Bridge to Algebra

Assignments and Skills Practice
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Money, Money, Who Gets the Money?  
Introduction to Picture Algebra

You and your friend Jamal go to lunch. You each order a cheeseburger and a large soft drink. Jamal also orders a small salad, which costs $1.09. The total for both of you is $6.27. How much does each of you owe?

1. Draw and label two “boards” that represent the amounts that you and Jamal owe.

2. Use the picture that you drew to help you solve the problem. What amount does each of you owe? Write your answer using a complete sentence.

Jamal and Carla mow a lawn together to earn some more money for the summer. Carla begins mowing 30 minutes before Jamal. Then they mow together for 75 minutes until they finish. How much time did Jamal and Carla each spend mowing?

3. Draw and label two “boards” that represent the amount of time that Jamal and Carla mowed.

4. Use the picture that you drew to determine the amount of time spent mowing. How much time did Jamal and Carla spend mowing? Write your answer using a complete sentence.

5. What was the total time spent mowing? Write your answer using a complete sentence.

6. Suppose that Jamal and Carla together are paid $15.00. How much were they paid for each hour of work? Remember that 1 hour is equal to 60 minutes. Write your answer using a complete sentence.

7. Because he worked for 75 minutes, Jamal should receive $6.25 of the $15.00. How much should Carla receive? Use complete sentences to explain how you found the answer.
Collection Connection
Factors and Multiples

1. What factor of 24 is paired with 8? Write all of the factor pairs of 24.

2. What factor of 42 is paired with 6? Write all of the factors of 42.

3. What factor of 35 is paired with 5? Write all of the factors of 35.

4. A collection of 24 marbles is divided into equal-sized groups. What group sizes are possible?

5. Our number system is based on the number 10. The Babylonians based their number system on the number 60. Write all of the factors of 60.

6. Why do you think the Babylonians chose the number 60 as the base of their system? Write your answer using a complete sentence.

7. Lilly listed 1, 2, 3, 4, 8, 12, 24, 32, 48, and 96 as factors of 96. Is her list complete?

8. Caitlin has a collection of CDs. The number of CDs that she has is divisible by 2, 3, 4, 5, and 6. What is the least number of CDs that Caitlin can have in her collection?

9. Write four number sentences using the numbers 3, 6, and 18. Then complete the statements.

   The number 3 is a _____________ of 18.
   The number 18 is a _____________ of 6.
   The numbers 3 and 6 are a _____________ of 18.
Dogs and Buns
Least Common Multiple

Your club is packing bag lunches for an upcoming trip and wants to include at least one hard-boiled egg in each lunch. There are 8 students going on the trip. Eggs are sold in cartons of one dozen, or 12 eggs. The club wants to put an equal number of eggs in each lunch and have no eggs left over. How many dozens of eggs do they need to buy?

1. List the first ten multiples of 8.

2. List the first ten multiples of 12.

3. What numbers are in both sets of multiples?

4. Of the numbers that are in both sets, which is the smallest?

5. How many dozens of eggs does the club need to buy?

In a video game, a character needs to shine a light through two spinning wheels that have holes in them. The first wheel makes a complete rotation in 7 seconds. The second wheel makes a complete rotation in 9 seconds. The holes are lined up at 0 seconds. How many seconds will pass before they are lined up again?


7. List the first ten multiples of 9.

8. What is the least common multiple of 7 and 9? Write a complete sentence to explain your answer.

9. How many seconds will pass before the holes are again lined up?

10. Find the least common multiple of each pair of numbers.

   3 and 5        4 and 6
   8 and 16       10 and 15
Assignment

Name ________________________________ Date __________________

Kings and Mathematicians
Prime and Composite Numbers

Use the divisibility rules on page 18 in your text to decide whether each number is prime or composite. Use a complete sentence to explain your reasoning.

1. 51

2. 71

3. 45

4. 87

5. 41

All of the prime numbers up to 50 are listed below.
2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47

6. List all of the even prime numbers.

7. Explain your answer to Question 6 using divisibility rules.

In each list, identify the number that is not prime. Then write a complete sentence that explains why it is not prime.

8. 59, 63, 71, 79

9. 101, 103, 105, 107

Name the property that is illustrated.

10. 27 \times 1 = 27

11. 2 \times 3 = 3 \times 2
I Scream for Ice Cream
Prime Factorization

Desmond's class invents a game that they call “Factor It.” For each round, the teacher turns over a card with a number on it and the students write a factorization for the number. Students receive 1 point for each factor in their factorization. For example, suppose that the teacher turned over a card with 36 on it.

Desmond writes down $3 \times 12$ and receives 2 points.

Cynthia writes down $2 \times 2 \times 9$ and receives 3 points.

Juan writes down $2 \times 2 \times 3 \times 3$ and receives 4 points.

Juan wins the round because he has the most points.

For each number on the cards that the teacher turns over, write a factorization that will get you the greatest number of points in the game. Construct a factor tree to check your answer.

1. 48
2. 72
3. 54
4. 128
5. 640
6. 1000

7. Suppose that the teacher turns over a card that has a 60 on it. Desmond writes $(2 \times 2) \times 5 \times 3 = 4 \times 5 \times 3$. Juan writes $2 \times 2 \times (5 \times 3) = 2 \times 2 \times 15$.
Whose answer is correct? How do you know? Write a complete sentence to explain your reasoning.
Assignment

Name ____________________________ Date ____________________

Powers That Be
Powers and Exponents

1. How can divisibility rules help you to find the prime factorization of 513? Use complete sentences to explain.

For each power, identify the base and the exponent. Then evaluate the power.

2. $6^5 = _____________$
   Base: _____________
   Exponent: _____________

3. $1^{12} = _____________$
   Base: _____________
   Exponent: _____________

4. $30^2 = _____________$
   Base: _____________
   Exponent: _____________

5. $10^4 = _____________$
   Base: _____________
   Exponent: _____________

Use a factor tree to find the prime factorization of each number. Then use exponents to write the prime factorization.

6. 40
   Prime factorization = _____________

7. 98
   Prime factorization = _____________

8. 72
   Prime factorization = _____________

9. 128
   Prime factorization = _____________
Beads and Baubles
Greatest Common Factor

1. Your aunt’s club is planning to sell small bags of different types of beads to people who want to make their own bead jewelry. The table below lists the different types of beads and how many they have.

<table>
<thead>
<tr>
<th>Type of Bead</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oval bead</td>
<td>24</td>
</tr>
<tr>
<td>Metal bead</td>
<td>18</td>
</tr>
</tbody>
</table>

The club wants to divide these beads into bags so that each bag has exactly the same number of oval beads and metal beads. What is the greatest number of bags that they can make so that all of the beads are used and there is the same number of each bead in each bag? Write your answer using a complete sentence.

2. Complete the table to find the greatest common factor of 100 and 64.

<table>
<thead>
<tr>
<th>Number</th>
<th>Unique Factor Pairs</th>
<th>Unique Factors</th>
<th>Common Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>64</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The greatest common factor of 100 and 64 is _____.

3. Complete the table to find the greatest common factor of 36 and 48.

<table>
<thead>
<tr>
<th>Number</th>
<th>Unique Factor Pairs</th>
<th>Unique Factors</th>
<th>Common Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>36</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>48</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The greatest common factor of 36 and 48 is _____.

Find the greatest common factor of each set of numbers.

4. 72 and 30
5. 25 and 50
6. 27 and 80
7. 30 and 54
8. 22, 55, and 110
9. 96, 48, and 80
Assignment for Lesson 2.1

Comic Strips
Dividing a Whole into Fractional Parts

Write the fraction that is represented by the fraction model.

1. [Fraction Model]

2. [Fraction Model]

3. [Fraction Model]

Divide and shade each rectangle to represent the fraction.

4. \[ \frac{2}{3} \]

5. \[ \frac{3}{5} \]

6. \[ \frac{1}{8} \]

7. \[ \frac{7}{12} \]

8. Divide and shade the circle to represent \[ \frac{3}{8} \].
Dividing Quesadillas
Dividing More than One Whole into Parts

Six friends are sharing 4 quesadillas equally for lunch at a table in the cafeteria.

1. Show one way that you can divide the quesadillas equally. How many pieces would each person get? Use complete sentences to explain your reasoning.

2. Juanita divided all of the quesadillas into thirds. How many pieces would each person get? Write your answer using a complete sentence.

3. Dwayne said he would divide each quesadilla into six pieces. How many pieces would each person get? Is that the same amount of quesadillas that Juanita got? Use a complete sentence to explain your reasoning.

4. Gretchen made 3 pans of lasagna for her 5 friends. Show one way that she can cut up the pans so that her friends all have an equal amount of lasagna. Draw a picture and explain your solution.
Assignment for Lesson 2.3

No “I” in Team
Dividing Groups into Fractional Parts

The swim team is holding a bake sale to raise money for the end of season banquet. Team members donated 15 dozen chocolate chip cookies, 12 dozen oatmeal cookies, 8 dozen sugar cookies, 10 dozen peanut butter cookies, 6 dozen fudge cookies, 4 dozen lemon drop cookies, and 5 dozen thumbprint cookies.

1. Find the fraction of the cookies that are chocolate chip cookies.
2. Find the fraction of the cookies that are peanut butter cookies.
3. Find the fraction of the cookies that are oatmeal cookies.
4. Find the fraction of the cookies that are thumbprint cookies.
5. Find the fraction of the cookies that are fudge cookies.
6. Find the fraction of the cookies that are lemon drop cookies.
7. Find the fraction of the cookies that are sugar cookies.
8. Find the fraction of cookies that are oatmeal cookies or sugar cookies.
9. Find the fraction of cookies that are not chocolate chip cookies.
10. Find the fraction of cookies that are not fudge cookies or lemon drop cookies.
11. After three days of the sale, the swim team sold \( \frac{3}{4} \) of the cookies. How many cookies do they have left? Draw a diagram to show how you know that your answer is correct.
Assignment

Name ___________________________________________________ Date _____________________

Fair Share of Pizza
Equivalent Fractions

1. Divide each fraction model to determine four other fractions that are equivalent to $\frac{1}{2}$.

   \[
   \begin{array}{cccc}
   \frac{2}{4} & \frac{3}{6} & \frac{4}{8} & \frac{5}{10} \\
   \end{array}
   \]

2. Divide each fraction model to determine three other fractions that are equivalent to $\frac{2}{3}$.

   \[
   \begin{array}{cccc}
   \frac{4}{6} & \frac{6}{9} & \frac{8}{12} \\
   \end{array}
   \]

3. Explain what the numerator and denominator means in each of the fractions that are equivalent to $\frac{2}{3}$. Write your answer using a complete sentence.

4. Write three equivalent fractions that are equivalent to the given fraction.

   \[
   \begin{array}{ccc}
   \frac{1}{5} & \frac{3}{7} & \frac{5}{8} \\
   \end{array}
   \]
When Twelfths Are Eighths
Simplifying Fractions

1. Your aunt made coffee cakes for dessert and cut them in different ways. Write the fraction that is represented by the fraction model. Then write the fraction in simplest form.

2. Draw cuts and shade in the coffee cake below to represent \( \frac{16}{20} \). Then write the fraction in simplest form.
When Bigger Means Smaller
Comparing and Ordering Fractions

1. Compare the fractions. Then use the symbol > or < to make each statement true.

\[
\begin{align*}
\frac{1}{2} & \bigcirc \frac{1}{3} \\
\frac{3}{5} & \bigcirc \frac{3}{4} \\
\frac{2}{5} & \bigcirc \frac{2}{3}
\end{align*}
\]
\[
\begin{align*}
\frac{4}{5} & \bigcirc \frac{7}{8} \\
\frac{3}{4} & \bigcirc \frac{2}{3} \\
\frac{11}{12} & \bigcirc \frac{9}{10}
\end{align*}
\]

2. Write a complete sentence to explain how you can tell which fraction is greater if both fractions have the same numerator.

3. Write a complete sentence to explain how you can tell which fraction is greater if both fractions have numerators that are one number less than their denominators.

4. Find the least common denominator (LCD) of the fractions. Then use the symbol > or < to complete the statement.

\[
\begin{align*}
\frac{5}{8} & \bigcirc \frac{13}{20} & \text{LCD} = \_ \\
\frac{19}{20} & \bigcirc \frac{54}{60} & \text{LCD} = \_
\end{align*}
\]

5. Tell what method you would use to compare each pair of fractions. Then use the symbol > or < to complete the statement.

\[
\begin{align*}
\frac{3}{7} & \bigcirc \frac{3}{5} \\
\frac{17}{18} & \bigcirc \frac{16}{18} \\
\frac{4}{9} & \bigcirc \frac{11}{27}
\end{align*}
\]
Assignment

Name ___________________________________________________ Date _____________________

Who Gets What?
Adding and Subtracting Fractions with Like Denominators

Timothy is copying his large CD collection to MP3s so he can store them on his MP3 player.

On Monday, he copied \( \frac{3}{16} \) of his music. On Tuesday, he copied \( \frac{5}{16} \) of his music. On Wednesday, he copied \( \frac{7}{16} \) of his music. On Thursday, he copied the rest.

1. What fraction of his music did Timothy copy on Monday and Tuesday? Simplify your answer, if possible. Show all your work.

2. What fraction of his music did Timothy copy on Tuesday and Wednesday? Simplify your answer, if possible. Show all your work.

3. What fraction more of his music did Timothy copy on Wednesday than he copied on Tuesday? Simplify your answer, if possible. Show all your work.

4. What fraction of his music did Timothy copy on Thursday? Remember that you can write 1 as \( \frac{16}{16} \). Simplify your answer, if possible. Show all your work.

Find each sum or difference. Simplify your answer, if possible.

5. \( \frac{5}{24} + \frac{7}{24} = \)

6. \( \frac{7}{60} + \frac{4}{60} + \frac{9}{60} = \)

7. \( \frac{7}{12} - \frac{5}{12} = \)

8. \( \frac{15}{18} - \frac{3}{18} = \)
Old-Fashioned Goodies
Adding and Subtracting Fractions with Unlike Denominators

1. Find the least common multiple of each pair of numbers.
   3 and 4
   4 and 6
   2 and 4
   8 and 6

2. Your little brother is making chocolate chip cookies for his class. The recipe he is using calls for \( \frac{1}{4} \) cup brown sugar and \( \frac{1}{2} \) cup white sugar. What is the total amount of sugar needed for this recipe? Use a complete sentence to explain how you found your answer.

3. Linn had \( \frac{3}{4} \) of a cake left after her tea party. Then she gave Paul \( \frac{3}{8} \) of the cake. What fraction of the cake did Linn have left? Show all your work.

4. Sammy read \( \frac{5}{8} \) of a science fiction book. He then read another \( \frac{1}{3} \) of the book. What fraction of the book did Sammy read? Show all your work.

Find the sum or difference.

5. \( \frac{1}{2} + \frac{3}{8} = \)

6. \( \frac{3}{4} - \frac{5}{8} = \)

7. \( \frac{1}{3} + \frac{4}{9} = \)

8. \( \frac{9}{10} - \frac{3}{5} = \)

9. \( \frac{1}{5} + \frac{2}{3} = \)

10. \( \frac{1}{4} + \frac{2}{3} = \)

11. \( \frac{5}{9} + \frac{2}{5} = \)

12. \( \frac{4}{5} - \frac{1}{4} = \)
Fun and Games
Improper Fractions and Mixed Numbers

Lewis is measuring $4\frac{1}{4}$ cups of flour for a recipe. He does not want to dirty two measuring cups. He thinks that he can use the $\frac{1}{4}$ measuring cup to measure the flour.

1. Rewrite $4\frac{1}{4}$ as an improper fraction. Show all your work.

2. How many times will Lewis have to fill the $\frac{1}{4}$ measuring cup? Write your answer using a complete sentence.

Lewis wants to measure $2\frac{2}{3}$ cups of milk. He thinks that he can measure this amount by using only the $\frac{1}{3}$ measuring cup.

3. Rewrite $2\frac{2}{3}$ as an improper fraction. Show all your work.

4. How many times will Lewis have to fill the $\frac{1}{3}$ measuring cup? Write your answer using a complete sentence.

Rewrite each mixed number as an improper fraction. Show all your work.

5. $3\frac{1}{5} =$

6. $7\frac{1}{2} =$

Rewrite each improper fraction as a mixed number. Show all your work.

7. $\frac{25}{6} =$

8. $\frac{32}{9} =$
Parts of Parts
Multiplying Fractions

Write the multiplication problem that is shown by the area model.

1. [Area Model Diagram]

\[ \text{ } \times \text{ } = \text{ } \]

2. [Area Model Diagram]

\[ \text{ } \times \text{ } = \text{ } \]

3. Find each product. Be sure to simplify your answers, if possible.

\[ \frac{3}{8} \times \frac{1}{2} = \quad \frac{5}{6} \times \frac{3}{4} = \quad \frac{5}{6} \times \frac{3}{5} = \]

\[ \frac{2}{3} \times \frac{3}{5} = \quad \frac{2}{5} \times \frac{10}{12} = \quad \frac{3}{8} \times \frac{4}{9} = \]

4. Three fourths of the 8th grade class tried out for the school play. If \( \frac{5}{6} \) of those students won a part, what part of the 8th grade class will be in the play? Show all your work.
Parts in a Part
Dividing Fractions

Jordan is going to do some baking. While gathering his ingredients, he finds that he has only $\frac{3}{4}$ cup of baking mix.

1. It takes $\frac{1}{4}$ cup of the mix to make a batch of biscuits. How many batches of biscuits can Jordan make? Show all your work. Use a complete sentence to write your answer.

2. It takes $\frac{1}{2}$ cup of the mix to make a pie crust. How many pie crusts can Jordan make? Show all your work. Use a complete sentence to write your answer.

3. Jordan lives $\frac{1}{2}$ mile from school. Each block in his neighborhood is $\frac{1}{10}$ mile long. How many blocks are between Jordan’s house and his school? Show all your work. Use a complete sentence to write your answer.

Find each quotient. Simplify your answer, if possible.

4. $\frac{6}{8} \div \frac{3}{8} =$

5. $\frac{12}{12} \div \frac{3}{12} =$

6. $\frac{7}{10} \div \frac{2}{5} =$

7. $\frac{1}{6} \div \frac{2}{3} =$

8. $\frac{11}{12} \div \frac{5}{8} =$

9. $\frac{6}{15} \div \frac{3}{10} =$

10. $\frac{5}{18} \div \frac{2}{12} =$

11. $\frac{3}{2} \div \frac{5}{6} =$
All That Glitters
Adding and Subtracting Mixed Numbers

1. Carlos is using ribbon to wrap a present for his aunt. He has $1\frac{3}{4}$ feet of gold ribbon, $2\frac{5}{8}$ feet of blue ribbon, and $1\frac{7}{8}$ feet of red ribbon. Estimate the number of feet of ribbon Carlos has to the nearest whole number.

2. Is your estimate in Question 1 greater than or less than the exact amount? How can you tell? Explain your reasoning using a complete sentence.

3. What is the exact amount of ribbon that Carlos has? Show all your work. Write your answer using a complete sentence.

4. Carlos used only $1\frac{3}{4}$ feet of the $2\frac{5}{8}$ feet of blue ribbon to wrap his aunt’s present. How many feet of blue ribbon does he have left? Does he have enough blue ribbon to wrap another present if he uses the same amount of ribbon? Show all your work. Write your answer using a complete sentence.

Find each sum. Show all your work. Simplify your answer, if possible.

5. $9\frac{1}{4} + 3\frac{5}{6}$

6. $3\frac{5}{6} + 4\frac{3}{10}$

7. $1\frac{3}{8} + 2\frac{7}{12} + 3\frac{1}{4}$

Find each difference. Show all your work. Simplify your answer, if possible.

8. $3\frac{7}{8} - 1\frac{3}{4}$

9. $5\frac{1}{3} - 1\frac{5}{6}$

10. $3\frac{1}{4} - 2\frac{5}{6}$

11. $8 - 4\frac{3}{8}$
Project Display
Multiplying and Dividing Mixed Numbers

1. Cynthia needs \( \frac{2}{3} \) cups of sugar to make one pound of taffy. She wants to make \( 3\frac{1}{2} \) pounds of taffy. How many cups of sugar will she need? Show all your work. Write your answer using a complete sentence.

2. Tamara is making enlargements of a picture to include in her science report. The width of the picture is \( \frac{4}{2} \) inches. She is enlarging the picture to \( 1\frac{3}{4} \) times its size. What will the width of the new picture be? Show all your work. Write your answer using a complete sentence.

3. Farmers were able to harvest \( 30\frac{5}{6} \) bushels of grain from \( 2\frac{1}{3} \) acres. How many bushels did each acre produce? Show all your work. Write your answer using a complete sentence.

Find each product or quotient. Show all your work. Simplify your answer, if possible.

4. \( \frac{2\frac{1}{6}}{3} \times \frac{4\frac{4}{5}}{5} = \)

5. \( \frac{6\frac{1}{4}}{3} \times \frac{3}{5} = \)

6. \( \frac{3\frac{1}{4}}{4} \times \frac{4\frac{1}{3}}{3} = \)

7. \( \frac{5\frac{1}{2}}{2} \times \frac{2\frac{2}{3}}{3} = \)

8. \( \frac{5\frac{5}{6}}{5} = \)

9. \( \frac{6\frac{3}{5}}{1\frac{1}{2}} = \)

10. \( \frac{9\frac{1}{5}}{3\frac{3}{15}} = \)
Carpenter, Baker, Mechanic, and Chef
Working with Customary Units

1. Tommy was weaving different-sized squares of yarn for a class quilt. He had a skein of yarn that was $5\frac{2}{3}$ yards long. He made two squares using $2\frac{3}{8}$ feet, one square using $2\frac{1}{2}$ feet, and one square using $3\frac{1}{4}$ feet. How many feet of yarn does Tommy have left? Give your answer in feet and in yards. Show all your work. Write your answer using a complete sentence.

2. The baker decides that walnuts would be good in his bread. He knows that a batch for 4 loaves of bread will use $2\frac{2}{25}$ ounces of walnuts, a batch for 10 loaves of bread will use $5\frac{1}{5}$ ounces of walnuts, and a batch for 12 loaves of bread will use $6\frac{6}{25}$ ounces of walnuts. Will a one-pound bag of walnuts be enough if the baker wants to make all three batches of bread? Will he have enough to make another 4 loaves? Show your work. Write your answers using complete sentences.
Cents Sense
Decimals as Special Fractions

Different countries use different units of money. It is possible to use exchange rates to convert from one system of money to another. In the United Kingdom, the currency is called the pound. Rates of exchange change from day to day.

1. On a given day, one U.S. dollar is equal to 0.524 pounds. Complete the statements.

0.524 pounds

= 0 pounds + (5 × \( \square \) of a pound) + (2 × \( \square \) of a pound) + (4 × \( \square \) of a pound)

= \( \square \) ones + \( \square \) tenths + \( \square \) hundredths + \( \square \) thousandths

= \( \square \) 1s + \( \frac{1}{10} \) s + \( \frac{1}{100} \) s + \( \frac{1}{1000} \) s

2. On another day, 3.5 pounds is worth the same as 6.5798 U.S. dollars. Complete the statements.

6.5798 dollars

= 6 dollars + (5 × \( \square \) of a dollar) + (7 × \( \square \) of a dollar) + (9 × \( \square \) of a dollar) + (8 × \( \square \) of a dollar)

= \( \square \) ones + \( \square \) tenths + \( \square \) hundredths + \( \square \) thousandths + \( \square \) ten thousandths

= \( \square \) 1s + \( \frac{1}{10} \) s + \( \frac{1}{100} \) s + \( \frac{1}{1000} \) s + \( \frac{1}{10,000} \) s

3. On another day, 128 pounds is worth the same as 245.389 U.S. dollars. Complete the statements.

245.389 dollars

= 245 dollars + (3 × \( \square \) of a dollar) + (8 × \( \square \) of a dollar) + (9 × \( \square \) of a dollar)

= \( \square \) hundreds + \( \square \) tens + \( \square \) ones + \( \square \) tenths + \( \square \) hundredths + \( \square \) thousandths

= \( \square \) 100s + \( \square \) 10s + \( \square \) 1s + \( \frac{1}{10} \) s + \( \frac{1}{100} \) s + \( \frac{1}{1000} \) s
What's in a Place?
Place Value and Expanded Form

1. The fastest average speed recorded for a stage of the Tour de France is 50.349 kilometers per hour. Identify the place value of the given digit for this speed.
   - What is the place value of the 5?
   - What is the place value of the 4?
   - What is the place value of the 3?
   - What is the place value of the 0?
   - What is the place value of the 9?

2. The winning time for the 200-meter 4-man relay in the 2004 Summer Olympics was 175.91 seconds. Identify the digit of the given place value for this time.
   - What digit is in the ones place?
   - What digit is in the hundredths place?
   - What digit is in the hundreds place?
   - What digit is in the tenths place?
   - What digit is in the tens place?

3. Rewrite the word form of each decimal as a number.
   - Five hundred eighty-three and seven tenths
   - Thirty and twenty-one hundredths
   - One hundred fifty and one hundred thirty-five thousandths
   - Two and five thousandths
   - Four hundred thirty-seven thousandths

4. Write each decimal in word form. Remember to write the decimal point as the word “and.”
   - 31.5
   - 104.29
   - 300.03
   - 6.025
My Dog is Bigger Than Your Dog
Decimals as Fractions: Comparing and Rounding Decimals

Rewrite each decimal as a mixed number.

1. \(13.242 = \)
2. \(1.708 = \)
3. \(3.754 = \)
4. \(125.026 = \)

5. The table below lists rainfall records for Memphis, Tennessee, for certain days in January according to the National Weather Service. Place the rainfall amounts in order from least to greatest.

<table>
<thead>
<tr>
<th>Rank</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount</td>
<td>2.58</td>
<td>3.33</td>
<td>2.13</td>
<td>2.86</td>
<td>2.92</td>
<td>1.83</td>
<td>4.53</td>
<td>4.40</td>
</tr>
<tr>
<td>Year</td>
<td>1875</td>
<td>1951</td>
<td>1949</td>
<td>1939</td>
<td>1880</td>
<td>1913</td>
<td>1930</td>
<td>1946</td>
</tr>
</tbody>
</table>

6. The table below lists the life expectancy at birth in various countries according to the CIA World Fact Book. Round each age as indicated in the table.

<table>
<thead>
<tr>
<th>Country</th>
<th>Life Expectancy at Birth (years)</th>
<th>Round to the Nearest Ten</th>
<th>Round to the Nearest One</th>
<th>Round to the Nearest Tenth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aruba</td>
<td>79.14</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>United States</td>
<td>77.71</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>72.25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>India</td>
<td>64.35</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Botswana</td>
<td>33.87</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Making Change and Changing Hours
Adding and Subtracting Decimals

1. Jenny works in a convenience store. She wants to find how much time she spends driving to and from work. She notices that the amount of time to get to work depends on the day that she is driving. She drives for 1.3 hours on Monday, 1.05 hours on Tuesday, and 0.95 hours on Saturday.

Draw the outlines for the base-ten pieces to represent each decimal. Then use the base-ten pieces to find the total time spent driving for the week.

2. Draw the outlines for the base-ten pieces to represent each decimal and the sum.
   \[ 1.73 + 0.05 = \]

   \[ 1.1 + 0.9 + 1.03 = \]


Find each sum or difference. Use estimation to check your answer.

4. \[ 2.231 + 10.6 = \]
5. \[ 6.7 + 13.3 = \]
6. \[ 2.35 - 0.66 = \]
7. \[ 4.7 + 0.32 = \]
8. \[ 53 - 15.535 = \]
9. \[ 76.30 - 0.03 = \]
Rules Make the World Go Round
Multiplying Decimals

A grocery store is selling ground beef for $1.89 per pound.

1. How much does it cost to buy 2.5 pounds? Round your answer to the nearest cent.

2. How much does it cost to buy 7.25 pounds? Round your answer to the nearest cent.

3. How much does it cost to buy 4.35 pounds? Round your answer to the nearest cent.

4. Spring Hill Park is on a rectangular piece of land that measures 0.75 mile by 1.25 miles. Draw and label a rectangle to represent the park. Then find the area of the park by multiplying the park’s length by its width.

5. The table shows the running speeds in feet per second of several animals. Complete the table by finding the distance that each animal can run for the given number of seconds.

<table>
<thead>
<tr>
<th>Animal</th>
<th>Speed (feet per second)</th>
<th>Time (seconds)</th>
<th>Distance (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quarter horse</td>
<td>69.7</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Rabbit</td>
<td>51.33</td>
<td>35.5</td>
<td></td>
</tr>
<tr>
<td>Giraffe</td>
<td>46.93</td>
<td>50.5</td>
<td></td>
</tr>
<tr>
<td>Chicken</td>
<td>13.2</td>
<td>100.25</td>
<td></td>
</tr>
</tbody>
</table>

Perform the indicated multiplication.

6. \(25 \times 0.31 = \)
7. \(890 \times 0.23 = \)
8. \(1 \times 0.23 = \)
9. \(7 \times 6.59 = \)
10. \(52 \times 0.86 = \)
11. \(7.05 \times 3.72 = \)
The Better Buy
Dividing Decimals

1. Use the base-ten piece to show $0.18 \div 6$.

Use estimation to place the decimal point in the correct position in each quotient.

2. $14 \quad \quad 3. \quad 232 \quad \quad 4. \quad 2325 \quad \quad 5. \quad 256$

Find each quotient. Estimate to check that your answer is reasonable.

6. $8 \div 0.48 \quad \quad 7. \quad 15 \div 16.2 \quad \quad 8. \quad 231.2 \div 17 \quad \quad 9. \quad 256.186 \div 20$

10. The winning time for the middle school 4-person 100-meter relay was 62.59 seconds. Suppose that each runner ran exactly the same amount of time. What would the time be for each runner? Show all your work. Write your answer using a complete sentence.
Bonjour!
Working with Metric Units

Which metric unit of length would be most appropriate for measuring each item? From the measurements in the box, choose a reasonable estimate of the measurement of each item.

<table>
<thead>
<tr>
<th>Lengths</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 centimeters</td>
</tr>
<tr>
<td>240 kilometers</td>
</tr>
</tbody>
</table>

1. Height of a doorway
2. Length of a shoe
3. Distance from Los Angeles to San Diego
4. Height of a school building
5. Width of a calculator

Which metric unit of capacity would be most appropriate for measuring the amount contained in each item? From the measurements in the box, choose a reasonable estimate of the capacity of each item.

<table>
<thead>
<tr>
<th>Capacities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 milliliter</td>
</tr>
<tr>
<td>2 liters</td>
</tr>
</tbody>
</table>

6. Bathtub
7. Juice box
8. Raindrop
9. Swimming pool
10. Bottle of soda

Which metric unit of mass would be most appropriate for measuring the mass of each item? From the measurements in the box, choose a reasonable estimate of the mass of each item.

<table>
<thead>
<tr>
<th>Masses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 kilogram</td>
</tr>
<tr>
<td>40 grams</td>
</tr>
</tbody>
</table>

11. Automobile
12. Pair of shoes
13. Penny
14. Bag of sugar
15. Loaf of bread
Heard It and Read It
Ratios and Fractions

Write each phrase as a ratio in two ways.

1. The bakery had 5 loaves of wheat bread and 6 loaves of rye bread.

2. There are 3 roosters and 25 hens on the farm.

3. Alicia spent 30 minutes reading and 80 minutes using the computer.

4. The bracelet had 13 diamonds and 20 emeralds.

5. At the football game, there were 12 cheerleaders and 25 football players.

6. Write one ratio for each row in the table. Be sure to include the quantity names. If possible, simplify the ratio.

<table>
<thead>
<tr>
<th>Club</th>
<th>Boys</th>
<th>Girls</th>
<th>Total Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spanish Club</td>
<td>32</td>
<td>16</td>
<td>48</td>
</tr>
<tr>
<td>Algebra Club</td>
<td>16</td>
<td>8</td>
<td>24</td>
</tr>
<tr>
<td>Drama Club</td>
<td>18</td>
<td>18</td>
<td>36</td>
</tr>
<tr>
<td>Music Club</td>
<td>15</td>
<td>45</td>
<td>60</td>
</tr>
</tbody>
</table>
Equal or Not, That Is the Question
Writing and Solving Proportions

1. Bill is painting his room a certain shade of green. The paint is a mixture of 3 parts blue paint to 2 parts yellow paint. To get the correct shade of green, how much yellow paint should he add to 6 quarts of blue paint? Find an equivalent ratio to determine the unknown quantity. Show all your work.

2. LaShaya answered 9 of 10 questions correctly on her math quiz. Her twin sister LaTeisha answered 22 out of 25 questions correctly. Did they have the same ratio of correct problems to total problems? Use the product of the means and extremes to determine the answer. Show all your work. Then write a complete sentence to explain your answer.

For each proportion, find an equivalent ratio to determine the unknown quantity. Check your answer using the product of the means and extremes.

3. \[ \frac{16 \text{ miles}}{90 \text{ minutes}} = \frac{? \text{ miles}}{270 \text{ minutes}} \]

4. \[ \frac{16 \text{ sandwiches}}{3 \text{ bags}} = \frac{? \text{ sandwiches}}{12 \text{ bags}} \]

5. \[ \frac{72 \text{ dollars}}{12 \text{ hours}} = \frac{? \text{ dollars}}{6 \text{ hours}} \]

6. \[ \frac{9 \text{ tons}}{3 \text{ days}} = \frac{12 \text{ tons}}{? \text{ days}} \]

7. \[ \frac{112 \text{ ounces}}{? \text{ cans}} = \frac{24 \text{ ounces}}{3 \text{ cans}} \]

8. \[ \frac{3 \text{ goals}}{2 \text{ games}} = \frac{9 \text{ goals}}{? \text{ games}} \]

9. \[ \frac{? \text{ dollars}}{21 \text{ pounds}} = \frac{6 \text{ dollars}}{12 \text{ pounds}} \]

10. \[ \frac{48 \text{ books}}{? \text{ shelves}} = \frac{36 \text{ books}}{3 \text{ shelves}} \]
The Survey Says
Using Ratios and Rates

<table>
<thead>
<tr>
<th>Country</th>
<th>Population</th>
<th>Number of FM Radio Stations</th>
<th>Number of AM Radio Stations</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>295,734,134</td>
<td>8950</td>
<td>4854</td>
</tr>
<tr>
<td>France</td>
<td>60,656,178</td>
<td>3500</td>
<td>41</td>
</tr>
<tr>
<td>Germany</td>
<td>82,431,390</td>
<td>787</td>
<td>51</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>60,441,457</td>
<td>431</td>
<td>219</td>
</tr>
</tbody>
</table>

1. Write a rate to describe the number of people per FM radio station in each of the four countries listed. Be sure to label the quantities.

2. Write each rate that you wrote in Question 1 as a unit rate. Be sure to label the quantities being compared. Round the numerator of the unit rate to the nearest whole number.

3. Order the rates that you wrote in Question 2 from least to greatest.

4. Write a rate to describe the number of people per AM radio station in each of the four countries listed. Be sure to label the quantities being compared.

5. Write each rate that you wrote in Question 4 as a unit rate. Be sure to label the quantities being compared. Round the numerator of the unit rate to the nearest whole number.

6. Order the ratios you wrote in Question 5 from least to greatest.
Assignment for Lesson 5.4

Who’s Got Game?
Using Proportions to Solve Problems

Write and solve a proportion to answer each problem.  Show all your work.

1. Tommy types 50 words per minute, with an average of 3 mistakes.  How many mistakes would you expect Tommy to make if he typed 300 words?  Write your answer using a complete sentence.

2. Jackie wants to burn 2000 calories in one week.  She can burn 250 calories per hour doing aerobics.  How many hours should Jackie do aerobics that week?

3. Six cans of fruit juice cost $2.50.  Ned needs to buy 72 cans for a camping trip for the Outdoor Club.  How much will he spend?

4. A safe following distance while driving is two car lengths for every ten miles per hour that you are traveling.  If you are traveling at 65 miles per hour, how many car lengths is a safe following distance?

Use any process to solve each proportion.  Be sure to show all of your work.

5. \[
\frac{5 \text{ minutes}}{3 \text{ gallons}} = \frac{x \text{ minutes}}{27 \text{ gallons}}
\]

6. \[
\frac{500 \text{ calories}}{5 \text{ miles}} = \frac{50 \text{ calories}}{x \text{ miles}}
\]

7. \[
\frac{13 \text{ bats}}{8 \text{ hits}} = \frac{65 \text{ bats}}{x \text{ hits}}
\]

8. \[
\frac{5 \text{ grams of protein}}{3 \text{ grams of fat}} = \frac{x \text{ grams of protein}}{21 \text{ grams of fat}}
\]
Assignment for Lesson 6.1

Name ___________________________________________________ Date _____________________

One in a Hundred
Percents

Certain fractions, decimals, and percents are used often. The amounts in the table below are used frequently for sales, commission amounts, interest rates, and tax rates. Fill in the missing fraction, decimal, or percent to complete the table.

<table>
<thead>
<tr>
<th>Fraction</th>
<th>Decimal</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.01</td>
<td>1%</td>
</tr>
<tr>
<td>$\frac{1}{10}$</td>
<td></td>
<td>10%</td>
</tr>
<tr>
<td>$\frac{1}{8}$</td>
<td>0.125</td>
<td></td>
</tr>
<tr>
<td>$\frac{1}{5}$</td>
<td></td>
<td>20%</td>
</tr>
<tr>
<td>$\frac{1}{4}$</td>
<td>0.25</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.3</td>
<td>33 $\frac{1}{3}$%</td>
</tr>
<tr>
<td>$\frac{1}{2}$</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>$\frac{3}{8}$</td>
<td></td>
<td>37.5%</td>
</tr>
<tr>
<td>$\frac{2}{3}$</td>
<td>0.6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.75</td>
<td>75%</td>
</tr>
<tr>
<td>$\frac{4}{5}$</td>
<td></td>
<td>80%</td>
</tr>
<tr>
<td></td>
<td>0.9</td>
<td>90%</td>
</tr>
</tbody>
</table>
Brain Waves
Making Sense of Percents

1. Find each percent of 45.
   What is 1% of 45?
   What is 10% of 45?
   What is 20% of 45?
   What is 40% of 45?
   What is 95% of 45?
   What is 225% of 45?

2. Find each percent of 250.
   What is 1% of 250?
   What is 10% of 250?
   What is 20% of 250?
   What is 22% of 250?
   What is 85% of 250?
   What is 150% of 250?

3. Jai is a 28% shooter in basketball. That means when he shoots a free throw he makes a basket 28% of the time. Jai shoots 120 free throws in a season. How many baskets will he be likely to make? Use benchmark percents of 1% and 10% to help you find the answer. Write your answers using complete sentences.
   What is 1% of 120?
   What is 10% of 120?
   What is 20% of 120?
   What is 8% of 120?

4. In Tampa, Florida the sun shines about 66% of the year. About how many days does the sun shine in Tampa? Use benchmark percents of 1% and 10% to help you find the answer. Then use complete sentences to explain your answer.
Assignment for Lesson 6.3

Commissions, Taxes, and Tips
Finding the Percent of a Number

The items below are purchased in a city with a sales tax rate of 7%. Find the amount of sales tax on each purchase.

1. A DVD for $18
2. A computer hard drive for $40
3. A bathing suit for $25
4. A bicycle for $150

An advertising salesperson receives a 15% commission on all of the sales that she makes. Find the commission on each sale.

5. A quarter-page ad for $250
6. A half-page ad for $450
7. A full-page ad for $800
8. The inside back cover ad for $1200

A shoe store is having a 25% off sale on all of its shoes. Find the discount on each pair of shoes that sells for the original price listed below.

9. Men’s running shoes for $85
10. Women’s cross training shoes for $50
11. Softball cleat shoes for $29.95
12. Golf shoes for $120
Find It on the Fifth Floor
Finding One Whole, or 100%

1. Jamie and his friends have summer jobs. They need to save some of their money for college expenses. They each save a percent of their summer earnings. Find the money each friend saved using the information given in the table. Solve by finding 1% of the total earnings and then multiplying that answer by the percent saved.

<table>
<thead>
<tr>
<th>Name</th>
<th>Percent Saved</th>
<th>Amount Saved</th>
<th>Total Earnings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jamie</td>
<td>20%</td>
<td>$620</td>
<td></td>
</tr>
<tr>
<td>Sammi</td>
<td>25%</td>
<td>$608</td>
<td></td>
</tr>
<tr>
<td>Keith</td>
<td>10%</td>
<td>$1350</td>
<td></td>
</tr>
<tr>
<td>Tara</td>
<td>15%</td>
<td>$870</td>
<td></td>
</tr>
</tbody>
</table>

Write a proportion to answer each question. Then solve the proportion.

2. 50 is 40% of what number?

3. 8% of what number is 2?

4. 12 is 30% of what number?

5. You know that 20% of a number is 30. What is the number?

6. Tara read 45 pages of her summer novel on the bus to work. If this is 18% of the novel, how many pages are in the novel?
It’s Your Money
Finding Percents Given Two Numbers

1. Five co-workers are trying to figure out who received the highest percent of their wages for a bonus. Each person’s total wages and bonus are listed in the table. Complete the table by calculating the percent bonus. Use any method to determine the percent. Show all your work.

<table>
<thead>
<tr>
<th>Person</th>
<th>Wages</th>
<th>Total Bonus</th>
<th>Percent Bonus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leah</td>
<td>$4500</td>
<td>$157.50</td>
<td></td>
</tr>
<tr>
<td>Ratha</td>
<td>$23,400</td>
<td>$538.20</td>
<td></td>
</tr>
<tr>
<td>Ed</td>
<td>$35,350</td>
<td>$636.30</td>
<td></td>
</tr>
<tr>
<td>Chris</td>
<td>$7500</td>
<td>$315.00</td>
<td></td>
</tr>
<tr>
<td>Mary</td>
<td>$14,500</td>
<td>$362.50</td>
<td></td>
</tr>
</tbody>
</table>

2. The number 14 is what percent of 200?

3. The number 28 is what percent of 200?

4. What percent of 200 is 56?

5. What percent of 200 is 112?

6. What percent of 50 is 225?
So You Want to Buy a Car
Percent Increase and Percent Decrease

Use ratios to find the percent increase or percent decrease in each problem.

1. A dress that normally sells for $72 is on sale for $45. What is the percent decrease in the price?

2. A home purchased for $120,000 in 2002 is sold for $156,000 in 2005. What is the percent increase in the price?

3. The CD Warehouse purchases CDs for $6 each and sells them for $9 each. What is the percent increase in the price?

4. The CD Warehouse is having a clearance sale. A CD player that originally sells for $60 is now priced at $36. What is the percent decrease in the price?

5. The local high school sold 1914 tickets this year to its spring musical. That was 174 more tickets sold than last year. What is the percent increase in the number of tickets sold?

6. Ken’s heart rate went from 74 beats per minute while resting to 148 beats per minute while exercising. What is the percent increase in his heart rate?

7. Bargain Basement is having a going-out-of-business sale. All merchandise is first marked down 50%. It is then marked down an additional 50%. Are they giving their merchandise away for free? Use an example and write complete sentences to explain your thinking.
I Love New York
Negative Numbers in the Real World

1. The highest temperature ever recorded on Earth was 136°F at Al Aziziyah, Libya, in Africa. The lowest temperature ever recorded on Earth was −129°F at Vostok Station in Antarctica. Write each temperature as an integer. Use the number line to find the number of degrees between these two temperatures.

2. The highest recorded temperature in Anchorage, Alaska, was 86°F on June 25, 1953. The lowest recorded temperature in that city was −38°F recorded on February 3, 1947. Write each temperature as an integer. Find the number of degrees between these two temperatures. Write your answer using a complete sentence.

3. The highest point in the U.S. is Mount McKinley, Alaska, at about 6773 yards above sea level. The lowest point in the U.S. is the Badwater Basin in Death Valley, California, at about 87 yards below sea level. Write each elevation as an integer. Use the number line to find the number of yards between the lowest and highest points.

4. The deepest point in the ocean is the Marianas Trench in the Pacific Ocean at about 6.9 miles below sea level. The highest point in the world is Mount Everest in the Himalayan Mountains at about 5.5 miles. Write each height as an integer. Use the number line to find the approximate number of miles between the lowest and highest points.
Assignment for Lesson 7.2

Going Up?
Adding Integers

Use the number line to illustrate each statement.

1. Write and evaluate an addition statement in which the addends are both positive.

```
-14 -12 -10 -8 -6 -4 -2  0  2  4  6  8  10  12  14
```

2. Write and evaluate an addition expression in which both addends are negative.

```
-14 -12 -10 -8 -6 -4 -2  0  2  4  6  8  10  12  14
```

3. Write and evaluate an addition expression in which the addends have different signs.

```
-14 -12 -10 -8 -6 -4 -2  0  2  4  6  8  10  12  14
```

4. Write an addition expression in which the sum is zero.

```
-14 -12 -10 -8 -6 -4 -2  0  2  4  6  8  10  12  14
```

Find each sum without using a number line.

5. \( 4 + (-8) = \)

6. \( 15 + (-7) = \)

7. \( -13 + 18 = \)

8. \( -25 + 17 = \)

9. \( -5 + 5 = \)

10. \( 9 + (-9) = \)

11. \( -5 + (-6) = \)

12. \( -33 + (-7) = \)
Test Scores, Grades, and More
Subtracting Integers

Use the number line to find the difference. Show all your work.

1. \( 12 - 5 = \)

2. \( 7 - (-6) = \)

3. \( -4 - (-8) = \)

4. \( -10 - (-4) = \)

5. \( -5 - 10 = \)

Find each difference without using a number line.

6. \( 7 - (-13) = \)

7. \( 10 - (-1) = \)

8. \( -16 - 3 = \)

9. \( -9 - 7 = \)

10. \( -1 - (-2) = \)

11. \( -5 - (-5) = \)

12. \( 19 - (-19) = \)

13. \( -8 - (-8) = \)

14. \( 40 - (-20) = \)

15. \( -800 - (-300) = \)
Checks and Balances
Multiplying and Dividing Integers

Represent each problem as a multiplication problem. Then use repeated addition to solve the problem.

1. Tesha withdrew $30 each week from her savings account to pay for her dance lesson. How much money did she withdraw in four weeks?

2. The average temperature dropped 2 degrees per hour for 5 hours. How many degrees did the temperature drop during that time period?

Rewrite each multiplication problem as the product of –1 and a positive integer.

3. \(-3 \times -4 = \)
4. \(-8 \times -7 = \)
5. \(-4 \times -6 \times 5 = \)

Rewrite each division problem as a related multiplication problem. Then find the quotient.

6. \(-25 \div 5 = \)
7. \(-49 \div (-7) = \)

Find each product or quotient.

8. \(3 \times 4 = \)
9. \(12 \div 3 = \)
\(3 \times (-4) = \)
\(-12 \div 3 = \)
\(-3 \times (-4) = \)
\(12 \div (-3) = \)

10. \(2 \times 5 = \)
11. \(10 \div 5 = \)
\(2 \times (-5) = \)
\(-10 \div 5 = \)
\(-2 \times (-5) = \)
\(10 \div (-5) = \)

12. \(6 \times 7 = \)
13. \(42 \div 6 = \)
\(6 \times (-7) = \)
\(-42 \div 6 = \)
\(-6 \times (-7) = \)
\(42 \div (-6) = \)
Weight of a Penny
Absolute Value and Additive Inverse

1. The table shows the lowest record temperatures for several states. Write the absolute value of the number that represents each temperature in the table.

<table>
<thead>
<tr>
<th>State</th>
<th>Temperature (degrees Fahrenheit)</th>
<th>Absolute Value of Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Florida</td>
<td>−2</td>
<td></td>
</tr>
<tr>
<td>Tennessee</td>
<td>−32</td>
<td></td>
</tr>
<tr>
<td>Texas</td>
<td>−23</td>
<td></td>
</tr>
<tr>
<td>Hawaii</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Idaho</td>
<td>−60</td>
<td></td>
</tr>
</tbody>
</table>

Find the sum or difference inside the absolute value symbol. Then find the absolute value of the result.

2. \(|−6 + 5| = |\underline{\text{1}}| =

3. \(|−11 + 15| = |\underline{\text{4}}| =

4. \(|8 + (−9)| = |\underline{\text{1}}| =

5. \(|22 + (−7)| = |\underline{\text{15}}| =

6. \(|−7 + (−3)| = |\underline{\text{10}}| =

7. \(|−10 + (−10)| = |\underline{\text{20}}| =

In Questions 8 and 9, find the distance between the numbers.

8. Distance between \(−2\) and \(3\) = \(|\underline{5}| =

9. Distance between \(12\) and \(−12\) = \(|\underline{24}| =

10. Graph each number on the number line. Then graph the opposite of the number.

−12 −10 −8 −6 −4 −2 0 2 4 6 8 10 12 14

−12 7

11. A fellow student says that \(|−7 + 4|\) is the same as \(|−7| + |4|\). Is she correct? Use a complete sentence to explain why or why not.
Exploring the Moon
Powers of Ten

1. The world population in 1650 was approximately 550,000,000. By 1979, the world population had grown to about 4,336,000,000. Write each number in expanded form using powers of ten.

2. Write each population in expanded form using powers of 10.
   - Asia: 27,730,000,000 =
   - Europe: 4,820,000,000 =
   - Africa: 4,660,000,000 =

3. A common influenza virus measures 0.0001 millimeter long. Write this measurement in expanded form using powers of ten. (Use negative powers of 10 to represent numbers less than 1.)

4. For each situation, write the measure of energy generated in standard form. (A joule is a unit of energy.)
   - Hurricane: $4 \times 10^{15}$ joules
   - Atom bomb: $8 \times 10^{13} + 4 \times 10^{12}$ joules
   - Man running: $2 \times 10^6 + 5 \times 10^5$ joules
   - Woman running: $1 \times 10^6 + 8 \times 10^5$ joules
   - Chirp of a cricket: $9 \times 10^{-4}$ joules
   - Moonlight on a face: $8 \times 10^{-5}$ joules

Use the rules below to find each product or quotient.

When you multiply by powers of 10 that are greater than 1, you move the decimal point one place to the right for each zero in the power of 10.
When you multiply by powers of 10 that are less than 1, you move the decimal point one place to the left for each decimal place in the power of 10.
When you divide by powers of 10 that are greater than 1, you move the decimal point one place to the left for each zero in the power of 10.
When you divide by powers of 10 that are less than 1, you move the decimal point one place to the right for each decimal place in the power of 10.

5. $124 \times 10 =
6. 1045 \times 0.1 =$
7. $981 \times 0.01 =
8. 3.217 \times 1000 =$
9. $549 \div 100 =
10. 3.945 \div 10 =$
11. $2.137 \div 0.1 =
12. 24,903 \div 0.001 =$
Expanding Our Perspective
Scientific Notation

In the table are some facts about the universe. The very large and very small numbers are written in standard form or using scientific notation. Complete the table.

<table>
<thead>
<tr>
<th>Description</th>
<th>Standard Form</th>
<th>Scientific Notation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance from Earth to the sun</td>
<td>93,000,000 mi</td>
<td></td>
</tr>
<tr>
<td>Temperature of the sun at the core</td>
<td>27,000,000°F</td>
<td></td>
</tr>
<tr>
<td>Number of protons in a gram</td>
<td></td>
<td>$6.022 \times 10^{23}$</td>
</tr>
<tr>
<td>Mass of a proton</td>
<td>0.000000000000000016726 kg</td>
<td></td>
</tr>
<tr>
<td>Mass of an electron</td>
<td></td>
<td>$9.11 \times 10^{-28}$ g</td>
</tr>
<tr>
<td>Mass of Earth</td>
<td></td>
<td>$5.97 \times 10^{24}$ kg</td>
</tr>
<tr>
<td>Mass of the sun</td>
<td></td>
<td>$1.9889 \times 10^{30}$ kg</td>
</tr>
<tr>
<td>Mass of a virus</td>
<td>0.0000000000000035 g</td>
<td></td>
</tr>
<tr>
<td>Wavelength of violet light</td>
<td>0.0000004 m</td>
<td></td>
</tr>
<tr>
<td>Wavelength of gamma rays</td>
<td>0.0000000000000001 m</td>
<td></td>
</tr>
<tr>
<td>Distance light travels in a year</td>
<td></td>
<td>$9.46 \times 10^{15}$ m</td>
</tr>
<tr>
<td>Approximate value of the U.S. debt</td>
<td>$7,787,000,000,000</td>
<td></td>
</tr>
<tr>
<td>Diameter of an atom</td>
<td></td>
<td>$4.2 \times 10^{-8}$ m</td>
</tr>
<tr>
<td>Diameter of an electron</td>
<td></td>
<td>$5.64 \times 10^{-15}$ m</td>
</tr>
<tr>
<td>Width of the Milky Way Galaxy</td>
<td>851,400,000,000,000,000,000 m</td>
<td></td>
</tr>
</tbody>
</table>
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.

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.
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.

<table>
<thead>
<tr>
<th>Month</th>
<th>Number of Drinks Purchased</th>
<th>Cost of Discount Card</th>
<th>Total Cost of Drinks (with card purchased)</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>15</td>
<td>$5.00</td>
<td></td>
</tr>
<tr>
<td>February</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>March</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>April</td>
<td></td>
<td>$17.00</td>
<td></td>
</tr>
<tr>
<td>May</td>
<td></td>
<td>$14.00</td>
<td></td>
</tr>
<tr>
<td>June</td>
<td>4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>$m$</th>
<th>$4m + 8$</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>20</td>
</tr>
<tr>
<td>−2</td>
<td>8</td>
</tr>
<tr>
<td>0.5</td>
<td></td>
</tr>
</tbody>
</table>
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.

<table>
<thead>
<tr>
<th>Movie</th>
<th>Regular Price</th>
<th>Sale Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed XXIV</td>
<td>$17</td>
<td></td>
</tr>
<tr>
<td>The Furious and the Fast</td>
<td>$12</td>
<td></td>
</tr>
<tr>
<td>Planet Wars</td>
<td>$19</td>
<td></td>
</tr>
<tr>
<td>Saturday the Fourteenth XIII</td>
<td>$6</td>
<td></td>
</tr>
</tbody>
</table>

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. \( \frac{w}{4} = 120.3 \)
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.

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

6. \(12z + 8 = 44\)  

7. \(123.4 = 5t - 8.8\)
Where's the Point?
Plotting Points in the Coordinate Plane

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)
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.

<table>
<thead>
<tr>
<th>Time (years)</th>
<th>Weight (pounds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
</tr>
<tr>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
<tr>
<td>6.5</td>
<td></td>
</tr>
</tbody>
</table>

Solve each equation using any method.

4. $6n + 17 = 53$
5. $245 = 25n - 5$
6. $\frac{x}{3} + 2 = 14$
7. $\frac{w}{4} - 7 = -5$
**Assignment for Lesson 8.7**

**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.

<table>
<thead>
<tr>
<th>Time (hours)</th>
<th>Distance (miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>60</td>
</tr>
<tr>
<td>2</td>
<td>120</td>
</tr>
<tr>
<td>3</td>
<td>180</td>
</tr>
<tr>
<td>4</td>
<td>240</td>
</tr>
<tr>
<td>5</td>
<td>300</td>
</tr>
<tr>
<td>6</td>
<td>360</td>
</tr>
<tr>
<td>7</td>
<td>420</td>
</tr>
<tr>
<td>8</td>
<td>480</td>
</tr>
<tr>
<td>9</td>
<td>540</td>
</tr>
<tr>
<td>10</td>
<td>600</td>
</tr>
<tr>
<td>11</td>
<td>660</td>
</tr>
<tr>
<td>12</td>
<td>720</td>
</tr>
<tr>
<td>13</td>
<td>780</td>
</tr>
<tr>
<td>14</td>
<td>840</td>
</tr>
<tr>
<td>15</td>
<td>900</td>
</tr>
<tr>
<td>16</td>
<td>960</td>
</tr>
</tbody>
</table>

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.
Assignment

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. \( \angle \ldots \) and \( \angle 5 \) are vertical angles.
9. The measure of \( \angle 6 \) is _______.
10. \( \angle \ldots \) and \( \angle 6 \) are corresponding angles.
11. The measure of \( \angle 7 \) is _______.
12. \( \angle \ldots \) and \( \angle 7 \) are supplementary angles.
13. \( \angle \ldots \) 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.
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.

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.
The Signs Are Everywhere
Quadrilaterals and Other Polygons

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

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
</table>
| [Diagram of quadrilateral] | 1.  
2.  
3.  
4.  
5.  |
| [Diagram of trapezoid] | 1.  
2.  
3.  
4.  
5.  |
| [Diagram of square] | 1.  
2.  
3.  
4.  
5.  |

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

2. How many diagonals can you draw from a vertex?

3. Into how many triangles would these diagonals divide the dodecagon?

4. What is the sum of the measures of the angles of the dodecagon?

5. What is the measure of each angle of the regular dodecagon?

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

1. ![Garden Plot Diagram]

2. ![Triangle Diagram]

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.

   ![Triangle Diagram 1]
   ![Triangle Diagram 2]

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

   ![Rectangle Diagram 1]
   ![Rectangle Diagram 2]
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.
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.

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 $ABCD$?

<table>
<thead>
<tr>
<th>Scale factor</th>
<th>Perimeter of original shape</th>
<th>Perimeter of new shape</th>
<th>How many times bigger is the perimeter of the new shape?</th>
<th>Area of original shape</th>
<th>Area of new shape</th>
<th>How many times bigger is the area of the new shape?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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.

<table>
<thead>
<tr>
<th>Job Number</th>
<th>Wall Width (feet)</th>
<th>Wall Height (feet)</th>
<th>Area (square feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>7 feet</td>
<td>8 feet</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>16 feet</td>
<td>8 feet</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>12 feet</td>
<td>10 feet</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>14 feet</td>
<td>10 feet</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>18 feet</td>
<td></td>
<td>180 square feet</td>
</tr>
<tr>
<td>6</td>
<td>10 feet</td>
<td></td>
<td>120 square feet</td>
</tr>
<tr>
<td>7</td>
<td>16 feet</td>
<td></td>
<td>192 square feet</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>12 feet</td>
<td>216 square feet</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>12 feet</td>
<td>288 square feet</td>
</tr>
</tbody>
</table>

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.
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 \( \pi \) and round each answer to the nearest hundredth.

<table>
<thead>
<tr>
<th>Garden Name</th>
<th>Radius (feet)</th>
<th>Diameter (feet)</th>
<th>Area (square feet)</th>
<th>Circumference (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atlantic</td>
<td>2.5 feet</td>
<td>5 feet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pacifica</td>
<td>6 feet</td>
<td>12 feet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mediterranean</td>
<td>1.75 feet</td>
<td>3.5 feet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baltica</td>
<td>1 foot</td>
<td>2 feet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Japanesque</td>
<td>2.25 feet</td>
<td>4.5 feet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Floridian</td>
<td>3.25 feet</td>
<td>6.5 feet</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Garden Name</th>
<th>Length (feet)</th>
<th>Width (feet)</th>
<th>Area (square feet)</th>
<th>Perimeter (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Yorker</td>
<td>2.5 feet</td>
<td>5.5 feet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pennsylvanian</td>
<td>3 feet</td>
<td>8 feet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Californian</td>
<td>4 feet</td>
<td>6 feet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arizonian</td>
<td>2 feet</td>
<td>3 feet</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Assignment for Lesson 10.3

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?

![Parallelogram diagram]

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.

![Garden diagram]

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Assignment for Lesson 10.4

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.

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. \( \sqrt{200} \approx \)
Assignment

Name ___________________________________________________ Date _____________________

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.

<table>
<thead>
<tr>
<th>Gate Sizes and Brace Lengths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height (feet)</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>3 feet</td>
</tr>
<tr>
<td>3 feet</td>
</tr>
<tr>
<td>4 feet</td>
</tr>
<tr>
<td>4 feet</td>
</tr>
<tr>
<td>6 feet</td>
</tr>
<tr>
<td>6 feet</td>
</tr>
</tbody>
</table>

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:
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.

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

<table>
<thead>
<tr>
<th>Leg 1</th>
<th>Leg 2</th>
<th>Hypotenuse</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 feet</td>
<td>4 feet</td>
<td></td>
</tr>
<tr>
<td>6 feet</td>
<td>8 feet</td>
<td></td>
</tr>
<tr>
<td>9 feet</td>
<td>12 feet</td>
<td></td>
</tr>
<tr>
<td>12 feet</td>
<td>16 feet</td>
<td></td>
</tr>
<tr>
<td>15 feet</td>
<td>20 feet</td>
<td></td>
</tr>
</tbody>
</table>
**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.

<table>
<thead>
<tr>
<th>Number of Games</th>
<th>Number of Series Won in Given Number of Games</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 games</td>
<td>17 series</td>
</tr>
<tr>
<td>5 games</td>
<td>24 series</td>
</tr>
<tr>
<td>6 games</td>
<td>21 series</td>
</tr>
<tr>
<td>7 games</td>
<td>33 series</td>
</tr>
<tr>
<td>8 games</td>
<td>5 series</td>
</tr>
</tbody>
</table>

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.
**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?
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.

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

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.
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.

<table>
<thead>
<tr>
<th>Data Intervals</th>
<th>Tally</th>
<th>Frequency</th>
</tr>
</thead>
</table>

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.
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

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
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.

<table>
<thead>
<tr>
<th>Frozen Yogurt Flavor</th>
<th>Number of Votes</th>
<th>Fraction of Total Votes</th>
<th>Fraction of Total Votes as a Decimal</th>
<th>Percent of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cherry</td>
<td>175</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peach</td>
<td>90</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mint</td>
<td>150</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strawberry</td>
<td>85</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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 for Lesson 12.1

Your Friendly Neighborhood Grocer
Three-Dimensional Figures

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

1. skyscraper
   - [Image of skyscraper]

2. package
   - [Image of package]

3. sea shell
   - [Image of sea shell]

4. juice can
   - [Image of juice can]

5. the moon
   - [Image of moon]

6. door stop
   - [Image of door stop]

7. top of a funnel
   - [Image of top of a funnel]

8. liquid tanker on a truck
   - [Image of liquid tanker on a truck]

9. steeple
   - [Image of steeple]

10. grapefruit
    - [Image of grapefruit]
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.
Assignment for Lesson 12.3

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 \( \pi \) 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 \( \pi \) 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 \( \pi \) 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 \( \pi \).

5. How much steel was needed to make the Alaska Pipeline, including the bases? Use 3.14 for \( \pi \) 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 \( \pi \) and round your answer to the nearest hundredth.

7. What is the volume of the mailing tube? Use 3.14 for \( \pi \) 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 \( \pi \) and round your answer to the nearest hundredth.
Assignment

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 \( \pi \) 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 \( \pi \) 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 \( \pi \) and round your answer to the nearest hundredth. Show all your work. Explain your reasoning using a complete sentence.
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 $\pi$. Round each answer to the nearest whole number.

<table>
<thead>
<tr>
<th>Planet Name</th>
<th>Diameter (miles)</th>
<th>Volume (cubic miles)</th>
<th>Surface Area (square miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercury</td>
<td>3032</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Venus</td>
<td>7519</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mars</td>
<td>4194</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jupiter</td>
<td>88,736</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saturn</td>
<td>74,978</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uranus</td>
<td>32,193</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neptune</td>
<td>30,775</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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 $\pi$ and round your answer to the nearest hundredth. Show all your work. Write your answer using a complete sentence.

<table>
<thead>
<tr>
<th>Radius</th>
<th>Surface Area (square inches)</th>
<th>Volume (cubic inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 inch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 inches</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 inches</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Name ___________________________________________________ Date _____________________

Engineers and Architects
Nets and Views

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

1. 2. 3. 4. 5.
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 $36\pi$ 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.
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.

<table>
<thead>
<tr>
<th>Number of Trees Sold</th>
<th>Amount of Money in Cash Drawer (dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>40(1) + 30</td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

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. \( f(x) = x ÷ 2 \)
**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.

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.

<table>
<thead>
<tr>
<th>Quantity Name</th>
<th>Column 1</th>
<th>Column 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit of Measure</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>108</td>
</tr>
<tr>
<td>Expression</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(label)</th>
<th>(units)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>150</td>
</tr>
<tr>
<td>2</td>
<td>135</td>
</tr>
<tr>
<td>4</td>
<td>120</td>
</tr>
<tr>
<td>6</td>
<td>105</td>
</tr>
<tr>
<td>8</td>
<td>90</td>
</tr>
<tr>
<td>10</td>
<td>75</td>
</tr>
<tr>
<td>12</td>
<td>60</td>
</tr>
<tr>
<td>14</td>
<td>45</td>
</tr>
<tr>
<td>16</td>
<td>30</td>
</tr>
<tr>
<td>18</td>
<td>15</td>
</tr>
</tbody>
</table>
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.

1. How much money will you have after 2 weeks? Enter this answer in the table.
2. How much money will you have after 4 weeks? Enter this answer in the table.
3. How much money will you have after 6 weeks? Enter this answer in the table.
4. Label the quantity names and units in both columns.
5. 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.

<table>
<thead>
<tr>
<th>Column 1</th>
<th>Column 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantity Name</td>
<td></td>
</tr>
<tr>
<td>Unit of Measure</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>325</td>
</tr>
<tr>
<td>Expression</td>
<td>550</td>
</tr>
</tbody>
</table>

6. 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.
7. How many weeks will it take you to reach your goal? Enter this answer in the table.
8. Write each row in the table as an ordered pair. Then graph the ordered pairs. Draw a line through the ordered pairs.

9. Use the graph to find the slope of the line.
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.

1. How much chlorine is left after 2 weeks? Enter this answer in the table.
2. How much chlorine is left after 10 weeks? Enter this answer in the table.
3. How much chlorine is left after 15 weeks? Enter this answer in the table.
4. Label the quantity names and units in both columns.
5. 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.

<table>
<thead>
<tr>
<th>Column 1</th>
<th>Column 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantity Name</td>
<td></td>
</tr>
<tr>
<td>Unit of Measure</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>21</td>
</tr>
<tr>
<td>10</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>0</td>
</tr>
<tr>
<td>Expression</td>
<td></td>
</tr>
</tbody>
</table>

6. Use the expression to determine the number of weeks until there are 21 pounds of chlorine left. Enter this answer in the table.
7. After how many weeks will the chlorine be gone? Enter this answer in the table.
8. Create a graph of the values in the table.
9. Use the graph to determine the $x$-intercept and the $y$-intercept.
10. Choose two points on the graph to find the slope.
Assignment for Lesson 13.5

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.

<table>
<thead>
<tr>
<th>$x$</th>
<th>$y$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

Use the slope and the intercepts to graph each function.

5. $y = 10 - 5x$

6. $y = 2x + 1$
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.

<table>
<thead>
<tr>
<th>Total Height (inches)</th>
<th>Height of Navel (inches)</th>
<th>Ratio of Navel Height to Total Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>67</td>
<td>41</td>
<td>0.61</td>
</tr>
<tr>
<td>77</td>
<td>48</td>
<td></td>
</tr>
<tr>
<td>61</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td>73</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>65</td>
<td>41</td>
<td></td>
</tr>
<tr>
<td>53</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>70</td>
<td>42</td>
<td></td>
</tr>
<tr>
<td>74</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>31</td>
<td></td>
</tr>
<tr>
<td>63</td>
<td>41</td>
<td></td>
</tr>
</tbody>
</table>

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.
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.

<table>
<thead>
<tr>
<th>Number</th>
<th>Natural Number</th>
<th>Whole Number</th>
<th>Integer</th>
<th>Rational Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>−8</td>
<td></td>
<td></td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4,238,399</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( \frac{12}{17} )</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>−14</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>−13.46</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.5 \times 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.5 + 3.5 − 8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 ÷ (−6)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.25 + 3.75</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2^{25}</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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. \( \left( \frac{2}{3} \right)^{-3} \left( \frac{2}{3} \right)^{-3} = \)

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. \( \frac{10^{17}}{10^{17}} = \)
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. \( \sqrt{3^2} \)
Assignment

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.

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. $2 \times (8 \times 5) = 2 \times (5 \times 8)$
The House that Math Built
The Distributive Property

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

1. 

2. 

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 for Lesson 15.1

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.

<table>
<thead>
<tr>
<th>x-coordinate</th>
<th>y-coordinate</th>
</tr>
</thead>
<tbody>
<tr>
<td>-4</td>
<td>1</td>
</tr>
<tr>
<td>-2</td>
<td>2</td>
</tr>
<tr>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

slope:
x-intercept:
y-intercept:
equation of line:

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:
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 $1 \text{ cm} = 1 \text{ km}$.

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Actual Distance</th>
<th>Distance Apart on a Map (scale: $1 \text{ cm} = 1 \text{ km}$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Downtown</td>
<td>Brooklyn Heights</td>
<td>4.5 km</td>
<td></td>
</tr>
<tr>
<td>John C. Tune Airport</td>
<td>Downtown</td>
<td>10 km</td>
<td></td>
</tr>
<tr>
<td>Downtown</td>
<td>Centennial Park</td>
<td>6.3 km</td>
<td></td>
</tr>
<tr>
<td>Bordeaux Hills</td>
<td>West Nashville</td>
<td>2.5 km</td>
<td></td>
</tr>
</tbody>
</table>
Assignment for Lesson 15.3

Designer Mathematics
Sliding and Spinning

1. On the grid at the right, draw a triangle with the vertices (3, 3), (3, 7), and (6, 7). Label the triangle with the letter \( A \).

2. Translate the triangle -10 units vertically. Label the new triangle with the letter \( B \).

3. Translate triangle \( B \) -9 units horizontally. Label the new triangle with the letter \( C \).

4. Translate triangle \( C \) 10 units vertically. Label the new triangle with the letter \( D \).

5. Describe a translation that would map triangle \( A \) onto triangle \( D \). Write your answer using a complete sentence.

6. The shaded figure at the right has been rotated to a new position. Describe the transformation.

   The triangle was rotated _____ degrees about the origin.

   Was the direction of rotation clockwise or counterclockwise?
Assignment

Name ___________________________________________________ Date _____________________

Secret Codes
Flipping, Stretching, and Shrinking

1. Write the coordinates of the vertices of the hexagon in the table below.

2. Reflect the hexagon in the y-axis. Write the coordinates of the vertices of the image in the table below.

3. Reflect the original hexagon in the x-axis. Write the coordinates of the vertices of the image in the table below.

<table>
<thead>
<tr>
<th>Pre-image</th>
<th>Image 1</th>
<th>Image 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
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<tr>
<td>D</td>
<td></td>
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<tr>
<td>E</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. Dilate rectangle FACE by a scale factor of 2 using the origin as the center of dilation. Label the vertices of the image.

5. Reflect the word MOM in the y-axis. Is it still a word?
A Stitch in Time
Multiple Transformations

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.
1. Jack and Pablo are looking for summer jobs. Jack finds a job that pays $7.25 per hour and guarantees 30 hours per week. Pablo finds a job that pays $8.35 per hour and guarantees 25 hours per week. Find the earnings per week for each person.

2. Sam is collecting monetary donations for the food pantry. He collects $372.31 from the freshman class, $231.44 from the sophomore class, $543.87 from the junior class, and $632.22 from the senior class. How much money did Sam collect for the food pantry?

3. Use mental math to find the sum of 40 and 38.

4. Estimate the product of 450 and 820.

5. Ice cream costs $3.55 per gallon. How much do 5 gallons of ice cream cost?

---

Simplify each expression.

6. \((4 + 13) - (7 + 2)\)

7. \(6 \times 4 + 1 - 5\)

8. \(8 + 27 \div 3\)

9. \(4 \times 3 + 6\)

10. \(15 \div 5 + 14 - 8\)

11. \(9 - 3 \times 2 + 6\)

Decide where to place the parentheses so that the answer is correct using the order of operations.

12. \(14 + 7 \div 3 + 8 = 15\)

13. \(9 - 6 + 2 \div 2 = 5\)
Reflect & Review

1. You buy four 3-ring binders for $14. How much does one 3-ring binder cost?

2. Piper is making oatmeal raisin cookies for your class party. One batch of the recipe she is using makes 24 cookies. If Piper makes 3 batches of the recipe, how many cookies will she have?

3. You purchase 5 DVDs for $15.99 each and 6 video game cartridges for $35.99 each. What is the total cost of your purchase?

4. Use mental math to find the product of 20 and 161. 5. Simplify $7 + 12 \div 6 - 2 \times 3$.

Practice

List all of the factor pairs of each number.

6. 30
7. 27
8. 42
9. 31
10. Is 3 a factor of 57? Justify your answer.
11. Is 4 a factor of 64? Justify your answer.
12. Is 7 a factor of 98? Justify your answer.
13. Is 5 a factor of 33? Justify your answer.

List all of the factors of each number in each pair. Then circle the factors that the numbers have in common.

14. 12, 15
15. 24, 36
16. 15
17. 40

List the first five multiples of each number.
Skills Practice

Reflect & Review

1. One third of your class of 18 students likes vanilla frozen yogurt. How many students in your class like vanilla frozen yogurt?

2. Your teacher is rearranging 24 desks in a classroom. He wants the same number of desks in each row. Find all possible rectangular arrangements that have no more than 10 desks in any row or column.

3. A museum is displaying a 54-piece coin collection in groups so that the same number of coins is in each group. List the different ways in which the coins can be displayed.

4. Write all of the factors of 45.

5. Simplify \(4 + 3 \times 6 - 8 \div 2\).

Practice

6. List the first eight multiples of 2.

7. List the first ten multiples of 5.

8. List the first ten multiples of 3 and 4. Circle the multiples that 3 and 4 have in common.

9. List the first eight multiples of 6 and 8. Circle the multiples that 6 and 8 have in common.

10. Is 42 a multiple of 4? Justify your answer.

11. Is 63 a multiple of 7? Justify your answer.

Find the least common multiple of each pair of numbers.

12. 15, 25

13. 12, 16

14. 27, 36
Name ___________________________________________________ Date _____________________

**Reflect & Review**

1. You run 2 miles every third day and swim every Wednesday. Today you are going to run and swim. In how many days will you run and swim on the same day?

2. You are balancing your checkbook. The beginning balance is $64.32. You have written checks for $11.08, $4.82, and $15.91. What is the ending balance of your checkbook?

3. Use mental math to find the product of 67 and 40.

4. Demonstrate the commutative property of multiplication using the numbers 7 and 15.

5. Decide where to place parentheses so that the statement is true.
   \[24 - 12 + 3 + 8 - 2 = 15\]

**Practice**

6. Is 54 prime or composite? Justify your answer.

7. List the next three prime numbers after 7.

8. True or False: All odd numbers are prime. Justify your answer.

9. True or False: All even numbers are composite. Justify your answer.

10. Is 37 prime or composite? Justify your answer.

11. List all of the prime numbers between 20 and 30.

12. List all of the prime numbers between 40 and 60.
Skills Practice

Reflect & Review

1. A rectangular gymnasium floor needs to be refinished. If the floor is 90 feet wide and 128 feet long, what is the area that will be refinished?

2. Paul has $0.88 in change. He wants you to guess which coins he has. He tells you that you need to use the least amount of coins possible. What coins does Paul have?

3. List the next three prime numbers after 31.

4. Find the least common multiple of 18 and 27.

Practice

Construct a factor tree for each number. Then write the prime factorization of each number.

5. 27

6. 100

7. 35

8. 98

9. 24

10. 36

Determine where to place parentheses so that the statement properly demonstrates the associative property.

11. 

\[(4 \times 5) \times 8 = 4 \times 5 \times 8\]

12. 

\[3 \times (10 \times 2) = 3 \times 10 \times 2\]
Reflect & Review

1. Three fifths of the 1065 students in your school want pizza for lunch. How many students in your school do not want pizza?

2. You are selling energy bars to raise money for a class trip. A energy bar sells for $1.50. You need to sell enough energy bars to raise $129. How many energy bars do you need to sell?

3. Your friend asks you to explain the difference between prime and composite numbers. Use complete sentences in your explanation.

4. Use a factor tree to find the prime factorization of 48.

5. Find the least common multiple of 12 and 20.

Practice

Identify the base and exponent in the power.

6. \(5^3\)

7. \(2^3\)

Write the product as a power.

8. \(4 \times 4 \times 4 \times 4 \times 4\)

9. \(3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3\)

Write the prime factorization of the number using powers.

10. 28

11. 36

12. 125

13. 200
Reflect & Review

1. An art store is displaying small pieces of art on a wall. There are 18 pieces. How many different ways could the art be displayed with an equal amount of paintings in each row?

2. Your summer job is mowing lawns. If you earn $30 per yard mowed, how many days will it take you to earn $540?

3. Write the prime factorization of 400 using powers.

4. Use mental math to find the product of 18 and 600.

5. Is 273 prime or composite? Justify your answer.

Practice

6. What is the difference between the greatest common factor and least common multiple of a pair of numbers?

Find the greatest common factor of the numbers.

7. 12 and 15
8. 20 and 30
9. 8 and 12
10. 42 and 54
11. 49 and 63
12. 80 and 64
13. 25 and 40
14. 48 and 72
Skills Practice

Name __________________________ Date ________________

Reflect & Review

1. You and your friends have $18 for lunch. You buy three sandwiches for $4 each and three drinks for $1 each. Assuming that the tax has already been included, do you have enough to pay for your lunch? Show all your work.

2. This summer, you earned $1920 in 12 weeks. How much money did you earn each week?

3. What are the factors of 64?

4. Use mental math to find the quotient $1200 \div 60$.

Practice

5. Identify the numerator of the fraction $\frac{3}{8}$.

6. Identify the denominator of the fraction $\frac{15}{44}$.

7. Write the fraction that has a numerator of 10 and a denominator of 19.

8. Write the fraction that has a denominator of 11 and a numerator of 5.

Complete each statement.

9. $\frac{1}{6}$ is the same as ____ $\frac{1}{12}$s.

10. $\frac{4}{9}$ is the same as ____ $\frac{1}{18}$s.

11. $\frac{1}{5}$ is the same as ____ $\frac{1}{25}$s.

Represent each fraction by drawing the specified figure.

12. $\frac{4}{5}$ of a circle

13. $\frac{1}{4}$ of a rectangle

14. $\frac{7}{9}$ of a square
Skills Practice

Reflect & Review

1. You are reading a book for English class. You can read 15 pages in one hour. The book is 345 pages. How long will it take you to read the book?

2. Seth wants to build a fence to enclose his backyard. The area to fence in has three sides with measurements of 25 feet, 75 feet, and 27 feet. If the fencing that Seth chooses costs $5 per panel, how much would it cost him to fence in his backyard? (A panel is 4 feet in length and partial panels cannot be purchased.)

3. Use parentheses to make the statement true.
   
   \[ 4 \times 6 + 16 \div 5 + 3 = 26 \]

4. Write a fraction with a numerator of 18 and a denominator of 33.

Practice

5. Three submarine sandwiches need to be divided equally among 5 people. How much of a sandwich does each person get?

6. You and three of your friends have 3 bags of jewelry beads that you are dividing equally among all of you. How much of a bag does each person get?

Determine whether the solution is reasonable. Use complete sentences to explain why or why not.

7. In celebration of Pi Day (March 14 for 3.14), your math teacher bought 17 pizza pies. Each pizza is cut into 6 slices. There are 30 students in your class. Each student will receive 5 slices of pizza.
Skills Practice

Name ___________________________________________________ Date _____________________

Reflect & Review

1. Max is baking cookies. He makes 24 cookies from his first batch and 32 cookies from his second batch. He divides the cookies equally into 8 boxes. How many cookies are in each box?

2. Find the greatest common factor of 15 and 40.

3. Write $6 \times 6 \times 7 \times 7 \times 7$ using powers.

4. Jillian wants to purchase a new MP3 player that costs $125. She earns $25 each week working after school at a library. How many weeks will it take Jillian to save for the MP3 player?

Practice

The lunch menu at your school offers three main dishes: hamburger, hot dog, or pizza. Twenty-four students choose a hamburger, 33 students choose a hot dog, and 47 students choose pizza.

5. What fraction chose a hamburger?

6. What fraction chose a hot dog?

7. What fraction did not choose a hot dog?

8. There are 47 students in Lilly’s gym class. Fifteen students in the class prefer volleyball, 28 students prefer track, and 4 students prefer football. What fraction of the students prefer volleyball and football?

One hundred twenty-two thousand people applied for football season tickets at a state university. Forty-four thousand three hundred twenty-one applications got donor-seat tickets, 67,493 applications got regular-seat tickets, and the remaining applications did not get tickets.

9. What fraction got donor-seat tickets?

10. What fraction got regular-seat tickets?
Skills Practice

Name ___________________________________________________ Date _____________________

Reflect & Review

1. Lonnie and Dana are practicing for a basketball free throw contest. Each person attempts 20 free throws. Dana makes 17 and Lonnie makes 14. What fraction of the throws did each person make?

2. Find the greatest common factor of 8 and 18.

3. Use mental math to find the product of 25 and 40.

4. You and three of your friends go to the water park. One admission to the water park is $15. What is the total cost for all of you to go to the water park?

Practice

Fill in the blank so that each pair of fractions are equivalent.

5. \[ \frac{2}{5} = \square \]

6. \[ \frac{5}{8} = \square \]

7. \[ \frac{3}{4} = \square \]

8. \[ \frac{7}{10} = \square \]

9. \[ \frac{8}{9} = \square \]

10. \[ \frac{4}{7} = \square \]

Fill in the blanks so that each equality is true.

11. \[ \frac{1}{3} = \frac{1 \times \square}{3 \times \square} = \frac{7}{21} \]

12. \[ \frac{4}{5} = \frac{4 \times \square}{5 \times \square} = \frac{12}{15} \]

13. \[ \frac{9}{20} = \frac{9 \times \square}{20 \times \square} = \frac{36}{80} \]

14. \[ \frac{5}{11} = \frac{5 \times \square}{11 \times \square} = \frac{25}{55} \]

15. \[ \frac{8}{15} = \frac{8 \times \square}{15 \times \square} = \frac{48}{90} \]

16. \[ \frac{7}{30} = \frac{7 \times \square}{30 \times \square} = \frac{49}{210} \]
Skills Practice

Name ____________________________ Date _____________________

Reflect & Review

1. Heather is placing winning tickets under every third chair at the orchestra concert. The chairs are numbered and there are 300 chairs. As she is placing tickets under the chairs, she becomes confused. She is at chair number 244 and wants to know if she should put a ticket under the chair. She placed the first winning ticket under chair number 3. Should she put a ticket under chair number 244? Explain.

2. Use a factor tree to find the prime factorization for 81.

3. List the first 5 multiples of 5.

4. Find the greatest common factor of 6 and 10.

Practice

Fill in the blank(s) so that each equality is true.

5. \( \frac{8}{10} = \underline{4} \)

6. \( \frac{15}{30} = \underline{2} \)

7. \( \frac{12}{15} = \underline{4} \)

8. \( \frac{32}{36} = \frac{32 \div \underline{36}}{36 \div \underline{9}} = \frac{8}{\underline{9}} \)

9. \( \frac{21}{28} = \frac{21 \div \underline{28}}{28 \div \underline{4}} = \frac{3}{\underline{4}} \)

10. \( \frac{18}{27} = \frac{18 \div \underline{27}}{27 \div \underline{3}} = \frac{2}{\underline{3}} \)

Simplify each fraction.

11. \( \frac{20}{25} \)

12. \( \frac{8}{12} \)

13. \( \frac{35}{40} \)

14. \( \frac{24}{64} \)

15. \( \frac{18}{38} \)

16. \( \frac{26}{65} \)
Reflect & Review

1. At a garage sale, Wanda bought 4 books for $1 each, 2 CDs for $3 each, and 3 toys for $2 each. How much money did Wanda spend?

2. During the first series of last night’s football game, the quarterback ran for 8 yards, was sacked for a loss of 4 yards, and threw a pass for 5 yards. To earn a first down, ten yards must be gained. Did they earn a first down? Justify your answer.

3. Simplify \( \frac{36}{81} \)

4. Use mental math to find the product of 200 and 42.

Practice

Use your knowledge of common fractions to compare each pair of fractions.

5. \( \frac{3}{8}, \frac{3}{4} \)

6. \( \frac{7}{10}, \frac{5}{14} \)

Find the LCD of each pair of fractions. Then use the LCD to rewrite each fraction. Circle the original fraction that is greater.

7. \( \frac{4}{5}, \frac{7}{15} \)

8. \( \frac{2}{7}, \frac{1}{5} \)

9. \( \frac{5}{6}, \frac{7}{9} \)

10. \( \frac{1}{3}, \frac{2}{5} \)

11. \( \frac{1}{2}, \frac{4}{7} \)

12. \( \frac{3}{8}, \frac{4}{9} \)
Skills Practice

Reflect & Review

1. You are training for a marathon. During the first week of training you need to run at least 42 miles in 6 days. If you run the same number of miles each day for the 6 days, how many miles do you have to run each day?

2. Your friend Louie tells you that any positive number multiplied by 2 is a composite number. Is he correct? Justify your answer.

3. Order the fractions $\frac{2}{3}$, $\frac{4}{9}$, $\frac{1}{2}$, $\frac{7}{8}$, $\frac{1}{12}$, and $\frac{13}{14}$ from least to greatest.

4. Find the greatest common factor of 27 and 36.

5. Find the least common multiple of 12 and 16.

Practice

Perform the indicated operation(s). Simplify your answer, if possible.

6. $\frac{3}{5} + \frac{1}{5}$

7. $\frac{1}{7} + \frac{2}{7} + \frac{3}{7}$

8. $\frac{3}{16} + \frac{1}{16} + \frac{5}{16}$

9. $\frac{4}{9} - \frac{3}{9}$

10. $\frac{10}{11} - \frac{4}{11}$

11. $\frac{4}{15} + \frac{1}{15}$

12. $\frac{14}{17} - \frac{11}{17}$

13. $\frac{7}{10} - \frac{3}{10}$

14. $\frac{4}{7} + \frac{6}{7} - \frac{3}{7}$
Skills Practice

Reflect & Review

1. You have $\frac{3}{4}$ of a yard of material. You use a piece that is $\frac{1}{4}$ of a yard long for one pillow. How much fabric do you have left? Simplify your answer, if possible.

2. The U.S. Mint is issuing new state quarters. There is one state quarter for each of the 50 states. You collect all 50 quarters and want to display them in a rectangular display with the same number of quarters in each row. How many ways can you arrange the quarters?

3. Find the least common multiple of 9 and 15.

4. Write the prime factorization of 56 using powers.

Practice

Perform the indicated operation(s). Simplify your answer, if possible.

5. $\frac{1}{4} + \frac{1}{2}$

6. $\frac{1}{7} + \frac{5}{14}$

7. $\frac{3}{16} + \frac{1}{8} + \frac{1}{16}$

8. $\frac{5}{6} - \frac{1}{3}$

9. $\frac{5}{12} - \frac{7}{24}$

10. $\frac{2}{3} + \frac{1}{15}$

11. $\frac{4}{7} + \frac{9}{14} - \frac{1}{2}$

12. $\frac{3}{8} - \frac{1}{4} + \frac{9}{16}$

13. $\frac{4}{15} + \frac{1}{3} - \frac{1}{5}$
**Reflect & Review**

1. A bakery sells cookies for $1 each and slices of pie for $3 each. If the bakery sells 44 cookies and 15 slices of pie, how much money did the bakery make from the cookies and pie?

2. Find the perimeter of the rectangle at the right.  
   *(Hint: The perimeter is equal to twice the length plus twice the width.)*

3. Simplify the expression $7 \times 3 + 6 - 2 \times 8 \div 4$.

4. Find the sum of $4^2$ and $3^3$.

**Practice**

Write each mixed number as an improper fraction.

5. $6 \frac{1}{2}$  
6. $1 \frac{5}{8}$  
7. $3 \frac{1}{8}$

Write each improper fraction as a mixed number.

8. $\frac{11}{3}$  
9. $\frac{15}{7}$  
10. $\frac{23}{6}$

11. $\frac{19}{2}$  
12. $\frac{13}{4}$  
13. $\frac{19}{5}$

Find the sum. Simplify your answer, if possible.

14. $\frac{3}{5} + \frac{3}{5}$  
15. $\frac{7}{9} + \frac{4}{9}$  
16. $\frac{2}{3} + \frac{5}{4}$
**Reflect & Review**

1. You are making gift bags for a third grade class. You have 56 mini granola bars, 14 bouncy balls, and 70 pieces of gum. What is the greatest number of identical gift bags that you can make? How many of each item will be in each bag?

2. You want to buy a guitar that costs $1225. You have saved $550 and are earning $45 per week at your current after-school job. If you save your earnings every week, how long will it take before you can buy the guitar?

3. Use mental math to find the product of 43 and 8. (Hint: Think $40 \times 8 + 3 \times 8$.)

4. Find the least common denominator of the fractions $\frac{3}{7}$, $\frac{2}{5}$, and $\frac{1}{2}$.

**Practice**

Find each product. Simplify your answer, if possible.

5. $\frac{3}{4} \times \frac{2}{9}$
6. $\frac{8}{15} \times \frac{1}{4}$
7. $\frac{4}{3} \times \frac{5}{6}$

8. $\frac{7}{10} \times \frac{6}{35}$
9. $\frac{7}{4} \times \frac{10}{21}$
10. $\frac{11}{12} \times \frac{16}{33}$

11. $\frac{15}{24} \times \frac{6}{20}$
12. $\frac{14}{35} \times \frac{10}{8}$
13. $\frac{9}{32} \times \frac{28}{33}$
Reflect & Review

1. There are 20 people running a 5-kilometer race. You have five oranges to give the runners after the race. If the oranges are evenly divided among the runners, how much of an orange should each runner get?

2. Find the area of the rectangle shown at the right.  
   (Hint: The area is equal to the product of the length and the width.)

3. Write \( \frac{16}{3} \) as a mixed number.

4. Write the prime factorization of 96 using a factor tree.

Practice

Find each quotient. Simplify your answer, if possible.

5. \( \frac{15}{7} \div \frac{10}{14} \)
6. \( \frac{2}{9} \div \frac{4}{3} \)
7. \( \frac{11}{6} \div \frac{2}{7} \)

8. \( \frac{5}{8} \div \frac{25}{14} \)
9. \( \frac{14}{32} \div \frac{7}{8} \)
10. \( \frac{45}{33} \div \frac{15}{11} \)

11. \( \frac{10}{3} \div \frac{35}{27} \)
12. \( \frac{24}{5} \div \frac{26}{20} \)
13. \( \frac{3}{10} \div \frac{12}{5} \)
Reflect & Review

1. There are 24 students in your math class. If two thirds of the students are girls, how many boys are in your math class?

2. What is \( \frac{1}{2} \) of \( \frac{2}{3} \)?

3. Find the GCF of 14 and 28.

4. Is 43 prime or composite? Justify your answer.

Practice

Find each sum. Simplify your answer, if possible.

5. \( \frac{2}{5} + \frac{1}{5} \)  
6. \( \frac{5}{9} + \frac{2}{9} \)  
7. \( \frac{3}{8} + \frac{1}{4} \)

8. \( \frac{4}{7} + \frac{3}{14} \)  
9. \( \frac{2}{9} + \frac{1}{3} \)  
10. \( \frac{1}{6} + \frac{3}{3} \)

Find each difference. Simplify your answer, if possible.

11. \( \frac{11}{12} - \frac{7}{12} \)  
12. \( \frac{7}{8} - \frac{3}{8} \)  
13. \( \frac{11}{12} - \frac{7}{12} \)
Reflect & Review

1. On a 20-question quiz, you answered 15 questions correctly. What fraction of questions did you answer correctly? Simplify your answer, if possible.

2. Use mental math to find the product of 14 and 280.

3. Find the least common multiple of 12 and 8.

4. On the first day of a camping trip, it rained \(\frac{3}{4}\) inches. On the second day, it rained \(\frac{2}{3}\) inches. On the third day, it rained \(\frac{5}{8}\) inch. What is the total amount of rainfall for the three days?

Practice

Find each product. Simplify your answer, if possible.

5. \(\frac{2}{4} \times \frac{7}{33}\)
6. \(\frac{3}{5} \times \frac{7}{2}\)
7. \(\frac{5}{8} \times \frac{6}{9}\)

8. \(\frac{19}{21} \times \frac{4}{5}\)
9. \(\frac{1}{3} \times \frac{3}{26}\)
10. \(\frac{3}{5} \times \frac{5}{9}\)

Find each quotient. Simplify your answer, if possible.

11. \(\frac{9}{11} \div \frac{7}{22}\)
12. \(\frac{2}{3} \div \frac{13}{15}\)
13. \(\frac{4}{5} \div \frac{11}{25}\)
**Reflect & Review**

1. A classroom is \(31\frac{1}{2}\) feet wide. If a desk and the space around it take up \(5\frac{1}{4}\) feet, how many rows of desks will fit in the classroom?

2. Which fraction is greater, \(\frac{7}{9}\) or \(\frac{3}{4}\)?

3. Use mental math to find the product of 70 and 300.

4. You answered \(\frac{17}{20}\) of the questions on a test correctly. There were 100 questions on the test. How many questions did you answer correctly?

**Practice**

Complete each statement using the correct number of units. Show all your work.

5. 5 inches = _____ feet
6. 2 tons = _____ pounds
7. 5 pints = _____ quarts
8. 72 feet = _____ yards
9. 7 gallons = _____ quarts
10. \(2\frac{1}{2}\) pounds = _____ ounces

Complete the statement using <, >, or =. Show all your work.

11. 8 feet _____ 90 inches
12. 7 cups _____ 2 quarts
Skills Practice
Lesson 4.1

Reflect & Review

1. Joe has been working on his homework all evening. He finished \( \frac{3}{4} \) of his history project and \( \frac{5}{6} \) of his English homework. For which class did he complete more work?

2. Find the perimeter of the triangle with side lengths of \( \frac{6}{7} \) foot, \( \frac{2}{3} \) foot, and \( \frac{14}{21} \) foot.

3. Use mental math to find the product of 0.453 and 100.

4. Find the quotient \( \frac{9}{35} \div \frac{6}{7} \).

Practice

Complete each statement. Show all your work.

5. 500 pennies = ____ dollars

6. 15 dimes = ____ half-dollars

7. 25 nickels = ____ quarters

8. Complete the statement by writing each digit as part of a dollar.

\[ \$3.72 = ____ \text{ dollars} + (7 \times ____ \text{ of a dollar}) + (2 \times ____ \text{ of a dollar}) \]

Complete each statement to write the decimal in a different form.

9. 18.96 = ____ tens + ____ ones + ____ tenths + ____ hundredths

10. 573.17 = ____ hundreds + ____ tens + ____ ones + ____ tenths + ____ hundredths

11. 74.619 = ____ tens + ____ ones + ____ tenths + ____ hundredths + ____ thousandths

12. 94.013 = ____ tens + ____ ones + ____ tenths + ____ hundredths + ____ thousandths

13. 199.67 = ____ hundreds + ____ tens + ____ ones + ____ tenths + ____ hundredths
Skills Practice

Name ___________________________________________________ Date _____________________

Reflect & Review

1. Find the area of the rectangle shown at the right.

2. At Sam’s favorite store, he finds a coat on sale for $72 that was originally $120. How much money did he save by buying the coat on sale?

3. List the next four consecutive prime numbers after the prime number 31.

4. Find the least common multiple of 9 and 12.

5. Use mental math to find the product of 56 and 20.

Practice

Identify the place value of the specified digit in the number.

6. 410.25; digit: 2
7. 3075.0125; digit: 3
8. 57,498.613; digit: 3

Write the number in expanded form and in word form.

9. 520.43

10. 7201.38

Write the decimal in standard form and in word form.

11. \((6 \times 100) + (1 \times 10) + (7 \times 1) + \left(4 \times \frac{1}{100}\right)\)

12. \((4 \times 10,000) + (7 \times 100) + (2 \times 10) + (9 \times 1) + \left(5 \times \frac{1}{10}\right) + \left(3 \times \frac{1}{1000}\right) + \left(6 \times \frac{1}{10,000}\right)\)
Skills Practice

Reflect & Review

1. James and Ken are landscaping for a business in town. The drawing at the right represents the lawn. Find the area of the lawn that James and Ken are landscaping.

2. Tosin has worked $14\frac{1}{2}$ hours this week. Next week she wants to work 25 hours. How many more hours will she work next week than she worked this week?

3. Evaluate the expression $19 - 25 \div 7 - (18 - 12)$.

4. Simplify $\frac{14}{35} \times \frac{15}{16} \div \frac{5}{4}$.

Practice

Write each decimal as a mixed number. Simplify your answer, if possible.

5. 21.04
6. 14.002
7. 200.205

Round each whole number to the given place value.

8. 5736 to the nearest ten
9. 84,521 to the nearest thousand
10. 244 to the nearest hundred

11. In the table, round each decimal to the given place value.

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<th></th>
<th>Round to the nearest hundred</th>
<th>Round to the nearest ten</th>
<th>Round to the nearest one</th>
<th>Round to the nearest tenth</th>
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</tr>
</tbody>
</table>
Skills Practice

Name ______________________________ Date ______________________

Reflect & Review

1. Your class orders 27 sub sandwiches. There are 24 students in your class. Your teacher places your class in groups of 4 and divides the sub sandwiches evenly among the groups. How many sub sandwiches will each group receive? How much will each group member receive?

2. Order the numbers 0.48, \( \frac{1}{10} \), 0.85, \( \frac{3}{4} \), \( \frac{1}{2} \), \( \frac{8}{10} \), and 0.25 from least to greatest.

3. You are baking cookies and want to double the recipe. The recipe calls for \( 2\frac{1}{4} \) cups of flour and \( \frac{3}{4} \) cup of sugar. How many cups of each ingredient will you need when you double the recipe?

4. Evaluate \( \frac{7}{4} + \frac{8}{3} - \frac{1}{2} \). Simplify your answer, if possible.

Practice

Find each sum or difference.

5. 54.3 + 22.9

6. 10.326 + 62.931

7. 19.71 + 33.55

8. 64.67 − 14.15

9. 194.337 − 123.015

10. 22.6 − 10.2

11. 473.44 + 94.2

12. 78.321 − 39.7

13. 628.907 + 129.8
Skills Practice

Name ___________________________________________________ Date _____________________

Reflect & Review

1. Jessica is buying birthday presents for her twin nieces. She has $64 to spend. So far she
has purchased two swimsuits for $12.50 each and two pairs of flip-flops for $4.63 each.
She wants to buy each twin a basketball that costs $15.33. Does Jessica have enough
money to purchase the basketballs?

2. Find the area of a triangle that has a height of 4 feet and a base of $6\frac{1}{2}$ feet.
(Hint: The area is equal to one half of the length of the base multiplied by the height.)

3. Simplify $\frac{15}{33} \times \frac{25}{55}$

4. Find the greatest common factor of 24 and 56.

Practice

Find each product.

5. $3.2 \times 2.01$  
6. $4.6 \times 0.05$  
7. $5.04 \times 1.03$

8. $2.17 \times 0.04$  
9. $7.34 \times 1.6$  
10. $301.2 \times 5.8$

11. $8.4 \times 10.3$  
12. $17.08 \times 2.4$  
13. $11.3 \times 0.07$
Skills Practice

Name ________________________________ Date __________________

Reflect & Review

1. Draw a circle. Use it to represent the fraction \( \frac{7}{8} \).

2. Ten pizzas are divided evenly among 32 people. What fraction of a pizza does each person get? Justify your answer.

3. Simplify \( \frac{3}{16} + \frac{3}{4} - \frac{3}{8} \).

4. Find the product of \( \frac{7}{5} \) and \( 2 \frac{1}{2} \).

Practice

Find each quotient.

5. \( 8 \div 46 \)

6. \( 9 \div 43.2 \)

7. \( 4 \div 9.52 \)

8. \( 3.5 \div 73.5 \)

9. \( 0.2 \div 8.36 \)

10. \( 8 \div 1.2 \)

11. \( 0.98 \div 0.7 \)

12. \( 3.21 \div 0.3 \)
Skills Practice

Reflect & Review

1. Glennis runs 5.75 miles per week and swims 3.5 miles per week. How many miles of exercise does she get each week?

2. Shelly is traveling to her grandmother’s house that is 324 miles away. If her car gets 23 miles per gallon, how many gallons of gasoline will she use on the trip?

3. Find the least common multiple of 18 and 24.

4. Write $\frac{7}{9}$ as an improper fraction.

Practice

Convert each measure. Show all your work.

5. 30 hectometers = _______ kilometers

6. 18 millimeters = _______ meters

7. 5.32 decimeters = _______ hectometers

8. 18.7 liters = _______ milliliters

9. 0.1 meters = _______ centimeters

10. 15 centiliters = _______ kiloliters

11. 3.2 milligrams = _______ grams

12. 0.09 kilograms = _______ centigrams

13. 15.5 decimeter = _______ kilometers

14. 3.67 millimeters = _______ centimeters
Skills Practice

Reflect & Review

1. Gill wants a CD player that costs $135.49. The sales tax is $10.16. How much money does he need to purchase the CD player including tax?

2. Hannah wants to place a small fence border around her rectangular flower bed. The dimensions of the sides are 12.5 feet and 18.8 feet. How much fencing will she need?

3. Write 452.89 in expanded form.

4. Find the difference $634.27 − 421.8$.

Practice

Write each statement as a ratio in two ways, (a) as a fraction and (b) using a colon.

5. Thirteen out of twenty boys like football.

6. Sue answered 19 out of 25 questions correctly.

7. Jake made 12 out of 18 putts on the golf course.

8. Pat ate 3 out of 8 pieces of pizza.

9. Kevin made 15 baskets out of 26 attempts at the basketball game.

10. Matt threw 30 strikes out of 43 pitches. How many pitches were not strikes?

11. Phil caught one out of every three passes. How many passes did he miss?

12. Ingra answered 12 out of 20 phone calls. How many phone calls did she miss?
Reflect & Review

1. Kathy enjoys working in her vegetable garden. She wants to hire you to water the plants while she is out of town for the weekend. She waters each section of the garden for $\frac{1}{3}$ hour. There are 15 sections that need to be watered. Kathy offers to pay you $5 per hour. How much will you make?

2. Ty is selling programs at a hockey game. For every program he sells, $0.25 goes to the Children’s Hospital. If he sells 435 programs, how much money will the Children’s Hospital receive?

3. Use mental math to simplify $45 + 17 - 6$.

4. Round 465,902 to the nearest ten thousand.

Practice

5. Jamie and Quinn are at the batting cages. With each turn, the pitching machine pitches 20 balls. Jamie hits 12 pitches and Quinn hits 14 pitches. Write a proportion for each baseball player in two ways, (a) using fractions and (b) using colons.

For each proportion, find the equivalent rate.

6. $\frac{46 \text{ miles}}{3 \text{ gallons}} = \frac{? \text{ miles}}{6 \text{ gallons}}$
7. $\frac{12 \text{ trees}}{5 \text{ acres}} = \frac{36 \text{ trees}}{? \text{ acres}}$
8. $\frac{24 \text{ ounces}}{8 \text{ gallons}} = \frac{6 \text{ ounces}}{? \text{ gallons}}$

Determine the unknown quantity.

9. $8 : 20 :: ? : 5$
10. $9 : 18 :: 4 : ?$
11. $6246 : 6 :: 2082 : ?$
Name ___________________________________________________ Date _____________________

Reflect & Review

1. Devon loves to cycle. On Monday she rode 4.75 kilometers, on Tuesday she rode 3.8 kilometers, on Thursday she rode 6.2 kilometers, and on Friday she rode 8.3 kilometers. How many kilometers did she ride in all?


3. Simplify $(15)(6) - 8 ÷ 2 + 2 - 14$.

4. Find the quotient $\frac{12}{25} ÷ \frac{6}{15}$.

5. Convert 467 centimeters to meters.

Practice

Complete each statement to write the rate as a unit rate.

6. \[ \frac{54}{3 \text{ hours}} = \frac{(54 ÷ \square)}{(3 ÷ \square) \text{ hours}} = \frac{\square}{1 \text{ hour}} \]

7. \[ \frac{320 \text{ min}}{20 \text{ days}} = \frac{(320 ÷ \square) \text{ min}}{(20 ÷ \square) \text{ days}} = \frac{\square}{1 \text{ day}} \]

8. \[ \frac{32 \text{ people}}{8 \text{ cars}} = \frac{(32 ÷ \square) \text{ people}}{(8 ÷ \square) \text{ cars}} = \frac{\square \text{ people}}{1 \text{ car}} \]

9. \[ \frac{500 \text{ apples}}{25 \text{ trees}} = \frac{(500 ÷ \square) \text{ apples}}{(25 ÷ \square) \text{ trees}} = \frac{\square \text{ apples}}{1 \text{ tree}} \]

10. \[ \frac{418 \text{ books}}{22 \text{ shelves}} = \frac{(418 ÷ \square) \text{ books}}{(22 ÷ \square) \text{ shelves}} = \frac{\square \text{ books}}{1 \text{ shelf}} \]

11. \[ \frac{700 \text{ pens}}{20 \text{ boxes}} = \frac{(700 ÷ \square) \text{ pens}}{(20 ÷ \square) \text{ boxes}} = \frac{\square \text{ pens}}{1 \text{ box}} \]

Write the rate as a unit rate.

12. \[ \frac{72 \text{ flowers}}{8 \text{ vases}} \]

13. \[ \frac{4000 \text{ chocolate chips}}{250 \text{ cookies}} \]
Skills Practice

Reflect & Review

1. Yanni and Freeda bought 104 beads at a craft store. One fourth of the beads are clear glass, one half of the beads are solid-colored glass, and one fourth of the beads are multi-colored glass. How many of each type of bead do they have?

2. At the state fair, Paula wants to buy some homemade strawberry jelly. After looking around, she decides that she wants either Sally’s Strawberry Jelly (16 ounces for $3.20) or Josh’s Jelly (24 ounces for $5.28). Which person should Paula buy from to get the most for her money? Justify your answer.

3. Find the LCM of 6 and 16.

4. Show that the proportion \( \frac{8}{9} = \frac{40}{45} \) is true.

Practice

Solve each proportion. Show all your work.

5. \[ \frac{35 \text{ staples}}{7 \text{ walls}} = \frac{x \text{ staples}}{3 \text{ walls}} \]

6. \[ \frac{124 \text{ computers}}{4 \text{ computer labs}} = \frac{620 \text{ computers}}{x \text{ computer labs}} \]

7. \[ \frac{8 \text{ acres}}{24,000 \text{ dollars}} = \frac{100 \text{ acres}}{x \text{ dollars}} \]

8. \[ \frac{5.52}{24 \text{ ounces}} = \frac{x}{32 \text{ ounces}} \]

9. \[ \frac{45 \text{ yards}}{16 \text{ carries}} = \frac{x \text{ yards}}{4 \text{ carries}} \]

10. \[ \frac{736 \text{ grapes}}{8 \text{ vines}} = \frac{92 \text{ grapes}}{x \text{ vines}} \]

11. If thirty-two cans will fit into four boxes, how many boxes will it take to pack 104 cans?
Skills Practice

Name ____________________________ Date _____________

Reflect & Review

1. Josh and Zandra are planning a trip to an amusement park for their class. The tickets are $35.95 each and meals and snacks will cost $38 for each student. The school will provide transportation. There are 24 students in the class. What is the total cost for each student to go on this trip? What is the cost for the entire class?

2. Zainab has just been promoted to assistant manager. She will receive a raise that is \( \frac{3}{20} \) of her original salary. If her salary is $2000 a month, what will it be after her promotion?

3. Find the product of \( \frac{36}{100} \) and \( \frac{75}{24} \).

4. Solve the proportion \( \frac{5}{9} = \frac{20}{?} \).

5. Order the numbers 0.65, \( \frac{4}{7} \), 0.15, \( \frac{8}{9} \), 0.1, and 0.7 from least to greatest.

Practice

Write each percent as a fraction and as a decimal.

6. 4%

7. 55%

8. 80%

Write each decimal as a fraction and as a percent.

9. 0.25

10. 0.3

11. 0.65

Write each fraction as a decimal and as a percent.

12. \( \frac{3}{5} \)

13. \( \frac{3}{8} \)

14. \( \frac{3}{4} \)
Skills Practice

Name ____________________________________________ Date _____________________

Reflect & Review

1. There are 3545 students enrolled at a local high school. Two-fifths of the students have a
driver’s license. How many of the students have a driver’s license?

2. There are 52 playing cards in a deck. There are thirteen cards in each of the four suits.
   What is the ratio of the number of cards in two of the suits to the number of cards in
   the deck?

3. Find the least common multiple of 6 and 8.

4. Write the prime factorization of 54.

5. Use mental math to simplify $14 \times 22 - 100$.

Practice

Find the percent of the number.

6. 1% of 380

7. 10% of 430

8. 100% of 600

Use a benchmark percent to find each percent. Show all your work.

9. 25% of 200

10. 38% of 72

11. 60% of 140

12. 20% of 98

13. 72% of 300

14. 13% of 145

15. 9% of 180

16. 42% of 60

17. 99% of 550
1. The streets running east and west in Norman, Oklahoma, are named in order as multiples of twelve. If you begin on 12th Street and need to go south to get to 108th Street, how many east-west streets would you pass?

2. Lexi wants to buy a video camera. She has saved $150. At her babysitting job, she makes $10 per week. The video camera that Lexi wants costs $335. How long will it take her to save enough money to buy the video camera?

3. Use a benchmark percent to find 30% of 150.

4. Find the greatest common factor of 16 and 28.

5. Use mental math to find the difference 385 – 221.

6. Write and solve a proportion to find the percent of the number. Show all your work.
   6. 30% of 60
   7. 18% of 84
   8. 8% of 1200
   9. 120% of 75
   10. 49% of 58
   11. 25% of 367
   12. 15% of 240
   13. 75% of 654
   14. 145% of 2000
Skills Practice

Name ___________________________________________ Date __________________

Lesson 6.4

Reflect & Review

1. Candace is looking for a new apartment. She has budgeted one fourth of her paycheck each month to spend on rent. Each month she earns $2450. How much can she spend on an apartment and stay within her budget?

2. You are buying a guitar for $400. The sales tax in your state is 5%. How much sales tax will you be charged?

3. True or False: An odd number multiplied by an odd number is always odd.

4. Find the product of 0.36 and 150.

5. Use mental math to find the quotient \( \frac{565}{5} \).

Practice

Find the original price if the sale price given is 75% of the original price.

6. Sale price: $60

7. Sale price: $150

8. Sale price: $225

Find the markup price if the original price given is 90% of the markup price.

9. Original price: $36

10. Original price: $108

11. Original price: $315
Reflect & Review

1. Gil is 47 years old. He has spent two-fifths of his life living in Europe. How many years has he spent in Europe?

2. You are in charge of fundraising for your class trip to Washington, D.C. The total price of the trip is $32,000 for your class. The fundraiser you have chosen gives you 40% of all sales. How much does your class have to sell to earn $32,000 for the trip?

3. Simplify $12 - \left[ 8 + 4 \times (-6) \right] + 3$

4. Find the least common multiple of 8, 12, and 18.

5. Is 38 prime or composite? Justify your answer.

Practice

Use a proportion to find the percent.

6. What percent of 50 is 20?

7. 15 is what percent of 60?

8. 65 is what percent of 520?

9. What percent of 120 is 6?

10. What percent of 80 is 70?

11. 28 is what percent of 320?

Find the amount of simple interest earned for each deposit.

12. Principal: $500
   Interest rate: 4%
   Number of years: 20

13. Principal: $450
    Interest rate: 3%
    Number of years: 15

14. Principal: $1000
    Interest rate: 3%
    Number of years: 25
Reflect & Review

1. Donnie is a sales representative for a chemical company. He makes 25% commission on all sales. During the month of May, he sold $5600 in chemicals to businesses. How much money did he make on commission?

2. Is 321 divisible by 3? Justify your answer.

3. Round 567.3489 to the nearest thousandth.

4. Find the product of 65.38 and 12.3.

5. Find the quotient 785 ÷ 15.

Practice

Find the percent increase.

6. Original price: $45
   Current price: $53.10

7. Original price: $120
   Current price: $129.60

8. Original price: $124,600
   Current price: $187,523

9. Original price: $65,000
   Current price: $86,450

Find the percent decrease.

10. Original price: $800
    Sale price: $592

11. Original price: $1200
    Sale price: $1008

12. Original price: $275
    Sale price: $170.50

13. Original price: $80
    Sale price: $46.40
**Skills Practice**

Name ____________________________________________ Date ____________________

**Reflect & Review**

1. Henry receives $\frac{1}{8}$ of an inheritance. What percent of the inheritance did he receive?

2. Jake spent $\frac{3}{4}$ hours doing homework, $\frac{1}{2}$ hours eating, and $1\frac{1}{4}$ hours playing video games.

   Jake got home from school at 4:30 P.M. What time did he finish all three tasks?

3. Simplify $\frac{7}{8} + \frac{6}{4} - \frac{1}{2}$

4. Find the sum of 45.38 and 21.742.

5. List all the factors of 30.

**Practice**

Write each gain or loss as an integer.

6. gain of 10 yards

7. loss of 4 yards

8. gain of 18 yards

Complete each statement. Use the symbol $>$ for greater than and the symbol $<$ for less than.

9. $-5 \bigcirc -8$

10. $-3 \bigcirc 0$

11. $5 \bigcirc -5$

Read the problem and answer the questions.

12. The temperature at 9:00 A.M. was 40°. The temperature at 2:00 P.M. was $-10^\circ$.

   What was the change in temperature?

13. Sam had $120 in her savings account at the beginning of the month. She withdrew $50. Then she deposited $80. How much money does she have in her account now?

14. You began your hike at 30 feet below sea level. You are now at 200 feet. How far have you hiked?
Reflect & Review

1. Over a four-month period, a company makes a profit of $750 during the first month, a loss of $175 during the second month, a loss of $10 during the third month, and a profit of $900 during the fourth month. Write the amount of money made each month as an integer.

2. Nichole, Ann, and Dawn want to drive to an amusement park. The park is 325 miles from where they live. If they drive an average of 65 miles per hour, how long will it take them to drive to the park?

3. Solve the proportion \( \frac{15}{63} = \frac{5}{x} \)

4. Convert 3245 milligrams to grams.

5. Determine whether the fractions \( \frac{24}{36} \) and \( \frac{6}{9} \) are equivalent. Justify your answer.

Practice

Find each sum.

6. \( 5 + (-12) \)

7. \( 145 + (-100) \)

8. \( -19 + (-37) \)

9. \( -13 + 9 \)

10. \( 68 + (-42) \)

11. \( -13 + (-19) \)

12. \( -14 + 6 + (-13) \)

13. \( 34 + (-6) + (-22) \)

14. \( -12 + (-8) + (-21) \)

15. \( 60 + 44 + (-133) \)

16. \( -1 + 6 + (-7) + 3 \)

17. \( 315 + (-21) + (-315) + 45 \)
Skills Practice

Name ___________________________ Date ___________________

Reflect & Review

1. Olan answered 75% of the problems correctly on his math test. If there were 64 problems on the test, how many problems did he answer correctly?

2. There are 12 students on the school improvement team. For lunch, they order 5 pizzas. They are working in groups of 3. How should the pizzas be divided between the groups?

3. Write the temperature 15 degrees below zero as an integer.

4. Find the product of 5.2 and 8.

5. Find the difference \( \frac{3}{5} - \frac{9}{4} \).

Practice

Find each difference. Then write a sentence that describes the movement on the number line that you could use to solve the problem.

6. \( 7 - (-6) \)  
7. \( -5 - (-13) \)  
8. \( 22 - (-6) - 13 \)

Find each difference.

9. \( 188 - (-42) \)  
10. \( -304 - 22 \)  
11. \( 83 - 15 \)

12. \( -173 - 47 \)  
13. \( 31 - (-25) + 18 - 3 \)  
14. \( -48 - 21 + 10 - (-3) \)
Reflect & Review

1. Find the area of the figure at the right.

![Rectangle with dimensions 7 in., 8 in., 2 in., and 14 in.]

2. Cheryl is trying to estimate the amount of money that she has in her checking account. Yesterday, she had $322 in her account. Since then she has purchased items with her check card and paid a bill by check. Estimate to the nearest dollar the amount of money that Cheryl has in her checking account.

Purchased items: $32.44 and $71.38  Bill: $15.64

3. Simplify $6 + 9 - 16$.

4. List all the factors of 54.

5. What is the place value of 9 in the number 43,781.029?

Practice

Find each product or quotient.

6. $8 \times (-7)$

7. $-15 \times (-2)$

8. $-9 \times 14$

9. $-17 \times (-3)$

10. $-25 \div 5$

11. $81 \div (-9)$

12. $-121 \div (-11)$

13. $-22 \times 4$

14. $-36 \div (-3)$

15. $625 \div (-25)$

16. $-8 \times (-12)$

17. $-45 \div (-9)$
Reflect & Review

1. You are buying wood for a carpentry project. You need four pieces of wood with lengths of $3\frac{1}{8}$ feet, $5\frac{1}{2}$ feet, $2\frac{3}{4}$ feet, and 4 feet. How many feet of wood do you need?

2. At 7:00 A.M. the temperature was 38°F. A temperature reading taken at 5:00 P.M. indicated that the temperature was –5°F. Find the difference in the temperatures.

3. Use mental math to find the sum 5600 + 210 + 45.

4. Find the product of $\frac{41}{8}$ and $2\frac{2}{11}$.

5. Order the numbers 1.12, $\frac{5}{4}$, 0.8, 1.3, and $1\frac{1}{12}$ from least to greatest.

Practice

Find each absolute value.

6. $|9 - 16|$  
7. $|25 - 12|$  
8. $|3 - (-11)|$

9. $|5 \times (-7)|$  
10. $|9 - (-14) - 32|$  
11. $|1 - 8 + (-3)|$

Complete each statement so that it is true.

12. $14 + \_\_\_\_ = 0$  
13. $4 \times \_\_\_ = 1$  
14. $\frac{3}{4} \times \_\_\_ = 1$
Skills Practice

Reflect & Review

1. Gunner is at the grocery store buying cereal. A 12-ounce box of cereal costs $2.52 and a 16-ounce box of cereal costs $3.04. Which box is the better buy?

2. Jennifer has completed 20% of the problems on her achievement test. If there are 400 problems on the test, how many does she have left?

3. Write $\frac{46}{5}$ as a mixed number.

4. Find the quotient $45.39 \div 0.3$.

5. Is 528 divisible by 3? Justify your answer.

Practice

Write each number in expanded form using powers of ten.

6. 45.67

7. 123.8

8. 0.25

9. 9.17

Find each product or quotient.

10. $34.19 \times 100$

11. $15.227 \times 10$

12. $28.05 \div 10$

13. $548.2 \div 100$

14. $4902 \times 0.01$

15. $263.99 \div 0.001$
Skills Practice

Lesson 7.7

Name ___________________________ Date __________________

Reflect & Review

1. Ray bought a set of golf clubs and accessories. He paid $330 for a set of clubs, a bag, and a golf towel. If the tax on the items is 9% of the original price, how much will it cost him to buy the clubs and accessories?

2. You are stacking five books. The books have thicknesses of $2\frac{1}{8}$ inches, $4\frac{2}{5}$ inches, $1\frac{3}{4}$ inches, 3 inches, and $2\frac{3}{10}$ inches. How tall is the stack?

3. Use mental math to find the sum of 4220 and 8361.

4. Find the sum $1.28 + 17.3 + 22.654$.

5. Find all the prime numbers between 20 and 40.

Practice

Write each number as a power with a negative exponent. Then find the value of the power.

6. $\frac{1}{7^2}$

7. $\frac{1}{4^3}$

8. $\frac{1}{10^4}$

Write each number using scientific notation.

9. 0.000023

10. 0.00763

11. 0.0001948

Write each number in standard form.

12. $8.439 \times 10^{-6}$

13. $3.582 \times 10^{-8}$

14. $5.629 \times 10^{-2}$
Name ___________________________________________________ Date _____________________

**Reflect & Review**

1. A bakery sells loaves of bread for $2.35 each. On a given day, the bakery sells 210 loaves of bread. How much money do they make from the sale of the loaves of bread?

2. You count the stamps in your collection and find that you have 42 stamps from countries other than the United States. If you have 56 more stamps from the United States than from other countries, how many stamps do you have altogether?

3. Use mental math to find the difference 6400 – 1300.


5. Find all the prime numbers between 20 and 40.

**Practice**

A town has two card shops, Perfect Cards and the Card Stop. On a given day, the shops together sold a total of 355 cards. Perfect Cards sold 29 more cards than the Card Stop.

6. Draw a diagram that represents this situation.

7. How many cards did each shop sell?

8. Let p represent the number of cards sold by Perfect Cards and let c represent the number of cards sold by the Card Stop. Use the variables to write an equation that represents the total number of cards sold.

On your bookshelf, you have a total of 61 books. The number of paperback books that you have is 4 more than two times the number of hardcover books that you have.

9. Draw a diagram that represents this situation.

10. How many of each kind of book do you have?
Skills Practice

Reflect & Review

1. A water park sells season passes for $61.50 including tax. You want to buy 6 passes for your family. What is the total cost for 6 season passes?

2. Robin is 3 years older than Brent. Sally is 4 years younger than Brent. Robin is 12 years old. What are the ages of Brent and Sally?

3. Simplify $8 \times 9 - 15 \div 3 + 8 - 32$.


5. Use mental math to find the difference $1450 - 725$.

Practice

6. A copy machine makes 35 copies per minute. Let $m$ represent the number of minutes the copier runs. Write an expression that represents the total number of copies made.

7. Kate can make a dozen cookies out of one ready-bake cookie roll. Let $r$ represent each ready-bake cookie roll. Write an expression that represents the total number of cookies she can make.

8. Fifteen baseballs can fit into one display case. Let $c$ represent the number of display cases. Write an expression that represents the total number of baseballs in display cases.

9. Kendal earns $15 each night he works at a Mexican restaurant and $5 per hour in tips. Let $h$ represent the number of hours he works. Write an expression that represents the total amount of earnings.

Evaluate each expression for the given values.

10. $-2y$ when $y = 0$, $6$, and $-3$

11. $-8x + 7$ when $x = -1$, $2$, and $5$

12. $5.2r + 1.2$ when $r = -4$, $0$, and $1.5$

13. $\frac{1}{2} + \frac{3}{4}$ when $t = -8$, $\frac{1}{2}$, and $\frac{2}{3}$


**Skills Practice**

Reflect & Review

1. Find the perimeter of a square with a side length of $3\frac{1}{8}$ centimeters.

2. A local real estate agent earns 3% of the sale price of a house. If a house sells for $150,000, how much would he earn?

3. Evaluate $5 - 8t$ when $t = -2$ and 5.

4. Find the product $\frac{5}{6} \times \frac{15}{8} \times \frac{24}{25}$.

5. True or False: The product of two odd integers is an even integer. Justify your answer.

Practice

Solve each equation. Show all your work.

6. $4x = 24$

7. $r + 7 = 8$

8. $12x = 36$

9. $m - 34 = 58$

10. $\frac{2}{3}b = \frac{4}{9}$

11. $1.6g = 2.4$

12. $5.2t = -1.3$

13. $\frac{3}{5}b = \frac{18}{25}$

14. $87 + p = 167$
Skills Practice  

Reflect & Review

1. Belinda works at Pizza Galore where she earns $6 per hour. She wants to buy a CD player for her car that costs $358. How many hours does she need to work to earn enough money to buy the CD player?

2. Pablo wants to arrange his coin collection in a shadow box. He has 64 coins and wants the arrangement to be rectangular. Describe the ways in which Pablo can arrange his coins.

3. Solve the proportion \( \frac{5}{8} = \frac{x}{24} \)

4. Use mental math to find the product of 3200 and 40.

5. Find the quotient 453.2 ÷ 0.04.

Practice

Solve each equation. Show all your work.

6. \( 4t - 8 = 12 \)

7. \( 5 - 3v = -10 \)

8. \( 9 = 6y + 21 \)

9. \( -50t + 10 = 35 \)

10. \( 17 = 9c - 19 \)

11. \( 4r + 22 = -102 \)

12. \( \frac{-1}{3} + \frac{2}{9} = \frac{7}{9} \)

13. \( 2 = \frac{3}{2}p - 10 \)

14. \( 145 - 18n = -125 \)
Skills Practice

Name ___________________________________________________ Date _____________________

Reflect & Review

1. Barbara works for a car dealership near her house. She earns 15% commission on all sales. If she sells four cars totaling $62,540, what are her total earnings in commission?

2. A rectangular pool measures 20 feet by 12 feet. What is the area of the pool?

3. Simplify \( \frac{2}{5} + \frac{3}{2} - \frac{13}{10} \)

4. Write \( \frac{64}{5} \) as a decimal.

5. Find all of the prime numbers between 50 and 60.

Practice

Plot each point in the coordinate plane at the right.

6. \( A(4, 3) \)

7. \( B(2.5, 7) \)

8. \( C(0, 4) \)

9. \( D(9, 0) \)

10. \( E\left(\frac{3}{4}, \frac{5}{2}\right) \)

11. \( F(1, 7) \)

12. \( G(7, 2) \)

13. \( H(3, 5.5) \)
Skills Practice

Name ____________________________ Date __________________

Reflect & Review

1. Jade has 42 candy bars left to sell for a fundraiser. The candy bars are $1.50 each. She has $165 to turn in for candy bars sold. After she sells the rest of the candy bars, how much money will she turn in?

2. There are sixteen songs on a CD. Each song is about 4 minutes and 30 seconds long. How long will it take to listen to the entire CD?

3. Find the quotient \(2.19 \div 0.6\).


Practice

Complete each table.

5. \[
\begin{array}{c|c}
 x & 5x + 1 \\
\hline
 1 & \ \\
 2 & \ \\
 3 & \ \\
 4 & \ \\
\end{array}
\]

6. \[
\begin{array}{c|c}
 x & 3x + 4 \\
\hline
 0 & \ \\
 1 & \ \\
 2 & \ \\
 3 & \ \\
\end{array}
\]

7. \[
\begin{array}{c|c}
 x & 6x + 2 \\
\hline
 -3 & \ \\
 0 & \ \\
 1 & \ \\
 5 & \ \\
\end{array}
\]

8. \[
\begin{array}{c|c}
 x & 2x + 7 \\
\hline
 -4 & \ \\
 -1 & \ \\
 2 & \ \\
 3 & \ \\
\end{array}
\]

9. \[
\begin{array}{c|c}
 x & 6x + 1 \\
\hline
 -2 & \ \\
 -1 & \ \\
 0 & \ \\
 1 & \ \\
\end{array}
\]

10. \[
\begin{array}{c|c}
 x & 0.5x + 2 \\
\hline
 0 & \ \\
 2 & \ \\
 4 & \ \\
 6 & \ \\
\end{array}
\]

11. Create a graph from the table in Question 6.

12. Create a graph from the table in Question 10.
Name ___________________________ Date ____________________

Reflect & Review

1. There are a total of thirty-six computers in two computer labs. How many computers would you expect there to be in 6 computer labs?

2. Find the perimeter and area of a rectangle that has a length of 5 feet and a width of $\frac{3}{5}$ feet.

3. Use mental math to find the sum $4000 + 250 + 40 + 9$.

4. Find the LCM of 5 and 6.

5. Simplify $\frac{128}{400}$.

Practice

Troy, Meg, and Sam are playing miniature golf. The average time it takes to play one hole is 7 minutes.

6. Write an expression that you can use to represent the total amount of time it takes to play miniature golf in terms of the number of holes that are played. Define the variable that you use.

7. Use the expression that you wrote in Question 6 to complete the table of values below.

<table>
<thead>
<tr>
<th>Number of Holes</th>
<th>Total Time (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>63</td>
</tr>
<tr>
<td>2</td>
<td>28</td>
</tr>
</tbody>
</table>

8. Create a graph from the table of values in Question 7.
**Skills Practice**

**Name ________________________________ Date __________________**

### Reflect & Review

1. You and five friends go to the movie theater. The theater gives a 10% discount on a ticket with a student ID. A ticket for the matinee costs $6. If you and your friends all have student IDs, what is the total cost for all of you to go to the matinee?

2. Decide where to place the parentheses so that the answer is correct using the order of operations. $4 \times 8 + 15 - 8 \div 3 = 20$

3. Write $15\frac{4}{9}$ as a mixed number.

4. Write the prime factorization of 24.

### Practice

**Use the diagram at the right to answer each question.**

5. Name all of the pairs of vertical angles.

6. Name all of the pairs of alternate interior angles.

7. Name all of the pairs of supplementary angles.

8. Name all of the pairs of corresponding angles.

9. If $m\angle 2 = 35^\circ$, find $m\angle 4$, $m\angle 8$, $m\angle 3$, and $m\angle 7$.

10. If $m\angle 1 = 115^\circ$, find $m\angle 2$, $m\angle 5$, and $m\angle 6$. 

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1. Juliana is buying hot dogs and buns for a cookout. Hot dogs are sold in packages of ten and buns are sold in packages of eight. How many packages of hot dogs and buns should she buy so that she doesn’t have any hot dogs or buns left over?

2. Herb has $40. He buys 4 pounds of grapes for $2.45 per pound. How much money does he have left?

3. Use mental math to find the sum of 6522 and 471.

4. Find the product of 1.45 and 32.8.

5. 6. 7. Draw a triangle with the given characteristics. If it is not possible, explain why.

8. An isosceles right triangle
9. A scalene acute triangle
10. An obtuse equilateral triangle
11. An obtuse scalene triangle

12. Find the missing angle measure.
Skills Practice

Reflect & Review

1. Chris is assigning starting times to 20 golfers. First he puts them into groups of four. Now he needs to tell each group what time to start. The first group will begin at 7:30 A.M. There are 15 minutes between each group’s start time. How many groups are there? At what time does the last group start?

2. The photo gallery wants to print a flyer to advertise its portrait studio. Mr. Gray wants to place 8 pictures on the page in rows so that each row has the same number of pictures. He is able to shrink and enlarge the pictures to fit on the flyer. What are the different arrangements for the pictures?

3. List the next four prime numbers after 37.

4. Find the sum of \(\frac{5}{8}\) and \(2\frac{1}{3}\).

Practice

Write as many names as you can for each quadrilateral.

5. 6. 7.

Classify the polygon by its sides.

8. 9. 10.

Find the measure of the missing angle of each polygon.

11. 12.
Skills Practice

Name ___________________________________________________ Date _____________________

Reflect & Review

1. You are building a raised rectangular garden bed that is 6 feet long and 3 feet wide. What is the perimeter of the raised garden bed?

2. Your friend is making pillows to earn money this summer. One yard of material costs $1.34. She uses $\frac{3}{2}$ yards to make each pillow. How much does the material for one pillow cost? She sells the pillows for $10 each. How much does she make on each pillow after subtracting the cost of material?

3. Find the quotient $0.25 \div 5$.

4. Simplify $\frac{4}{7} \times \frac{9}{8} \div \frac{18}{35}$.

Practice

The figures shown are similar. Name the corresponding angles and corresponding sides of each pair of figures.

5. Find the scale factor used to produce the new figure.

7. Rectangle A is enlarged to make rectangle B.

8. Rectangle C is reduced to make rectangle D.

9. Triangle BAT is similar to triangle SIP. Find the missing side lengths.
Name ___________________________________________________ Date _____________________

Reflect & Review

1. You are responsible for restocking the paper cups in the concession stand at the football field. At Discount Paper, 500 cups cost $220, and at Paper Supply, 275 cups cost $115.50. Which store has better pricing for cups? Justify your answer.

2. An 8-inch by 10-inch rectangular picture frame is shown at the right. A 2-inch mat has been placed inside the frame. Find the area of the mat.

3. Find the product of 5.78 and 0.2.

4. Find the greatest common factor of 36 and 48.

5. Find the sum $7.03 + 9 + 11.28$.

Practice

Use a proportion and similar triangles to find the missing measure. Show all your work.

6. 

7. 

8. 

9.
Name ___________________________________________________ Date _____________________

**Reflect & Review**

1. Two fifths of the senior class voted for Spirit Week to be held in October. One fifth of the senior class voted for it to be held in September. If there are 455 students in the senior class, how many students did not vote for Spirit Week to be held in September or October?

2. Jake traveled 469 miles to his grandmother’s house. He drove at an average speed of 67 miles per hour. How many hours did he drive?

3. Find the difference \(\frac{3}{4} - \frac{8}{11}\).

4. Solve the proportion \(\frac{21}{15} = \frac{x}{5}\).

5. Write \(\frac{78}{5}\) as a mixed number.

**Practice**

Sketch each figure on the grid below.

6. A rectangle that is similar to rectangle \(ABCD\) with a scale factor of 3

7. A rectangle that is congruent to rectangle \(ABCD\)

8. A rectangle that is similar to rectangle \(ABCD\) with scale factor of 0.25

9. A triangle that is congruent to triangle \(STR\)

10. A triangle that is similar to triangle \(STR\) with scale factor of 2

11. A triangle that is similar to triangle \(STR\) with scale factor of 0.5
Name ___________________________________________________ Date _____________________

**Reflect & Review**

1. Josh’s first plane leaves the airport at 8 A.M. The flight lasts 2 hours. He has to wait 2 hours before leaving on a second plane that will get him to his destination. This flight lasts 3 hours. What time does he arrive at his destination?

2. Deana has a bottle of 300 vitamins. If she takes one vitamin a day, about how many weeks will the vitamins last?

3. Find the area of a rectangle with a length of 4.5 meters and a width of 2.7 meters.

4. Simplify: \( \frac{32}{8} \times \frac{6}{24} \div \frac{27}{18} \)

5. List all of the prime numbers between 50 and 60.

**Practice**

Complete the table to find the possible lengths and widths of rectangles with the given area. Then find the perimeters of these rectangles.

6. Area: 18 square units

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<th>Perimeter</th>
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7. Area: 24 square units

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8. Area: 12 square units

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<th>Perimeter</th>
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9. Area: 42 square units

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Complete the table to find the possible lengths and widths of rectangles with the given perimeter. Then find the areas of these rectangles.

10. Perimeter: 18 units

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<th>Area</th>
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11. Perimeter: 10 units

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<th>Area</th>
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Reflect & Review

1. Helen can transfer 24 pictures from a memory card to a CD in 2 minutes. At this rate, how many pictures can she transfer in one hour? Justify your answer.

2. Your teacher has decided to make a memory quilt for your class. Each student will design one square. There are 32 students in your class. What are the different ways that the squares can be arranged in rows and columns? Which dimensions will your teacher be most likely to use and why?

3. Solve the equation $3x + 8 = -16$.

4. Write the prime factorization of 48.

5. Order the numbers $2.3, -1.5, \frac{9}{4}, 2.8, -2, -\frac{7}{3}, 1, \text{ and } -1$ from least to greatest.

Practice

Find the missing information for each circle. Write your answer in terms of $\pi$ when necessary.

   Diameter:
   Circumference:
   Area:

7. Radius:
   Diameter: 10 m
   Circumference:
   Area:

Determine which figure has the greater area. Justify your answer.

8. 

9. 


1. You are attending a conference for your company. The round trip is 328 miles and your company will pay you $0.42 per mile for using your own car. How much will you be paid for the round trip?

2. Find the maximum area of a rectangle that has a perimeter of 16 feet.

3. Use mental math to find the sum of 93 and 48.

4. Find the greatest common factor of 8 and 12.

5. Find the quotient $136.92 \div 2.1$.

Practice

Find the area of each figure.

6. 

```
\begin{array}{c}
\text{12 in.} \\
\text{18 in.}
\end{array}
```

7. 

```
\begin{array}{c}
\text{16 mm} \\
\text{10 mm} \\
\text{5 mm}
\end{array}
```

8. 

```
\begin{array}{c}
\text{9 ft} \\
\text{4 ft}
\end{array}
```

9. 

```
\begin{array}{c}
\text{20 in.} \\
\text{7 in.} \\
\text{7 in.}
\end{array}
```

10. 

```
\begin{array}{c}
\text{5 m} \\
\text{3 m}
\end{array}
```
Reflect & Review

1. A patio is built in the shape of a trapezoid, as shown. Find the area of the patio.

2. What is the area of the top of a 14-inch by 14-inch pizza box?

3. Simplify \( \frac{264}{312} \).

4. Fifty-four is what percent of 86? Round your answer to the nearest tenth.

5. Write the ordered pair whose point is 6 units to the right of the y-axis and 2 units above the x-axis.

Practice

Write the square root of each perfect square.

6. \( \sqrt{81} \)

7. \( \sqrt{225} \)

8. \( \sqrt{64} \)

Complete each statement with two integers so that the squares of the integers are the closest perfect squares to the number.

9. \( \underline{\_\_}^2 < 19 < \underline{\_\_}^2 \)

10. \( \underline{\_\_}^2 < 93 < \underline{\_\_}^2 \)

11. \( \underline{\_\_}^2 < 40 < \underline{\_\_}^2 \)

Estimate the square root to the nearest tenth.

12. \( \sqrt{14} \)

13. \( \sqrt{56} \)

14. \( \sqrt{19} \)

15. \( \sqrt{35} \)

16. \( \sqrt{102} \)

17. \( \sqrt{73} \)
Reflect & Review

1. Josh wants to put a fence around his rectangular basketball court. The court is 51.5 feet long and 38.75 feet wide. How many feet of fencing will Josh need?

2. If the fencing Josh chose in Question 1 costs $5.38 per foot, how much would it cost to fence in the basketball court?

3. Use mental math to subtract 240 from 941.

4. Simplify \( \frac{54}{36} \times \frac{72}{66} \).

5. Matt played 72 baseball games last summer. His team won 58 games. What percent of the games did they win? Round your answer to the nearest percent.

Practice

Use the Pythagorean theorem to find the missing side length.

6. ? m

7. 11 in.

8. ? cm

Plot and connect the points in a coordinate plane and use the Pythagorean theorem to find the length of the hypotenuse.

9. \( A(0, 1), B(0, 7), C(8, 1) \)

10. \( E(1, 4), F(1, 0), G(8, 4) \)
1. Paul and Moriah are trying to find the shortest route to their favorite restaurant. They have narrowed their search to two routes which form a right triangle. The legs of the triangle are 8 miles and 10 miles. Would it be a shorter distance traveling the legs of the triangle or the hypotenuse? Justify your answer.

2. Elise purchased her house for $75,000. Today it is worth $138,000. Find the percent increase in the value of her house.

3. Simplify $18 - 33 \times 2 + 48 \div 6 + 20$.

4. Evaluate $6r^2 - 9r + 7$ when $r = -2$.

5. Solve the equation $4x - 10 = 22$.

Determine whether the triangle is a right triangle.

6. 7. 8.

9. Eric is designing a geometric statue for an arts festival. The base of the statue is a right triangle. If the lengths of the legs of the base are 13 inches and 84 inches, how long is the hypotenuse of the base?
Reflect & Review

1. Kelly has hand-written a biology report that is 2000 words long. She can type 47 words per minute. About how long will it take her to type the report? Round your answer to the nearest minute.

2. Solve the equation $18 = 14 - \frac{1}{6}x$.

3. Simplify the expression $\frac{6 + 8}{20}$.

4. You have completed 24 of 50 homework problems. Write the ratio that represents the portion of problems that you have completed.

Practice

There are 12 socks in a drawer. Four of the socks are white, 6 socks are blue, and 2 socks are black. You randomly select a sock from the drawer.

5. What is the probability that you will select a white sock?

6. What is the probability that you will select a blue sock?

7. What is the probability that you will select a black sock?

8. What is the probability that you will select a sock that is not blue?

9. What is the probability that you will select a sock that is not white?

10. What is the probability that you will select a sock that is not black?

John has 7 dimes, 9 quarters, and 3 nickels in his pocket.

11. What is the probability that he will randomly pull a quarter out of his pocket?

12. What is the probability that he will randomly pull a dime out of his pocket?

13. What is the probability that he will randomly pull a nickel out of his pocket?
Reflect & Review

1. You are burning 12 songs to a CD for your friend. You want to type the names of the songs on a piece of paper and put it in the CD case. You want to arrange the names in rows and columns so that all of the rows have the same number of songs and all of the columns have the same number of songs. How many different arrangements are possible? (Space is not a problem because you can always choose a smaller font.)

2. Find the area of the garden shown at the right. Round your answer to the nearest foot.

3. Sally works 5.75 hours every Monday, Tuesday, and Thursday. On Saturdays, she works 7.5 hours. She earns $6.75 per hour. How much will she make in one week?

4. Use mental math to find the product of 300 and 120.

5. Write the next three prime numbers after 71.

Practice

You have 8 blue marbles, 9 red marbles, and 3 green marbles in a bag. You reach into the bag without looking and pull out a marble.

6. Suppose that you pull out a green marble, put it back, and pull out another marble. What is the probability that the second marble is red?

7. Suppose that you pull out a blue marble, put it back, and pull out another marble. What is the probability that the second marble is blue?

8. Suppose that you pull out a red marble, do not put it back, and pull out another marble. What is the probability that the second marble is blue?

9. Suppose that you pull out a green marble, do not put it back, and pull out another marble. What is the probability that the second marble is green?

10. What is the probability of pulling two red marbles from the bag if you pull out one red marble, put it back into the bag, and then pull out a second red marble?
Skills Practice

Reflect & Review

1. You have $200 saved and you are spending it at a rate of $5 per week. Write an algebraic expression that represents this situation.

2. You buy a bag of 12 guitar picks for $2.04. How much does one pick cost?

3. Simplify $\frac{4}{3} + \frac{7}{6} - \frac{9}{4}$.

4. Find the sum $327.8 + 42.03 + 87$.

5. Evaluate $7x + 5$ when $x = -3$.

Practice

Find the mean, median, mode, and range of the set of data. Round your answers to the nearest hundredth when necessary.

6. 14, 19, 8, 22, 11, 19, 4, 18, 12, 10, 21

7. 55, 24, 73, 108, 39, 46, 72, 100, 92, 32
1. Nelly found a house that she would like to buy. Her down payment for the house must be 20% of the sale price. If the price of the house is $240,000, what will her down payment be?

2. Chloe is taking round beads out of a jar. She knows that there are 15 purple beads, 18 gray beads, and 22 black beads. Without looking at the color of the bead that she is choosing, what is the probability that she will choose a purple bead?

3. Simplify \((18 - 15 \times 3) - 2(5 + 4)\).

4. Find the product of 6.2 and 0.4.

5. Solve the proportion \(\frac{6}{25} = \frac{18}{x}\).

6. Construct a histogram of the data in the frequency table.

<table>
<thead>
<tr>
<th>Data Intervals</th>
<th>0.0–0.9</th>
<th>1.0–1.9</th>
<th>2.0–2.9</th>
<th>3.0–3.9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tally</td>
<td>+++</td>
<td>+++</td>
<td>1</td>
<td>+++</td>
</tr>
<tr>
<td>Frequency</td>
<td>5</td>
<td>3</td>
<td>1</td>
<td>7</td>
</tr>
</tbody>
</table>

7. Construct a frequency table and a histogram of the data.

22, 4, 20, 11, 31, 5, 27, 7, 19, 3, 1, 15, 29, 9, 22, 35, 12, 0, 2, 25, 38

Data Intervals

<table>
<thead>
<tr>
<th>Data Intervals</th>
</tr>
</thead>
</table>

Tally

<table>
<thead>
<tr>
<th>Tally</th>
</tr>
</thead>
</table>

Frequency

<table>
<thead>
<tr>
<th>Frequency</th>
</tr>
</thead>
</table>
1. Ritchie challenges Sheila to a basketball contest. Ritchie claims he can make 19 out of 25 three-pointers and Sheila claims she makes a basket 81% of the time from the three-point line. Who do you think will make more baskets out of 100 three-pointers based on the information given? Justify your answer.

2. Your cell phone provider charges you $0.13 per minute for calls when you have used more than 1400 minutes. You are also charged a monthly fee of $29.95. Last month you used 2278 minutes. How much was last month’s phone bill?


4. At graduation, two thirds of the class wore sandals. There were 27 students in the class. How many students did not wear sandals?

5. Use the stem-and-leaf plot to identify the mean, median, and mode(s) of the data.

<table>
<thead>
<tr>
<th>Stem</th>
<th>Leaf</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>2</td>
<td>1 2 5 8</td>
</tr>
<tr>
<td>3</td>
<td>0 1 2 6</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

6. Make a stem-and-leaf plot of the data.

<table>
<thead>
<tr>
<th>Stem</th>
<th>Leaf</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>3 3 4</td>
</tr>
<tr>
<td>5</td>
<td>0 4 8 8</td>
</tr>
<tr>
<td>6</td>
<td>1 1 2 6</td>
</tr>
<tr>
<td>7</td>
<td>0 1</td>
</tr>
</tbody>
</table>

7. 0, 4, 6, 7, 7, 10, 11, 14, 16, 19, 21, 28, 42, 43, 43, 46, 46, 49, 52, 54, 57, 61

8. 3.7, 3.8, 3.9, 4.0, 4.6, 4.9, 5.0, 5.1, 5.4, 5.8, 6.2, 6.4, 6.6, 7.1, 7.5, 7.7, 7.8, 8.5, 8.5, 9.8
1. Yolanda made golf putts from distances of 7 feet, 15 feet, 8 feet, 9.5 feet, and 11 feet from the hole. Of the putts she made, what is the average distance from the hole?

2. When contractors lay tile in a house, they order 10% extra tiles to account for breakage. A job requires 150 tiles. How many tiles should the contractor order?

3. What is 15% of 75?

4. Find the product of 0.81 and 3.54.

Practice

Find the median, upper quartile, and lower quartile of the data.

5. 5, 18, 15, 8, 12, 10, 8, 4, 1, 10, 11, 3, 15

6. 65, 69, 52, 64, 59, 48, 44, 56, 70, 38, 40
Reflect & Review

1. Sandy is building a web page for a customer. She charges a flat fee of $75 and $15.95 per month for maintenance. How much would it cost the customer to pay for one year of service?

2. A basketball team makes 65% of its baskets from the field. How many attempts would it take the team to make 26 baskets?

3. Use mental math to find the product of 60 and \( \frac{1}{2} \).

4. Simplify \( \frac{198}{270} \).

5. Simplify \( 37.8 + 42.01 - 16 \).

Practice

A bakery manager collects information about the bakery’s sales and organizes the results in the table below. Complete the table and then construct a circle graph for the table.

<table>
<thead>
<tr>
<th>Type of Bread</th>
<th>Number Sold</th>
<th>Percent of Total Sold</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>190</td>
<td></td>
</tr>
<tr>
<td>Wheat</td>
<td>200</td>
<td></td>
</tr>
<tr>
<td>Rye</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Pumpernickel</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Oatmeal</td>
<td>40</td>
<td></td>
</tr>
</tbody>
</table>
Skills Practice

Name ___________________________ Date ____________________

Reflect & Review

1. You are on the school track team and you throw the discus. During a warm-up at a recent practice, you throw the discus distances of 8.75 feet, 9.5 feet, and 8 feet. What is the average of these distances?

2. You want to buy a guitar that costs $328. The sales tax on the guitar is 7%. How much sales tax do you have to pay if you buy the guitar?

3. Simplify $5 + 24 \div 3 + 4 \times 6$.

4. Find the sum of $\frac{3}{8}$ and $\frac{2}{3}$.

5. Use mental math to find the difference $170.5 - 65.25$.

Practice

Identify the bases and the faces of each prism.

6. [Diagram]

7. [Diagram]

Identify each solid.

8. [Diagram of pyramid]

9. [Diagram of cylinder]

10. [Diagram of cone]
Reflect & Review

1. A playground is being built at the new elementary school near your school. The playground will take up a rectangular area and will be 120 feet wide and 140 feet long. What will the area of the playground be?

2. Tara works at a shoe store and makes an 8% commission on each pair of shoes that she sells. On a Saturday, she sells $380 worth of shoes. What is her commission?

3. Find the area of the triangle shown at the right.

4. Find the difference \( \frac{2}{3} - 4\frac{1}{6} \).

5. Simplify \( \frac{4(2) + 2(2)}{3} \).

Practice

Find the volume of the solid.

6. 7. Find the surface area of the solid.

8. 9.
Skills Practice

Lesson 12.3

Name ___________________________________________________ Date _____________________

Reflect & Review

1. A circular mural is being painted on the wall at the entrance of your school. The finished mural will have a diameter of 8 feet. What is the area of the mural? Use 3.14 for \( \pi \).

2. An office supply store sells four three-ring binders for $9.52. Another store sells five three-ring binders for $11.80. Which store sells the binders for a better price?

3. Find the area of the rectangle shown at the right.

4. Simplify \( 2.4(7^2) + 5 \).

5. Find the product of 6.4 and 1.3.

Practice

Find the volume of the cylinder. Use 3.14 for \( \pi \).

6. 

7. 

Find the surface area of the cylinder. Use 3.14 for \( \pi \).

8. 

9.
1. Your favorite video game is on sale for 15% off of the original price. If the video game was originally $35, how much is it now?

2. A merry-go-round has a diameter of 12 feet. What is the area of the surface of the merry-go-round?

3. Find the area of the rectangle shown at the right.

4. Simplify $6(4^2) + 3(8)$.

5. What is the volume of a square pyramid with a base length of 4 centimeters and a height of 6 centimeters?

6. What is the volume of a triangular pyramid with a base area of 100 square feet and a height of 15 feet?

7. What is the volume of a cone with a height of 15 inches and a diameter of 12 inches? Use 3.14 for $\pi$.

8. What is the volume of a cone with a height of 30 millimeters and a radius of 20 millimeters? Use 3.14 for $\pi$. 

1. You want to bake 4 batches of cookies for a friend’s birthday party. One batch of the recipe calls for \( \frac{3}{4} \) cup of sugar and 1 \( \frac{1}{2} \) cups of flour. How many cups of sugar and flour will you need to make the cookies for the party?

2. You and four of your friends are going to a music concert. One ticket to the concert costs $12.95. How much will it cost for all of you to buy tickets to the concert?

3. Simplify \( \frac{2}{3}(4^2)(9) \).

4. Simplify \( \frac{7(4) + 3(5)}{6 + 4} \).

5. Write \( \frac{5}{8} \) as an improper fraction.

6. What is the volume of a sphere with a diameter of 10 meters? Use 3.14 for \( \pi \). Round your answer to the nearest tenth.

7. What is the volume of a hemisphere with a radius of 2.5 inches? Use 3.14 for \( \pi \). Round your answer to the nearest tenth.

8. What is the surface area of a sphere with a diameter of 6 centimeters? Use 3.14 for \( \pi \).

9. What is the surface area of a sphere with a radius of 8 feet? Use 3.14 for \( \pi \).
Reflect & Review

1. Leila and two friends are driving together to a meeting. They will split the cost of the car that they rented for the trip. The total cost of the car rental is $249.30. How much will each person pay?

2. A carpenter is measuring a room so that she can install wood molding (wood strips) where the walls meet the floors. She needs strips with lengths of \( \frac{61}{2} \) feet, \( \frac{1}{4} \) feet, 8 feet, \( \frac{4}{8} \) feet, and \( \frac{51}{2} \) feet. How much wood will she need altogether?

3. Identify the solid shown at the right.

4. Find the quotient \( 127.5 \div 0.5 \).

5. Simplify \( 4(6^2) + 5 \).

Practice

Identify the solid that is formed by the net.

6. 

7. 

8. 

9. Draw the six views (top, front, left side, right side, bottom, back) of the solid.
**Reflect & Review**

1. Three eighths of a senior class participated in a play. If there are 544 students in the senior class, how many students did not participate in the play?

2. You have read 138 pages of a 230-page book. What fraction of the book do you have left to read?

3. Find the sum of \(-\frac{4}{7}\) and \(2\frac{1}{2}\).

4. Solve the proportion \(\frac{4}{25} = \frac{x}{40}\).

**Practice**

Write a ratio that compares the volume of solid A to the volume of solid B. Then write a ratio that compares the surface area of solid A to the surface area of solid B.

5. \(\text{A} 5\text{ in.}\quad \text{B} 10\text{ in.}\)

6. \(\text{A} 12\text{ m}\quad \text{B} 6\text{ m}\)

7. \(\text{A} 4\text{ m}\quad \text{B} 12\text{ m}\)
**Skills Practice**

Name ___________________________________________________ Date _____________________

[Reflect & Review]

1. Victoria is covering a bulletin board with material. The board is \(\frac{11}{2}\) inches wide and 18 inches long. How much material will she need to cover the bulletin board?

2. Matt rolls two number cubes. What is the probability that both number cubes will land on a 5?

3. Find the product of 324 and 2.5.

4. Find the quotient of \(\frac{3}{7} \div \frac{21}{15}\).

[Practice]

Decide whether the relation is a function.

5. \((1, 2), (3, 4), (5, 6), (7, 8)\)

6. \((1, 4), (2, 6), (3, 8), (1, 10), (5, 12)\)

For each function, identify the independent variable and the dependent variable.

7. A pizza costs $8.00 with $0.50 for each additional topping.

8. The depth of the water depends on the rate of the water flow into the pool.

9. The cost of a cell phone bill is $0.15 per minute in addition to the $25.99 monthly charge.

Find the value of each function when \(x = 4\).

10. \(f(x) = 8x\)

11. \(f(x) = 12 - x\)

12. \(f(x) = x + 20\)

13. What are the domain and range of the function given in the table?

<table>
<thead>
<tr>
<th>(x)</th>
<th>2</th>
<th>4</th>
<th>6</th>
<th>8</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>(y)</td>
<td>1</td>
<td>3</td>
<td>5</td>
<td>7</td>
<td>9</td>
</tr>
</tbody>
</table>
**Skills Practice**

Name __________________________________________ Date __________________

---

**Reflect & Review**

1. Six quiz scores from your science class are 17, 20, 23, 18, 21, and 24. Each quiz was worth 25 points. Find the mean, median, mode, and range of the quiz scores.

2. A circular inflatable swimming pool has a diameter of 40 feet. Find the area of the base of the pool. Use 3.14 for π and round your answer to the nearest square foot.

3. Use mental math to find the difference 1600 − 350.

4. Simplify \( \frac{5}{8} + \frac{2}{3} - \frac{1}{6} \).

---

**Practice**

Complete the input-output table for the linear function.

5. \( f(x) = 9x \)  

<table>
<thead>
<tr>
<th>( x )</th>
<th>( f(x) = 9x )</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>2</td>
<td>18</td>
</tr>
<tr>
<td>3</td>
<td>27</td>
</tr>
</tbody>
</table>

6. \( f(x) = x + 6 \)  

<table>
<thead>
<tr>
<th>( x )</th>
<th>( f(x) = x + 6 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>16</td>
</tr>
<tr>
<td>20</td>
<td>26</td>
</tr>
<tr>
<td>30</td>
<td>36</td>
</tr>
<tr>
<td>40</td>
<td>46</td>
</tr>
</tbody>
</table>

7. \( f(x) = 2x + 3 \)  

<table>
<thead>
<tr>
<th>( x )</th>
<th>( f(x) = 2x + 3 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>3</td>
<td>9</td>
</tr>
</tbody>
</table>

Complete the table by writing each row of numbers as an ordered pair. Then plot the points in the coordinate plane and draw a straight line through the points.

8. \( f(x) = 3x + 1 \)  

<table>
<thead>
<tr>
<th>( x )</th>
<th>( f(x) = 3x + 1 )</th>
<th>Ordered Pairs</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>(0, 1)</td>
</tr>
<tr>
<td>1</td>
<td>4</td>
<td>(1, 4)</td>
</tr>
<tr>
<td>2</td>
<td>7</td>
<td>(2, 7)</td>
</tr>
<tr>
<td>3</td>
<td>10</td>
<td>(3, 10)</td>
</tr>
</tbody>
</table>

9. \( f(x) = 4x - 1 \)  

<table>
<thead>
<tr>
<th>( x )</th>
<th>( f(x) = 4x - 1 )</th>
<th>Ordered Pairs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3</td>
<td>(1, 3)</td>
</tr>
<tr>
<td>2</td>
<td>7</td>
<td>(2, 7)</td>
</tr>
<tr>
<td>3</td>
<td>11</td>
<td>(3, 11)</td>
</tr>
<tr>
<td>4</td>
<td>15</td>
<td>(4, 15)</td>
</tr>
</tbody>
</table>
**Reflect & Review**

1. You are assembling pizzas for a fundraiser and you have assembled 6 pizzas so far. You can make 10 pizzas in one hour. Let \( h \) represent the number of hours you make pizzas after the first 6 pizzas. Use the variable to write an expression that represents this situation.

2. Your favorite book is on sale for 10% off of the regular price. If the book is regularly $65, how much is it on sale for?

3. Simplify \( \frac{180}{210} \).

4. Simplify \( \frac{4 + 6}{11 - 3} \).

**Practice**

Find the slope of the line given in the graph.

5. 

6. 

7. The graph shows the number of miles you run for different numbers of days. What is the slope of the line? Include the units in your answer.
Name ___________________________________________________ Date _____________________

**Reflect & Review**

1. The real estate tax on a house is about 1% of the value of the house. If a house is appraised at $193,500, how much is the real estate tax?

2. Find the area of the trapezoid shown at the right.

3. Use mental math to simplify $1500 - 400 + 25$.  

4. Solve the equation $4x + 7 = 11$.

**Practice**

Find the slope and $x$- and $y$-intercepts of the linear function given by the graph.

5.  

![Graph](image)

6.  

![Graph](image)

Complete the ratio to find the slope of the line through the given points.

7. $(x_1, y_1) = (4, 5); (x_2, y_2) = (7, 9)$  
$$\frac{y_2 - y_1}{x_2 - x_1} = \square - \square = \square$$

8. $(x_1, y_1) = (1, 6); (x_2, y_2) = (4, 2)$  
$$\frac{y_2 - y_1}{x_2 - x_1} = \square - \square = \square$$

9. Find the slope and $x$- and $y$-intercepts of the linear function given by the table.

<table>
<thead>
<tr>
<th>$x$</th>
<th>$y$</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>18</td>
</tr>
<tr>
<td>4</td>
<td>24</td>
</tr>
</tbody>
</table>
Reflect & Review

1. Each person in your history class has to give an oral report. Your teacher has written the names of all twenty students in your class on separate pieces of paper. She then places the names in a bag and chooses one randomly to determine who will give the first report. What is the probability that you will be chosen first?

2. In Question 1, what is the probability that you will be chosen second if someone else was chosen first?

3. Simplify \( \frac{45}{144} \).

4. Find the product \( 73.1 \times 0.06 \).

Practice

Identify the slope and \( y \)-intercept of each line.

5. \( y = 4x \)

6. \( y = -3x + 1 \)

7. \( y = 6x - 5 \)

Find the \( x \)- and \( y \)-intercepts for the graph of the equation. Show all your work.

8. \( y = 7x \)

9. \( y = -5x + 5 \)

10. \( y = -2x + 6 \)

Graph the linear equation written in slope-intercept form.

11. \( y = x + 3 \)

12. \( y = 0.5x + 1 \)
1. Your family drives to San Diego every summer to visit your aunt. The round trip is 1274 miles. Your car can travel 22 miles on one gallon of gasoline. How many gallons of gasoline will you use on the trip? Round your answer to the nearest whole gallon.

2. The height of a tree can grow up to 10 centimeters per year.
   a. Write an equation for the growth of the tree where \( x \) represents the number of years and \( h \) represents the tree’s height.
   b. Find the height of a tree after 7 years.

3. Evaluate \( 4x + 9 \) when \( x = -1 \).

4. Find the difference \( \frac{3}{8} - \frac{5}{8} \).

5. Find the product of 43.5 and 2.6.

Determine whether the two sets of data in the scatter plot have a positive relationship, a negative relationship, or no relationship.

6. [Scatter plot image]
7. [Scatter plot image]
8. [Scatter plot image]

Draw a line of best fit for the data on the scatter plot.

9. [Scatter plot image]
10. [Scatter plot image]
Skills Practice

Name ___________________________________________________ Date _____________________

Reflect & Review

1. The high temperatures in a city during one week were recorded as 98°F, 101°F, 93°F, 96°F, 92°F, 103°F, and 95°F. What was the average high temperature for the week? Round your answer to the nearest tenth of a degree.

2. A weather station is predicting a 30% chance of rain. What is the chance that it will not rain?

3. What is 40% of 1450?

4. Find the product $\frac{25}{36} \times \frac{27}{15} \times \frac{20}{33}$.

5. Find the least common multiple of 8 and 10.

Practice

Perform the indicated operations.

6. $5.88 \div 2.1$

7. $25.9 \div (-3.5)$

8. $-4.3 \times 6.3$

9. $\frac{6}{15} - \frac{3}{5}$

10. $\frac{6}{25} + \frac{7}{10}$

11. $2\frac{1}{8} \times 3\frac{3}{4}$

12. $\frac{4}{5} - \frac{2}{8} + \frac{3}{10}$

13. $6.3 + 7.9 - 2.01$

14. $47 + 32 - 78$
Skills Practice

Name __________________________________________ Date ___________________

Reflect & Review

1. You have a clear glass vase in the shape of a cylinder that you want to fill with sand. The cylinder is 18 inches tall and has a diameter of 4 inches. How much sand do you need? Use 3.14 for \( \pi \).

2. The diameter of the sun at its equator is 1,390,000 kilometers. Write the diameter of the sun in scientific notation.

3. Round the decimal 625.644 to the nearest hundredth.

4. Simplify \( 5 - 4(5) + 8 \).

5. Find the quotient \( \frac{1}{3} \div \frac{3}{11} \).

Practice

Find the value of the product or quotient of powers.

6. \((5)^{-3}(5)^{4}\)

7. \((2)^7(2)^{-11}\)

8. \(\frac{\left(\frac{1}{3}\right)^{-5}}{\left(\frac{1}{3}\right)^{-2}}\)

9. \((\frac{-1}{2})^2\left(\frac{-1}{2}\right)^{-1}\)

10. \(\frac{(4)^6}{(4)^3}\)

11. \(\frac{(7)^{-1}}{(7)^5}\)

12. \(\frac{(3)^{-5}}{(3)^{-7}}\)

13. \(\frac{(-2)^4}{(-2)^8}\)

14. \(\frac{(10)^3}{(10)^{-2}}\)
Skills Practice

Reflect & Review

1. You and your family eat at a restaurant and the bill is $29.70 before tax. If the sales tax is 6%, how much do you have to pay in sales tax?

2. Kyle runs regularly at the school track. He wants to run $3\frac{1}{2}$ miles. If one lap is $\frac{1}{4}$ of a mile, how many times will he need to run around the track?

3. Solve the equation $6x + 12 = 8$.

4. Find the quotient $0.54 \div 0.9$.

5. Evaluate $\left(\frac{4}{9}\right)^{-3}$.

Practice

Write each fraction as a decimal.

6. $\frac{2}{3}$

7. $\frac{5}{6}$

8. $\frac{3}{8}$

Write the fraction that represents each repeating decimal.

9. 0.0303 ...

10. 0.5353 ...

11. 0.44 ...
Name ___________________________________________________ Date _____________________

**Reflect & Review**

1. There are 36 marbles in a bag. Fifteen of the marbles are red, 11 are blue, and 10 are green. What is the probability that you will draw a blue marble out of the bag?

2. Using the information from Question 1, what is the probability of drawing a red marble and then drawing a green marble, if you don’t put the red marble back?

3. Find the slope and intercepts of the graph of \( y = 4x - 8 \).

4. Evaluate \( 7x - 12 \) when \( x = 2 \).

5. Write the next three prime numbers after 13.

**Practice**

Decide whether each statement is true or false. Justify your decision with a complete sentence.

6. An integer is always a whole number.

7. An irrational number is sometimes a real number.

8. All integers are rational numbers.

For each problem, identify the property that is represented.

9. \( 4 \times 8 = 8 \times 4 \)  
10. \( \frac{4}{7} \times 1 = \frac{4}{7} \)  
11. \( (10 + 27) + 19 = 10 + (27 + 19) \)  
12. \( -468 + 21 = 21 + (-468) \)
Skills Practice
Lesson 14.5

Reflect & Review

1. Your quiz scores for history class are 87, 93, 65, 99, and 82. Find the mean, median, mode, and range of the scores.

2. You are building a deck box that will fit into the corner of the deck. The shape of the base of the box is shown at the right. What is the area of the base of the deck box?

3. Find the sum $\frac{1}{3} + \frac{8}{4} + \frac{5}{12}$.

4. Solve the proportion $\frac{r}{8} = \frac{6}{4}$.

5. Write the prime factorization of 72.

Practice

Use the distributive property to evaluate each expression. Show all your work.

6. $5(8 + 3)$

7. $-4(7 + 2x)$

8. $9(x + 5)$

9. $6(3x - 1)$

10. $\frac{20 + 30}{5}$

11. $\frac{-15 + 12}{-3}$

12. Identify the property used in each step of the solution.

   $2(x - 1) + 7 = 11$
   $2(x - 1) + 7 - 7 = 11 - 7$
   $2(x - 1) = 4$
   $2x - 2 = 4$
   $2x - 2 + 2 = 4 + 2$
   $2x = 6$
   $\frac{2x}{2} = \frac{6}{2}$
   $x = 3$
Skills Practice

Name ________________________________ Date _________________

Reflect & Review

1. Donnie is planting a row of plants along one side of his house. He is planting along a section of the house that is 12 feet long. Each plant takes up about $\frac{3}{2}$ feet of space. How many plants can he plant in the row?

2. Lexi wants a new digital camera. The camera is $130$ plus tax. If the sales tax is 7%, how much will the sales tax on the camera be?

3. Use mental math to find the quotient $\frac{3}{4} \div \frac{9}{16}$.

4. Solve the equation $\frac{1}{3}x = 8$.

5. Find the sum of 23.4 and 98.7.

Practice

Graph each ordered pair in the coordinate plane. Identify the quadrant in which the point represented by the ordered pair lies.

6. $(−5, 2)$

7. $(7, −1)$

8. $(−2, −3)$

9. $(−4, 4)$

10. $(−1, −6)$

11. $(−2, 5)$
Skills Practice

Reflect & Review

1. Patty walks 2.3 miles a day, 5 days a week. How many miles does she walk in a year?

2. Rachel’s test scores for this semester are 78, 93, 89, 86, and 95. What is her average score?

3. Seventy eight is what percent of 160?

4. Use mental math to find the product of 58 and 4.

5. Decide where to place the parentheses so that the answer is correct using the order of operations.
   
   \[ 5 + 17 - 8 \times 4 + 24 \div 7 = 41 \]

Practice

6. You are making a scale model of a statue of your school’s mascot, the tiger. The actual statue is 8 feet tall. Determine the height of the model if you use a scale in which 10 feet are equal to 1 inch.

7. An action figure is 3.5 inches tall. The package that the figure came in states that a scale in which 1.75 feet are equal to 1 inch was used to create the figure. Find the height of the model that was used to create the action figure.
Reflect & Review

1. Claire wants to install an inground hot tub. The diameter of the hot tub is 6 feet. She wants to pave 2 feet out from the edge of the hot tub. Find the area she wants to pave. Round the area to the nearest square foot.

2. Hattie works at an amusement park during the summer. She earns $7.50 per hour and receives a bonus of $50 for every 20 hours worked. How much money will she make per week if she works 23 hours?

3. Find the product \( \frac{6}{25} \times \frac{35}{48} \times \frac{64}{49} \).

4. Simplify \( 10 - 6 \times 2 + 8 \div 4 \).

Practice

The vertices of a figure are given. Graph the figure in the coordinate plane. Then perform the indicated translation and draw the new figure.

5. Rectangle:
   \((2, 5), (2, -1), (4, 5), (4, -1)\)
   Vertical translation: +3 units
   Horizontal translation: -1 unit

6. Quadrilateral:
   \((-3, 0), (-1, -1), (1, 4), (4, 3)\)
   Vertical translation: -2 units
   Horizontal translation: +2 units
1. A grain silo in the shape of a cylinder is 55 feet high and has a diameter of 10 feet. Find the amount of grain the silo can hold. Use 3.14 for $\pi$.

2. If the silo in Question 1 is only 90% filled, how much grain is in the silo?

3. Use mental math to find the product of 3600 and 5.

4. Find the quotient $\frac{4}{5} \div \frac{2}{3}$.

5. Rectangle: Reflect figure in $y$-axis
   (1, 0), (1, 5), (6, 0), (6, 5)

6. Quadrilateral: Reflect figure in $x$-axis
   (−2, −1), (0, −4), (6, −3), (2, −1)
Reflect & Review

1. Nancy and Melissa are making brownies for the Assisted Living Center. They want to double the recipe but don’t know if they have enough flour. If the original recipe requires \( \frac{3}{2} \) cups of flour, how much flour would be required if they double it?

2. A scientist wants to track a mouse’s movements in a maze on a coordinate plane. The mouse begins at the origin and travels left 5 units, up 7 units, right 8 units, and then down 3 units. Where is the mouse on the coordinate plane?

3. Find the volume of a cube with a length of 6 meters, a height of 5 meters, and a width of 7 meters.

4. Use mental math to find the sum \( \frac{1}{4} + \frac{1}{4} \).

Practice

The vertices of a figure are given. Graph the figure in the coordinate plane. Then perform the transformations and draw the new figure.

5. Triangle: \((-2, 5), (3, 0), (-4, -1)\)
   - Vertical translation: -2 units
   - Horizontal translation: +1 unit
   - Reflect figure in y-axis

6. Rectangle: \((6, 0), (6, -8), (2, -8), (2, 0)\)
   - Dilate by a scale factor of 0.5 using the origin as the center of dilation
   - Vertical translation: +3 units
   - Horizontal translation: -2 units