle took her little cousin to the "Dress a Dragon" store.
Here you can choose to dress your dragon from a choice of 6 hats, 5 pants, and 3 shirts.
An **outfit** is made up of 1 hat, 1 pants, and 1 shirt.

How many different **combinations** of **outfits** are there?

2) Assistentment #42020 "42020 - 30449 - Combinations"

Danielle took her little cousin to the "Dress a Dragon" store.
Here you can choose to dress your dragon from a choice of 6 hats, 2 pants, and 2 shirts.
An **outfit** is made up of 1 hat, 1 pants, and 1 shirt.

How many different **combinations** of **outfits** are there?

3) Assistentment #42021 "42021 - 30449 - Combinations"

Danielle took her little cousin to the "Dress a Dragon" store.
Here you can choose to dress your dragon from a choice of 5 hats, 2 pants, and 4 shirts.
An **outfit** is made up of 1 hat, 1 pants, and 1 shirt.

How many different **combinations** of **outfits** are there?

4) Assisment #42022 "42022 - 30449 - Combinations"

Danielle took her little cousin to the "Dress a Dragon" store.
Here you can choose to dress your dragon from a choice of 2 hats, 3 pants, and 4 shirts.
An **outfit** is made up of 1 hat, 1 pants, and 1 shirt.


How many different **combinations** of **outfits** are there?


Assisment #30449 "30449 - Combinations"

Danielle took her little cousin to the "Dress a Dragon" store.
Here you can choose to dress your dragon from a choice of $\%v\{h\}$ hats, $\%v\{p\}$ pants, and $\%v\{s\}$ shirts.
An **outfit** is made up of 1 hat, 1 pants, and 1 shirt.

How many different **combinations** of **outfits** are there?

Fill in:

 $\%v\{h+p+s\}$

 $\%v\{h*p*s\}$

Hints:

- Start by figuring out how many combinations there are for Hats and Pants. Then when you have that number, Find out how many complete outfits can me made.
- There are $\%v\{h\}$ hats and $\%v\{p\}$ pants.

Some sample combinations are:

{HAT 1, PANTS 1}

{HAT 1, PANTS 2}

- There are $v\{h\}$ hats and $v\{p\}$ pants.

If we allow for any hat to be used with any pants, then we have $v\{h\} \times v\{p\} = v\{p^*h\}$ combinations.

Now , figure out how many combinations can be made with $v\{h\}$ hats, $v\{p\}$ pants, and $v\{s\}$ shirts.

- Now you can list all the combinations or you can just multiply:

There are $v\{h\} \times v\{p\} \times v\{s\} = v\{p^*h^*s\}$ combinations.

Type in $v\{p^*h^*s\}$

13 Appendix D: Data Tables

Table D-1: Accentuate the Negative Data

1	StudentName	Group Number	Condition	APC ² pre-test	APC post test	Gain Score
4	Teddy A Bartkiewicz	5	Control	46%	69%	23%
8	Alycia D Bouffard	6	Control	30%	84%	54%
9	Natalie A Burchat	5	Control	69%	84%	15%
11	James A Carlson	6	Control	76%	84%	8%
14	Becca A Cochran	5	Control	61%	61%	0%
17	Narvicto E Dejesus	6	Control	53%	38%	-15%
19	Matt J Demers	6	Control	61%	61%	0%
23	Nour E Elsakka	6	Control	69%	100%	31%
29	Kiery M Fisher	5	Control	61%	46%	-15%
33	Rachel L Govoni	5	Control	53%	38%	-15%
34	Guy C Hafford	6	Control	46%	53%	7%
39	Kelsey L Herring	6	Control	76%	69%	-7%
46	Robert W Joachim	5	Control	84%	84%	0%
47	Sara Y Kaminsky	5	Control	84%	92%	8%
49	Myles A Kennedy	6	Control	69%	84%	15%
55	Erin K Lapierre	5	Control	61%	53%	-8%
57	Brandon E Lewis	5	Control	61%	84%	23%
58	Kaitlyn N Lijoi	6	Control	76%	100%	24%
59	Christina L Litchfield	5	Control	23%	53%	30%
61	Matthew W Loomer	6	Control	69%	92%	23%
67	Bethany R Mccann	6	Control	46%	61%	15%
69	Mary E Mckeown	6	Control	53%	38%	-15%
70	Matt Mclean	6	Control	38%	30%	-8%
71	Jordan M Miralis	5	Control	53%	38%	-15%
73	Daniel J Mortimer	6	Control	76%	84%	8%
75	Jaleh M Nault	5	Control	76%	84%	8%
76	Ben F North	5	Control	92%	84%	-8%
81	Greg N Polechronis	6	Control	46%	84%	38%
82	Jonathan R Pouliot	5	Control	92%	76%	-16%
85	Teddy Quinlivan	5	Control	92%	100%	8%
88	Nicole J Rapp	6	Control	30%	61%	31%
89	Danielle M Rekemeyer	5	Control	53%	76%	23%
91	Gianna M Roth	5	Control	53%	61%	8%
93	Kyle F Roy	6	Control	30%	84%	54%
94	Lil M Sam		Control	69%	92%	23%

² APC= average percent correct

95	Josephine H Saygh	5	Control	76%	61%	-15%
96	Michael J Scala	5	Control	92%	92%	0%
97	Julie T Shamgochian	6	Control	61%	46%	-15%
98	Meaghan K Shanahan	5	Control	69%	61%	-8%
102	Madison E Taylor	6	Control	100%	92%	-8%
104	Zack J Twitchell	6	Control	84%	100%	16%
105	Jen L Tylock	5	Control	92%	100%	8%
106	Osi M Van dessel	5	Control	84%	92%	8%
108	Jamie A White	5	Control	76%	61%	-15%
109	Jessica M Williams	6	Control	92%	84%	-8%
2	Adam T Amatucci	7	Mastery	76%	76%	0%
5	Gautam Batra	7	Mastery	76%	69%	-7%
6	Nicki L Bertrand	7	Mastery	69%	84%	15%
7	Frank F Bisnette	4	Mastery	38%	38%	0%
10	Ryan C Carelli	7	Mastery	76%	92%	16%
12	William K Chan	4	Mastery	61%	100%	39%
13	Nicole L Chaulk	4	Mastery	69%	53%	-16%
16	Rana Dabbagh	7	Mastery	100%	84%	-16%
18	Jarred W Delude	7	Mastery	76%	61%	-15%
21	Gabriella digiacomo Digiacomo	7	Mastery	76%	84%	8%
25	Aaron S Feitelberg	4	Mastery	92%	100%	8%
26	Michael E Ferguson	7	Mastery	92%	100%	8%
28	Victoria B Fields-huggan	7	Mastery	46%	76%	30%
30	Angeline P Gallant	7	Mastery	46%	46%	0%
31	Ian D Gansler	7	Mastery	53%	84%	31%
32	Alycia A Gemma	4	Mastery	53%	84%	31%
35	Kayla J Hamilton	7	Mastery	30%	84%	54%
36	Mitch J Harpin	7	Mastery	61%	38%	-23%
37	Caroline L Harrington	4	Mastery	76%	46%	-30%
40	Brandon K Hesselton	4	Mastery	0%	41%	41%
41	Brendan T Hicks	7	Mastery	69%	69%	0%
42	Elizabeth howland L Howland	7	Mastery	76%	69%	-7%
44	A M J	7	Mastery	69%	76%	7%
48	Victoria N Keaney	4	Mastery	30%	61%	31%
50	Caraline J Konz	7	Mastery	84%	92%	8%
51	Brandon L Labelle	4	Mastery	23%	76%	53%
53	Alexandra V Lampson	4	Mastery	69%	69%	0%
54	Derek F Lanotte	7	Mastery	61%	69%	8%
56	Anna W Lapriore	4	Mastery	69%	84%	15%
60	Matt L Lombard	4	Mastery	92%	61%	-31%
62	Umbreen T Majid	7	Mastery	53%	100%	47%
63	Nicholas A Marin	4	Mastery	76%	84%	8%
64	Thalilyan P Martins	7	Mastery	69%	41%	-28%

65	Hannah E Masek	4	Mastery	61%	76%	15%
66	Nate R May	4	Mastery	38%	53%	15%
68	Tim M Mccarthy	7	Mastery	92%	92%	0%
74	Connor P Nash	7	Mastery	92%	92%	0%
77	Carly D O'connell	7	Mastery	84%	100%	16%
78	Amanda S Okaka	4	Mastery	76%	92%	16%
84	Jack T Quinlivan	4	Mastery	38%	69%	31%
90	Nick J Rodriguez	7	Mastery	61%	100%	39%
99	Kelsey M Shea	7	Mastery	84%	61%	-23%
100	Matthew J Smith	4	Mastery	16%	50%	34%
101	Angela M Su	4	Mastery	100%	100%	0%
			control	66%	73%	7%
			experiment	65%	74%	10%
			all	65%	74%	8%
			ttest	0.843	0.673	0.540
			mode	0.760	0.840	0.080
			effect size		0.088	0.144
			SDV control	0.194	0.202	0.185
			SDV mastery	0.229	0.192	0.221

Table D-2: Accentuate the Negative Data, Post “Goofer” Removal

1	StudentName	Group Number	Condition	APC pre-test	APC post test	Gain Score	Goofer/Serious
14	Becca A Cochran	5	Control	61%	61%	0%	serious
19	Matt J Demers	6	Control	61%	61%	0%	serious
46	Robert W Joachim	5	Control	84%	84%	0%	serious
96	Michael J Scala	5	Control	92%	92%	0%	serious
34	Guy C Hafford	6	Control	46%	53%	7%	serious
11	James A Carlson	6	Control	76%	84%	8%	serious
73	Daniel J Mortimer	6	Control	76%	84%	8%	serious
75	Jaleh M Nault	5	Control	76%	84%	8%	serious
85	Teddy Quinlivan	5	Control	92%	100%	8%	serious
91	Gianna M Roth	5	Control	53%	61%	8%	serious
105	Jen L Tylock	5	Control	92%	100%	8%	serious
47	Sara Y Kaminsky	5	Control	84%	92%	8%	serious
106	Osi M Van dessel	5	Control	84%	92%	8%	serious
67	Bethany R Mccann	6	Control	46%	61%	15%	serious
9	Natalie A Burchat	5	Control	69%	84%	15%	serious
49	Myles A Kennedy	6	Control	69%	84%	15%	serious
104	Zack J Twitchell	6	Control	84%	100%	16%	serious
4	Teddy A Bartkiewicz	5	Control	46%	69%	23%	serious
57	Brandon E Lewis	5	Control	61%	84%	23%	serious
89	Danielle M Rekemeyer	5	Control	53%	76%	23%	serious
61	Matthew W Loomer	6	Control	69%	92%	23%	serious
94	Lil M Sam		Control	69%	92%	23%	serious
58	Kaitlyn N Lijoi	6	Control	76%	100%	24%	serious
59	Christina L Litchfield	5	Control	23%	53%	30%	serious
88	Nicole J Rapp	6	Control	30%	61%	31%	serious
23	Nour E Elsakka	6	Control	69%	100%	31%	serious
81	Greg N Polechronis	6	Control	46%	84%	38%	serious
8	Alycia D Bouffard	6	Control	30%	84%	54%	serious
93	Kyle F Roy	6	Control	30%	84%	54%	serious
2	Adam T Amatucci	7	Mastery	76%	76%	0%	serious
7	Frank F Bisnette	4	Mastery	38%	38%	0%	serious
30	Angeline P Gallant	7	Mastery	46%	46%	0%	serious
41	Brendan T Hicks	7	Mastery	69%	69%	0%	serious
53	Alexandra V Lampson	4	Mastery	69%	69%	0%	serious
68	Tim M Mccarthy	7	Mastery	92%	92%	0%	serious
74	Connor P Nash	7	Mastery	92%	92%	0%	serious
101	Angela M Su	4	Mastery	100%	100%	0%	serious
44	A M J	7	Mastery	69%	76%	7%	serious

21	Gabriella digiacomo Digiaco	7	Mastery	76%	84%	8%	serious
25	Aaron S Feitelberg	4	Mastery	92%	100%	8%	serious
26	Michael E Ferguson	7	Mastery	92%	100%	8%	serious
54	Derek F Lanotte	7	Mastery	61%	69%	8%	serious
63	Nicholas A Marin	4	Mastery	76%	84%	8%	serious
50	Caraline J Konz	7	Mastery	84%	92%	8%	serious
6	Nicki L Bertrand	7	Mastery	69%	84%	15%	serious
56	Anna W Lapriore	4	Mastery	69%	84%	15%	serious
65	Hannah E Masek	4	Mastery	61%	76%	15%	serious
66	Nate R May	4	Mastery	38%	53%	15%	serious
10	Ryan C Carelli	7	Mastery	76%	92%	16%	serious
77	Carly D O'connell	7	Mastery	84%	100%	16%	serious
78	Amanda S Okaka	4	Mastery	76%	92%	16%	serious
28	Victoria B Fields- huggan	7	Mastery	46%	76%	30%	serious
31	Ian D Gansler	7	Mastery	53%	84%	31%	serious
32	Alycia A Gemma	4	Mastery	53%	84%	31%	serious
84	Jack T Quinlivan	4	Mastery	38%	69%	31%	serious
48	Victoria N Keaney	4	Mastery	30%	61%	31%	serious
100	Matthew J Smith	4	Mastery	16%	50%	34%	serious
12	William K Chan	4	Mastery	61%	100%	39%	serious
90	Nick J Rodriguez	7	Mastery	61%	100%	39%	serious
40	Brandon K Hesselton	4	Mastery	0%	41%	41%	serious
62	Umbreen T Majid	7	Mastery	53%	100%	47%	serious
51	Brandon L Labelle	4	Mastery	23%	76%	53%	serious
35	Kayla J Hamilton	7	Mastery	30%	84%	54%	serious
			control	64%	81%	17%	
			experiment	60%	79%	19%	
			all	62%	80%	18%	
			ttest	0.510	0.672	0.623	
			mode	0.690	0.840	0.000	
			effect size	-0.232	-0.118	0.133	
			SDV control	0.160	0.150	0.146	
			SDV mastery	0.236	0.173	0.166	

Table D-3: Comparing and Scaling Data

3	StudentName	Group number	Condition	APC pre-test	APC Post Test	Gain Score
23	Kiery M Fisher	5	control	72%	45%	-27%
24	Teddy A Bartkiewicz	5	control	63%	45%	-18%
25	Becca A Cochran	5	control	36%	54%	18%
26	Ben F North	5	control	72%	72%	0%
27	Osi M Van dessel	5	control	90%	54%	-36%
28	Natalie A Burchat	5	control	90%	54%	-36%
29	Christina L Litchfield	5	control	54%	63%	9%
30	Jen L Tylock	5	control	90%	90%	0%
31	Jaleh M Nault	5	control	90%	63%	-27%
32	Gianna M Roth	5	control	63%	27%	-36%
33	Erin K Lapierre	5	control	63%	81%	18%
34	Rachel L Govoni	5	control	45%	45%	0%
35	Danielle M Rekemeyer	5	control	100%	72%	-28%
36	Robert W Joachim	5	control	63%	54%	-9%
37	Teddy Quinlivan	5	control	63%	63%	0%
38	Meaghan K Shanahan	5	control	45%	54%	9%
39	Sara Y Kaminsky	5	control	81%	81%	0%
40	Michael J Scala	5	control	81%	63%	-18%
41	Jonathan R Pouliot	5	control	63%	81%	18%
42	Jamie A White	5	control	54%	54%	0%
43	Lil M Sam		control	72%	50%	-22%
44	Zack J Twitchell	6	control	36%	63%	27%
45	James A Carlson	6	control	81%	81%	0%
46	Kelsey L Herring	6	control	90%	54%	-36%
47	Kaitlyn N Ljoi	6	control	81%	36%	-45%
48	Nour E Elsakka	6	control	72%	45%	-27%
49	Madison E Taylor	6	control	72%	63%	-9%
50	Myles A Kennedy	6	control	54%	54%	0%
51	Jessica M Williams	6	control	45%	63%	18%
52	Matt Mclean	6	control	36%	54%	18%
53	Daniel J Mortimer	6	control	72%	63%	-9%
54	Nicole J Rapp	6	control	45%	81%	36%
55	Julie T Shamgochian	6	control	27%	63%	36%
56	Matt J Demers	6	control	36%	36%	0%
57	Narvicto E Dejesus	6	control	45%	27%	-18%
58	Matthew W Loomer	6	control	63%	63%	0%
59	Mary E Mckeown	6	control	63%	36%	-27%
60	Bethany R Mccann	6	control	18%	36%	18%
86	Jordan M Miralis	5	control	54%	81%	27%
87	Brandon E Lewis	5	control	63%	50%	-13%
88	Greg N Polechronis	6	control	90%	72%	-18%
91	Josephine H Saygh	5	control	54%	45%	-9%

92	Alycia D Bouffard	6	control	18%	45%	27%
94	Kyle F Roy	6	control	54%	81%	27%
96	Guy C Hafford	6	control	72%	27%	-45%
6	Angela M Su	4	mastery	72%	90%	18%
7	Alexandra V Lampson	4	mastery	63%	72%	9%
8	William K Chan	4	mastery	90%	100%	10%
9	Nicholas A Marin	4	mastery	63%	36%	-27%
10	Anna W Lapriore	4	mastery	90%	81%	-9%
11	Hannah E Masek	4	mastery	72%	63%	-9%
13	Matt L Lombard	4	mastery	0%	72%	72%
14	Nicole L Chauk	4	mastery	45%	72%	27%
15	Aaron S Feitelberg	4	mastery	90%	72%	-18%
16	Alycia A Gemma	4	mastery	63%	63%	0%
17	Frank F Bisnette	4	mastery	18%	27%	9%
19	Matthew J Smith	4	mastery	45%	36%	-9%
20	Caroline L Harrington	4	mastery	45%	81%	36%
61	Ryan C Carelli	7	mastery	100%	81%	-19%
62	Elizabeth howland L Howland	7	mastery	90%	72%	-18%
63	Gabriella digiacomo Digiacomo	7	mastery	63%	72%	9%
64	Kelsey M Shea	7	mastery	36%	63%	27%
65	Caraline J Konz	7	mastery	72%	81%	9%
66	Nicki L Bertrand	7	mastery	63%	72%	9%
68	Gautam Batra	7	mastery	90%	90%	0%
69	Connor P Nash	7	mastery	72%	90%	18%
70	A M J	7	mastery	54%	63%	9%
71	Adam T Amatucci	7	mastery	72%	45%	-27%
72	Rana Dabbagh	7	mastery	81%	90%	9%
73	Ian D Gansler	7	mastery	54%	90%	36%
74	Jarred W Delude	7	mastery	63%	81%	18%
75	Angeline P Gallant	7	mastery	27%	36%	9%
76	Carly D O'connell	7	mastery	81%	81%	0%
77	Victoria B Fields-huggan	7	mastery	18%	90%	72%
78	Kayla J Hamilton	7	mastery	54%	63%	9%
79	Umbreen T Majid	7	mastery	72%	63%	-9%
81	Tim M Mccarthy	7	mastery	90%	72%	-18%
82	Nick J Rodriguez	7	mastery	81%	90%	9%
83	Brendan T Hicks	7	mastery	72%	45%	-27%
84	Mitch J Harpin	7	mastery	54%	54%	0%
85	Derek F Lanotte	7	mastery	90%	100%	10%
89	Amanda S Okaka	4	mastery	72%	72%	0%
90	Victoria N Keaney	4	mastery	27%	60%	33%
93	Michael E Ferguson	7	mastery	72%	72%	0%
97	Nate R May	4	mastery	27%	81%	54%
98	Jack T Quinlivan	4	mastery	18%	45%	27%
99	Brandon K Hesselton	4	mastery	27%	45%	18%

			Mode	0.720	0.630	0.000
			control average	0.620	0.574	-0.046
			experiment average	0.607	0.696	0.090
			average of all	0.614	0.633	0.019
			ttest	0.781	0.002	0.007
			Effect Size		0.749	0.608
			SDV control	0.202	0.163	0.223
			SDV mastery	0.248	0.184	0.231

