

Assignment

Name _____ Date _____

Life in a Small Town Picture Algebra

The owner of the coffee shop in the town that you are studying keeps track of her sales of food and beverages. On one particular day, the store had a total of \$168 in sales. The food sales were \$28 more than the beverage sales. How much were the food and beverage sales that day?

1. In the space below, draw a picture to represent the situation. Label the unknown parts with a variable and the known parts with their values. Do not worry about making the drawing to scale.

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2. Use the picture to find the amount of food sales and the amount of beverage sales.

Food sales:

Beverage sales:

3. Write a word equation to represent the drawing in Question 1.

High school students in the town that you are studying go to a school with students from another town. The total number of students in the high school is 431. Your town, Town A, has 2 more than twice as many students as Town B.

4. In the space below, draw a picture to represent the situation. Label the unknown parts with a variable and the known parts with their values. Do not worry about making the drawing to scale.

5. Use the picture to find the number of students from each town.

Students in Town A:

Students in Town B:

6. Write a word equation to represent the drawing in Question 4.

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Computer Games, CDs, and DVDs Writing, Evaluating, and Simplifying Expressions

A coffee shop has a special promotion in which you can buy a card for \$5.00 and purchase large coffee drinks for a month for only \$1.50 each.

1. Use this information to complete the table below.

Month	Number of Drinks Purchased	Cost of Discount Card	Total Cost of Drinks (with card purchased)
January	15	\$5.00	
February	20		
March	10		
April			\$17.00
May			\$14.00
June	4		

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2. In the table, what values change?
3. In the table, what values do not change?
4. Do the values in one column of the table depend on the values in another column?
Use a complete sentence to explain.
5. Use a complete sentence to explain how you found the total cost of drinks for each month.

6. Complete the table below.

m	$4m + 8$
	20
6	
-2	
	8
0.5	

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Selling Cars Solving One-Step Equations

The Media Store runs a promotion in July to increase summer business. They take \$2 off of every DVD in the store. Complete the table below.

Movie	Regular Price	Sale Price
Speed XXIV	\$17	
The Furious and the Fast	\$12	
Planet Wars		\$19
Saturday the Fourteenth XIII	\$6	

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1. How did you find the sale price, given the regular price? Use a complete sentence to explain your answer.
2. Write an expression to represent the sale price, given the regular price.

Use any method to solve each equation.

3. $x + 33 = 97$

4. $7 + x = 24$

5. $m - 325 = 339$

6. $m - 3.5 = 22.6$

7. $5y = 17$

8. $12.5y = 225$

9. $\frac{w}{22} = 15$

10. $\frac{w}{4} = 120.3$

Assignment

Assignment for Lesson 8.4

Name _____ Date _____

A Park Ranger's Work Is Never Done Solving Two-Step Equations

A local park rents cabins for people who want to vacation by the forest. The fee for the rental is \$27 per night. There is also a \$55 cleaning and maintenance charge that is added to the total bill.

1. What would the total cost be for a 3-day rental? Write your answer using a complete sentence.
2. What would the total cost be for a 7-day rental? Write your answer using a complete sentence.
3. Define a variable for the number of days that a cabin is rented. Use the variable to write an expression that represents the cost to rent the cabin, given the number of days that the cabin is rented.
4. How many days could the cabin have been rented if the total rental fee is \$190? Show all your work. Write your answer using a complete sentence.
5. Write an equation that you can use to find the number of days that you could rent the cabin for \$28. Solve the equation. Does your answer make sense? Write your answer using a complete sentence.

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Solve each two-step equation. Show all your work.

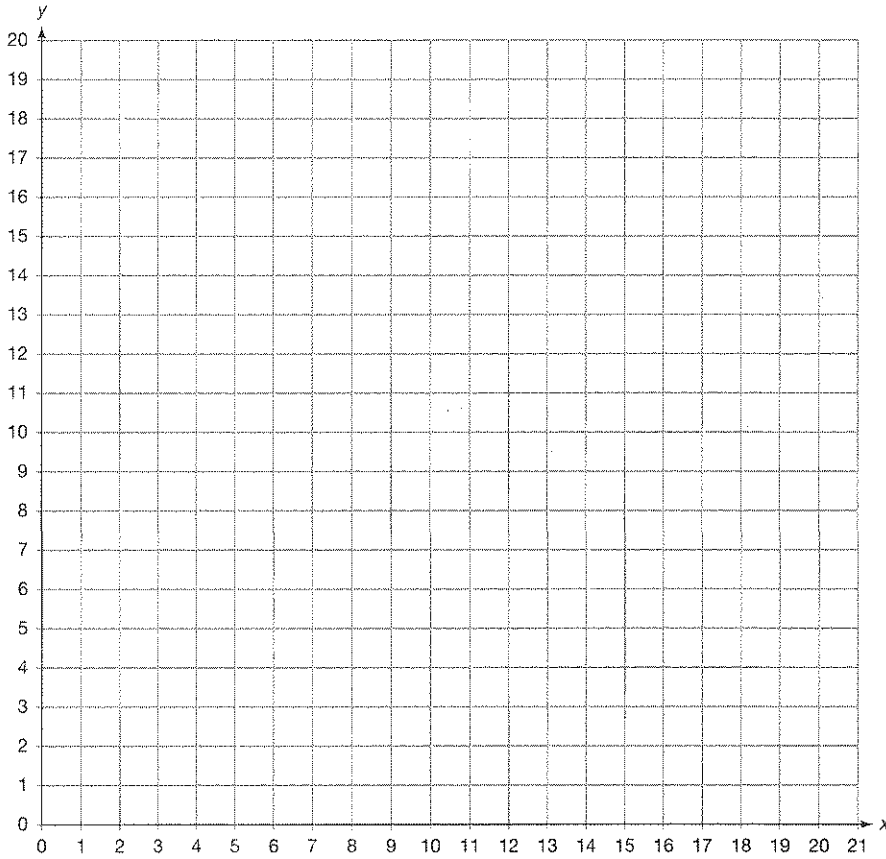
6. $12z + 8 = 44$

7. $123.4 = 5t - 8.8$

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Where's the Point? Plotting Points in the Coordinate Plane



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Plot and label each point in the coordinate plane.

- | | |
|---------------|----------------|
| 1. $A(5, 3)$ | 2. $B(0, 4)$ |
| 3. $C(12, 0)$ | 4. $D(13, 3)$ |
| 5. $E(3, 17)$ | 6. $F(20, 2)$ |
| 7. $G(1, 12)$ | 8. $H(16, 14)$ |
| 9. $J(1, 6)$ | 10. $K(5, 19)$ |

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Get Growing! Using Tables and Graphs

Lewis is researching a type of fish called carp. He discovers that one variety of carp can grow 5 pounds during each year of its life. He decides to purchase a very young carp of this variety that weighs 2 pounds.

1. How much will his carp weigh after 1 year? Write your answer using a complete sentence.
2. Define a variable for the amount of time in years that Lewis has had the carp. Write an expression that represents the weight of the carp in terms of the number of years Lewis has had it.
3. Use the expression that you wrote in Question 2 to complete the table.

Time (years)	Weight (pounds)
0	
1.5	
	12
	17
5	
6.5	
	37
	42

Solve each equation using any method.

4. $6n + 17 = 53$

5. $245 = 25n - 5$

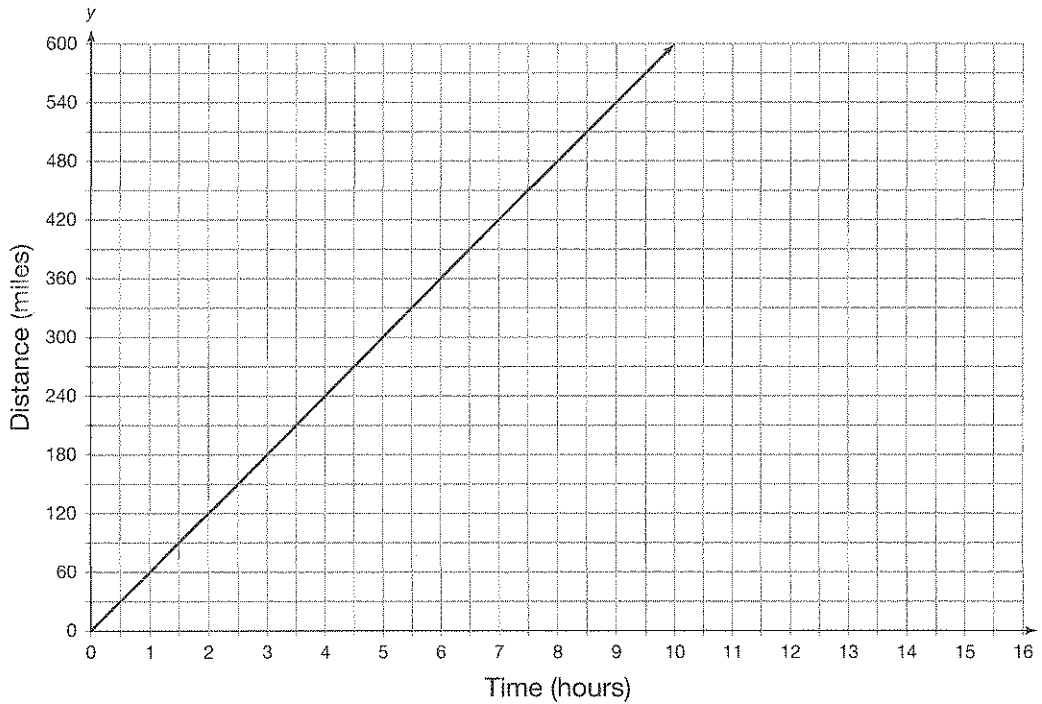
6. $\frac{x}{3} + 2 = 14$

7. $\frac{w}{4} - 7 = -5$

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Saving Energy Solving Problems Using Multiple Representations

Sandy is driving east from San Francisco along Route 80. The graph below represents the relationship between the time that Sandy has driven and the distance that she has driven.



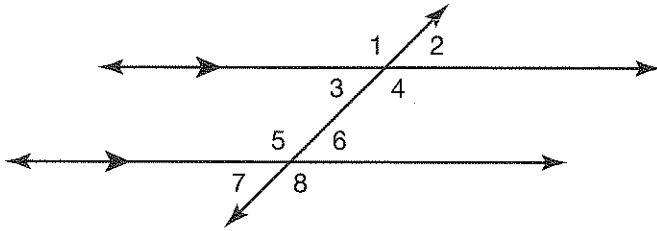
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1. How far has Sandy driven in 5 hours?
2. How far has Sandy driven in 10 hours?
3. How far has Sandy driven in 1 hour?
4. How fast is Sandy driving?
5. Write an equation to find the number of hours that Sandy drove if she drove for 340 miles.

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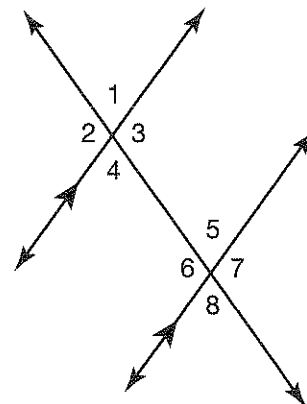
Figuring All of the Angles Angles and Angle Pairs



For Questions 1 through 13, use the figure above. The measure of $\angle 1$ is 135° . Complete each statement.

1. The measure of $\angle 2$ is _____.
2. $\angle 1$ and $\angle 2$ are _____ angles.
3. The measure of $\angle 3$ is _____.
4. $\angle 1$ and $\angle 3$ are _____ angles.
5. The measure of $\angle 4$ is _____.
6. $\angle 1$ and $\angle 4$ are _____ angles.
7. The measure of $\angle 5$ is _____.
8. \angle _____ and $\angle 5$ are vertical angles.
9. The measure of $\angle 6$ is _____.
10. \angle _____ and $\angle 6$ are corresponding angles.
11. The measure of $\angle 7$ is _____.
12. \angle _____ and $\angle 7$ are supplementary angles.
13. \angle _____ and $\angle 7$ are supplementary angles.

14. Write all of the relationships that you can think of that exist between the angles in the figure at the right.



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Assignment

Assignment for Lesson 9.2

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A Collection of Triangles Classifying Triangles

1. Use a ruler to draw an isosceles triangle that has a right angle.
2. Use a ruler to draw an isosceles triangle that has an obtuse angle.
3. Use a ruler to draw an isosceles triangle that has 3 acute angles.

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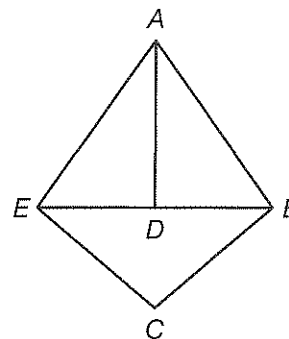
The side lengths of a triangle are given. Classify each triangle by its side lengths.

4. 2 inches, 2 inches, 2 inches
5. 5 meters, 2 meters, 4 meters
6. 7 feet, 5 feet, 5 feet

The angle measures of a triangle are given. Classify each triangle by its angle measures.

7. 30° , 90° , 60°
8. 40° , 110° , 30°
9. 45° , 60° , 75°
10. 60° , 60° , 60°

11. In the figure at the right, the length of \overline{AB} is equal to the length of \overline{AE} . Name and classify all of the triangles in the figure at the right. Use a complete sentence to write your answer.

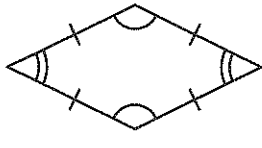
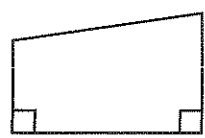
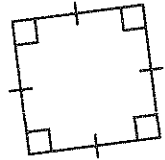


Assignment

Name _____ Date _____

The Signs Are Everywhere Quadrilaterals and Other Polygons

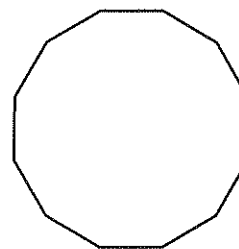
1. Write all of the names you can think of for each figure.

	1. 2. 3. 4. 5.
	1. 2. 3. 4. 5.
	1. 2. 3. 4. 5.

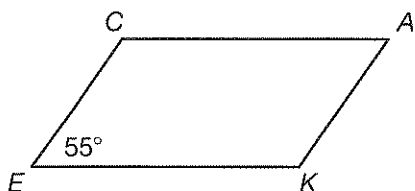
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The figure at the right is a 12-sided polygon called a regular dodecagon.

- How many diagonals can you draw from a vertex?
- Into how many triangles would these diagonals divide the dodecagon?
- What is the sum of the measures of the angles of the dodecagon?
- What is the measure of each angle of the regular dodecagon?



6. Find the measure of the missing angles of parallelogram CAKE.

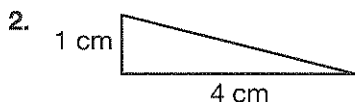
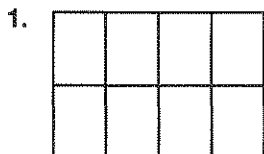


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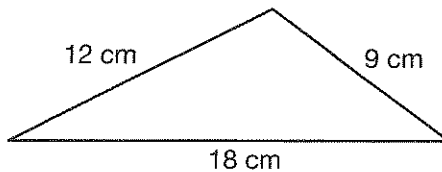
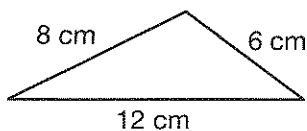
Name _____ Date _____

How Does Your Garden Grow? Similar Polygons

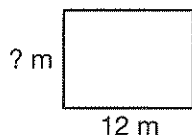
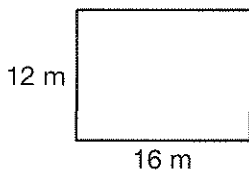
For each garden plot, draw a garden plot that is similar to the given plot but larger. Then draw a garden plot that is similar to the given plot but smaller.



3. Decide whether the triangles are similar. If they are, find the scale factor of the larger triangle compared to the smaller triangle. Write your answer using a complete sentence.



4. The rectangular gardens are similar. Find the scale factor of the smaller garden compared to the larger garden. Then find the missing length.



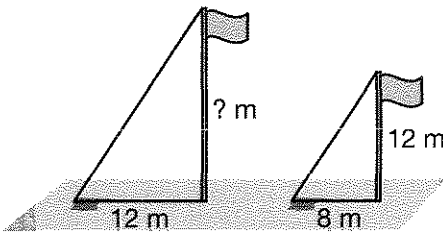
Assignment

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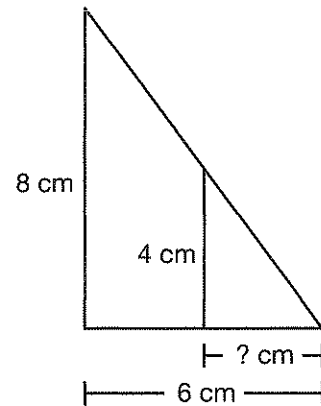
Shadows and Mirrors Indirect Measurement

Outside of the Boy Scouts of America building there are many flags that represent different groups within the organization. A group of scouts decides to use indirect measurement to find the heights of different flagpoles.

1. The scouts find that the shorter flagpole casts a shadow that is 8 meters long. The taller flagpole casts a shadow that is 12 meters long. The shorter flagpole is 12 meters tall. Find the height of the taller flagpole. Write your answer using a complete sentence.



2. Use what you have learned about similar triangles to find the length of the unknown side of the small triangle at the right.



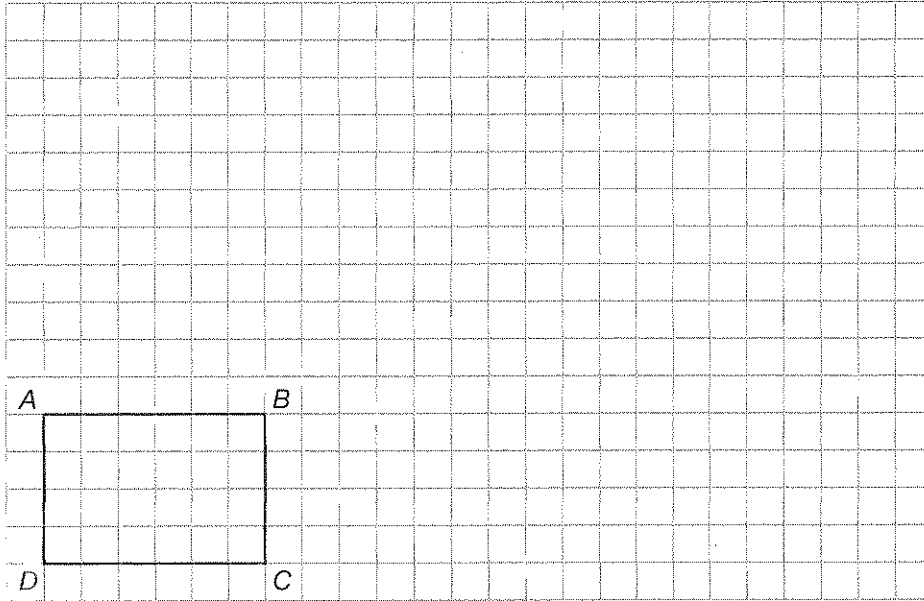
3. A tree casts a shadow that is 24 feet long. Casey is 5 feet tall and she casts a shadow that is 3 feet long. About how tall is the tree? Show all your work. Write your answer using a complete sentence.

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A Geometry Game Congruent Polygons

You want to investigate some shapes like the ones you worked with when you played the Geometry Game. Use the grid below to make new shapes that are similar to rectangle $ABCD$ with the scale factors given in the table. Then complete the table.



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Scale factor	Perimeter of original shape	Perimeter of new shape	How many times bigger is the perimeter of the new shape?	Area of original shape	Area of new shape	How many times bigger is the area of the new shape?
1						
2						
0.5						

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Now, make another rectangle that has the same area as the area of rectangle $ABCD$. Is the new rectangle congruent to rectangle $ABCD$? Is your new rectangle similar to rectangle $ABCD$?

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All Skate! Perimeter and Area

1. You get a job with the maintenance department of an apartment rental company. Your boss wants you to estimate the amount of paint needed for the next month. He tells you that you can paint 400 square feet with each gallon of wall paint. Fill in the missing values to complete the table.

Job Number	Wall Width (feet)	Wall Height (feet)	Area (square feet)
1	7 feet	8 feet	
2	16 feet	8 feet	
3	12 feet	10 feet	
4	14 feet	10 feet	
5	18 feet		180 square feet
6	10 feet		120 square feet
7	16 feet		192 square feet
8		12 feet	216 square feet
9		12 feet	288 square feet

2. Find the total area to be painted for all of the jobs.
3. Use your answer in Question 2 to determine the number of gallons of paint that you need to purchase to do all of the painting. Use a complete sentence to explain your reasoning.
4. Suppose that you need to put trim around the edges of a wall that has a width of 16 feet and a height of 12 feet. How many 8-foot pieces of trim do you need to purchase? Use a complete sentence to explain your reasoning.

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Round Food Around the World Circumference and Area of a Circle

Northern Tier Gardens has hired you for a summer job installing water gardens. They have circular water garden pools available in a variety of sizes. It is important to know the area of each water garden pool to help determine how many plants and fish it can support. It is also important to know the circumference of each water garden pool because there is a metal rim around each one to provide support and to help keep dirt out.

1. The manager has asked you to create a table showing the dimensions of the company's various water garden pools. He reminds you that the area of a circle can be found using the formula $A = \pi r^2$ and the circumference can be found using the formula $C = 2\pi r$. Use this information to complete the table. Use 3.14 for π and round each answer to the nearest hundredth.

Garden Name	Radius (feet)	Diameter (feet)	Area (square feet)	Circumference (feet)
Atlantic	2.5 feet	5 feet		
Pacifica	6 feet	12 feet		
Mediterranean	1.75 feet	3.5 feet		
Baltica	1 foot	2 feet		
Japanesque	2.25 feet	4.5 feet		
Floridian	3.25 feet	6.5 feet		

10

2. The garden company also makes rectangular garden pools. The table below has dimensions of some of the rectangular pools. Complete the table.

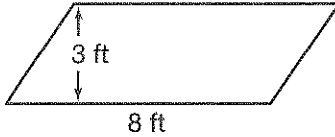
Garden Name	Length (feet)	Width (feet)	Area (square feet)	Perimeter (feet)
New Yorker	2.5 feet	5.5 feet		
Pennsylvanian	3 feet	8 feet		
Californian	4 feet	6 feet		
Arizonian	2 feet	3 feet		

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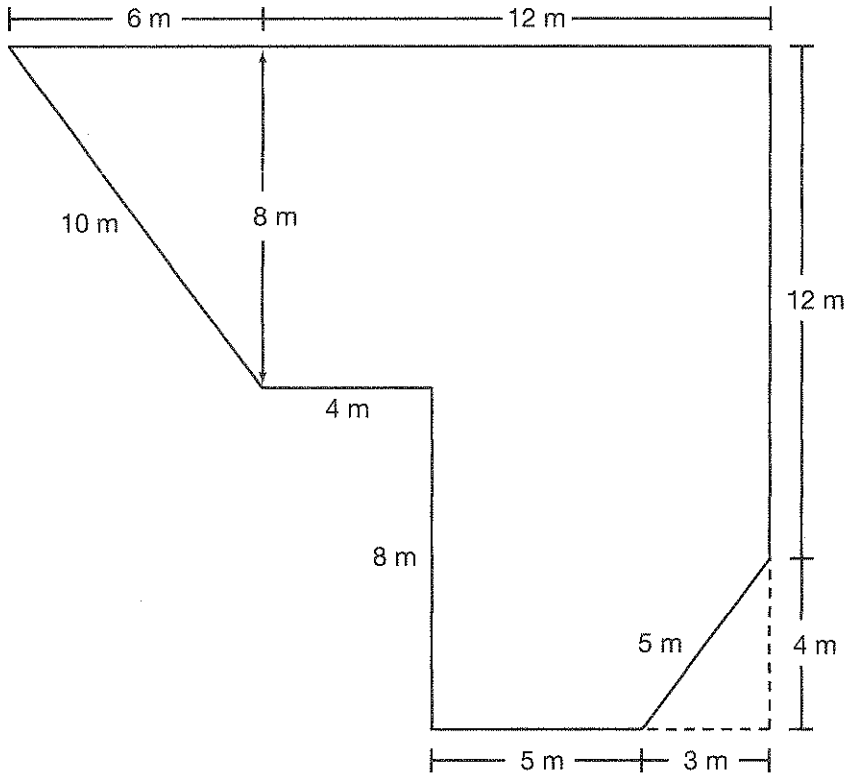
Name _____ Date _____

City Planning Areas of Parallelograms, Triangles, Trapezoids, and Composite Figures

1. Give the dimensions of a rectangle that has the same area as the parallelogram pictured below. What is the area?



2. A city wants to create a garden according to the plan below. Find the area and perimeter of the garden. Write your answer using a complete sentence.



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Assignment for Lesson 10.4

Name _____ Date _____

Sports Fair and Square Squares and Square Roots

Tech-Right Industries makes windows in various shapes, including squares.

1. A customer wants a square window with an area of 49 square feet. What is the perimeter of the window? Show all your work. Then write a complete sentence to explain your reasoning.
2. A customer wants a square window with a perimeter of 20 feet. What is the area of the window? Show all your work. Then write a complete sentence to explain your reasoning.
3. A customer wants a square window with an area of 16 square feet. What is the perimeter of the window? Show all your work. Then write a complete sentence to explain your reasoning.
4. A customer wants a square window with a perimeter of 14 feet. What is the area of the window? Show all your work. Then write a complete sentence to explain your reasoning.

10

Estimate each square root to the nearest tenth.

5. $\sqrt{10} \approx$

6. $\sqrt{30} \approx$

7. $\sqrt{75} \approx$

8. $\sqrt{50} \approx$

9. $\sqrt{20} \approx$

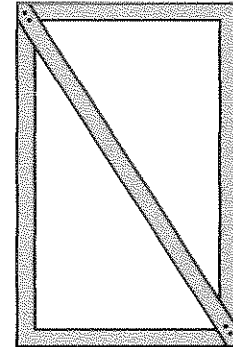
10. $\sqrt{200} \approx$

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Are You Sure It's Square? The Pythagorean Theorem

A fence company makes gates of different sizes. Each gate needs to have a brace installed as shown in the figure. Use the dimensions given in the table to find the length of the brace needed for each gate. Use the Pythagorean theorem to find the lengths. Round each length to the nearest hundredth of a foot. Show all your work in the space below the table.



Gate Sizes and Brace Lengths		
Height (feet)	Width (feet)	Brace Length (feet)
3 feet	3 feet	
3 feet	10 feet	
4 feet	3 feet	
4 feet	10 feet	
6 feet	3 feet	
6 feet	10 feet	

Brace for 3-foot by 3-foot gate:

Brace for 3-foot by 10-foot gate:

Brace for 4-foot by 3-foot gate:

Brace for 4-foot by 10-foot gate:

Brace for 6-foot by 3-foot gate:

Brace for 6-foot by 10-foot gate:

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A Week at Summer Camp Using the Pythagorean Theorem

1. The field in front of the dining hall at camp is a rectangle that is 125 yards wide and 375 yards long. How far is it from one corner of the field to the opposite corner? Round your answer to the nearest whole number. Write your answer using a complete sentence.
2. You are making a picture frame in the craft cabin. The frame measures 9 inches by 12 inches. You measure the diagonal and it is 17 inches. Is the frame rectangular? Write your answer using a complete sentence.
3. On the third day at camp, you go canoeing on the camp lake. You paddle from the dock due north for 500 yards and then due west for 475 yards. How far are you from the dock? Round your answer to the nearest whole number. Write your answer using a complete sentence.
4. You are helping to build a new door for the cabin. You measure the doorway and find that it is 3 feet wide and 7 feet tall. You measure the diagonal and find that it is 7 feet, $7\frac{1}{2}$ inches long. Is the door frame rectangular? Write your answer using a complete sentence.

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5. Complete the table of Pythagorean triples below. What pattern do you see?

Leg 1	Leg 2	Hypotenuse
3 feet	4 feet	
6 feet	8 feet	
9 feet	12 feet	
12 feet	16 feet	
15 feet	20 feet	

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Sometimes You're Just Rained Out Finding Simple Probabilities

You are planning an outdoor reunion in Pittsburgh. In a given year in Pittsburgh there are an average of 60 clear days, 100 partly cloudy days, and 205 cloudy days.

1. Find the probability that it will be cloudy on a randomly-chosen day.
2. Find the probability that it will be clear on a randomly-chosen day.
3. Are the probabilities that you found in Questions 1 and 2 theoretical or experimental probabilities? Use a complete sentence to explain.
4. While playing basketball, Keira made 4 out of 10 of her last foul shots. Tara made 10 out of 25 of her last foul shots. Who has the better probability of making the next foul shot? Use a complete sentence to explain your answer.

Since 1903, the National League has played the American League in the World Series. The World Series is usually won by the team winning the best out of 7 games. The table shows the number of games that were played to win each series during the first 100 World Series.

Number of Games	Number of Series Won in Given Number of Games
4 games	17 series
5 games	24 series
6 games	21 series
7 games	33 series
8 games	5 series

5. What is the probability that the next World Series will take 7 games to determine a winner?
6. What is the probability that the next World Series will take 4 games?
7. Is this theoretical or experimental probability? Use a complete sentence to explain.

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Socks and Marbles Finding Probabilities of Compound Events

You place tiles with the letters from the word MATHEMATICS into a bag. Then you choose a tile from the bag.

1. What is the probability that you choose a vowel?
2. What is the probability that you first choose a vowel and then you choose another vowel without replacing the first vowel? Show all your work.

You have some different bills in your pocket: one \$20 bill, three \$10 bills, two \$5 bills, and one \$1 bill.

3. What is the probability that if you reach into your pocket without looking, you will pull out a \$10 bill?
4. What is the probability that after you pull out the \$10 bill, you do not replace it but reach in and pull out another \$10 bill? Show all your work.
5. What is the probability that after you pull out the first \$10 bill, you put it back and then pull out another \$10 bill? Show all your work.

A chess set contains 8 black pawns, 8 white pawns, 2 black rooks, 2 white rooks, 2 black knights, 2 white knights, 2 black bishops, 2 white bishops, 1 black queen, 1 white queen, 1 black king, and 1 white king. You place the chess pieces into a bag. Find the probability of choosing the given piece from the bag.

6. A white piece
7. A knight
8. A black knight
9. A black pawn
10. A white pawn and then without replacement a second white pawn
11. Are the events in Question 10 independent events or dependent events?

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What Do You Want to Be? Mean, Median, Mode, and Range

You are thinking about becoming a teacher, but you are considering working in another country for a few years. You did some research and found the average beginning teacher salaries in other countries. The salaries are shown in the table. The sum of the salaries shown in the table is \$441,197. Use this information in Questions 1–7.

Country	Salary	Country	Salary
Switzerland	\$33,209	France	\$19,761
Germany	\$29,697	Greece	\$19,327
Denmark	\$28,140	Italy	\$19,188
Netherlands	\$25,896	Portugal	\$18,751
United States	\$25,707	Sweden	\$18,581
Australia	\$25,661	Finland	\$18,110
Spain	\$24,464	New Zealand	\$16,678
Norway	\$22,194	Mexico	\$10,465
Ireland	\$21,940	Turkey	\$9,116
Austria	\$21,804	Czech Republic	\$6,806
Iceland	\$19,939	Hungary	\$5,763

1. Find the mean, median, mode, and range of the salaries for beginning teachers in these countries. Round each answer to the nearest dollar.
2. What does the mean tell you about the salaries for these different countries? Write your answer using a complete sentence.
3. What does the median tell you about the salaries for these different countries? Write your answer using a complete sentence.
4. What does the mode tell you about the salaries for these different countries? Write your answer using a complete sentence.

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Get the Message? Histograms

You are interested to know how often some people use their cellular phones to make calls. You surveyed the members of your family and your class and had them keep track of the number of calls that they make each day on their cellular phones. The average number of calls per day for each person is listed below.

21 22 10 8 2 15 13 9 14 7
7 12 9 3 8 7 15 12 5 13

1. Complete the frequency table below for this data. Use reasonable data intervals. Use only as many columns as you need. To complete the table, use tally marks to list each occurrence in an interval. Then total the tally marks and write the frequency for each interval.

Data Intervals						
Tally						
Frequency						

2. Use the frequency table to construct a histogram below.

First, draw and label the horizontal and vertical axes.

Next, place the intervals on the horizontal scale.

Next, label the vertical scale, beginning with zero and ending with a number large enough to include all of the frequencies in the table.

Next, draw a bar to represent the frequency of each interval.

Finally, add a title to the histogram.

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Go for the Gold! Stem-and-Leaf Plots

You thought it might be interesting to examine the number of gold medals won by the top 20 countries at the Athens 2004 summer Olympics. You make a list of the numbers of gold medals that these teams won.

4, 8, 9, 9, 10, 11, 35, 14, 3, 5, 8, 17, 27, 6, 9, 16, 4, 9, 32, 4

1. Order the numbers from least to greatest. Then, construct a stem-and-leaf plot of the data. Include a key with your plot. Be sure to give your plot a title.

2. Find the mean of the data. Draw a square around the median of the data. Place a triangle around the mode of the data, if one exists. Find the range of the data. Because the median of the data is not a data item, it is not possible to put a square around it.
3. Does displaying the data in this way help you see any trends? Use a complete sentence to explain any trends that you see.

You decide to compare the number of gold medals won by countries in 2004 to the number of gold medals won by countries in the 1980 summer Olympics.

2, 8, 6, 5, 7, 2, 80, 1, 2, 47, 8, 8, 3, 3, 2, 6, 2, 2, 3, 1

4. Construct a stem-and-leaf plot of the data. Then compare it to the 2004 stem-and-leaf plot. Use a complete sentence to write a statement comparing the plots.

Assignment

Name _____ Date _____

All About Roller Coasters Box-and-Whisker Plots

Lin and Will have decided that before they go to college, they want to ride as many roller coasters as possible. They both like coasters with a lot of drop! The length of the greatest drops on the top ten steel and top 10 wooden roller coasters are listed below. All measurements are in feet.

Wooden Roller Coasters

214, 155, 150, 147, 141, 140, 139, 137, 129, 124

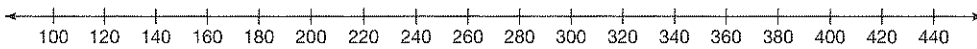
Steel Roller Coasters

418, 400, 328, 300, 255, 229, 228, 225, 221, 219

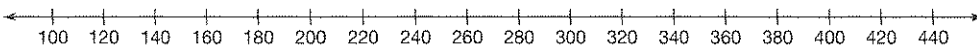
1. What is the median drop of the wooden roller coasters in the data set?
2. What is the median drop of the steel roller coasters in the data set?
3. What is the greatest drop for each set? Wooden: _____ Steel: _____
4. What is the upper quartile for each set? Wooden: _____ Steel: _____
5. What is the least drop of each data set? Wooden: _____ Steel: _____
6. What is the lower quartile of each data set? Wooden: _____ Steel: _____

Locate the five points that you found in Questions 1–6 for each type of roller coaster on the number lines below. Then construct a box-and-whisker plot for each type of roller coaster.

Greatest Drops of Wooden Roller Coasters



Greatest Drops of Steel Roller Coasters



Assignment

Name _____ Date _____

What's Your Favorite Flavor? Circle Graphs

The Food Service manager at the Eddy Middle School plans to add one more flavor of frozen yogurt to the school lunch menu. The table below shows the results of a survey given to the students who were asked to choose which frozen yogurt that they wanted to be added to the menu. Complete the table.

Frozen Yogurt Flavor	Number of Votes	Fraction of Total Votes	Fraction of Total Votes as a Decimal	Percent of Total
Cherry	175			
Peach	90			
Mint	150			
Strawberry	85			

Use the percents from your table to construct a circle graph. Remember that there are 360 degrees in a circle. For each flavor, write and solve a proportion to find the number of degrees in each section of the circle graph that will represent each flavor. Include a key for the graph or label each section with the type of frozen yogurt. Give your graph a title.

Assignment

Name _____ Date _____

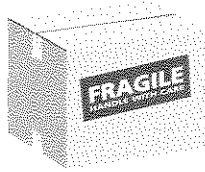
Your Friendly Neighborhood Grocer Three-Dimensional Figures

Identify each shape as a prism, a pyramid, a cylinder, a cone, or a sphere.

1. skyscraper



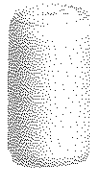
2. package



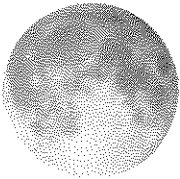
3. sea shell



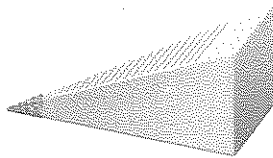
4. juice can



5. the moon



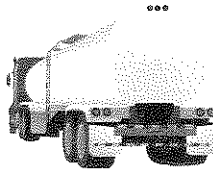
6. door stop



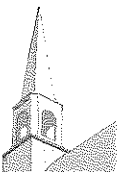
7. top of a funnel



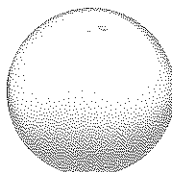
8. liquid tanker on a truck



9. steeple



10. grapefruit



Assignment

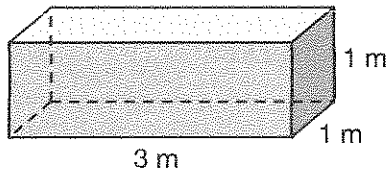
Name _____ Date _____

Carnegie Candy Company Volumes and Surface Areas of Prisms

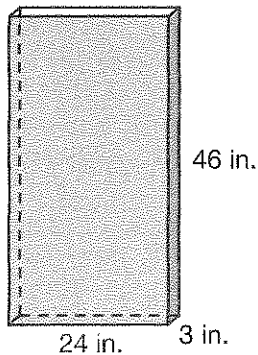
Decide whether each amount is more closely related to volume or surface area.

1. The amount of air in a room
2. The amount of metal in a hamster cage
3. The amount of cardboard in a box
4. The amount of cereal that fits in a box
5. Give an example in which you would need to find volume and an example in which you would need to find surface area. Write your answers using complete sentences.

6. Find the volume and surface area of the prism.



7. Find the volume and surface area of the prism.



Name _____ Date _____

The Playground Olympics Volumes and Surface Areas of Cylinders

1. A playground has a cylindrical fountain that has a radius of 6.5 feet and a depth of 2.5 feet. What is the volume of the fountain? Use 3.14 for π and round your answer to the nearest hundredth.
2. The workers at the playground use a hose that is 2 inches in diameter and 50 feet long to fill the fountain. What is the volume of water in cubic feet contained in the hose? (*Hint: 1 inch is one twelfth of a foot.*) Use 3.14 for π and round your answer to the nearest hundredth.
3. A park has a concrete patio that is in the shape of a cylinder. It has a diameter of 50 feet and it is 0.5 foot thick. What is the volume of the concrete in the patio? Use 3.14 for π and round your answer to the nearest hundredth.
4. The Alaska Pipeline, finished in 1977, was created to move oil from the North Slope Oil Fields to the ice-free port of Valdez, Alaska. It is 800 miles long and 4 feet in diameter. What is the volume of oil in cubic feet contained in the pipeline? (*Hint: 5280 feet is 1 mile.*) Use 3.14 for π .
5. How much steel was needed to make the Alaska Pipeline, including the bases? Use 3.14 for π and round your answer to the nearest hundredth.
6. A cylindrical mailing tube is 3 inches in diameter and 36 inches long. What is the area of cardboard needed to make the mailing tube, including the bases? Use 3.14 for π and round your answer to the nearest hundredth.
7. What is the volume of the mailing tube? Use 3.14 for π and round your answer to the nearest hundredth.
8. A farm silo in the shape of a cylinder measures 3 meters in diameter and 12 meters high. How much feed will the silo hold? Use 3.14 for π and round your answer to the nearest hundredth.

Assignment

Assignment for Lesson 12.4

Name _____ Date _____

The Rainforest Pyramid Volumes of Pyramids and Cones

1. The Rainforest Pyramid in Galveston, Texas, sells Brazil nuts in a package that is a scale model of the building. The package is 5 inches tall and has a square base that is 10 inches on each side. What is the volume of the package? Round your answer to the nearest hundredth.
2. Rock salt, which is used to melt snow on highways, is stored in cone-shaped buildings. This shape is used because it is the shape that a pile of salt forms as it is poured. A typical building measures 10 meters in diameter and has a height of 5 meters. What is the volume of rock salt that could be stored in such a building? Use 3.14 for π and round your answer to the nearest hundredth.
3. When corn is dumped into a pile, it naturally forms the shape of a cone. A pile of corn that is 60.8 feet in diameter and 12.9 feet high is in a farmer's field. How many cubic feet of corn are in the pile? Use 3.14 for π and round your answer to the nearest hundredth.
4. A company makes pyramid-shaped gift boxes in two sizes. The small size has a square base that is 3.5 inches by 3.5 inches and is 3.5 inches high. The large size has a square base that is 7 inches by 7 inches and is 6 inches high. What is the volume of each box? Round each answer to the nearest hundredth.
5. Which has a greater volume, a cone with a height of 10 inches and a diameter of 5 inches, or a square pyramid with a height of 10 inches and a base length of 5 inches? Use 3.14 for π and round your answer to the nearest hundredth. Show all your work. Explain your reasoning using a complete sentence.

Assignment

Name _____ Date _____

What on Earth? Volumes and Surface Areas of Spheres

1. Assume that each planet in the table is a sphere. Find the volume and surface area of each planet. Use 3.14 for π . Round each answer to the nearest whole number.

Planet Name	Diameter (miles)	Volume (cubic miles)	Surface Area (square miles)
Mercury	3032		
Venus	7519		
Mars	4194		
Jupiter	88,736		
Saturn	74,978		
Uranus	32,193		
Neptune	30,775		

2. The Carnegie Candy Company wants to make a spherical candy container with a surface area in square inches that is numerically equal to its volume in cubic inches. What must the radius of the sphere be? Complete the table to find the answer. Use 3.14 for π and round your answer to the nearest hundredth. Show all your work. Write your answer using a complete sentence.

Radius	Surface Area (square inches)	Volume (cubic inches)
1 inch		
2 inches		
3 inches		

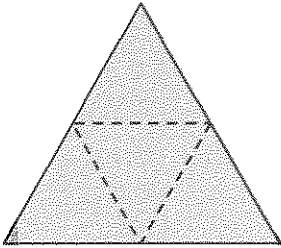
Assignment

Name _____ Date _____

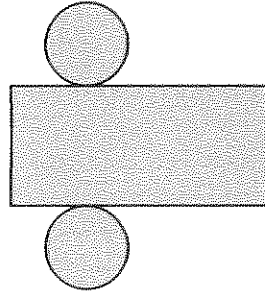
Engineers and Architects Nets and Views

Name the solid that is created when each net is folded.

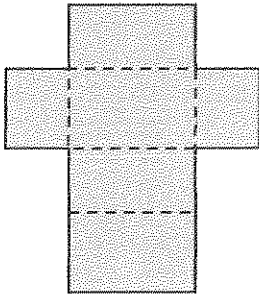
1.



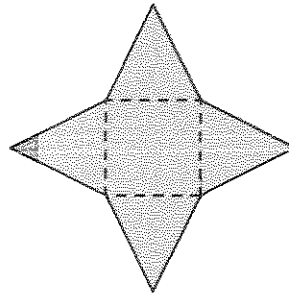
2.



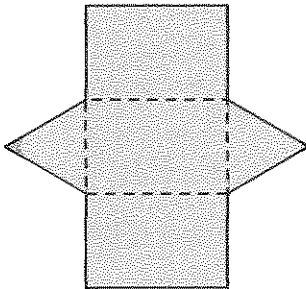
3.



4.



5.



Assignment

Assignment for Lesson 12.7

Name _____ Date _____

Double Take Similar Solids

1. A tiger shark and a nurse shark are on display in similar prism-shaped display cases. The length of the tiger shark display case is 12 feet. The length of the nurse shark display case is 6 feet. The volume of the tiger shark display case is 816 cubic feet. Find the volume of the nurse shark display case. Write your answer using a complete sentence.
2. Pumpkins vary in size. A pumpkin with a diameter of 6 inches has a volume of about 36π cubic inches. A pumpkin with a similar shape has a diameter of 3 feet. What is the volume of the second pumpkin? Write your answer using a complete sentence.
3. How many cubic feet are there in a cubic yard? Write your answer using a complete sentence.
4. How many cubic inches are there in 1 cubic foot? Write your answer using a complete sentence.
5. A model train is $\frac{1}{87}$ the size of an actual train. A train car from the actual train is in the shape of a rectangular prism and has the dimensions 87 feet by 8 feet by 12 feet. Find the volume of the actual train car. Then, find the volume of the model train car. Round your answer to the nearest thousandth. Write your answer using a complete sentence.
6. A jet fuel tanker truck has a volume of 535 cubic feet. The company that makes the fuel is making a $\frac{1}{32}$ size model tanker truck to sell as a toy. What is the volume of the model truck in cubic feet? Round your answer to the nearest thousandth. Write your answer using a complete sentence.

Assignment

Name _____ Date _____

Running a Tree Farm Relations and Functions

Every year in December you sell holiday trees raised on your tree farm. You sell the trees for \$40 each for any size. You have \$30 in your cash box as you begin selling on a Saturday morning.

1. Complete the first four rows of the input-output table. The first row is done for you.

Number of Trees Sold		Amount of Money in Cash Drawer (dollars)
1	$40(1) + 30$	70
2		
3		
4		
		510
		1030

2. Write an algebraic expression to represent the amount of money you have in your cash box. Let x represent the number of trees sold.
3. Find the number of trees that you sold if you have \$510 in the drawer at the end of the day. Complete Row 5 of the table.
4. Find the number of trees that you sold if you have \$1030 in the drawer at the end of the day. Complete Row 6 of the table.
5. Is the relation $y = 40x + 30$ a function? Write a complete sentence to explain why or why not.
6. If the relation $y = 40x + 30$ is a function, identify the dependent variable and the independent variable. Write your answer using a complete sentence.
7. If the relation $y = 40x + 30$ is a function, identify its domain and its range.

Find the value of each function when $x = 12$.

8. $f(x) = 10x$
9. $f(x) = x - 2$
10. $f(x) = 100 - x$
11. $f(x) = x \div 2$

Assignment

Name _____ Date _____

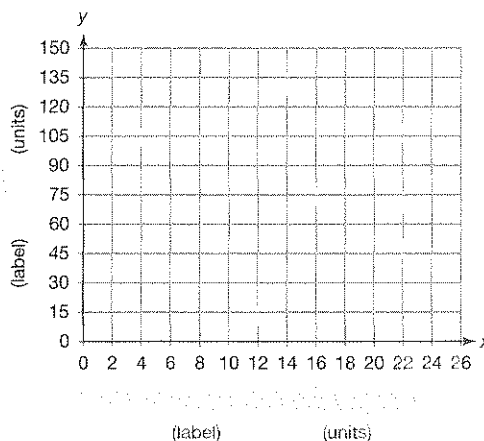
Scaling a Cliff Linear Functions

You are standing on the top of a cliff, which is 138 feet high. You can rappel down the cliff at a rate of 3 feet per second.

1. How high are you above the ground after 1 second? Enter this answer in the table.
2. How high are you above the ground after 2 seconds? Enter this answer in the table.
3. How high are you above the ground after 3 seconds? Enter this answer in the table.
4. Label the quantity names and units in both columns.
5. Label the Expression row in Column 1 as "x." Then write an expression to represent the quantity in Column 2 in terms of the quantity in Column 1. Enter this expression in the table.

	Column 1	Column 2
Quantity Name		
Unit of Measure		
	1	
	2	
	3	
		108
Expression		

6. How many seconds have passed when you are 108 feet above the ground? Enter this answer in the table.
7. How many seconds have passed when you are half-way down the cliff? Enter the height and your answer in the table.
8. Write each row in the table as an ordered pair. Then graph the ordered pairs. Be sure that you place the independent variable on the horizontal axis. Draw a line through the ordered pairs.



Assignment

Name _____ Date _____

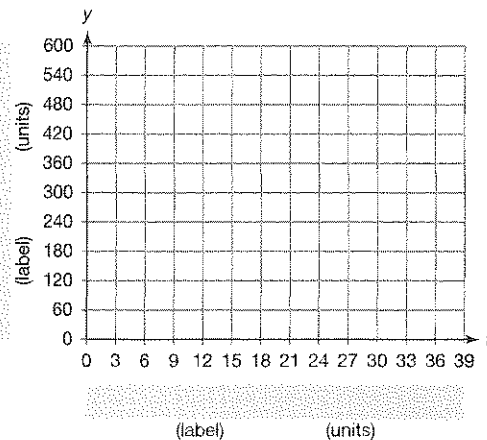
Biking Along Slope and Rates of Change

You are saving money for a bike trip. You think that the trip will cost about \$550. Your Uncle Lance gives you \$100 to open an account. You plan to deposit \$15 into the account each week for the trip.

- How much money will you have after 2 weeks? Enter this answer in the table.
- How much money will you have after 4 weeks? Enter this answer in the table.
- How much money will you have after 6 weeks? Enter this answer in the table.
- Label the quantity names and units in both columns.
- Define a variable for the quantity in Column 1 and enter it in the table. Then write an expression to represent the amount in Column 2 in terms of the quantity in Column 1. Enter this expression in the table.

	Column 1	Column 2
Quantity Name		
Unit of Measure		
	2	
	4	
	6	
		325
		550
Expression		

- Use the expression to determine the number of weeks that it will take for you to have \$325 in your account. Enter this answer in the table.
- How many weeks will it take you to reach your goal? Enter this answer in the table.
- Write each row in the table as an ordered pair. Then graph the ordered pairs. Draw a line through the ordered pairs.
- Use the graph to find the slope of the line.



Assignment

Name _____ Date _____

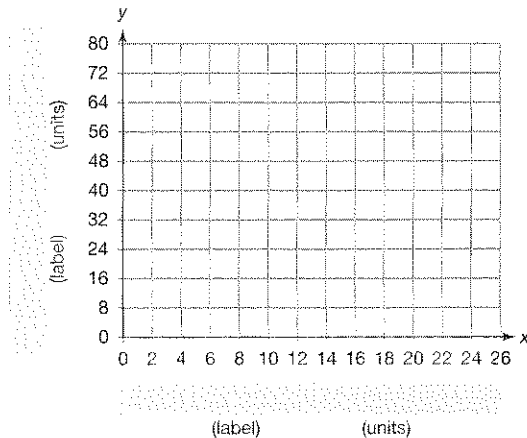
Let's Have a Pool Party! Finding Slope and y-Intercepts

At the beginning of the swimming season, you buy a 75-pound container of chlorine to keep your pool clean. You find that you are using 3 pounds of chlorine per week to keep your pool water sparkling clean.

- How much chlorine is left after 2 weeks? Enter this answer in the table.
- How much chlorine is left after 10 weeks? Enter this answer in the table.
- How much chlorine is left after 15 weeks? Enter this answer in the table.
- Label the quantity names and units in both columns.
- Define a variable for the quantity in Column 1 and enter it in the table. Then write an expression to represent the amount in Column 2 in terms of the quantity in Column 1. Enter this expression in the table.

	Column 1	Column 2
Quantity Name		
Unit of Measure		
	2	
	10	
	15	
		21
		0
Expression		

- Use the expression to determine the number of weeks until there are 21 pounds of chlorine left. Enter this answer in the table.
- After how many weeks will the chlorine be gone? Enter this answer in the table.
- Create a graph of the values in the table.
- Use the graph to determine the x-intercept and the y-intercept.



- Choose two points on the graph to find the slope.

Assignment

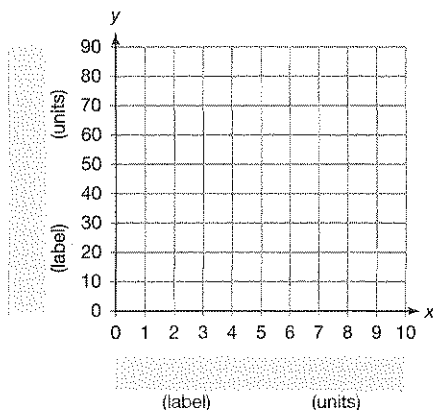
Name _____ Date _____

What's for Lunch? Using Slope and Intercepts to Graph Lines

You and your friends decide to go to Pete's Pizzeria for lunch. Pete charges \$12 for the lunchtime special pizza.

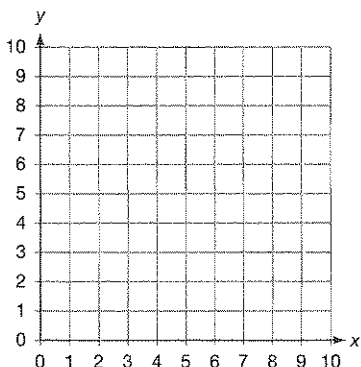
1. Write a linear function that models the total amount y that you would pay if you ordered x pizzas.
2. What is the slope of this function? Write your answer using a complete sentence.
3. What is the x -intercept and what is the y -intercept? Write your answer using a complete sentence.
4. Complete the table to find the cost in dollars of buying the given number of pizzas. Then, graph the function using the values in the table, the intercepts, and the slope.

x	y
1	
3	
5	
7	

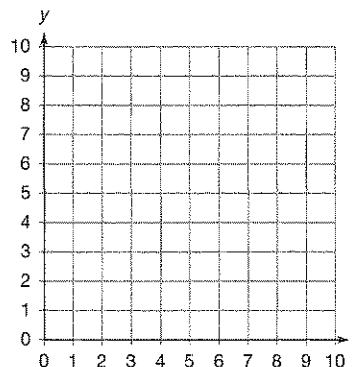


Use the slope and the intercepts to graph each function.

5. $y = 10 - 5x$



6. $y = 2x + 1$



Assignment

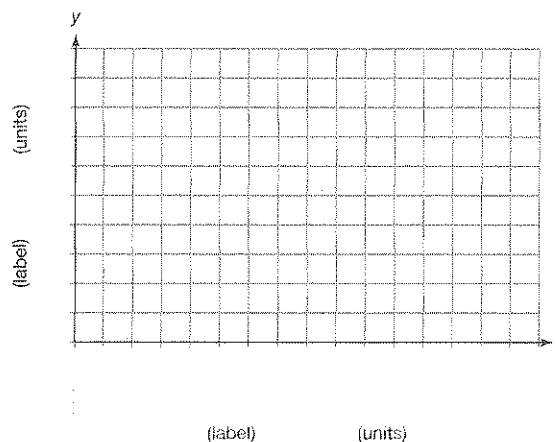
Name _____ Date _____

Healthy Relationships Finding Lines of Best Fit

You and your classmates want to determine whether there are any other relationships similar to the height to arm span relationship. You decide to see whether there is a correlation between total height and the height from the floor to your navel. You collect data on several classmates.

Total Height (inches)	Height of Navel (inches)	Ratio of Navel Height to Total Height
67	41	0.61
77	48	
61	38	
73	45	
65	41	
53	33	
70	42	
74	46	
50	31	
63	41	

1. Complete the ratio column of the table. Round your answer to two decimal places. The first one is done for you.
2. Plot the ordered pairs in the table on the grid at the right. Label the horizontal axis as "Total height (inches)" and the vertical axis as "Height of navel (inches)." Label each axis in intervals of 5.
3. Decide what type of correlation, if any, that the data have. If there is a correlation, draw a line of best fit.



4. Write an equation of the line of best fit. Use your graph and the table to help you.

Assignment

Name _____ Date _____

Is It a Bird or a Plane? Rational Numbers

Complete the table below by putting a dot in each box that describes the number or the result of the operation. The first one is completed for you.

14

Number	Natural Number	Whole Number	Integer	Rational Number
-8			•	•
2				
0				
4,238,399				
0.5				
$\frac{12}{17}$				
-14				
-13.46				
2.5×4				
$4.5 + 3.5 - 8$				
$12 \div (-6)$				
$1.25 + 3.75$				
2^{25}				
$0.\bar{3}$				

Assignment

Name _____ Date _____

How Many Times? Powers of Rational Numbers

Find the value of each product of a power or quotient of a power.

1. $\left(\frac{2}{3}\right)^2 \left(\frac{2}{3}\right)^4 =$

2. $(5)^4(5)^6 =$

3. $(4)^{-7}(4)^5 =$

4. $\frac{(3)^{-4}}{(3)^{-6}} =$

5. $\frac{\left(\frac{2}{3}\right)^{-3}}{\left(\frac{2}{3}\right)^{-3}} =$

6. $\frac{(2)^{14}}{(2)^{13}} =$

7. $10^{23} \div 10^{19} =$

8. $10^2 \times 10^{-6} =$

9. $10^{-4} \div 10^7 =$

10. $\frac{10^{17}}{10^{17}} =$

Assignment

Assignment for Lesson 14.3

Name _____ Date _____

Sew What? Irrational Numbers

Identify the following as rational or irrational. Write a complete sentence to explain your answer.

1. 1.2121 ...

2. 0.313113111 ...

3. $\frac{25}{7}$

4. 123

5. $\sqrt{7}$

6. $\sqrt{(8 + 1)}$

7. 0.0123456789101112 ...

8. 0.33 ...

9. $\sqrt{3^2}$

14

Assignment

Assignment for Lesson 14.4

Name _____ Date _____

Worth 1000 Words Real Numbers and Their Properties

Decide whether each statement is true or false. Write a complete sentence to explain your reasoning.

1. A rational number is never a whole number.
2. An integer is always a whole number.
3. All whole numbers are rational numbers.
4. The square of a whole number is always a rational number.
5. All whole numbers are natural numbers.

14

Identify the property that the statement represents.

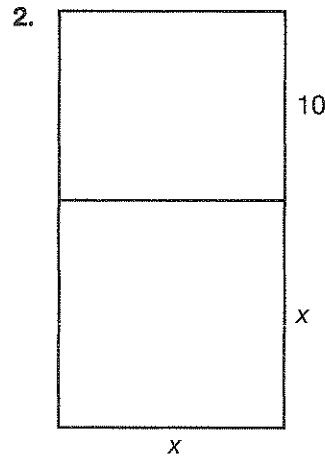
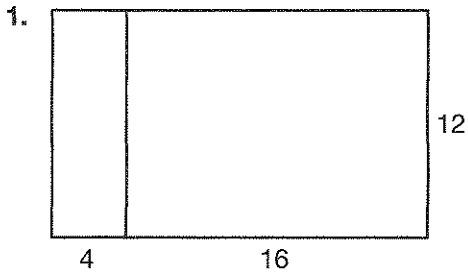
6. $12 + 4 = 4 + 12$
7. $-3 + (7 + 2) = (-3 + 7) + 2$
8. $1 \cdot (a + c) = (a + c)$
9. $17.356 + (-17.356) = 0$
10. $\frac{2}{3} \times \frac{3}{2} = 1$
11. $2 \times (8 \times 5) = 2 \times (5 \times 8)$

Assignment

Name _____ Date _____

The House that Math Built The Distributive Property

Write an expression that will give the area of each region shown below.



14

3. Identify the property that is used in each step of the solution below.

$$5(m + 3) = \frac{58 + 6m}{2}$$

Given problem

$$5m + 15 = \frac{58 + 6m}{2}$$

$$5m + 15 = 29 + 3m$$

$$5m + 15 - 3m = 29 + 3m - 3m$$

$$2m + 15 = 29$$

$$2m + 15 - 15 = 29 - 15$$

$$2m = 14$$

$$2m \left(\frac{1}{2} \right) = 14 \left(\frac{1}{2} \right)$$

$$m = 7$$

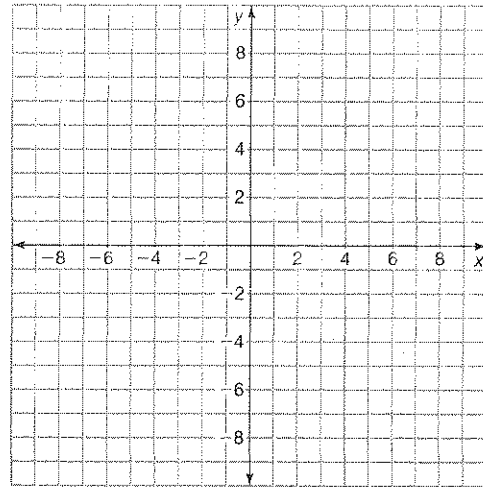
Assignment

Name _____ Date _____

Worms and Ants Graphing in Four Quadrants

1. Write the rows in the table as ordered pairs. Then graph the ordered pairs and draw a line through the points. Find the slope, intercepts, and equation of the line.

x-coordinate	y-coordinate
-4	1
-2	2
0	3
2	4
4	5



slope:

x-intercept:

y-intercept:

equation of line:

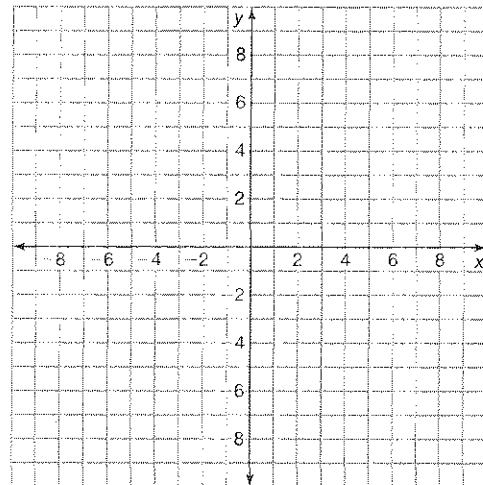
15

2. For the linear function $y = 3x - 4$, find the slope and the x- and y-intercepts. Plot the x-intercept and the y-intercept. Beginning at the y-intercept, use the slope to find another point on the line. Finally, draw a line through the points.

slope:

x-intercept:

y-intercept:



Assignment

Name _____ Date _____

Maps and Models Scale Drawings and Scale Models

The nickname of Nashville, Tennessee is "The Athens of the South" because of its long commitment to education. The town even constructed an exact replica of the Parthenon for the Centennial Exposition of 1897. In 1982, the construction began on Athena Parthenos, which stands 41 feet 10 inches tall.

1. The sculptor first made a 1 : 10 model from clay. This means that 1 inch on the model is equal to 10 inches in the real statue. What was the height of the clay model?
2. Later the sculptor made a 1 : 5 model. This means that 1 inch on the model is equal to 5 inches in the real statue. What was the height of the model?
3. You want to go with your friend to visit the Parthenon in Centennial Park in Nashville. You are staying in downtown Nashville. The scale on the map is 1 centimeter is equal to 1 kilometer. Use the scale to determine the number of kilometers between Centennial Park and your downtown hotel if the distance on the map is 70 centimeters.
4. The table below shows the approximate distances between places in and around Nashville, Tennessee. Complete the table to show how far apart the places would be on a map using a scale of 1 cm = 1 km.

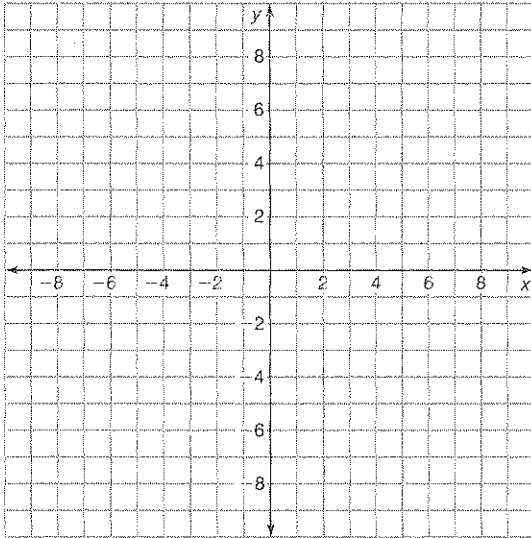
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From	To	Actual Distance	Distance Apart on a Map (scale: 1 cm = 1 km)
Downtown	Brooklyn Heights	4.5 km	
John C. Tune Airport	Downtown	10 km	
Downtown	Centennial Park	6.3 km	
Bordeaux Hills	West Nashville	2.5 km	

Assignment

Name _____ Date _____

A Stitch in Time Multiple Transformations



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1. On the grid above, draw a quadrilateral with vertices $(2, 2)$, $(3, 5)$, $(7, 5)$, and $(4, 2)$. Label the quadrilateral with the letter *A*.
2. Reflect the quadrilateral in the x -axis. Label the new quadrilateral with the letter *B*.
3. Rotate quadrilateral *B* 180 degrees about the origin. Label the new quadrilateral with the letter *C*.
4. Reflect quadrilateral *C* over the x -axis. Label the new quadrilateral with the letter *D*.
5. Describe a transformation that would map quadrilateral *A* onto quadrilateral *D*. Write your answer using a complete sentence.