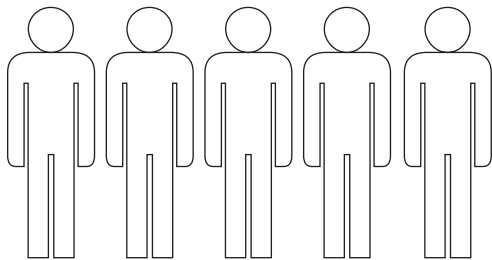


Vocabulary and English Language Development

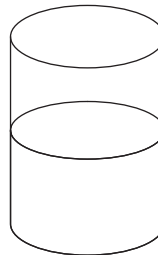
▶ Activate Prior Knowledge

Use the drawing to model each situation.

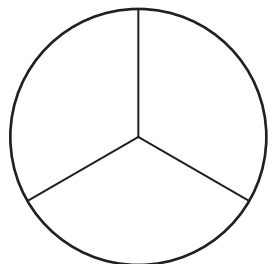
- 1 4 out of 5 people



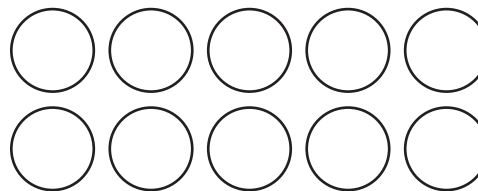
- 2 The glass is half full.



- 3 $\frac{2}{3}$ of the pizza



- 4 One in ten balls is red.



▶ Definition Review

The **denominator** is the number below the fraction bar, and a **numerator** is the number above the bar.

A **set** is a collection of objects, and a **fraction** names part of a whole or part of a set.

A **fraction** names part of a whole or part of a set.

The **whole** is the entire amount or object.

▶ Application

Follow the directions to play the game. You need four players.

- Place 10 red chips and 10 blue chips in a bag.
- The first player pulls a handful of chips out of the bag.
- The second player writes a fraction to describe the number of red chips pulled.
- The third player identifies the numerator and the denominator of the fraction.
- The fourth player writes a fraction to describe the number of blue chips pulled.
- Change the order of play until every player has had a turn performing each of the four tasks.

Vocabulary and English Language Development

▶ Activate Prior Knowledge

- 1 List three examples of times you use fractions in your daily life.

- 2 For a typical 24-hour school day, what fraction of your time do you spend doing each of the following?

Sleeping: $\frac{\quad}{24}$

Attending school: $\frac{\quad}{24}$

Relaxing: $\frac{\quad}{24}$

▶ Definition Review

The **denominator** is the number below the bar in a fraction that tells how many equal parts there are in the whole set.

The **numerator** is the number above the bar in a fraction that tells how many equal parts are being used.

A fraction with 1 in the numerator is a **unit fraction**.

Complete each sentence with the word *unit fraction*, *numerator*, or *denominator*.



- 3 The fraction $\frac{1}{5}$ is an example of a _____.

- 4 The _____ in the fraction $\frac{1}{5}$ is 1.

- 5 The _____ in the fraction $\frac{1}{5}$ is 5.

▶ Application

Work with a partner. You will need a ruler, a small round lid, scissors and number cubes.

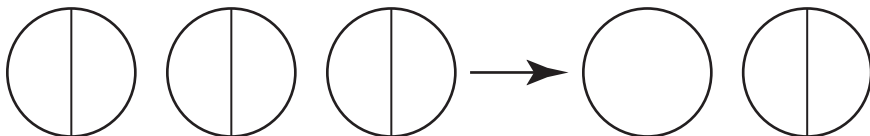
- *With your partner*, trace the lid to make four circles each, and cut them out.
- Each person rolls two number cubes four times. Write down the numbers you roll. They will be denominators in unit fractions.
- *Do not work with your partner in this step.* Use the circles to model your unit fractions. You will need to divide your circles into equal sections. Shade one section of each circle to represent the 1 in the numerator of the unit fraction. For example, if you rolled 3, 9, 4, and 10, you will make models for $\frac{1}{3}$, $\frac{1}{9}$, $\frac{1}{4}$, and $\frac{1}{10}$.
- Show your circles to your partner. See if your partner can name the unit fractions that your circles represent.

Vocabulary and English Language Development

▶ Activate Prior Knowledge

Improper fractions can be written as mixed numbers. For example,

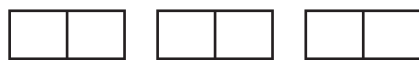
$\frac{3}{2}$ is the same as $1\frac{1}{2}$.



Draw a line to connect the improper fraction with the mixed number that it equals. Then shade the model beside each mixed number.

1 $\frac{7}{3}$

$2\frac{1}{2}$



2 $\frac{8}{5}$

$2\frac{1}{3}$



3 $\frac{5}{2}$

$1\frac{3}{5}$



▶ Definition Review

An **improper fraction** has a numerator that is greater than the denominator.

A **mixed number** has a whole number part and a fraction part.

Label each number as an *improper fraction* or a *mixed number*.

4 $1\frac{7}{8}$ _____

5 $\frac{12}{10}$ _____

6 $\frac{7}{7}$ _____

7 $8\frac{8}{9}$ _____

▶ Application

Follow the directions below.

- Roll two number cubes. Write down the sum of the numbers.
If the numbers are equal, roll again to find a new number.
- Roll two number cubes again. Write down the sum of the numbers.
- Write an improper fraction using the two numbers you rolled.
- Write the improper fraction as a mixed number.

1-4

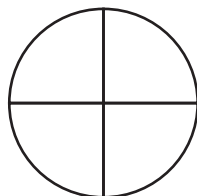
Vocabulary and English Language Development

▶ Activate Prior Knowledge

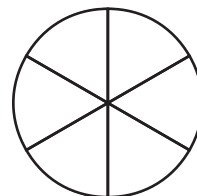
Sara, Carmen, and Josh each ate a whole quesadilla, which they each cut differently. Their quesadillas are shown below. Write equivalent forms of one to express the amount eaten by each person. Shade each fraction.



1 $\frac{\square}{\square} = 1$



2 $\frac{\square}{\square} = 1$



3 $\frac{\square}{\square} = 1$

▶ Definition Review

Equivalent fractions are fractions that represent the same number.

An **equivalent form of one** is any nonzero number divided by itself.

The **Identity Property of Multiplication** states that the product of any number and 1 equals the number.

Value is the amount of a number.

Fill in the blank.

- 4 The statement $\frac{4}{4} = \frac{8}{8}$ is an example of _____.
- 5 The _____ means that $\frac{3}{4} \times 1 = \frac{3}{4}$.
- 6 The fractions $\frac{2}{3}$ and $\frac{4}{6}$ are _____.

▶ Application

- Use fraction strips to model each fraction.
- Tell whether each pair of fractions is equivalent or not.

$\frac{4}{5}$ and $\frac{6}{10}$ _____

$\frac{1}{2}$ and $\frac{4}{8}$ _____

$\frac{3}{8}$ and $\frac{4}{9}$ _____

$\frac{6}{10}$ and $\frac{3}{5}$ _____

$\frac{4}{6}$ and $\frac{2}{3}$ _____

$\frac{3}{9}$ and $\frac{2}{6}$ _____

Vocabulary and English Language Development

▶ Activate Prior Knowledge

Use the designs to answer the questions.

Design A * ○ □ * □ □ * ○ □ * ○ □ *

Design B * ○ □ * ○ □ ○ * ○ □ * ○

Design C □ ○ * * ○ □ ○ * *

- 1 Which design has the greatest fraction of stars? _____
- 2 Which design has the least fraction of circles? _____
- 3 Which design has the greatest fraction of squares? _____

▶ Definition Review

A **common denominator** is the same denominator (bottom number) used in two or more fractions.

Equivalent forms of one are expressions that represent the same number.

The **least common denominator** (LCD) is the least common multiple of two or more numbers.

The **least common multiple** (LCM) is the least whole number greater than one that is a common multiple of each of two or more numbers.

Answer each question.

- 4 What is the least common multiple of 5 and 10? _____
- 5 What is a common denominator of $\frac{1}{2}$, $\frac{5}{6}$ and $\frac{7}{12}$? _____
- 6 What is the least common denominator of $\frac{5}{8}$ and $\frac{21}{24}$? _____

▶ Application

Use a ruler to cut 4 strips of paper, each 12 inches long. Divide each strip of paper into equal parts to show the fractions below. Then write the fractions in order from least to greatest. Have students say each fraction aloud.

$$\frac{1}{2}$$

$$\frac{1}{3}$$

$$\frac{1}{12}$$

$$\frac{1}{4}$$

Vocabulary and English Language Development

▶ Activate Prior Knowledge

Estimates are part of everyday life. The words *about*, *almost*, and *nearly* can signal an estimate. So can the phrases *close to* and *not quite*.

Write down examples of estimates from everyday life. Circle the words or phrases that signal an estimate. One example is done for you.

1 It is 7:55 and I say it is almost 8 o'clock.

2 _____

3 _____

4 _____

▶ Definition Review

Benchmarks are numbers that can help you estimate the values of fractions.

An **estimate** is a number close to an exact value. The word *estimate* can also be used as a verb, as in the definition of *benchmarks* above.

Fill in the blanks.

- 5 The numbers _____ are examples of benchmarks.
- 6 _____ help you estimate the values of fractions.
- 7 A(n) _____ indicates *about how much*. It is not an exact value.

▶ Application

To do this activity, you will need a piece of string that is at least 6 inches long.

- Fold the string in half. Mark the halfway point with a pen or marker.
- Use the string to help you estimate the length of objects in the room.
- Use the benchmarks 0, $\frac{1}{2}$, and 1 for your estimates.
- If an object is almost as long as your string, estimate its length as 1.
- If an object comes close to the halfway mark on your string, estimate its length as $\frac{1}{2}$.
- If an object is so short that it does not come close to the halfway mark, estimate its length as 0.
- Estimate the lengths of at least ten objects.

Vocabulary and English Language Development

▶ Activate Prior Knowledge

- 1 List the names of ten friends or family members. Out of the people you listed, what fraction of them has a dog as a pet? Write your answer in simplest form.

▶ Definition Review

Match each term with its definition.

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"> 2 _____ greatest common factor (GCF) 3 _____ prime number 4 _____ prime factorization 5 _____ composite number | <ol style="list-style-type: none"> A. a way of expressing a composite number as a product of its prime factors B. whole number that has exactly two factors, 1 and the number itself C. the largest number that divides evenly into two or more numbers D. a number greater than 1 with more than two factors |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

▶ Application

Complete the graphic organizer.

Show the Prime Factorization for each number.	Find the Greatest Common Factor for each set of numbers.
20 _____	20 and 75 _____
35 _____	35 and 42 _____
42 _____	42 and 20 _____
75 _____	75 and 42 _____

Vocabulary and English Language Development

▶ Activate Prior Knowledge

Write a number to complete the sentence.

- The numerator of $\frac{4}{5}$ is _____.
- The denominator of $\frac{9}{11}$ is _____.

▶ Definition Review

Circle the model that shows a fraction in simplest form.



A



B



A



B

Find the GCF of each pair of numbers.

- 16 and 20 _____
- 6 and 30 _____

▶ Application

Follow the directions for the activity.

- Students will work in groups of 2.
- Each student will think of a different number between 1 and 20.
- Students will use their numbers to fill in the graphic organizer.

Make a Fraction	Name the Parts of the Fraction	Find the GCF of the Numbers
Smaller Number: _____ Bigger Number: _____	Numerator: _____ Denominator: _____	
Smaller Number: _____ Bigger Number: _____	Numerator: _____ Denominator: _____	
Smaller Number: _____ Bigger Number: _____	Numerator: _____ Denominator: _____	

Vocabulary and English Language Development

▶ Activate Prior Knowledge

Complete the sentence by filling in the numbers according to the picture. Solve.

- 1 Dewayne bought _____ boxes of pencils with _____ pencils in each box.
How many pencils did Dewayne buy? _____



▶ Definition Review

A **factor** is a number that is multiplied by another number.

Sometimes the word **of** tells you to multiply. Example: $\frac{2}{3}$ of $\frac{1}{4}$ means $\frac{2}{3} \times \frac{1}{4}$.

Name the factors in each expression.

2 $\frac{3}{4} \times \frac{1}{3} = \frac{1}{4}$ _____ and _____

3 $\frac{5}{8}$ of $\frac{3}{10} = \frac{3}{16}$ _____ and _____

▶ Application

Follow the directions for the activity.

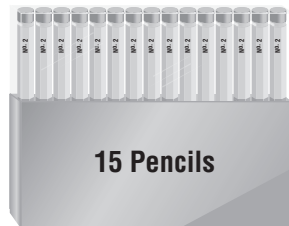
- Students work in groups of 4. Each group needs a number cube.
- Each student rolls the cube and memorizes the number.
- Each group makes 2 fractions using the students' numbers.
Write down the fractions.
- Multiply the fractions, and find the product in simplest form.
- Repeat the activity 10 times, using different fractions each time.
- For more variety, use 10-sided number cubes, or occasionally roll the die twice and use the sum for any given number.

Vocabulary and English Language Development

▶ Activate Prior Knowledge

Solve.

- 1 Amal divides the pencils into 3 equal groups. How many pencils are in a group? _____



▶ Definition Review

The **quotient** is the answer to a division problem.

A **dividend** is a number that is being divided.

The **divisor** is the number by which the dividend is being divided.

The product of a fraction and its **reciprocal** is 1.

Complete each sentence using the words *dividend*, *divisor*, *quotient* or *reciprocal*.

- 2 In the division problem $10 \div 2 = 5$, 10 is the _____.
- 3 In the division problem $12 \div 4 = 3$, 3 is the _____.
- 4 In the division problem $48 \div 6 = 8$, 6 is the _____.
- 5 The fraction $\frac{5}{2}$ is the _____ of $\frac{2}{5}$ because $\frac{2}{5} \times \frac{5}{2} = 1$.

▶ Application

Follow the directions for the activity.

- Students work in groups of 3. Each group needs 2 number cubes.
- Student A rolls the cubes and uses the numbers to make a fraction.
- Student B draws a model of the fraction.
- Student C draws a model of the reciprocal of the fraction.
- Repeat the activity several times, swapping tasks each time.
- Students should realize that if they were to combine the model of a fraction with the model of its reciprocal, they would get one whole.

Vocabulary and English Language Development

▶ Activate Prior Knowledge

Draw the objects in the order given. Follow the example.

- 1 A flower is on the *right* of a tree. 2 The person with the hat is *first* in line.



- 3 The number 6 is *after* the number 8. 4 The letter B is to the *left* of the letter C.
- 5 The star is on the *right* of the circle. 6 The triangle is *after* the square.

▶ Definition Review

A **decimal** is another way to show a fraction with a denominator of 10, 100, 1,000, and so on.

The usual way of writing a number with digits is called **standard form**.

The first decimal place to the right of the decimal point is the **tenths** place.

Fill in the blanks.

- 7 The underlined digit in 56.06 is in the _____ place.
- 8 Three and sixteen hundredths is written in _____ form.
- 9 The number 6.9 is a _____ written in _____ form.

▶ Application

Work with a partner for this activity.

- Write eight decimals in standard form. Do not show the numbers to your partner.
- With your partner, take turns reading the decimals on your list out loud. After you read the number out loud, your partner will write it in standard form and in word form. Check that your partner correctly understood your decimal.

Vocabulary and English Language Development

▶ Activate Prior Knowledge

Identify each coin by its name and value in dollars. All coins are worth less than \$1.

1 _____ = \$0. _____



2 _____ = \$0. _____



3 _____ = \$0. _____



4 _____ = \$0. _____



▶ Definition Review

A **denomination** is a category in the measurement of currency, or money.

A **decimal** is a number that can represent a whole number and a fraction.

The **hundredths** place is the second decimal place to the right of the decimal point.

Identify the largest denomination in each group.

5 _____



6 _____



▶ Application

Follow the directions for the activity.

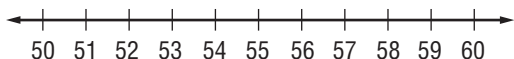
- Form a group of 3 or 4 students.
- Each person in your group will get the same amount of play money. You will also have play money for a “cash register.”
- Draw 10 to 15 items that might be sold in a grocery store. Determine an appropriate price for each item.
- Some members of the group will shop at the grocery store. One group member will run the cash registers. Work together to add and subtract money to pay and receive change for items.

Vocabulary and English Language Development

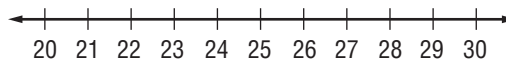
▶ Activate Prior Knowledge

Use the number line to help you round the number to the nearest tens place.

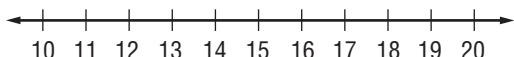
1 53 rounds to _____



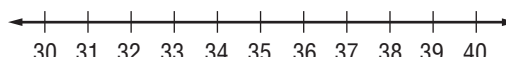
2 28 rounds to _____



3 11 rounds to _____



4 37 rounds to _____



▶ Definition Review

A **decimal** is a number that has digits in the tenths place and beyond.

To **round** a number means to find the nearest number based on a given place value.

Whole numbers are the set of all counting numbers and zero.

Fill in the blanks.

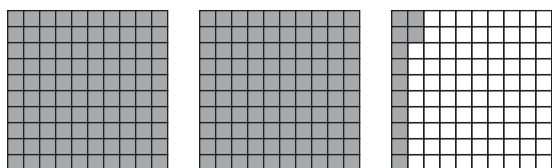
- 5 When you _____ a decimal to a whole number, the new number will not have a decimal point or any digits beyond the ones place.
- 6 The numbers 6, 100, and 37 are examples of _____.
- 7 A _____ is a number that represents a whole number and a fraction.

▶ Application

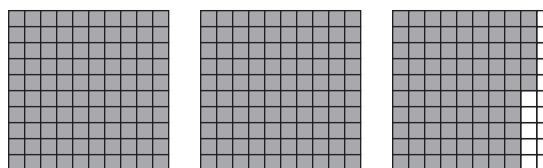
You can use decimal models to help you round decimals. If a hundredths block is less than half shaded, only count the fully shaded blocks. If a hundredths block is more than half shaded, count it as a fully shaded block.

Use the models to help you round to the nearest whole number.

8 _____



9 _____



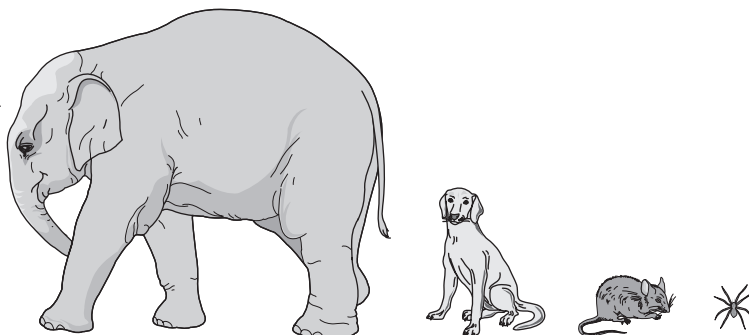
Vocabulary and English Language Development

▶ Activate Prior Knowledge

Look at the animals at the right. Fill in the blanks with words from the list below.

least greatest less than greater than

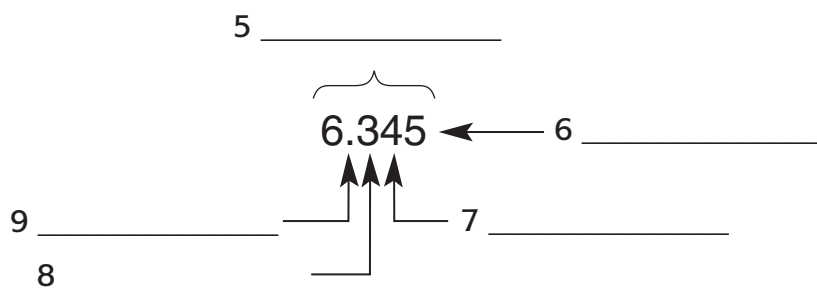
- 1 The spider weighs the _____.
- 2 The height of the dog is _____ the height of the spider.
- 3 The animal with the _____ number of legs is the spider.
- 4 The mouse weighs _____ the dog.



▶ Definition Review

A decimal point separates the whole number from the fraction in a **decimal**.

Label the parts of the number below.



▶ Application

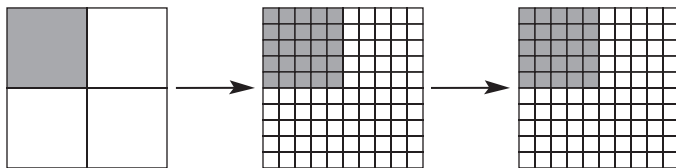
Follow the directions for the activity.

- Form a group of 6 students.
- As a group, choose two consecutive whole numbers between 1 and 10. *Consecutive* means that the numbers are next to each other, such as 3 and 4.
- Each person in the group writes down a decimal between the two whole numbers your group chose.
- Everyone in the group stands. Bring the paper on which you wrote the decimal. Put yourselves in order from least to greatest.
- Continue to repeat the activity with two new whole numbers as time permits.

Vocabulary and English Language Development

▶ Activate Prior Knowledge

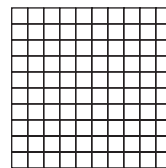
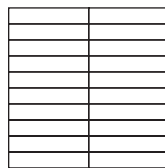
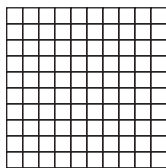
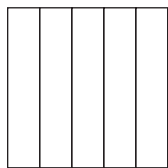
You can use models to change a fraction to a decimal. The fraction $\frac{1}{4}$ can be multiplied by $\frac{25}{25}$, or 1. The result is $\frac{25}{100}$ or 0.25.



Use the models to help you change the fraction to a decimal.

1 $\frac{2}{5} =$ _____

2 $\frac{7}{20} =$ _____



▶ Definition Review

A **decimal** is a number that can represent a whole number and a fraction.

A **fraction** is a number that represents part of a whole or part of a set.

▶ Application

You will work with a partner for this activity. Follow the directions.

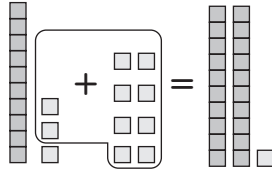
- Decide which person will be Partner A and which will be Partner B.
- Partner A writes down ten fractions between 0 and 1. Number the list 1 through 10.
- Partner B writes down ten decimals between 0 and 1. Number the list 1 through 10.
- Compare the numbers on the two lists, working from number 1 through number 10.
- Use models or number lines to decide whether the decimal or the fraction is greater. Circle the greater number.
- When you have compared all ten pairs of numbers, Partner A will write down ten decimals and Partner B will write down ten fractions. Repeat the activity with the new numbers.

Vocabulary and English Language Development

▶ Activate Prior Knowledge

When you add, sometimes you must “carry the 1.” This is also called **regrouping**.

$$\begin{array}{r} 1 \\ 13 \\ + 8 \\ \hline 21 \end{array}$$



Add. If you regroup, circle your answer.

1 $\begin{array}{r} 16 \\ + 9 \\ \hline \end{array}$

2 $\begin{array}{r} 12 \\ + 7 \\ \hline \end{array}$

3 $\begin{array}{r} 9 \\ + 18 \\ \hline \end{array}$

▶ Definition Review

A **decimal** is a number that has digits in the tenths place and beyond.

A **decimal point** is a period separating the ones and tenths in a decimal number.

The second decimal place to the right of the decimal point is the **hundredths** place.

To **regroup** is to use place value to exchange equal amounts when renaming a number.

The first decimal place to the right of the decimal point is the **tenths** place.

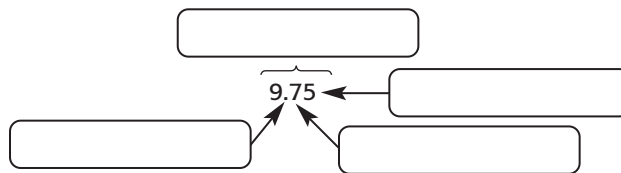
Write the correct term in each box.

decimal

decimal point

hundredth

tenth



▶ Application

Add. Use objects to model each sum. Then write the answer.

8 $\begin{array}{r} 0.8 \\ + 0.5 \\ \hline \end{array}$

9 $\begin{array}{r} 1.5 \\ + 5.9 \\ \hline \end{array}$

10 $\begin{array}{r} 4.0 \\ + 0.8 \\ \hline \end{array}$

11 $\begin{array}{r} 0.07 \\ + 0.16 \\ \hline \end{array}$

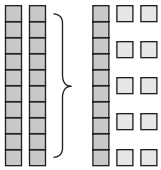
12 $\begin{array}{r} 1.05 \\ + 6.28 \\ \hline \end{array}$

13 $\begin{array}{r} 4.9 \\ + 5.48 \\ \hline \end{array}$

Vocabulary and English Language Development

▶ Activate Prior Knowledge

Sometimes you need to **regroup** to subtract. That means you use place value to rename a number. For example, 20 is equal to two tens. When you regroup, you can rename it as one ten and 10 ones.



Subtract.

1 $10 - 4 =$ _____

2 $12 - 9 =$ _____

3 $21 - 8 =$ _____

4 $34 - 7 =$ _____

▶ Definition Review

To **regroup** is to use place value to exchange equal amounts when renaming a number.

Fill in the blanks.

5 To find $1.6 - 0.9$, you must _____ the first number, 1.6.

6 When you do that, you will have _____ tenths and _____ ones.

7 Then you _____ 9 from 16.

$$\begin{array}{r} 1 \\ 1.6 \\ - 0.9 \\ \hline 0.7 \end{array}$$

▶ Application

Follow the directions to play the game.

- You and your partner work with another pair of students.
- Each set of partners will write 5 subtraction problems. All the subtraction problems should use decimals.
- Exchange your problems with the other pair of students.
- Work the problems with your partner. You can use decimal models to help you find the answers.
- When you are finished, meet with the other pair of students.
- As a group, check all your answers on a calculator. Each correct answer is worth 1 point.
- Repeat two more times. The team with the most points at the end of the game wins.

Vocabulary and English Language Development

▶ Activate Prior Knowledge

Fill in the blanks.

- 1 In the number 629, the number to the right of 2 is _____ and the number to the left of 2 is _____.
- 2 The mathematical name for the dot in 14.6 is _____.
- 3 The number 463.7 has _____ decimal place(s). The number 0.825 has _____ decimal place(s).

▶ Definition Review

A number that is multiplied by another number is a **factor**.
The answer to a multiplication problem is the **product**.

Write three sentences to describe decimal multiplication. Be sure to use the two vocabulary words.

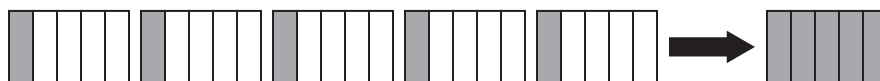
- 4 _____

▶ Application

You can use models to help you multiply decimals. To multiply 0.2×5 , draw a model for 0.2.

The whole number factor is 5, so you need to draw five models in all.

When the models are put together, you have one whole. So, $0.2 \times 5 = 1$.



Draw or make a model to represent the two factors in each problem. Then find the product.

- 5 $0.4 \times 5 =$ _____
- 6 $1.5 \times 4 =$ _____
- 7 $0.7 \times 3 =$ _____
- 8 $2.3 \times 2 =$ _____

Vocabulary and English Language Development

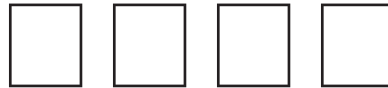
▶ Activate Prior Knowledge

Use the models to help you divide.

1 $4 \div 2 =$ _____



2 $16 \div 4 =$ _____



3 $3 \overline{)24} =$ _____



4 $2 \overline{)18} =$ _____



▶ Definition Review

Fill each box with *divisor*, *dividend*, or *quotient*.

5

_____ $11.04 \div 3 = 3.68$ _____

6

_____ $9.1 \div 5 = 1.82$ _____

▶ Application

Work with a partner to think of ways to remember the vocabulary words.

- Write at least one idea for each vocabulary word on note cards.
- Gather all the note cards from the class together.
- Choose the five best ideas for each vocabulary word.
- Punch holes in the corners of each card. Use yarn to tie the cards together. Display the vocabulary quilt in the classroom.

The dividend is on the end when you write a long division problem. $5 \overline{)25}$	The divisor is wearing a visor when you write a long division problem. $5 \overline{)25}$	The quotient answers the question , what is <i>a</i> divided by <i>b</i> ?
-----------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------

Vocabulary and English Language Development

▶ Activate Prior Knowledge

Solve.

- 1 **FISHING** Jud caught 6 fish the first day, 8 fish the second day, and 2 fish the third day. In all, he caught 16 fish in four days. How many fish did he catch the fourth day? _____

▶ Definition Review

The **Identity Property of Multiplication** says that the product of any factor and 1 equals the factor.

The **Zero Property of Multiplication** says that any number multiplied by zero is zero.

Directions:

- Place an **I** next to an example of the **I**ntity Property of Multiplication.
- Place a **Z** next to an example of the **Z**ero Property of Multiplication.
- Place an **N** next to examples that are **n**either of these properties.

2 $16 \times 1 = 16$ _____

3 $82 \times 0 = 0$ _____

4 $0 + 47 = 47$ _____

5 $1 \times 76 = 76$ _____

6 $0 \times 54 = 0$ _____

7 $67 + 1 = 68$ _____

▶ Application

- Find a partner. Use 6 index cards each.
- Write 3 equations each that model the Identity Property of Multiplication and 3 equations each that model the Zero Property of Multiplication. Use separate cards.
- Exchange index cards and place them facedown in front of you.
- Take turns turning over one of the index cards and identifying the property illustrated. Tell your partner to check your work. If it is incorrect, then your partner should explain why.
- The student who is correct gets to keep the card.
- Repeat until all of the cards have been used.
- The student with the most cards wins.

Vocabulary and English Language Development

▶ Activate Prior Knowledge

Use mental math to simplify each expression.

1 $5 + 11$ _____

2 $28 - 23$ _____

3 $5 \times (3 + 2)$ _____

4 $1 \times 4 \times 1$ _____

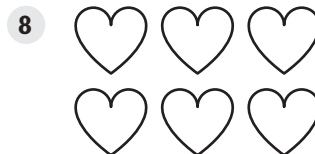
5 $(6 \times 2) + (2 \times 2)$ _____

6 $7 \times 0 \times 8$ _____

▶ Definition Review

An **array** is made up of objects or symbols that are displayed in rows of the same length and columns of the same length.

Match each array with the factors it represents.



A 2×3

B 1×4

C 3×5

▶ Application

- Find a partner.
- Roll two six-sided number cubes.
- Write a multiplication problem using the two numbers as factors.
- Fill in the graphic organizer for each problem you write.

Write the problem.	Name the factors.	Name the products.	Fill in the blank.
_____ \times _____ = _____	Factor 1: _____ Factor 2: _____	Product: _____	_____ is a multiple of _____
_____ \times _____ = _____	Factor 1: _____ Factor 2: _____	Product: _____	_____ is a multiple of _____
_____ \times _____ = _____	Factor 1: _____ Factor 2: _____	Product: _____	_____ is a multiple of _____

Vocabulary and English Language Development

▶ Activate Prior Knowledge

Solve.

- 1 Drake has 6 square tiles. Hannah has 6 more tiles than Drake has. Joquan has 6 more tiles than Hannah has. Tell how many tiles each person has.

Drake: _____ tiles Hannah: _____ tiles Joquan: _____ tiles

▶ Definition Review

A **multiple** of a number is the product of that number and any whole number.

A **product** is the answer to a multiplication problem.

Complete the graphic organizer.

Multiplication Fact	Name the product.	Fill in the blank.
$27 \times 8 = 216$		_____ is a multiple of 8.
$369 = 9 \times 41$		369 is a _____ of 41.
$72 = 9 \times 8$		_____ is a multiple of 9.

▶ Application

- Work in groups of 3. Each group will have two number cubes.
- Take turns rolling the cubes and writing the total on the board until you have 6 different numbers on the board.
- List the first 5 multiples for each number on the board. Start with the number itself as the first multiple.

Vocabulary and English Language Development

▶ Activate Prior Knowledge

Solve.

- 1 Taylor has to hand out 6 colored folders to each student in her class. If there are 22 students in the class, how many folders will Taylor hand out in all? _____

▶ Definition Review

The **Distributive Property of Multiplication** says that to multiply a sum by a number, multiply each addend by the number outside the parenthesis. For example: $3 \times (5 + 2) = 3 \times 5 + 3 \times 2 = 15 + 6 = 21$

A **pattern** is a sequence of numbers, figures, or symbols that follows a rule or design.

- Write **D** next to an example of the **Distributive Property**.
- Write **N** next to an example that is **not** the **Distributive Property**.

2 $25 \times (8 + 3) = 25 \times 8 + 25 \times 3$ _____

3 $12 \times (4 + 11) = 12 \times 4 + 11$ _____

4 $(18 + 5) \times 7 = 18 \times 7 + 5 \times 7$ _____

5 $(2 \times 6) \times 4 = 2 \times (6 \times 4)$ _____

6 $5 \times (3 + 9) = 5 \times 3 + 5 \times 9$ _____

7 $(6 + 8) \times 5 = 6 \times 5 + 8 \times 5$ _____

▶ Application

- Write the following problems on a piece of paper.

$(10 + 2) \times 15$ $(10 + 1) \times 37$ $40 \times (10 + 2)$

- Solve the problems using the traditional method.
- Solve the problems using the Distributive Property.
- Compare your methods and your answers.

Vocabulary and English Language Development

▶ Activate Prior Knowledge

Give 3 examples of when you might use estimation in your daily life.

1 _____

2 _____

3 _____

▶ Definition Review

Write “T” next to an example of the traditional multiplication method. Write “P” next to an example of the partial products method.

4

$$\begin{array}{r} 58 \\ \times 23 \\ \hline 24 \\ 150 \\ 160 \\ + 1,000 \\ \hline 1,334 \end{array}$$

5

$$\begin{array}{r} 49 \\ \times 18 \\ \hline 392 \\ + 490 \\ \hline 882 \end{array}$$

6

$$\begin{array}{r} 73 \\ \times 31 \\ \hline 73 \\ + 2,190 \\ \hline 2,263 \end{array}$$

7

$$\begin{array}{r} 62 \\ \times 49 \\ \hline 18 \\ 540 \\ 80 \\ + 2,400 \\ \hline 3,038 \end{array}$$

▶ Application

Write an estimate for each exact value.

Exact Value	Estimate	Exact Value	Estimate
49		57	
16		72	
31		64	
98		23	

Vocabulary and English Language Development

▶ Activate Prior Knowledge

Find the number of coins in each amount.

- 1 How many pennies are in 50¢? _____
- 2 How many dimes are in \$3.00? _____
- 3 How many dimes are in \$7.40? _____
- 4 How many dimes are in 90¢? _____
- 5 How many pennies are in \$2.37? _____
- 6 How many dimes are in \$2.10? _____

▶ Definition Review

The **dividend** is the number that is being divided.

The **divisor** is the number by which the dividend is being divided.

The **quotient** is the result of a division problem.

Label each part of the division problem.

$$\underline{\hspace{2cm}} \quad \swarrow \quad 10 \div 2 = 5 \quad \searrow \quad \underline{\hspace{2cm}}$$

▶ Application

Follow the directions for the activity. You will work in a small group of 4 or 5 students.

- Your group will need 50–100 pennies or other small items.
- Make different-sized groups of pennies. Decide whether each group can be divided by 0, 1, or 10.
- Write your group's answers to the questions below on a sheet of paper. Then share your answers with the class.
 1. What happens when you divide a group of pennies by 0?
 2. What happens when you divide a group of pennies by 1?
 3. What do groups of pennies that can be divided by 10 have in common?

Vocabulary and English Language Development

▶ Activate Prior Knowledge

Complete the series following the pattern.

- 1 5, 10, 15, 20, _____, _____, _____, _____
- 2 2, 4, 6, 8, _____, _____, _____, _____
- 3 3, 6, 9, 12, _____, _____, _____, _____

▶ Definition Review

A **dividend** is a number that is being divided.

A **divisor** is the number by which the dividend is being divided.

A **quotient** is the answer or result of a division problem.

Label each as **dividend**, **divisor**, or **quotient**.

$$\begin{array}{r} 7 \\ 5 \overline{)35} \end{array}$$

$$8 \div 2 = 4$$

- 4 7 is the _____.
- 5 5 is the _____.
- 6 35 is the _____.
- 7 8 is the _____.
- 8 2 is the _____.
- 9 4 is the _____.

▶ Application

Follow the directions for the activity.

- You will need six sheets of paper and 40 pennies or other small objects.
- Fold the first sheet of paper in half. Fold the second sheet of paper into thirds, and so on. The fifth sheet is folded into sixths. Use the last sheet to write answers.
- Follow the steps below for each sheet of paper, and then summarize what you learned.
 1. Place 2 pennies on each section of the first sheet of paper.
 2. On your last sheet of paper, write a division problem that the pennies and the sheet of paper represent. For the first sheet of paper, the problem is $4 \div 2 = 2$ because there are 4 pennies divided into 2 sections.
 3. Now place 3 pennies on each section of the paper. Write down the division problem.
 4. Add another penny to each section of the paper and write down the division problem.
 5. Continue until you have written down five division problems.

Vocabulary and English Language Development

▶ Activate Prior Knowledge

Draw an array to find the product.

1 $4 \times 3 =$ _____

2 $5 \times 5 =$ _____

3 $7 \times 6 =$ _____

4 $8 \times 4 =$ _____

▶ Definition Review

Inverse operations are operations that undo each other.

The **quotient** is the result of a division problem.

Write the vocabulary word(s) that completes the sentence.

- 5 In the division problem $10 \div 2$, the number 10 is the _____.
- 6 The _____ of multiplication is _____.
- 7 The _____ of $20 \div 4$ is 5.
- 8 The mathematical name for the second number in $9 \div 3$ is the _____.

▶ Application

Follow the directions for the activity.

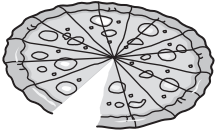
- Write a sentence for each vocabulary word that does not echo its definition in this lesson. For example: *When Kelly divided $136 \div 9$, she got the wrong quotient.*
- Rewrite your sentences on a blank sheet of paper. Replace the vocabulary words with blanks.
- Exchange your paper with another student.
- Fill in the blanks on the sheet of paper with the vocabulary words that complete the sentences.
- When you are finished, meet with your partner to discuss your answers.

Vocabulary and English Language Development

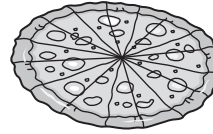
▶ Activate Prior Knowledge

A large pizza has 16 slices. Shade the slices of pizza that the friends get. Then decide how many pieces of pizza will be left over.

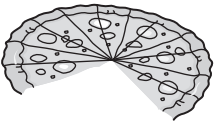
1 5 friends get 3 pieces each _____



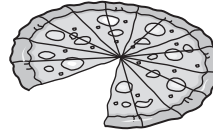
2 4 friends get 4 pieces each _____



3 6 friends get 2 pieces each _____



4 7 friends get 2 pieces each _____



▶ Definition Review

Division is an operation on two numbers in which the first number is split into the same number of equal groups as the second number.

A **fraction** is a number that represents part of a whole or part of a set.

The result of a division problem is called the **quotient**.

The **remainder** is the number that is left after one whole number is divided by another.

Describe the three ways that you can treat the remainder.

▶ Application

Follow the directions for the activity.

- Form groups of 4.
- Write down the months and days of your birthdays. Write "1" for January, "2" for February, and so on.
- Using the larger number from each date as the dividend and the smaller number from each date as the divisor, create four division problems. For example, a person born on June 26th would create the exercise $6 \overline{)26}$.
- Work together to find the quotients of each exercise.

Vocabulary and English Language Development

▶ Activate Prior Knowledge

Estimate each product.

1 $61 \times 11 =$ _____

2 $58 \times 27 =$ _____

3 $18 \times 39 =$ _____

4 $32 \times 43 =$ _____

▶ Definition Review

A **dividend** is a number that is being divided.

The **divisor** is the number by which the dividend is being divided.

The **quotient** is the answer or result of a division problem.

Write a division equation for each situation.

5 61 is the quotient
488 is the dividend
8 is the divisor _____

6 1,413 is the dividend
157 is the quotient
9 is the divisor _____

7 11 is the divisor
1,023 is the dividend
93 is the quotient _____

8 248 is the quotient
12 is the divisor
2,976 is the dividend _____

▶ Application

Follow the directions for the activity. You will need a partner for the activity.

- Each person writes down 5 numbers on a sheet of paper. Two numbers should be between 100 and 500. Two numbers should be between 501 and 1,000. One number should be between 1,001 and 2,000.
- Then each person writes down 5 numbers between 2 and 12.
- Look at your partner's sheet of paper. Write long division problems using your large numbers as the dividends. Use your partner's small numbers as the divisors for your problems.
- Exchange the sheet of problems with your partner. Solve the problems using long division.
- When you are finished, check your work with a calculator.

Vocabulary and English Language Development

▶ Activate Prior Knowledge

Fill in the blanks in each long division problem.

$$\begin{array}{r} \text{1} \quad 54 \\ 4 \overline{) 216} \\ \underline{00} \\ 16 \\ \underline{00} \\ 16 \\ \underline{00} \\ 0 \end{array}$$

$$\begin{array}{r} \text{2} \quad \underline{} \text{ R3} \\ 6 \overline{) 195} \\ \underline{00} \\ 18 \\ \underline{00} \\ 12 \\ \underline{00} \\ 3 \end{array}$$

▶ Definition Review

The **dividend** is a number that is being divided.

The **divisor** is the number by which the dividend is being divided.

Division is an operation on two numbers in which the first number is split into the same number of equal groups as the second number.

The **quotient** is the result of a division problem.

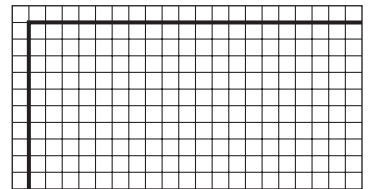
Label the parts of the long division problem.

$$\begin{array}{r} \underline{12} \\ 5 \overline{) 60} \\ \underline{00} \\ 0 \end{array}$$

▶ Application

Follow the directions for the activity. You will need graph paper.

- Choose a Guided Practice exercise. Rewrite the exercise so that you could estimate the quotient. For instance, Example 1 is $228 \div 22$. The example would be rewritten as $200 \div 20$.
- On graph paper, count across the same number of squares as your divisor. (If your divisor is large, you may need to turn the graph paper sideways.) For Example 1, you would count across 20 squares.
- Count down rows of squares until you reach the dividend. For Example 1, you would count down by 20s until you reached 200: 20, 40, 60, 80, 100, 120, 140, 160, 180, 200. So, the estimated quotient is 10.
- Repeat the activity for other Guided Practice exercises, or write your own two-digit division problems.



Vocabulary and English Language Development

▶ Activate Prior Knowledge

- 1 Create a fraction where the number of males in your family is the numerator and the total number of people in your family is the denominator. Then write three equivalent fractions.

▶ Definition Review

A **ratio** is a comparison of two numbers by division.

A **fraction** is a number that represents part of a whole number or part of a set.

Match each group with the correct ratio. Then give a fraction for the ratio.



The ratio of ladybugs to butterflies is 2 to 5.



The ratio of ladybugs to butterflies is 2 to 3.



The ratio of ladybugs to butterflies is 3 to 4.

▶ Application

Finding Ratios

- Students work individually.
- Students observe their classmates to find the following ratios:
 - The ratio of girls to boys in the class.
 - The ratio of boys to the total number of students in the class.
 - The ratio of students wearing red to students wearing blue.
 - The ratio of students with blond hair to students with black hair.
 - The ratio of students who do not have brown hair to the total number of students in the class.

Vocabulary and English Language Development

▶ Activate Prior Knowledge

Use the diagram to write each ratio as a fraction in simplest form.



- 1 mugs to glasses _____
- 2 glasses to total containers _____

▶ Definition Review

A **ratio table** is a table with columns filled with pairs of numbers that have the same ratio.

Tell whether the table is a ratio table. Write *yes* or *no*.

3

Numerator	3	6	9	12	15
Denominator	8	16	24	32	40

4

Numerator	2	4	8	10	12
Denominator	11	44	88	110	120

5

Numerator	45	36	27	18	9
Denominator	35	28	21	14	7

▶ Application

- Work in pairs.
- Each student rolls a number cube and records the result as either the numerator or denominator in the first column.
- Work together to complete the ratio table.

Numerator		$\times 2$	$\times 3$	$\times 4$	$\times 5$
Denominator					

$\times 2$ $\times 3$ $\times 4$ $\times 5$

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Vocabulary and English Language Development

▶ Activate Prior Knowledge

1 Order the products from least expensive to most expensive.



▶ Definition Review

A **rate** is a ratio of two measurements or amounts with different units. A **unit rate** describes how many units of the first type of quantity are equal to one unit of the other type of quantity.

Draw a line to match each rate to its unit rate.

- | | |
|-------------------------|-------------------|
| 2 18 miles in 3 hours | 20 miles per hour |
| 3 64 miles in 4 hours | 60 miles per hour |
| 4 300 miles in 15 hours | 6 miles per hour |
| 5 120 miles in 2 hours | 16 miles per hour |

▶ Application

Complete the graphic organizer.

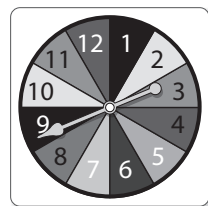
Ratio	Rate
Examples	Examples
Unit Rate	Unit Cost
Examples	Examples

Vocabulary and English Language Development

▶ Activate Prior Knowledge

You and your friends are playing a board game using the spinner below. Use the spinner to answer the questions.

- 1 How many sections are labeled with an even number? _____
- 2 How many sections are labeled with a number that is *not* divisible by 4? _____
- 3 How many sections are labeled with a number greater than 5? _____



▶ Definition Review

Probability is a number between 0 and 1 that measures the likelihood of an event happening.

A **ratio** is the comparison of two numbers by division.

A bag contains packets of different salad dressings: 3 Ranch, 8 Italian, 15 French, and 4 Thousand Island. One packet is picked without looking. Match each probability to the correct ratio.

- | | |
|---------------------------------|-----------------|
| 4 $P(\text{Ranch})$ | $\frac{11}{15}$ |
| 5 $P(\text{not Italian})$ | $\frac{0}{30}$ |
| 6 $P(\text{French or Italian})$ | $\frac{1}{10}$ |
| 7 $P(\text{Vinaigrette})$ | $\frac{23}{30}$ |

▶ Application

Finding Probabilities

- Students work in groups of 3.
- Roll a number cube 36 times and record the result each time.
- What is the ratio of the number of times a 3 was rolled to the total number of times the number cube was rolled?
- Think of four more probabilities that you can find using the results of your rolls.

Vocabulary and English Language Development

▶ Activate Prior Knowledge

Find each sum or product.

1 $6 + 5 = \underline{\quad}$

2 $5 + 6 = \underline{\quad}$

3 $4 + 12 = \underline{\quad}$

4 $12 + 4 = \underline{\quad}$

5 $3 \times 10 = \underline{\quad}$

6 $10 \times 3 = \underline{\quad}$

7 $11 \times 7 = \underline{\quad}$

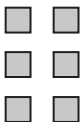



8 $7 \times 11 = \underline{\quad}$


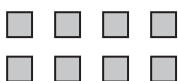
▶ Definition Review

The **Commutative Property of Addition** states that the order in which two numbers are added does not change the sum.

The **Commutative Property of Multiplication** states that the order in which two numbers are multiplied does not change the product.

Complete the diagrams to show the **Commutative Property** for the equations below.

9  +  =  + 

10  = 

▶ Application

Complete the graphic organizer.

- Work in pairs.
- Each person chooses a number.
- Use your numbers to complete the graphic organizer. Repeat for 3 sets of numbers.

Write an equation to demonstrate the Commutative Property of Addition	Write an equation to demonstrate the Commutative Property of Multiplication
$\underline{\quad} + \underline{\quad} = \underline{\quad} + \underline{\quad}$ $\underline{\quad} = \underline{\quad}$	$\underline{\quad} \times \underline{\quad} = \underline{\quad} \times \underline{\quad}$ $\underline{\quad} = \underline{\quad}$
$\underline{\quad} + \underline{\quad} = \underline{\quad} + \underline{\quad}$ $\underline{\quad} = \underline{\quad}$	$\underline{\quad} \times \underline{\quad} = \underline{\quad} \times \underline{\quad}$ $\underline{\quad} = \underline{\quad}$
$\underline{\quad} + \underline{\quad} = \underline{\quad} + \underline{\quad}$ $\underline{\quad} = \underline{\quad}$	$\underline{\quad} \times \underline{\quad} = \underline{\quad} \times \underline{\quad}$ $\underline{\quad} = \underline{\quad}$

Vocabulary and English Language Development

▶ Activate Prior Knowledge

Solve.

- 1 Jorge opened a savings account. The spreadsheet shows how much money he saved each month. Find the balances in February and March.

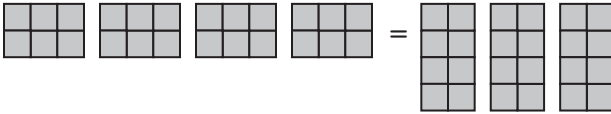
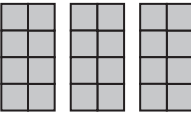
Jorge's Savings Account		
Date	Amount Deposited	Balance
January	\$25	\$25
February	\$20	\$_____
March	\$12	\$_____

▶ Definition Review

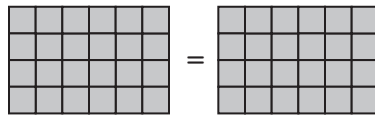
The **Associative Property of Addition** states that the grouping of the **addends** does not change the sum.

The **Associative Property of Multiplication** states that the grouping of the **factors** does not change the product.

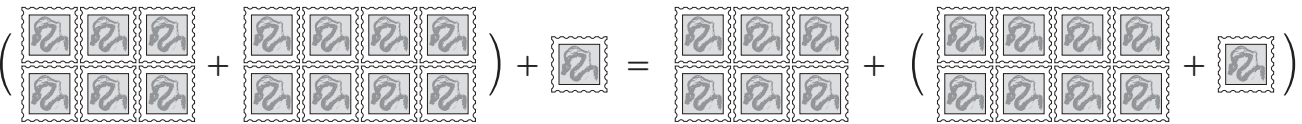
Name the property shown in each equation.

2  = 

$4 \times (2 \times 3)$ $(4 \times 2) \times 3$



24 = 24

3 

▶ Application

Complete the graphic organizer.

Associative Property of Addition		Associative Property of Multiplication	
Examples with 3 addends	Examples with 4 addends	Examples with 3 factors	Examples with 4 factors

Vocabulary and English Language Development

Solve.

- 1 Complete the diagram to model $4 + 8 = 12$.

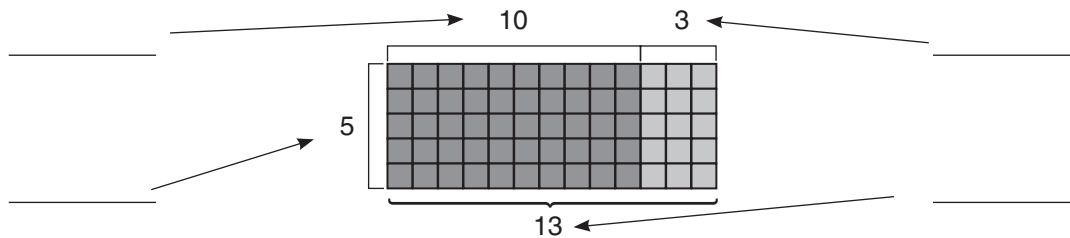


- 2 Draw an array to model 3×12 .

Definition Review

The **Distributive Property of Multiplication** states that to multiply a sum by a number, multiply each addend by the same number and add the products.

- 3 A model for the expression $5 \times (10 + 3)$ is shown below. Label each number on the model as an, addend or factor.



Application

- Gather 30 counters, 10 of one color and 20 of another color.
- Using the Distributive Property, arrange the counters on your desk to model the following expressions. Use a different color for addends.

$$2 \times (7 + 1)$$

$$4 \times (4 + 2)$$

$$3 \times (2 + 4)$$

$$3 \times (6 + 3)$$

$$5 \times (2 + 4)$$

$$6 \times (1 + 2)$$

Vocabulary and English Language Development

▶ Activate Prior Knowledge

Simplify.

1 $9 \div 1 + 2$

2 $9 \div 3$

3 $24 \div 6 - 2$

4 $24 \div 4$

▶ Definition Review

The **order of operations** are the rules that tell which operation to perform when more than operation is used.

Use the order of operations to write **1, 2, 3, or 4** in each blank.

5 $6 \times 4 + 12 \div (8 - 2)$ + _____

- _____

\times _____

\div _____

6 $35 - (9 + 1) \times 3 \div 2$ + _____

- _____

\times _____

\div _____

▶ Application

- Work in groups of 3.
- Each person writes one expression. Each expression must include $+$, $-$, \times , and \div .
- Use your expressions to complete the graphic organizer. Use the order of operations to number the order in which the operations are done. A sample is given.

Expression	Add	Subtract	Multiply	Divide
$25 + 12 \div 4 \times 2 - 6$	3	4	2	1
$16 \div (8 \times 2) - 7 \div 2$				
$28 - (14 \div 2) + (5 \times 2)$				
$32 \div 4 - (10 + 2) \times 2$				

Vocabulary and English Language Development

▶ Activate Prior Knowledge

Fill in the circle with the correct operation symbol.

1 $5 \bigcirc 6 = 11$

2 $7 \bigcirc 2 = 5$

3 $12 \bigcirc 3 = 4$

4 $2 \bigcirc 5 = 10$

Fill in the blank with *addition*, *subtraction*, *multiplication*, or *division*.

5 The operation that tells you to separate a group into equal parts is called _____.

6 When you add $3 + 3$, you perform _____.

7 The words “take away” and “minus” signal _____.

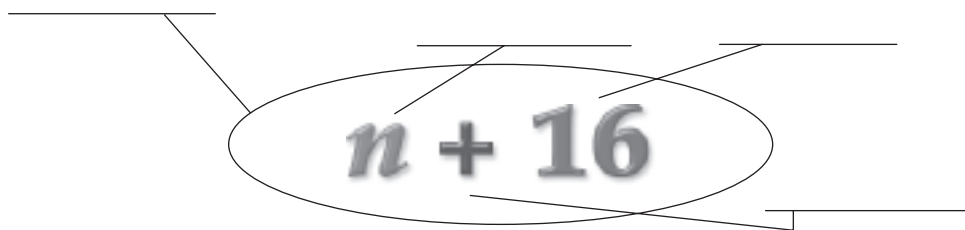
8 The symbols \times and \bullet tell you to perform _____.

▶ Definition Review

A **variable** is a symbol, usually a letter, used to represent a number.

An **algebraic expression** is a combination of numbers, variables, and at least one operation.

9 Label each part of the expression.



▶ Application

Follow the directions for the activity. You will work with a partner.

- Divide a sheet of paper into 12 slips of paper.
- Write $+$, $-$, \times , and \div on each of four slips of paper. Write x on another slip of paper.
- Write the numbers 3–9 on the remaining slips of paper.
- With your partner, use the slips of paper to create five algebraic expressions. Use the x and one operation in every expression. Write down each expression on a sheet of paper. Leave plenty of room between each expression.
- Think of a situation that each expression could represent. For example, $5x + 3$ could represent the total number of cents if you have x nickels and 3 pennies. Write the situation below the expression with which it belongs.

Vocabulary and English Language Development

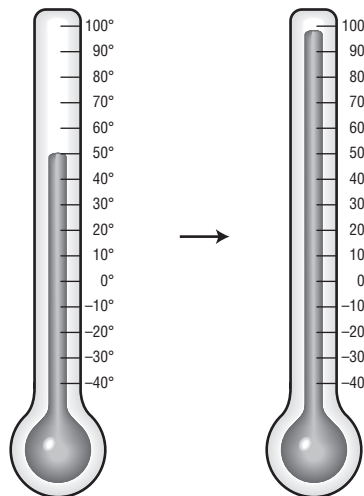
▶ Activate Prior Knowledge

Write *increased* or *decreased* to indicate the change in each item.

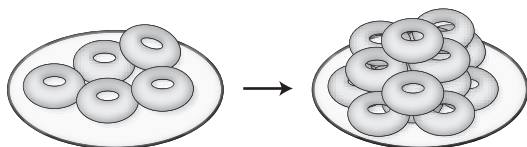
1



2



3



▶ Definition Review

An **algebraic expression** is a combination of numbers, variables, and at least one operation.

A **variable** is a symbol, usually a letter, used to represent a number.

Write the vocabulary word that completes each sentence.

- 4 An example of a(n) _____ is $2x + 1$.
- 5 In $2x + 1$, the _____ is x .

▶ Application


Follow the directions for the activity.

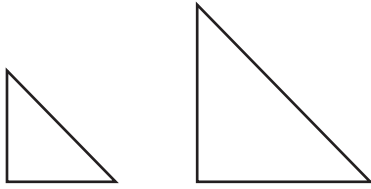
- On a sheet of paper, make a list of words that tell you to add, subtract, multiply, or divide. For example, the word *total* tells you to add.
- Form a group with two or three other students.
- Compare your lists. As a group, try to think of more words that tell you to add, subtract, multiply, or divide.
- Divide a sheet of paper into four sections. Label the sections *Addition*, *Subtraction*, *Multiplication*, and *Division*.
- Combine all the lists for your group on the sheet of paper. Place the words in the appropriate sections.


Vocabulary and English Language Development

▶ Activate Prior Knowledge

Determine whether the items are similar.

1  _____

2  _____

3  _____

▶ Definition Review

An **algebraic expression** is a combination of numbers, variables, and at least one operation.

Like terms are terms that contain the same variables.

When you combine like terms, you **simplify** an expression.

A **term** is each of the quantities connected by a plus or minus sign in an algebraic expression.

Draw a line to connect each term with its example.

- | | |
|------------------------|---------------|
| 4 algebraic expression | $6x$ and $2x$ |
| 5 like terms | $2t$ |
| 6 simplify | $2y + y = 3y$ |
| 7 term | $5n + 1$ |

▶ Application

Work in a small group of five or six students for this activity.

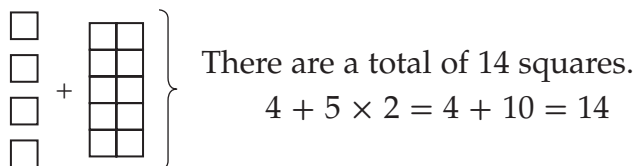
- Each person in the group will make up a term. Terms can be only a number or they can include the variable x .
- As a group, create an expression with all the terms you created.
- Simplify the expression by combining all the like terms.
- Repeat the first three steps using a different letter for the variable.
- If time allows, share your expressions with the class.

Vocabulary and English Language Development

▶ Activate Prior Knowledge

Given the expression $4 + 5 \times 2$, you should multiply 5×2 and then add 4. The same would be true if the expression were $5 \times 2 + 4$. You should multiply 5×2 and then add 4.

You can see how this works in the model below.



Draw a model for each expression. Then evaluate the expression.

1 $3 \times 3 + 4$ _____

2 $5 + 7 \times 2$ _____

3 $6 + 2 \times 3$ _____

4 $1 \times 6 + 4$ _____

▶ Definition Review

An **algebraic expression** is a combination of numbers, variables, and at least one operation.

When you **evaluate** an algebraic expression, you find the value of it by replacing variables with numbers.

The **value** is the amount of a number.

A **variable** is a symbol, usually a letter, used to represent a number.



▶ Application

- In a small group write sentences about the expression $2x + 1$. Use all vocabulary words. Take turns reading aloud the sentences you wrote.
- Work together to combine and revise the sentences into the best possible description of $2x + 1$.
- Share your group's description with the whole class.

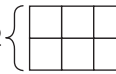

Vocabulary and English Language Development

▶ Activate Prior Knowledge


Add blocks to the right side to make the two sides equal.

1  \rightarrow  1×1 +

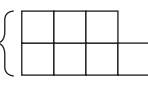
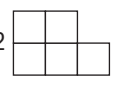
$2 = 1 \times 1 +$

2  \rightarrow  2×1 +

$2 \times 3 = 2 \times 1 +$

3  \rightarrow

$1 \times 3 =$

4  \rightarrow  2×2 + 1 +

$(2 \times 3) + 1 = (2 \times 2) + 1 +$

▶ Definition Review

Numbers that are **equal** have the same value.

An **equation** is a mathematical sentence that contains an equals sign, =.

Circle all the equations.

$6 + 3 = 10$

$4x + 3$

$b + 7 = 12$

$2 + 3 = 5$

$9 + 10$

$5 + w = 9$

$3 + 3 = 5$

$10 = 8 + 2$

$7y$

▶ Application

Follow the directions for the activity.

- Form a group of 3 to 5 players. Decide the order of play.
- For this activity, each person needs 12 pennies, paperclips, or other small objects. Your group also needs a pair of number cubes.
- Player 1 rolls the pair of number cubes. These two numbers are the left side of an equation. For example, if 3 and 4 are rolled, the left side of the equation is $3 + 4$.
- Player 1 uses his or her objects to model the right side of the equation. The right side and the left side must be different. For example, if the left side is $3 + 4$, Player 1 could model $2 + 5$ with 2 pennies and 5 pennies. Then Player 1 writes down the complete equation: $3 + 4 = 2 + 5$.
- Take turns rolling the number cubes and using your objects to model equations.

10-1

Vocabulary and English Language Development

▶ Activate Prior Knowledge

Evaluate each expression if $a = 4$ and $b = 9$.

1 $a \times b$

$\square \times \square = \square$

2 $(b + 3) \div a$

$(\square + 3) \div \square = \square$

3 $(a + b) - 2$

$\square + \square - 2 = \square$

▶ Definition Review

Write *equation* or *formula* to describe the item.

4 $d = r \times t$, where d is distance, r is rate, and t is time

5 $b = m + n$

6 $A = \ell \times w$, where A is area, ℓ is length, and w is width

7 $k = \frac{2 + t}{p}$

8 $a^2 = b^2 + c^2$, where a is the length of the hypotenuse of a triangle, and b and c are the lengths of the sides of a triangle

9 $F = \frac{9}{5}C + 32$, where F is the temperature in degrees Fahrenheit, and C is the temperature in degrees Celsius

▶ Application

Use the distance formula ($d = r \times t$) to complete the chart.

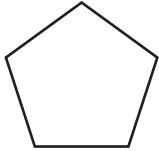
Distance (d)	Rate (r)	Time (t)
	84 miles per hour	3 hours
	46 kilometers per hour	8 hours
	15 miles per minute	30 minutes
	kilometers per hour	hours

10-2 Vocabulary and English Language Development

▶ Activate Prior Knowledge

Match the term with the figure it best describes.

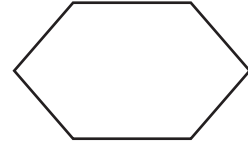
1



2



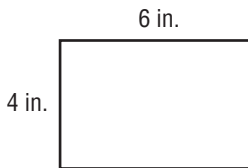
3



▶ Definition Review

Fill in the blanks.

4



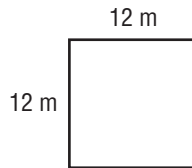
Shape: _____

Length: _____

Width: _____

perimeter: _____

5



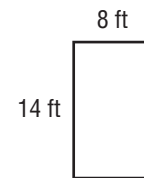
Shape: _____

Length: _____

Width: _____

perimeter: _____

6



Shape: _____

Length: _____

Width: _____

perimeter: _____

▶ Application

Follow the directions for the activity.

- Work in groups of 3.
- Choose a rectangular surface for which the perimeter can be found (for example: the floor, a desktop, or the cover of a book).
- Measure the length and width of the chosen object.
- Use the formula for the perimeter of a rectangle to find the perimeter of the object based on your measurements.
- Choose a side length for a square (for example: 5 ft, 14 mi, or 18 cm).
- Use the formula for the perimeter of a square to find the perimeter of the square based on your chosen side length.

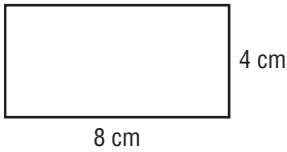
10-3

Vocabulary and English Language Development

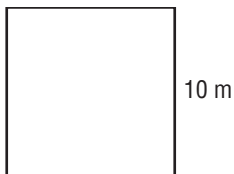
▶ Activate Prior Knowledge

Find the perimeter of each rectangle.

1 $P =$ _____

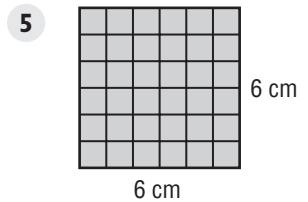
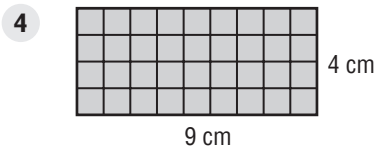
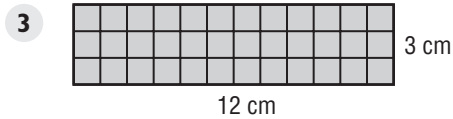


2 $P =$ _____



▶ Definition Review

Fill in the blanks.



Shape: _____

Length: _____

Width: _____

Area = _____

Shape: _____

Length: _____

Width: _____

Area = _____

Shape: _____

Length: _____

Width: _____

Area = _____

▶ Application

Follow the directions for the activity.

- Work with a partner.
- Measure the length and width of your classroom to the nearest foot.
- On grid paper, draw a model of your classroom using the measurements you found. Label the length and width.
- Find the area of your classroom based on your measurements.

Vocabulary and English Language Development

▶ Activate Prior Knowledge

1 Which figures are three-dimensional? _____

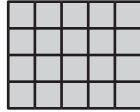
A



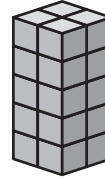
B



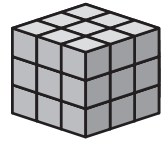
C



D



E



▶ Definition Review

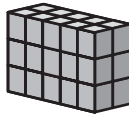
Match each vocabulary word to the description or figure that best fits it.

2 cube _____

A. the amount of space inside a three-dimensional figure

B. a unit for measuring volume

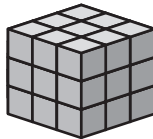
C.



3 volume _____

4 rectangular prism _____

D.



5 cubic unit _____

▶ Application

Follow the directions to play the game.

- Form a group of 3 or 4.
- Choose a rectangular prism for which the volume can be found (for example: the room itself, a drawer, or a box).
- Examine the prism and estimate its volume. Write your estimated volume.
- Use a ruler or yardstick to determine the actual volume of the prism.
- The student with the closest estimate wins the game.
- Repeat the game until all students choose and measure a prism.