Pre-Algebra Math Summer Review Packet

Hello Families!

This is a packet of some specifically chosen math review topics for your child to review over the summer. This will help them keep math fresh in their mind over summer break as well as solidifying some important topics from their math class this past year. I will be emailing out the answer key to you in the next week if you want to be able to check your child's answers.

If students complete this packet over the summer and return it to me in the fall, they will receive some extra credit!

There are a couple other ways that your child can work on their math skills this summer in addition to this review packet. They can log on to their IXL account (they have used this many times during the school year) and practice skills. I recommend that they complete the "Diagnostic" (on the green bar at the top of the main page) at the beginning of the summer so that IXL knows their specific skill level. Spending about 20 minutes on this is all that is needed, and it is important for students to take their time so that the results are accurate. After they complete the Diagnostic, students can go to "Recommendations" and begin learning. If you or your child needs help logging in and completing practice problems on IXL, feel free to reach out to me! The other way they can practice math this summer is on Khan Academy. This is a website with grade-level based lesson videos and practice problems. Students have used this a couple times this past year in math.

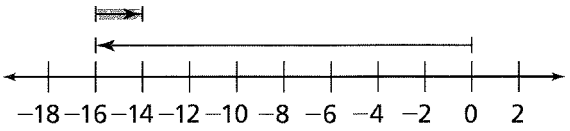
Have a great summer!

Mrs. Franck

Name _____

Reteach to Build Understanding
1-5

Colin climbs 16 feet down into a tunnel and lands on the tunnel floor. Then he jumps to a platform that is 2 feet above the tunnel floor. Where is Colin located in relation to ground level?



The arrow from 0 to −16 represents Colin's descent into the tunnel. The arrow pointing two units to the right from −16 represents his jump to the platform. Colin is located at −14 feet, or 14 feet below ground level.

The coldest temperature ever recorded on Earth is 135.8°F below 0, recorded in Antarctica on July 21, 1983. The hottest temperature ever recorded on Earth is 134°F, recorded in Death Valley, California, on July 10, 1913. What is the difference between those two temperatures?

1. Is the coldest temperature represented by a positive or negative number?

2. Write a number to represent the coldest temperature.

3. Is the hottest temperature represented by a positive or negative number?

4. Write a number to represent the hottest temperature.

5. Write a subtraction expression to represent the difference of the two temperatures.

6. What is the difference between the two temperatures?

On the Back!

7. Sonya drops a marble while standing on a deck $7\frac{7}{8}$ feet above the ground. The marble falls $4\frac{1}{4}$ feet from Sonya's hand to the deck, and then rolls and falls to the ground. What is the total vertical distance that the marble falls?

Name _____

Reteach to Build Understanding
1-7

To multiply rational numbers, you may need to write the numbers in the same form.

Write in equivalent decimal form: $\frac{3}{8} \cdot 0.4 = 0.375 \cdot 0.4$
$= 0.15$

Write in equivalent fraction form: $\frac{1}{7} \cdot 0.65 = \frac{1}{7} \cdot \frac{13}{20}$
$= \frac{13}{140}$

Remember: The rules for multiplying integers apply to rational numbers.

The height of a fish tank is 1.1 feet, and the area of the tank's base is $1\frac{1}{4}$ square feet. To find the volume of the tank, multiply the height by the area of the base. What is the volume of the fish tank?

1. Write a multiplication expression with the numbers given to represent the tank's volume.

2. Since one factor is a fraction and the other is a decimal, rewrite one of the factors in an equivalent form. Choose a factor to rewrite and explain your choice.

3. Write a new multiplication expression using your equivalent factor from Item 2 to represent the tank's volume.

4. What is the volume of the fish tank?

On the Back!

5. A hot air balloon is descending at a rate of 6.75 feet per second. What is the change in the balloon's height after $3\frac{1}{3}$ seconds?

Name _____

Reteach to Build Understanding
1-9

Dividing by a rational number is the same as multiplying by its reciprocal.

The reciprocal of a fraction inverts the numerator and the denominator.

$\frac{3}{4} \div \frac{9}{8} = \frac{3}{4} \cdot \frac{8}{9}$

$= \frac{2}{3}$

$\frac{8}{9}$ is the reciprocal of $\frac{9}{8}$.

A football team lost a total of $2\frac{1}{2}$ yards in 5 plays. What was the average change in yardage per play?

1. What number represents the total loss in yardage?

2. What is the total number of plays?

3. Write a division expression to represent the average change in yardage per play.

4. Write the numbers in your division expression as fractions.

5. Rewrite the division expression as a multiplication expression.

6. The average change in yardage was _____ yards per play. This means the team lost _____ yards per play.

On the Back!

7. A company had a loss of −$1,786.50 over the past 1.5 years. What was the company's average loss per year?

Name _____

Reteach to Build Understanding
2-1

How can you write $0.\overline{72}$ as a fraction?	Let $x = 0.\overline{72}$.
Set the decimal number equal to x.	$100x = 72.\overline{72}$
Multiply each side by a power of 10 to get repeating numbers to the left of the decimal point.	$100x - x = 72.\overline{72} - 0.\overline{72}$
	$99x = 72$
Subtract the equations to eliminate the repeating decimals.	$\frac{99x}{99} = \frac{72}{99}$
Solve for x.	$x = \frac{8}{11}$

In yesterday's basketball game, Raul made $77.\overline{7}\%$ of his shots. What fraction of his shots did he make?

1. How would you write $77.\overline{7}\%$ as a decimal? Set that decimal equal to x. What digit or digits repeat?

2. Multiply each side of the equation by a power of 10 to get the repeating digit(s) to the left of the decimal point. Since you only need to move one place, multiply each side by 10.

3. Subtract the equation in Exercise 1 from the equation in Exercise 2. Then simplify.

4. Divide each side of the equation by 9 to solve for x. What fraction is equal to x? Show your work.

5. What fraction of Raul's shots did he make?

On the Back!

6. This season, Jenny's lacrosse team had a winning percentage of $0.8\overline{3}$. What fraction of their games did Jenny's team win?

Name _____

Reteach to Build Understanding
2-2

Rational Numbers

Any number that can be written as a ratio of two nonzero integers is a rational number.

Decimal expansions of rational numbers either terminate or repeat.

All integers are rational numbers.

Examples: -235 $\frac{3}{4}$ $0.9\overline{4}$

Irrational Numbers

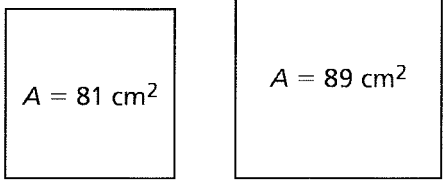
Numbers that are not rational are called irrational.

The decimal expansion of an irrational number does not terminate or repeat.

Square roots of nonperfect squares are irrational numbers.

Examples: 4.121121112... π $\sqrt{8}$

For each square below, is the side length rational or irrational?



1. What is the formula for the area of a square?

2. If you know the area of a square, how can you find its side length?

3. Write the side length of each square as a square root.

4. Is each side length rational or irrational? Explain.

On the Back!

5. Vidal has a screw that measures $\frac{1}{7}$ inch. Is $\frac{1}{7}$ a rational number or an irrational number? Explain.

Name _____

Reteach to Build Understanding
2-3

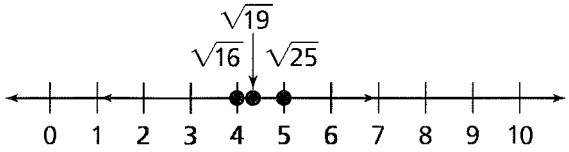
Between which two whole numbers is $\sqrt{19}$?

$16 < 19 < 25$ Order 19 between two consecutive perfect squares.

$\sqrt{16} < \sqrt{19} < \sqrt{25}$ Take the square root of each number.

$4 < \sqrt{19} < 5$ $\sqrt{16} = 4$ and $\sqrt{25} = 5$.

$\sqrt{19}$ is closer to 4 than it is to 5 since 19 is closer to 16 than it is to 25.



Cameron wants the longest skateboard sticker he can find. An online shop has stickers that are $9\frac{2}{5}$ inches, $9.\overline{35}$ inches, and $\sqrt{80}$ inches long. What is the length of the longest sticker?

1. Write $9\frac{2}{5}$ in decimal form.

2. Approximate $\sqrt{80}$ by using perfect squares. 80 is between which two perfect squares?

   What are the square roots of those two perfect squares?

   What is the approximate value of $\sqrt{80}$?

3. Write the lengths of the bumper stickers in order from least to greatest.

4. What is the length of the longest bumper sticker?

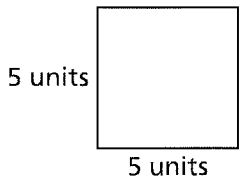
On the Back!

5. Ephraim's car is $\sqrt{120}$ feet long. Hadley's car is 15 feet long. Whose car is longer? Explain.

Name _____

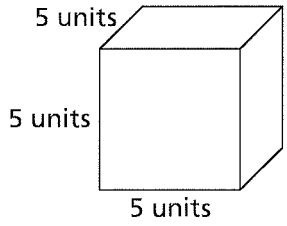
Reteach to Build Understanding
2-4

A square root is one of two equal factors of a number.



$5 \times 5 = 25$, so $\sqrt{25} = 5$.

A cube root is one of three equal factors of a number.



$5 \times 5 \times 5 = 125$, so $\sqrt[3]{125} = 5$.

Alistair has a cube-shaped box that has a volume of 216 cubic inches. What is the edge length of Alistair's box?

1. What is the formula for the volume of a cube?

2. If you know the volume of a cube, how do you find its edge length?

3. How would you write the edge length of Alistair's box using a cube root?

4. Fill in the boxes to find the cube root.

$\sqrt[3]{216} = \sqrt[3]{6 \cdot \quad \cdot \quad}$

$= \sqrt[3]{\quad 3}$

$=$

5. What is the edge length of Alistair's box?

On the Back!

6. Sian's room is in the shape of a square. Its area is 121 square feet. How long is one side of Sian's room?

Name _____

Reteach to Build Understanding
2-5

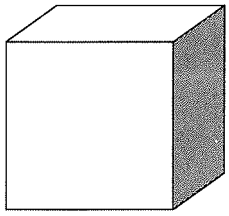
Sandi is tiling her bathroom counter. Each square tile has an area of 9 square inches. How many tiles will fit along a side of the counter that measures 15 inches?

Find the side length of each tile.

$A = s^2$	Use the formula for area of a square.
$9 = s^2$	Substitute 9 for A.
$\sqrt{9} = \sqrt{s^2}$	Take the square root of each side.
$\pm 3 = s$	Simplify.

Since length is positive, each side length of the tile is 3 inches. So, the number of tiles that will fit along a 15-inch side of the counter is $15 \div 3 = 5$, or 5 tiles.

Carlo is building a wooden box that is shaped like a cube. He wants the box to have a volume of 64 cubic inches. How many square inches of wood does Carlo need to build the box?



$V = 64$ in.^{3}

1. What is the length of one edge of the box?

2. What is the area of one face of the box?

3. What is the total area of all faces of the box?

4. How much wood does Carlo need to build his box?

On the Back!

5. Marjorie has a square tabletop whose area is 36 square feet. What is the tabletop's perimeter?

Name _____

Reteach to Build Understanding
2-6

Product of Powers Property: When multiplying powers with the same base, add the exponents while keeping the base the same.

$$3^4 \times 3^3 = 3^{4+3}$$
$$= 3^7$$

Quotient of Powers Property: When dividing powers with the same base, subtract the exponents while keeping the base the same.

$$3^4 \div 3^3 = 3^{4-3}$$
$$= 3^1$$

Part A Use the properties of exponents to write an equivalent expression for $2^3 \times 2^8$.

1. What is the common base?

2. What is the sum of the exponents?

3. What power is equivalent to the multiplication expression?

Part B Use the properties of exponents to write an equivalent expression for $5^9 \div 5^6$.

4. What is the common base?

5. What is the difference of the exponents?

6. What power is equivalent to the division expression?

On the Back!

7. Write equivalent expressions using the properties of exponents.

   a. $4^4 \div 4^2$ b. $7^4 \times 7^8$

Name _____

Reteach to Build Understanding
2-7

Zero Exponent Property: For any nonzero number a, $a^0 = 1$.

$$4^0 = 1$$

Negative Exponent Property: For any nonzero number a and integer n, $a^{-n} = \frac{1}{a^n}$.

$$4^{-2} = \frac{1}{4^2} = \frac{1}{16}$$

Answer the questions to complete the table.

2^2	2^1	2^0	2^{-1}	2^{-2}
4				

1. What is the value of any number raised to the power of 1? Write the value of 2^1 in the table.

2. What rule would you use to find the value of 2^0? Write this value in the table.

3. What rule would you use to find the value of 2^{-1}? Write this value in the table.

4. What rule would you use to find the value of 2^{-2}? Write this value in the table.

On the Back!

5. Make a table like the one above that shows the values of 5^2, 5^1, 5^0, 5^{-1}, and 5^{-2}.

Name _____

Reteach to Build Understanding
2-9

How do you write the number 0.0513 in scientific notation?

Step 1 Write the first factor. Move the decimal point to the right of the first nonzero digit.

$0.0513 \rightarrow 5.13$

Step 2 Write the second factor. Count the number of digits before the decimal point.

$0.0513 \rightarrow 10^{-2}$

$0\,|\,05\,|\,13$

0.0513 written in scientific notation is 5.13×10^{-2}.

As of July 1, 2014, the population of India was about 1,267,000,000. How can you write this number in scientific notation?

1. Move the decimal point to the right of the first digit. What is the first factor?

2. Count the number of digits after the decimal point. How many places did you move the decimal point?

3. Did you move the decimal point to the right or to the left? What does this tell you about the power of 10 in the second factor?

4. What is the second factor written as a power of 10?

5. Write the population of India in scientific notation.

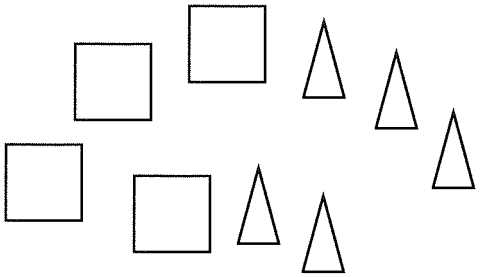
On the Back!

6. There are 3,153,600 seconds in a year. How can you write this number in scientific notation?

Name _____

Reteach to Build Understanding
3-1

A ratio is a relationship in which for every x units of one quantity there are y units of another quantity. There are three ways to write the ratio that relates the number of squares to the number of triangles.



$\frac{4}{5}$ 4 : 5 4 to 5

You can find equivalent ratios by multiplying or dividing both terms of a given ratio by the same nonzero number.

$\frac{8}{10} = \frac{24}{30}$ (×3 on both terms) $\qquad \frac{8}{10} = \frac{4}{5}$ (÷2 on both terms)

Alyssa's lemonade recipe calls for 9 lemons for every 2.5 gallons of water. Brian's recipe calls for 12 lemons for every 4 gallons of water. Whose lemonade will require more water if they each use 36 lemons?

1. Complete the tables of equivalent ratios to find out how much water each recipe requires if 36 lemons are used.

Alyssa	
Number of Lemons	**Gallons of Water**
9	2.5
18	5
	7.5
	10

(× on the left, ×3 on the right)

Brian	
Number of Lemons	**Gallons of Water**
12	4
24	

2. How many gallons of water will Alyssa need?
3. How many gallons of water will Brian need?
4. Whose recipe requires more water?

On the Back!

5. Mayumi hikes 3 miles in 2 hours. Edwin hikes 4 miles in 3 hours. Who takes more time to complete a 12-mile hiking trail? How much more time?

Name _____

Reteach to Build Understanding
3-3

Two quantities have a proportional relationship if all of the ratios that relate the quantities are equivalent. This table shows a proportional relationship because all of the ratios $\frac{y}{x}$ are equivalent to 4.

x	2	4	5	6	7	10
y	8	16	20	24	28	40
$\frac{y}{x}$	$\frac{8}{2} = 4$	$\frac{16}{4} = 4$	$\frac{20}{5} = 4$	$\frac{24}{6} = 4$	$\frac{28}{7} = 4$	$\frac{40}{10} = 4$

Sophie records the total number of cans of cat food she uses after different numbers of days. She wants to know if the number of cans of cat food she uses is proportional to the number of days.

After 3 days – 6 cans
After 4 days – 8 cans
After 9 days – 18 cans

1. Complete the table.

Number of Days (x)	3	4	9
Number of Cans (y)	6	8	18
$\frac{\textbf{Number of Cans } (y)}{\textbf{Number of Days } (x)}$	$\frac{6}{3} = 2$	____ =	____ =

2. Is the number of cans of cat food used proportional to the number of days? Explain.

3. How many cans of cat food will Sophie use after 12 days?

On the Back!

4. Is the relationship between the number of books and the number of shelves proportional? Explain.

Number of Shelves (x)	**Number of Books (y)**
3	135
5	225
6	270

Name _____

Reteach to Build Understanding
3-4

Jack uses 1.5 cups of water for every 2 cups of raspberries to make a raspberry syrup. What is an equation that relates the amount of water to the amount of raspberries in the syrup?

Step 1 Are the quantities proportional?

Cups of Raspberries (x)	2	4	6
Cups of Water (y)	1.5	3	4.5
$\frac{y}{x}$	$\frac{1.5}{2} = 0.75$	$\frac{3}{4} = 0.75$	$\frac{4.5}{6} = 0.75$

The quantities are proportional. The constant of proportionality is 0.75.

Step 2 Write an equation in the form $y = kx$, where k is the constant of proportionality, to relate proportional quantities x and y.

Use $k = 0.75$. $y = kx$

$y = 0.75x$

The equation $y = 0.75x$ relates the amount of water to the amount of raspberries.

1. Complete the table to determine whether the quantities x and y are proportional.

x	2	5	7
y	4.5	11.25	15.75
$\frac{y}{x}$	$\frac{4.5}{2} =$	$\frac{11.25}{\quad} =$	$\frac{\quad}{7} =$

2. What is the constant of proportionality that relates the quantities x and y?

$\frac{y}{x} =$

3. Write an equation that relates the quantities.

$y = kx$

$y =$ x

On the Back!

4. The table shows how the quantities x and y are related. Are the quantities proportional? Write an equation to represent the relationship.

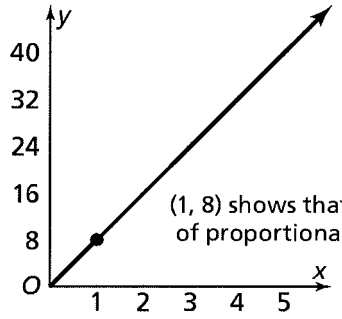
x	5	7	9
y	6.5	9.1	11.7

Name _____

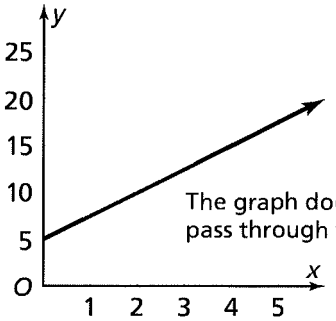
Reteach to Build Understanding
3-5

The graph of a proportional relationship is a straight line through the origin, (0, 0).

The graph is a straight line through the origin.



Proportional

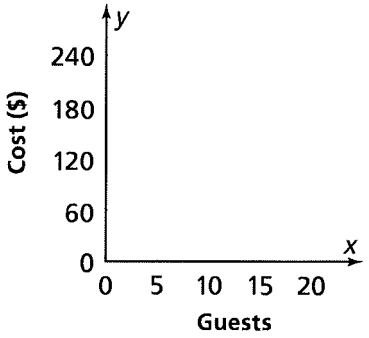


NOT Proportional

Mark is planning a birthday party at the local skating rink. The table shows the rates that are charged for parties at the skating rink. Is the number of guests proportional to the cost? If so, what is the constant of proportionality, and what does it mean in this situation?

Number of Guests (x)	Cost ($) ($y$)
5	60
10	120
15	180
20	240

1. Graph the ordered pairs on a coordinate plane.



2. Is the graph a straight line?

   YES or **NO**

3. Does the graph go through the origin, (0, 0)?

   YES or **NO**

4. Is the cost proportional to the number of guests?

   YES or **NO**

5. What is the constant of proportionality, $\frac{y}{x}$? $\frac{y}{x} = \text{——} =$

6. The constant of proportionality describes how the quantities are related. The cost of each guest at the party is $.

On the Back!

7. Draw an example of a graph of a proportional relationship. Identify the constant of proportionality.

Name _____

Reteach to Build Understanding
4-2

Norah has read 72 pages, which is 45% of a book. How many pages are in the book?

Step 1 Set up the proportion.

$$\frac{\text{part}}{\text{whole}} = \frac{p}{100}$$

$$\frac{72}{w} = \frac{45}{100}$$

Step 2 Solve for the variable.

$$\frac{72}{w} = \frac{45}{100}$$ Write the proportion.

$$\frac{72}{w} \cdot w = \frac{45}{100} \cdot w$$ Multiply each side by w.

$$72 = \frac{45w}{100}$$ Simplify.

$$72 \cdot \frac{100}{45} = \frac{45w}{100} \cdot \frac{100}{45}$$ Multiply by the reciprocal.

$$w = 160$$ Simplify.

There are 160 pages in Norah's book.

Trevon made 24 of the 40 free throws he attempted last season. What percent of his attempted free throws did Trevon make?

1. Complete the proportion. Use a variable for the missing value.

   $\frac{\quad}{\quad} = \frac{\quad}{100}$

2. Multiply each side of the proportion by .

3. Write the equation you can use to solve for the variable.

4. What is the missing value in the proportion?

5. What percent of his attempted free throws did Trevon make?

On the Back!

6. Jason was asked 40 questions on a quiz show. He answered 85% of the questions correctly. How many questions did he answer correctly?

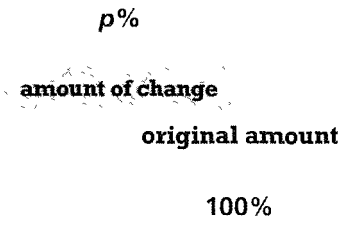
Name _____

Reteach to Build Understanding
4-4

Percent change describes an amount of change as a percent of the original value.

change = percent change • original amount

Last year, Billy was 48 inches tall. This year, he is 54 inches tall. What is the percent increase in Billy's height?



Step 1 Find the amount of change. $54 - 48 = 6$

Step 2 Use the percent equation.

$$6 = p \cdot 48$$

$$\frac{6}{48} = \frac{p \cdot 48}{48}$$

$$\frac{6}{48} = p$$

$$0.125 = p$$

Rewrite the decimal as a percent. Billy's height has increased by 12.5%.

Percent error describes the difference between an estimated value and the actual value as a percent of the actual value.

difference = percent error • actual value

Jason predicted that 227 students would attend the school dance. The actual number was 250. What is the percent error of Jason's prediction?

1. What is the difference between the predicted value and the actual value?

2. Complete the equation: $\quad = p \cdot$

3. Solve the equation for p.

4. What is the percent error?

On the Back!

5. Last week, there were 420 new subscribers to a Web site. This week, the number of new subscribers decreased by 5%. How many new subscribers are there this week?

Name _____

Reteach to Build Understanding
4-5

A tent that usually sells for $220 is on sale for 15% off. What is the sale price?

Step 1 Find the markdown amount.

markdown = percent markdown • original price

$m = 0.15 \cdot 220$

$m = 33$

15%

markdown amount

original price: $220

100%

Step 2 Find the sale price.

sale price = original price – markdown

$s = 220 - 33$

$s = 187$

markdown amount: $33 → sale price

original price: $220

The sale price is $187.

Use similar reasoning to find a markup amount. The markup is the amount of increase from the original price to the selling price. markup = percent markup • cost

Marcy has $20. She wants to buy a book that is marked down 30% from its original price of $28. If the sales tax is 2.5%, does Marcy have enough money to buy the book?

1. Complete the percent equation to find the markdown.

   $m =$ ____ • ____

   $=$ ____

2. Complete the equation to find the sale price.

   $s =$ ____ – ____

   $=$ ____

3. How much is the sales tax on the price you found in Exercise 2? Add the sale price and the sales tax to find the total cost of the book.

4. Does Marcy have enough money to buy the book? Explain.

On the Back!

5. The school store buys granola bars for $0.40 each and sells them for $0.65. What is the percent markup?

Name _____

Reteach to Build Understanding
4-6

Darius deposits $600 into a simple interest savings account. After a year, the account balance will be $615. What is the interest rate?

Step 1 Find the interest earned in one year.

$615 - 600 = 15$

Step 2 Use the percent equation.

interest amount = initial deposit • interest rate

$15 = 600 \cdot r$ Substitute.

$15 = 600r$ Simplify.

$\frac{15}{600} = \frac{600r}{600}$ Divide both sides by 600.

$r = 0.025$ Simplify to find the interest rate as a decimal.

The simple interest rate is 2.5%.

Enrique earned $101.40 in interest over 6 years in a savings account that pays 1.3% simple interest per year. How much did Enrique originally deposit?

1. What was the amount of interest earned in one year? Explain how you found your answer.

2. Complete the percent equation below to find how much Enrique initially deposited. Use the interest amount you found in Exercise 1.

   interest amount = _____ • initial deposit

   = _____ • initial deposit

   = initial deposit

On the Back!

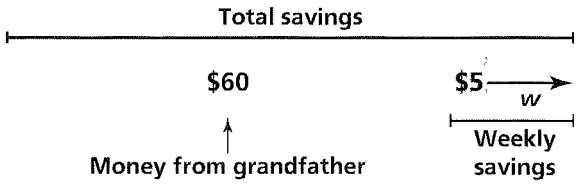
3. Tony's deposit earned $40.80 in simple interest over 3 years in an account with an interest rate of 1.7%. How much did Tony deposit?

Name _____

Reteach to Build Understanding
5-1

Amber is saving money to buy a bicycle. She saves $60 her grandfather gave her, and plans to save an additional $5 each week. How much will Amber save after *w* weeks?

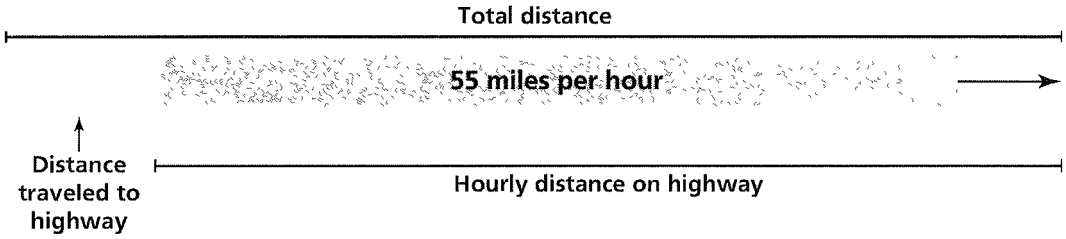
Use a bar diagram to represent the amount Amber will save after *w* weeks.



Amber will save $60 + 5w$ dollars after *w* weeks.

Reggie drives 10 miles from the airport to the highway. Once on the highway, he drives at a speed of 55 miles per hour. What is Reggie's total distance from the airport *h* hours after reaching the highway?

1. Complete the bar diagram.



2. Write an expression that represents the distance that Reggie travels on the highway in *h* hours.

3. Write an expression that represents Reggie's total distance from the airport *h* hours after reaching the highway.

On the Back!

4. Chrissy had 4 gallons of gas in her tank when she arrived at the gas station. She pumped gas into her car at a rate of $\frac{3}{10}$ gallon per second. How many gallons of gas were in the tank after *s* seconds?

Name _____

Reteach to Build Understanding
5-3

Simplify the expression $9 - 2x - 7 + 4x$.

Step 1 Use the Commutative Property to reorder the terms so that like terms are together.

$$9 + 4x - 7 - 2x = 9 - 7 + 4x - 2x$$

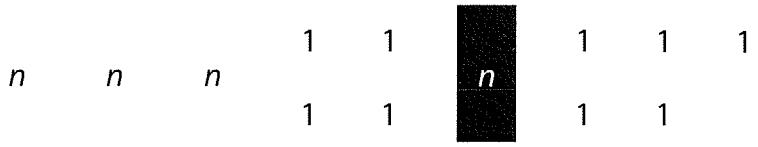
Step 2 Use the Associative Property to group like terms.

$$= (9 - 7) + (4x - 2x)$$

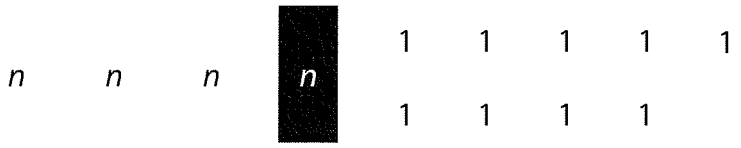
Step 3 Simplify by combining like terms.

$$= 2 + 2x$$

Eloise's math tutor used algebra tiles to model $3n + 4 - n + 5$. What is the simplified form of this expression?



1. Eloise rearranged the tiles as shown below. What property did she use? Write an expression that represents Eloise's arrangement of the tiles.



2. Rewrite your expression from Exercise 1 by grouping like terms.

3. What is the simplified form of the expression?

On the Back!

4. What is the simplified form of the expression $7r - 8r + 13 - 2r + 5$?

Name _____

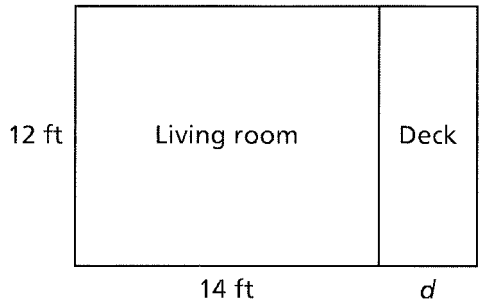
Reteach to Build Understanding
5-4

You can use the Distributive Property to expand expressions.

$3(7x + 5) = (3)(7x) + (3)(5)$ Use the Distributive Property.
$= 21x + 15$ Simplify.

The expanded form of $3(7x + 5)$ is $21x + 15$.

The Bains' house has a deck next to the living room. What is the total combined area of the living room and deck?



1. The deck and living room combine to form a rectangle. What is the rectangle's width?

2. Write an expression to represent the combined length of the rectangle.

3. Write an expression to represent the combined area of the living room and deck.

4. Use the Distributive Property to expand the product and then simplify. What expression represents the total combined area of the living room and deck?

On the Back!

5. The deli's lunch special offers customers half off the total cost of a sandwich of their choice and a bag of pretzels. The original price of the pretzels is $1.50. Let s represent the original cost of a selected customer's sandwich. What is the total cost of the customer's order?

Name _____

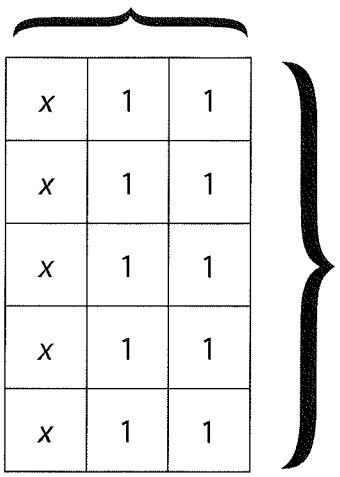
Reteach to Build Understanding
5-5

Factor the expression $6x + 9$.

$6x + 9 = (3 \cdot 2x) + (3 \cdot 3)$ The Greatest Common Factor (GCF) of $6x$ and 9 is 3.

$= 3(2x + 3)$ Distributive Property

A room that is 5 meters long has an area of $5x + 10$ square meters. What expression represents the width of the room?



1. What is the GCF of $5x$ and 10?

2. Fill in the box to rewrite the expression $5x + 10$ using the GCF.

$5x + 10 = (\quad \cdot x) + (5 \cdot \quad)$

3. Use the Distributive Property rewrite the expression from Exercise 2 in factored form.

4. What expression represents the width of the room?

5. Label the length and width of the room on the area model.

On the Back!

6. Cameron combined peanuts, cashews, and walnuts to make a trail mix. The expression $16p + 24c + 32w$ represents the total number of nuts in the mix. Cameron wants to divide the trail mix into equal servings, but he does not know how many. Use factoring to write expressions that will help Cameron divide the trail mix into 4 servings or 8 servings.

Name _____

Reteach to Build Understanding
5-6

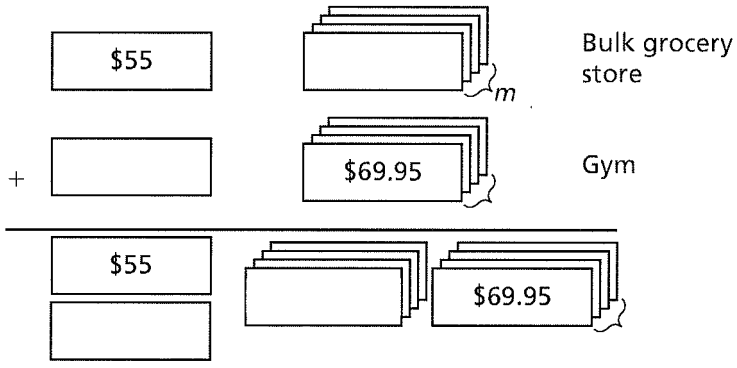
Raul and Bobby are brothers who are saving to buy a new video game console. Bobby contributed $25 and plans to save $10 per week. Raul contributed $20 and plans to save $15 per week. What expression represents the total amount Bobby and Raul will have in w weeks?

$25 + 10w$	Write an expression for Bobby's savings.
$20 + 15w$	Write an expression for Raul's savings.
$(25 + 10w) + (20 + 15w)$	Add the expressions.
$(25 + 20) + (10w + 15w)$	Use the Commutative and Associative Properties.
$45 + 25w$	Combine like terms.

The expression $45 + 25w$ represents the total amount they will have in w weeks.

For membership to a bulk grocery store, there is a $55 initial fee and monthly dues are $12.50. A gym membership costs $69.95 a month, plus a one-time sign up fee of $90. What expression represents the total cost of both memberships for m months?

1. Complete the diagram.



2. What expression represents the total monthly cost of the bulk grocery store membership?

3. What expression represents the total monthly cost of the gym membership?

4. Write the sum of the expressions from Exercises 2 and 3.

5. Use the Commutative and Associative Properties to rewrite your expression with like terms grouped together. Then combine like terms to write an expression that represents the total cost of both memberships for m months.

On the Back!

6. For adults, a bowling alley charges $3.75 for shoe rental and $5 per game. For children, the cost is $2.50 for shoe rental and $4 per game. What expression represents the total cost for one adult and one child to bowl g games?

Name _____

Reteach to Build Understanding
5-7

A meal delivery service called Healthy Foods charges an initial fee of $29.95 plus $25 each month. Good Eats provides the same service for an initial fee of $10 plus $20 a month. Write an expression that represents the amount Miranda will save over m months if she signs up for Good Eats instead of Healthy Foods.

$(29.95 + 25m) - (10 + 20m)$	Subtract expressions for the cost of each membership.
$= 29.95 + 25m - 10 - 20m$	Distributive Property
$= (25m - 20m) + (29.95 - 10)$	Commutative and Associative Properties
$= 5m + 19.95$	Combine like terms.

Miranda will save $5m + 19.95$ dollars if she signs up for Good Eats instead of Healthy Foods.

Last week, Byron bought 5 containers of yogurt and spent $12.88 on other groceries. This week Cassandra bought 3 containers of the same yogurt and spent $11.50 on other groceries. How much more money did Byron spend than Cassandra?

1. Let c represent the cost of one container of yogurt. Write expressions to represent the amount spent by Byron and the amount spent by Cassandra.

2. Write an expression to represent the difference by subtracting the amount that Cassandra spent from the amount that Byron spent. Then complete the steps to simplify the expression.

   $($ $)$ $-$ $($ $)$

   $= 5c + 12.88 -$ $-$

   $= (5c -$ $) + ($ $- 11.50)$

   $=$ $c +$

3. What expression represents how much more money Byron spent than Cassandra?

On the Back!

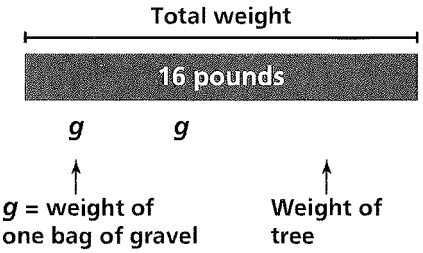
4. Yesterday Gunnar ran 4 times around the track plus an additional 450 feet. Today he ran 3 times around the track plus an additional 375 feet. What expression represents how much farther Gunnar ran yesterday than today?

Name _____

Reteach to Build Understanding
6-2

Ted bought 2 bags of gravel and a potted tree that weighed 7.4 pounds at Marvin's Garden Shoppe. The total weight of his purchases was 16 pounds. How much did each bag of gravel weigh?

Use a bar diagram and an equation to represent the situation. Then solve the equation.

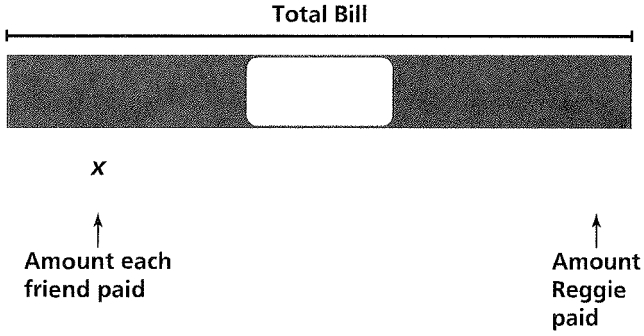


$$2g + 7.4 = 16$$
$$2g + 7.4 - 7.4 = 16 - 7.4$$
$$2g = 8.6$$
$$\frac{2g}{2} = \frac{8.6}{2}$$
$$g = 4.3$$

Each bag of gravel weighed 4.3 pounds.

Three friends ate lunch at a restaurant. Their friend Reggie arrived late and only ordered a glass of juice. The total bill was $39.50 before taxes. Reggie paid $2 for his juice, and the others divided the remaining amount equally. How much did each of Reggie's three friends pay?

1. Complete the bar diagram.



2. Fill in the boxes to write and solve an equation.

$x +$ $= 39.50$

$3x + 2 -$ $= 39.50 -$

$3x =$

$\frac{3x}{\square} = \frac{\quad}{\square}$

$x =$

3. How much did each of Reggie's three friends pay?

On the Back!

4. Blair's new computer cost $5 less than twice the cost of her old computer. Her new computer cost $709. How much did Blair's old computer cost?

Name _____

Reteach to Build Understanding
6-3

Four friends each bought a ticket to a concert. In addition to the ticket price, each friend paid a service fee of $5.50 to the ticket broker. The four friends paid a total of $126. What was the price of each ticket?

Let t represent the price of a ticket.
Then the expression $t + 5.50$ represents the amount paid by each person.

$$4(t + 5.50) = 126$$
$$4t + 22 = 126$$
$$4t + 22 - 22 = 126 - 22$$
$$4t = 104$$
$$\frac{4t}{4} = \frac{104}{4}$$
$$t = 26$$

The price of each ticket was $26.

A class of 24 students visited a science museum. Each student paid the museum's admission fee and $6 for lunch at the museum. The class spent a total of $336. What was the admission fee that each student paid?

1. Let f represent the museum's admission fee. What expression represents the total amount paid by each student?

2. Use the expression from Exercise 1 to write an expression that represents the total amount paid by the entire class.

3. Use the expression from Exercise 2 to write an equation that represents the situation.

4. Rewrite the equation using the Distributive Property.

5. Solve the equation. What was the admission fee that each student paid?

On the Back!

6. A grocer bought 25 bags of flour from a wholesaler. He marked up the price of each bag by $1.50, sold all of the flour for a total of $87.50. How much did the grocer pay the wholesaler for each bag of flour?

Name _____

Reteach to Build Understanding
6-4

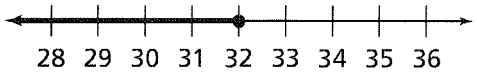
Each day, Maura is allowed to play video games for no more than 60 minutes. She has already played for 28 minutes today. For how many more minutes can Maura play video games today?

Let m represent the number of minutes Maura can still play today.

Write and solve an inequality.

$$28 + m \leq 60$$
$$28 - 28 + m \leq 60 - 28$$
$$m \leq 32$$

Use a number line to show all of the possible solutions.



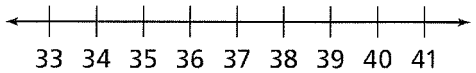
Maura may play video games for no more than 32 additional minutes today.

Vin has saved $62 so far this month. His goal is to save at least $100 by the end of the month. How much can Vin save from now until the end of the month to reach his goal?

1. Let s represent the amount Vin saves from now until the end of the month. Write an expression that represents Vin's total savings this month.

2. Write an inequality that shows that Vin's total savings for the month are at least $100.

3. Solve the inequality from Exercise 2 and show all of the possible solutions on the number line.



4. How much can Vin save from now until the end of the month to meet his goal?

On the Back!

5. Three students have already enrolled for a creative writing class. The teacher will cancel the class if there are fewer than 10 students enrolled. Write three values for numbers of students needed to sign up so that the the creative writing class can be held.

Name _____

Reteach to Build Understanding
6-5

Benny has $450 in his bank account. For how many weeks can Benny withdraw $50 per week from this account?

Let w represent the number of weeks. Write and solve an inequality.

$$50w \leq 450$$
$$\frac{50w}{50} \leq \frac{450}{50}$$
$$w \leq 9$$

Use a number line to show all of the possible solutions.

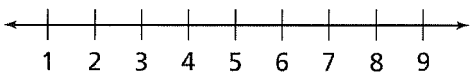
Benny can withdraw $50 per week for up to 9 weeks.

Manuel has been training for a bike race. He now rides 35 miles during each training session. This is more than 5 times the distance he rode during each session when he first began training. What are the possible distances Manuel rode during each session when he began training?

1. Let d represent the distance Manuel rode during each session when he began training. Write an expression that represents 5 times this distance.

2. Use the expression from Exercise 1 to write an inequality that relates the distance Manuel now rides to the distance he rode when he began training.

3. Solve the inequality from Exercise 2 and graph the solution on the number line.



4. What are the possible distances Manuel rode during each session when he began training?

On the Back!

5. Shari has 7 months to save $294 for a vacation. How much must Shari save each month in order to save at least $294 for her vacation?

Name _____

Reteach to Build Understanding
6-7

Denny likes to create number puzzles. He says, "I subtracted 4 from my height in inches, multiplied by 3, and then added 33. My answer is greater than the street number of my house." Denny lives at 219 Franklin Street. What are possible values for Denny's height in inches?

Write an inequality to represent Denny's height, h.

Multiply by 3	The difference of Denny's height and 4	Add 33	$>$	Denny's house number
3 $\cdot$	$(h-4)$	$+ 33$	$>$	219

$$3(h-4)+33>219$$
$$3h-12+33>219$$
$$3h+21>219$$
$$3h+21-21>219-21$$
$$3h>198$$
$$\frac{3h}{3}>\frac{198}{3}$$
$$h>66$$

Denny is taller than 66 inches.

Denny is 36 years old and his daughter is 7 years old. Denny says, " My age is less than 4 more than twice the sum of my son's age and my daughter's age, in years. What are possible ages in years, a, of Denny's son?

1. Fill in the boxes to write an inequality that represents Denny's son's age, a, in years.

Multiply by 2	The sum of Denny's son's age and his daughter's age	Add 4	$<$	Denny's age
$\cdot$	$(a +$ $)$	$+$	$<$	

2. Use the Distributive Property to rewrite the inequality from Exercise 1.

3. Solve the inequality. What are possible ages of Denny's son?

On the Back!

4. Three times the sum of 2 and the number of points Robbie scored in his last basketball game is at least 36. What are possible numbers of points Robbie scored?

Name _____

Reteach to Build Understanding
7-1

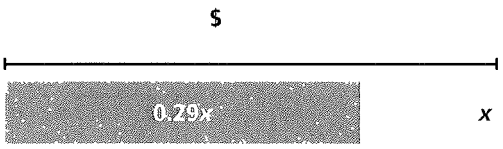
Johann sold 9 of his video games online. The next day, he sold 27 video games. He collected a total of $900. If Johann charged the same amount for each video game, how much did he sell each game for?

$9x + 27x = 900$	Write an equation.
$36x = 900$	Combine like terms.
$\frac{36x}{36} = \frac{900}{36}$	Divide each side by 36.
$x = 25$	Simplify.

Johann sold each game for $25.

Joshua makes earrings to sell at craft fairs. Each pair of earrings contains the same number of wooden beads as glass beads. For each pair, Joshua spends a total of $0.29 on the wooden beads and $0.11 on the glass beads. How many pairs of earrings, x, can Joshua make if he has $20 to spend on beads?

1. Use the information in the problem to complete the bar diagram.



2. Write an equation to represent the bar diagram.

3. What are the like terms in your equation from Exercise 2? Rewrite the equation by combining the like terms.

4. Divide each side of the equation by the same number to solve for x. How many pairs of earrings can Joshua make?

On the Back!

5. Irene owns a bakery. For each cake, she spends $\frac{1}{4}$ of an hour to make frosting and $\frac{2}{5}$ hour to decorate. How many cakes can Irene frost and decorate in $3\frac{1}{4}$ hours?

Name _____

Reteach to Build Understanding
7-2

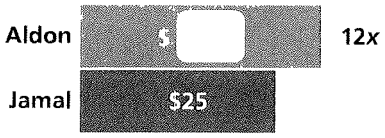
Rachel has saved $200 and spends $25 each week. Roy just started saving $15 per week. In how many weeks will Rachel and Roy have the same amount of money saved?

$200 - 25x = 15x$	Write an equation.
$200 - 25x + 25x = 15x + 25x$	Add $25x$ to both sides.
$200 = 40x$	Combine like terms.
$\frac{200}{40} = \frac{40x}{40}$	Divide both sides by 40.
$5 = x$	Simplify.

Rachel and Roy will have the same amount of money saved in 5 weeks.

Aldon and Jamal raised the same amount of money for the school fundraiser. Aldon donated $40 and sold 12 tickets for the school raffle. Jamal donated $25 and sold 15 tickets for the raffle. What was the cost of each raffle ticket?

1. Complete the bar diagram below.



2. What expression represents the total amount of money that Aldon raised?

3. What expression represents the total amount of money that Jamal raised?

4. Write an equation that shows that Aldon and Jamal raised the same amount of money.

5. Solve your equation for x. What was the cost of each raffle ticket?

On the Back!

6. Ray and Claudia are writing in journals. Ray has written 16 pages and he now writes 2 pages every day. Claudia has written only 2 pages, but she now writes 4 pages every day. In how many days will they have written the same number of pages?

Name _____

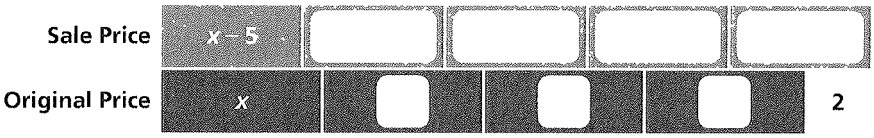
Reteach to Build Understanding
7-3

Solve the equation $4(3x + 5) = 6(x + 8) - x$.

$4(3x + 5) = 6(x + 8) - x$	
$12x + 20 = 6x + 48 - x$	Use the Distributive Property.
$12x + 20 = 5x + 48$	Combine like terms.
$7x + 20 = 48$	Subtract $5x$ from both sides.
$7x = 28$	Subtract 20 from both sides.
$x = 4$	Divide both sides by 7.

Rajan bought 5 copies of a book to give as gifts. The book was on sale for $5 off the original price. The total that Rajan spent on 5 books was $2 more than he would have spent on 4 copies of the book at the original price. What was the original price?

1. Complete the bar diagram below.



2. Complete the equation that represents the bar diagram.

5(−) = +

3. Fill in the steps to solve the equation.

$5x -$ $= 4x + 2$	Use the Property.
$5x -$ $- 25 = 4x - 4x + 2$	Subtract from both sides.
$- 25 = 2$	Combine like terms.
$x - 25 +$ $= 2 +$	Add 25 to both sides.
$x =$	Simplify.

4. What was the original price of the book?

On the Back!

5. Joshua scored the same number of points in each of his last 3 basketball games. He scored 8 fewer points in each of those games than he scored in his best game. The total number of points that Joshua scored in the last 3 games is equal to twice the number of points he scored in his best game. How many points did Joshua score in his best game?

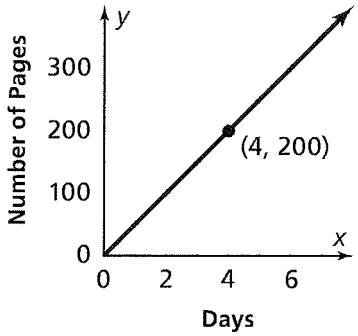
Name _____

In order to finish reading a book by the assigned date, Caleb plans to read the same number of pages each day, as shown in the graph. What is the slope of the line?

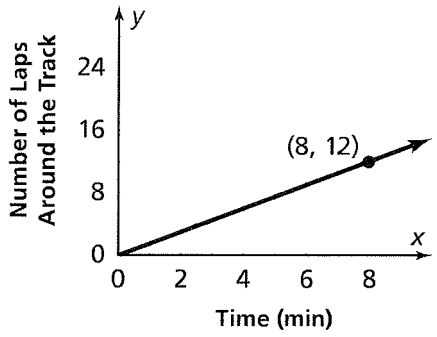
The rise is 200 pages. The run is 4 days.

$$\frac{\text{rise}}{\text{run}} = \frac{200 \text{ pages}}{4 \text{ days}} = 50 \text{ pages per day}$$

The slope of the line is 50.



The graph relates the time in minutes and the number of laps Jerry must run around the track in order to meet his goal for the track meet. What is the slope of the line?



1. What is the rise between the points (0, 0) and (8, 12)?

2. What is the run between the points (0, 0) and (8, 12)?

3. What is the slope of the line?

On the Back!

4. Christina made a graph to describe the distance she walked on her backpacking trip. She plotted miles on the *y*-axis and the number of days on the *x*-axis. She graphed a point at (0, 0) and another point to show she walked 14 miles in 8 days and drew a line that passes through the points. What is the slope of the line?

Name _____

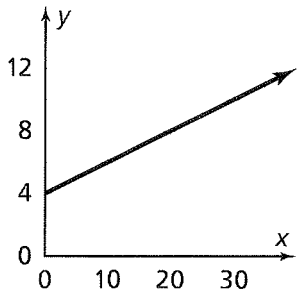
Reteach to Build Understanding
7-9

What is the equation of the line in slope-intercept form given its graph?

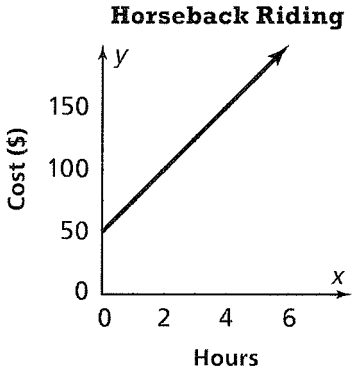
Step 1 Find b, the y-intercept.
The line crosses the y-axis at (0, 4), so $b = 4$.

Step 2 Find m, the slope.
Two points on the line are (0, 4) and (10, 6).
$\frac{\text{rise}}{\text{run}} = \frac{2}{10} = \frac{1}{5}$

Step 3 Write the equation $y = mx + b$.
$y = \frac{1}{5}x + 4$



The line shows the cost for horseback riding at a local stable. What is the equation of the line in slope-intercept form?



1. You can write the equation in the form $y = mx + b$. What does b represent? What is the value of b?

2. What does m represent?

3. How can you use the line to find the value of m? What is the value of m?

4. What is the equation of the line?

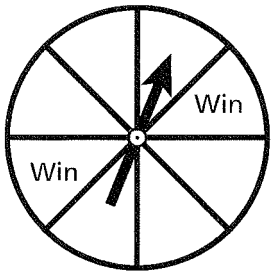
On the Back!

5. Wally opened a savings account with a deposit of $100. He plans to put $40 each week into the account. What is the equation of the line in slope-intercept form that shows Wally's total savings?

Name _____

Reteach to Build Understanding
9-2

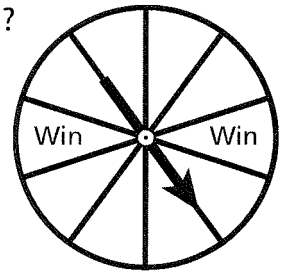
Out of 300 spins, how many times is the pointer of the spinner expected to land on Win?



Step 1 Find the possible outcomes of one spin. There are 8 equal-sized sections, so there are 8 possible outcomes.	**Step 2** Find the theoretical probability that the pointer will land on Win. $P(\text{Win}) = \frac{\text{number of Win sections}}{\text{total number of sections}}$ $\frac{2}{8} = \frac{1}{4}$	**Step 3** Use proportional reasoning to predict the likely number of winning spins, w. $\frac{1}{4} = \frac{w}{300}$ $\frac{1}{4} \cdot 300 = \frac{w}{300} \cdot 300$ $75 = w$

Out of 300 spins, you can expect the pointer to land on Win about 75 times.

On how many out of 200 spins do you expect the pointer to land on Win?



1. How many equal-sized sections does this spinner have?

2. Find the theoretical probability that the pointer will land on Win.

   $P(\text{Win}) = \frac{\text{number of Win sections}}{\text{total number of sections}} = \frac{\_\_}{\_\_} = \frac{1}{\_\_}$

3. Complete the proportion to find the number of expected wins, w, in 200 spins.

   $\frac{\_\_}{\_\_} = \frac{w}{\_\_}$

4. On how many out of 200 spins do you expect the pointer to land on Win?

On the Back!

5. Of 8 equal-sized sections on a spinner, 3 are shaded green. On how many out of 400 spins do you expect the pointer to land in a green section?

Name _____

Reteach to Build Understanding
9-3

A spinner has 8 equal-sized sections. Four of the sections are blue, two are red, and two are green. The pointer lands in a red section 8 times in 20 spins. How does this compare to the number of times the pointer is expected to land in a red section?

Step 1 Use the experiment's results to find the experimental probability that the pointer lands in a red section.

$$\text{Experimental probability} = \frac{\text{number of times pointer lands in a red section}}{\text{total number of spins}} = \frac{8}{20} = 40\%$$

Step 2 Find the theoretical probability that the pointer lands in a red section.

$$P(\text{red}) = \frac{\text{number of red sections}}{\text{total number of equal-sized sections}} = \frac{2}{8} = 25\%$$

The experimental probability is greater than the theoretical probability. The pointer landed in a red section more often than expected.

A spinner has 10 equal-sized sections labeled 1 through 10. In 40 spins, the spinner lands 3 times in section 5. How does this compare to the number of times the pointer is expected to land in section 5?

1. Find the experimental probability that the pointer lands in section 5.

$$\frac{\text{number of times pointer lands in section 5}}{\text{total number of spins}} = \frac{3}{40} = 7.5\,\%$$

2. Find the theoretical probability that the pointer lands in section 5.

$$P(5) = \frac{\text{number of sections labeled "5"}}{\text{total number of equal-sized sections}} = \frac{1}{10} = 10\,\%$$

3. How does the actual number of times the pointer landed in section 5 compare to the expected number?

The pointer lands in section 5 less often than expected.

On the Back!

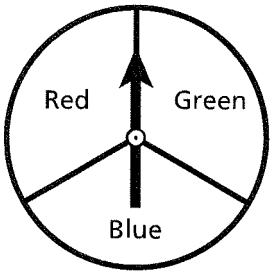
4. A spinner has 4 equal-sized sections labeled 1 through 4. In 25 spins, the spinner lands 5 times in section 3. How does this compare to the number of times the pointer is expected to land in section 3?

The pointer lands in section 3 less often than expected.

Name _____

Reteach to Build Understanding
9-6

In a certain board game, a player who lands on the *Double Spin* space earns two spins of the pointer shown. This player is awarded a free turn if the pointer lands in the red section both times. What is the probability that a player who lands on the *Double Spin* space will win a free turn?



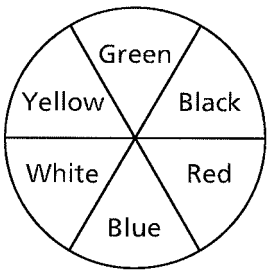
Make a table to describe the possible outcomes.

	Red (R)	**Green (G)**	**Blue (B)**
Red (R)	(R, R)	R, G	R, B
Green (G)	G, R	G, G	G, B
Blue (B)	B, R	B, G	B, B

- There are 9 possible outcomes.
- Each outcome is equally likely.
- The one favorable outcome is circled.

The probability that a player will win a free turn is $P(\text{R, R}) = \frac{1}{9}$.

To play a carnival game, a player tosses a coin into a large circular container. Equal-sized sections are painted different colors on the bottom of the container as shown. The player wins if the center of the coin lands in the green section and facing heads up. What is the probability that a player will win?



1. List all possible outcomes to describe where the the coin may land. Are the outcomes equally likely?

2. List all possible outcomes to describe the side of the coin that may be facing up when the coin lands in the container. Are the outcomes equally likely?

3. Describe all possible outcomes of the carnival game.

4. Find the probability that a player wins the carnival game.

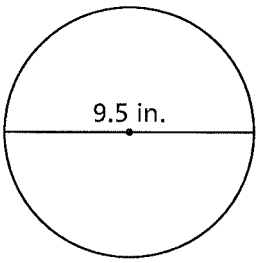
On the Back!

5. Find the probability of winning the carnival game if a player wins when the center of the coin lands in the yellow section and facing tails up.

Name _____

Reteach to Build Understanding
10-5

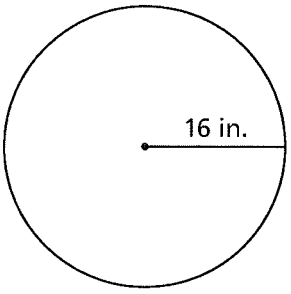
Marsha made the ceramic plate shown. What is the circumference of the plate? Use 3.14 for π.



$C = \pi d$	Formula for circumference
$C = \pi(9.5)$	The diameter is 9.5 inches.
$C \approx (3.14)(9.5)$	Use 3.14 for π.
$= 29.83$	Multiply.

The circumference of the plate is about 29.83 inches.

What is the circumference of the unicycle tire shown in the diagram? Use 3.14 for π.



1. What is the radius of the tire?

2. What is the diameter of the tire?

3. Fill in the boxes.

$C = \pi d$

$= \pi(\quad)$

$\approx (\quad)(\quad)$

$= (\quad)$

4. What is the circumference of the unicycle tire?

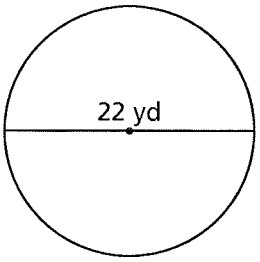
On the Back!

5. The circular top of a clay pot has a diameter of 14 centimeters. What is the circumference of the pot's circular top? Use 3.14 for π.

Name _____

Reteach to Build Understanding
10-6

A circular field in a park will be planted with sod. Sod costs $3 per square yard.



The diameter is 22 yards, so the radius is $22 \div 2 = 11$ yards. Find the area.

$A = \pi r^2$ Formula for area of a circle

$\approx (3.14)(11)^2$ Substitute 3.14 for π and 11 for r.

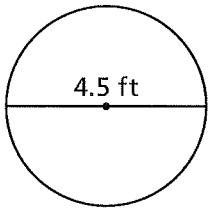
$= 3.14(121)$ Simplify the power.

$= 379.94$ Multiply.

The area is about 380 square yards.

Find the cost: $3 \times 380 = 1{,}140$. The sod will cost $1,140.

Luke uses rug hooking to make a new rug. He estimates that the cost of the yarn will be $5 per square foot. How much will he spend on yarn?



1. How do you find the radius of the rug? What is the radius of the rug in feet?

2. Fill in the boxes to find the area of the rug in square feet. Round the final area to the nearest tenth.

   $A = \pi r^2$

   $= \pi(\quad)^2$

   $\approx (\quad)(\quad)$

   $\approx (\quad)$ square feet

3. How do you find the cost of the wool for the new rug?

4. Find the cost of the wool.

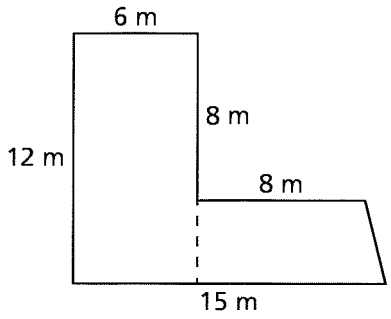
On the Back!

5. Malik has a mirror in the shape of a circle. The mirror's diameter is 76 centimeters. What is the area of the mirror? Use 3.14 for π.

Name _____

Reteach to Build Understanding
10-8

Murray is looking at a blueprint of the room shown below. What is the area of the room?



Break the figure into composite parts. The dashed line shown breaks the figure into a rectangle and a trapezoid.

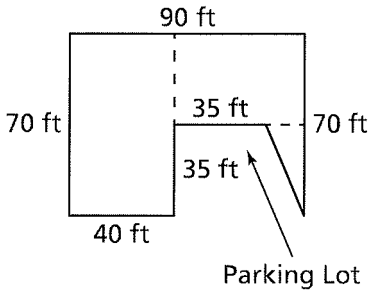
Find the area of the rectangle: $12 \cdot 6 = 72$. The area of the rectangle is 72 square meters.

Find the dimensions, in meters, of the trapezoid. Height: $12 - 8 = 4$ meters; bottom base: $15 - 6 = 9$ meters; top base: 8 meters

The area of the trapezoid is $\frac{9 + 8}{2} \times 4 = 34$ square meters.

The area of the room is $72 + 34 = 106$ square meters.

The city is designing a park, shown in the drawing below. One section is reserved for a parking lot. What is the area of the park?



1. What three shapes are created by the dashed lines?

2. What is the area of the rectangle on the left?

3. What is the area of the rectangle on the right?

4. What is the area of the triangle?

5. What is the total area of the park?

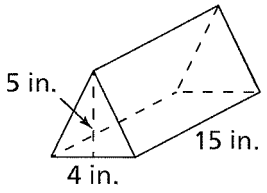
On the Back!

6. In the park shown above, what is the area of the parking lot?

Name _____

Reteach to Build Understanding
10-9

Raylene packs a specialty cake in the box shown. What is the volume of the box?



Step 1 Find B, the area of the base.
The base is a triangle.

$B = \frac{1}{2}bh$ Formula for area of a triangle
$= \frac{1}{2}(4)(5)$ Substitute $b = 4$ and $h = 5$.
$= 10$ Simplify.

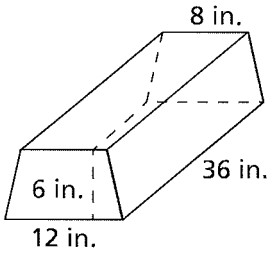
The area of the base is 10 square inches.

Step 2 Find the volume.

$V = Bh$ Formula for volume of a prism
$= 10(15)$ Substitute $B = 10$ and $h = 15$.
$= 150$ Simplify.

The volume of the box is 150 cubic inches.

Paula made a window box shaped like a prism. What is the volume of the window box?



1. What shape is the base of the prism?

2. Complete the formula for the area of the shape identified in Exercise 1.

$A = \frac{\quad}{\quad}(b_1 + b_2)$

3. Substitute given measurements into the formula to find the area of the base.

$B = \frac{\quad}{\quad}\left(\quad + \quad\right)$

$= \frac{\quad}{\quad}\left(\quad\right)\quad)$

$=$

4. What is the volume of the window box?

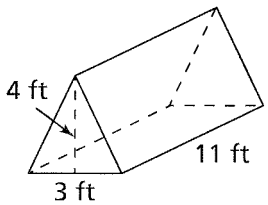
$V = Bh$

$= \quad\left(\quad\right)$

$=$ cubic inches

On the Back!

5. A playground has a tunnel in the shape of a triangular prism. What is the volume of the tunnel?



Name _____

Reteach to Build Understanding
12-1

A shelf support is in the shape of a right triangle with a leg length of 7 inches and a hypotenuse length of 15 inches. What is the length of the other leg to the nearest tenth of an inch?

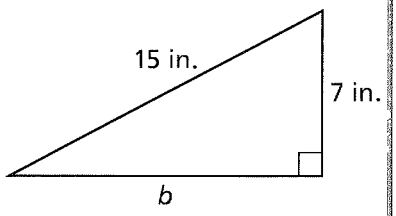
Draw and label a diagram.

Write the **Pythagorean Theorem.**

Substitute $a = 7$ and $c = 15$.

Simplify and solve for b.

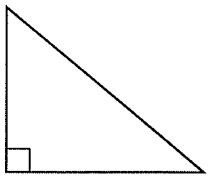
$$a^2 + b^2 = c^2$$
$$(\mathbf{7})^2 + b^2 = (\mathbf{15})^2$$
$$49 + b^2 = 225$$
$$b^2 = 176$$
$$\sqrt{b^2} = \sqrt{176}$$
$$b \approx 13.3$$



The length of the other leg is about 13.3 inches.

A slide and its ladder form a right triangle with the ground, with the slide representing the hypotenuse. The top of the ladder is 10 feet above the ground, and the bottom of the ladder is 12 feet from the bottom of the slide. What is the length of the slide to the nearest tenth of a foot?

1. Use the information in the problem to label the diagram.



2. Substitute the given information into the Pythagorean Theorem. Then solve for the missing length.

a^2 + b^2 = c^2

^{2} + ^{2} = c^2

+ = c^2

= c^2

$\sqrt{}$ = $\sqrt{}^2$

≈

3. What is the length of the slide to the nearest tenth of a foot?

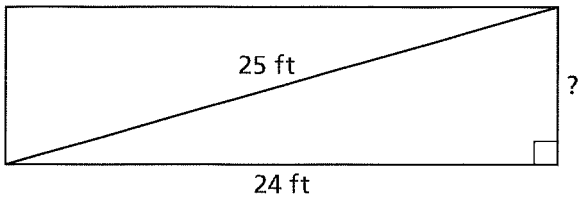
On the Back!

4. An 8 foot wire extends from the top of a 5 foot post to the ground, forming a right triangle. To the nearest tenth of a foot, what is the distance from the bottom of the post to the point where the wire meets the ground?

Name _____

Reteach to Build Understanding
12-3

What is the width of the garden shown in the diagram at the right?



Use the Pythagorean Theorem. Substitute $b = 24$ and $c = 25$.

$a^2 + b^2 = c^2$

$a^2 + 24^2 = 25^2$

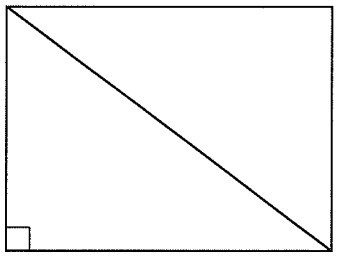
$a^2 + 576 = 625$

$a^2 = 49$

$a = 7$

The width of the garden is 7 feet.

Romy walks 16 yards, the length of a rectangular field. He then turns right and walks 12 yards, the width of the field. How far does Romy walk back to his starting point if he walks along the field's diagonal?



1. Label the diagram with the information given above.

2. Use the Pythagorean Theorem to find how far Romy walks along the field's diagonal.

$a^2 + b^2 = c^2$

$^2 + \quad ^2 = \quad ^2$

$+ \quad = \quad ^2$

$= \quad ^2$

$\sqrt{\quad} =$

$=$

Romy walks 20 yards.

On the Back!

3. A rectangular hallway rug has a width of 9 feet, and the diagonal measures 41 feet. What is the rug's length?