

**SCSS Advanced Lesson Planning**

**Grade Level: 6th Grade      Subject: Mathematics**

<b>Day</b>	<b>Standard</b>	<b>Activity/Assignment</b>	<b>Instructions</b>	<b>Additional Resource/Information</b> <i>Optional</i>
1	6.NS.5, 6.NS.6, 6.NS.6a, 6c 6.NS.7, 7a, 6.NS.7b, 7d 6.NS.4	Unit 1 Study Guide Review	Complete the Unit 1 study guide on pages 67-69 in the <i>Go Math</i> textbook. Be sure to check out the worked examples for guidance. You may choose to do even <b>or</b> odd problems; you do not need to complete every problem in the review.	
2	6.NS.1, 6.NS.4, 6.NS.2, 6.NS.3	Unit 2 Study Guide Review	Complete the Unit 2 study guide on pages 137-139 in the <i>Go Math</i> textbook. Be sure to check out the worked examples for guidance. You may choose to do even <b>or</b> odd problems; you do not need to complete every problem in the review.	
3	6.NS.A	<i>Getting TNReady</i>	Complete page 13-14 in the <i>Getting TNReady</i> workbook. #1-6 <b>ALL</b> #7-11 choose <b>TWO</b> to complete.	
4	6.RP.1, 6.RP.2, 6.RP.3, 6.RP.3a-3b 6.RP.3d	Unit 3 Study Guide Review	Complete the Unit 3 study guide on pages 225-227 in the <i>Go Math</i> textbook. Be sure to check out the worked examples for guidance. You may choose to do even <b>or</b> odd problems; you do not need to complete every problem in the review. You may choose to do even <b>or</b> odd problems; you do not need to complete every problem in the review.	
5	6.EE.1, 6.EE.2a-2c, 6.EE.3, 6.EE.4, 6.EE.6	Unit 4 Study Guide Review	Complete the Unit 4 study guide on pages 285-287 in the <i>Go Math</i> textbook. Be sure to check out the worked examples for guidance. You may choose to do even <b>or</b> odd problems; you do not need to complete every problem in the review.	
6	6.EE.5, 6.EE.6, 6b, 6c 6.EE.7, 6.EE.8, 6.EE.9	Unit 5 Study Guide Review	Complete the Unit 5 study guide on pages 359-361 in the <i>Go Math</i> textbook. Be sure to check out the worked examples for guidance. You may choose to do even <b>or</b> odd problems; you do not need to complete every problem in the review.	
7	6.EE.A 6.EE.B	<i>Getting TNReady</i>	Choose <b>TWO</b> problems to complete on each of the following pages in the <i>Getting TNReady</i> workbook: 29, 31, 39, 45	
8	6.G.1, 6.EE.7, 6.G.3, 6.NS.6b, 6.NS.8	Unit 6 Study Guide Review	Complete the Unit 6 study guide on pages 437-440 in the <i>Go Math</i> textbook. Be sure to check out the worked examples for guidance. You may choose to do even <b>or</b> odd problems; you do not need to complete every problem in the review.	
9	6.SP.1, -6.SP.5d	Unit 7 Study Guide Review	Complete the Unit 7 study guide on pages 485-486 #1-3 as well as the Performance Task on page 486 in the <i>Go Math</i> textbook. Be sure to check out the worked examples for guidance.	
10	6.NS.B	<i>Getting TNReady:</i> Fluency Practice	Choose <b>THREE</b> problems to complete on each of the following pages in the <i>Getting TNReady</i> workbook: 59, 61, 63 <b>No calculator please!</b>	

# UNIT 1 Study Guide Review

## MODULE 1 Integers

### ESSENTIAL QUESTION

How can you use integers to solve real-world problems?

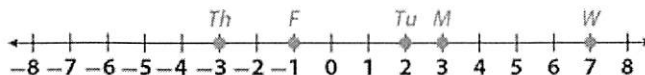
#### EXAMPLE 1

James recorded the temperature at noon in Fairbanks, Alaska, over a week in January.

Day	Mon	Tues	Wed	Thurs	Fri
Temperature	3	2	7	-3	-1

Graph the temperatures on the number line, and then list the numbers in order from least to greatest.

Graph the temperatures on the number line.



Read from left to right to list the temperatures in order from least to greatest.

The temperatures listed from least to greatest are -3, -1, 2, 3, 7.

#### EXAMPLE 2

Graph -4, 0, 2, and -1 on the number line. Then use the number line to find each absolute value.

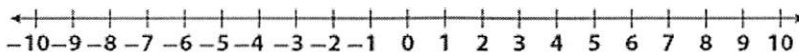


A number and its opposite are the same distance from 0 on the number line. The absolute value of a negative number is its opposite.

$| -4 | = 4$        $| 0 | = 0$        $| 2 | = 2$        $| -1 | = 1$

### EXERCISES

1. Graph 7, -2, 5, 1, and -1 on the number line. (Lesson 1.1)



List the numbers from least to greatest. (Lesson 1.2)

2. 4, 0, -2, 3 \_\_\_\_\_      3. -3, -5, 2, -2 \_\_\_\_\_

Compare using < or >. (Lesson 1.2)

4. 4 ○ 1      5. -2 ○ 2      6. -3 ○ -5      7. -7 ○ 2

Find the opposite and absolute value of each number. (Lessons 1.1, 1.3)

8. 6 \_\_\_\_\_      9. -2 \_\_\_\_\_

#### Key Vocabulary

- absolute value (*valor absoluto*)
- inequality (*desigualdad*)
- integers (*enteros*)
- negative numbers (*números negativos*)
- opposites (*opuestos*)
- positive numbers (*números positivos*)

## MODULE 2 Factors and Multiples

### ESSENTIAL QUESTION

How do you find and use the greatest common factor of two whole numbers? How do you find and use the least common multiple of two numbers?

#### Key Vocabulary

greatest common factor (GCF)  
(*máximo común divisor*  
(MCD))

least common multiple  
(LCM) (*mínimo común*  
*múltiplo* (mcm))

#### EXAMPLE 1

Use the Distributive Property to rewrite  $32 + 24$  as a product of their greatest common factor and another number.

- A. List the factors of 24 and 32. Circle the common factors.

24: ① ② 3 ④ 6 ⑧ 12 24

32: ① ② ④ ⑧ 16 32

- B. Rewrite each number as a product of the GCF and another number.

24:  $8 \times 3$

32:  $8 \times 4$

- C. Use the Distributive Property and your answer above to rewrite  $32 + 24$  using the GCF and another number.

$$32 + 24 = 8 \times 3 + 8 \times 4$$

$$32 + 24 = 8 \times (3 + 4)$$

$$32 + 24 = 8 \times 7$$

#### EXAMPLE 2

On Saturday, every 8th customer at Adam's Bagels will get a free coffee. Every 12th customer will get a free bagel. Which customer will be the first to get a free coffee and a free bagel?

- A. List the multiples of 8 and 12. Circle the common multiples.

8: 8 16 ②④ 32 40 ④⑧

12: 12 ②④ 36 ④⑧

- B. Find the LCM of 8 and 12.

The LCM is 24. The 24th customer will be the first to get a free coffee and a free bagel.

#### EXERCISES

1. Find the GCF of 49 and 63 (Lesson 2-1) \_\_\_\_\_

Rewrite each sum as a product of the GCF of the addends and another number. (Lesson 2-1)

2.  $15 + 45 =$  \_\_\_\_\_      3.  $9 + 27 =$  \_\_\_\_\_

4. Find the LCM of 9 and 6 (Lesson 2-2) \_\_\_\_\_

**MODULE 3** Rational Numbers

**ESSENTIAL QUESTION**

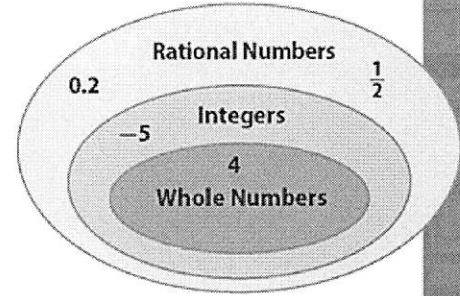
How can you use rational numbers to solve real-world problems?

**Key Vocabulary**  
 rational number (*número racional*)  
 Venn diagram (*diagrama de Venn*)

**EXAMPLE 1**

Use the Venn diagram to determine in which set or sets each number belongs.

- A.  $\frac{1}{2}$  belongs in the set of rational numbers.
- B.  $-5$  belongs in the sets of integers and rational numbers.
- C.  $4$  belongs in the sets of whole numbers, integers, and rational numbers.
- D.  $0.2$  belongs in the set of rational numbers.



**EXAMPLE 2**

Order  $\frac{2}{5}$ ,  $0.2$ , and  $\frac{4}{15}$  from greatest to least.

Write the decimal as an equivalent fraction.  $0.2 = \frac{2}{10} = \frac{1}{5}$

Find equivalent fractions with 15 as the common denominator.  $\frac{2 \times 3}{5 \times 3} = \frac{6}{15}$        $\frac{1 \times 3}{5 \times 3} = \frac{3}{15}$        $\frac{4}{15} = \frac{4}{15}$

Order fractions with common denominators by comparing the numerators.  $6 > 4 > 3$        $\frac{6}{15} > \frac{4}{15} > \frac{3}{15}$

The numbers in order from greatest to least are,  $\frac{2}{5}$ ,  $\frac{4}{15}$ , and  $0.2$ .

**EXERCISES**

Classify each number by indicating in which set or sets it belongs.

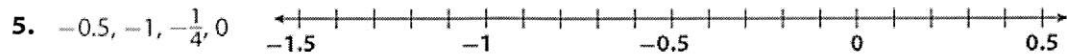
(Lesson 2.1)

- 1.  $8$  \_\_\_\_\_
- 2.  $0.25$  \_\_\_\_\_

Find the absolute value of each rational number. (Lesson 2.2)

- 3.  $|3.7|$  \_\_\_\_\_
- 4.  $|\frac{-2}{3}|$  \_\_\_\_\_

Graph each set of numbers on the number line and order the numbers from greatest to least. (Lesson 2.1, 2.3)



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# UNIT 2 Study Guide Review

## MODULE 4 Operations with Fractions

Key Vocabulary  
reciprocals (*reciprocos*)

### ? ESSENTIAL QUESTION

How can you use operations with fractions to solve real-world problems?

#### EXAMPLE 1

**Add.**

$$\frac{7}{9} + \frac{5}{12}$$

The LCM of 9 and 12 is 36.

$$\frac{7 \times 4}{9 \times 4} + \frac{5 \times 3}{12 \times 3}$$

Use the LCM to make fractions with common denominators.

$$\frac{28}{36} + \frac{15}{36} = \frac{43}{36}$$

Simplify.

$$\frac{43}{36} = 1\frac{7}{36}$$

**Subtract.**

$$\frac{9}{10} - \frac{5}{6}$$

The LCM of 10 and 6 is 30.

$$\frac{9 \times 3}{10 \times 3} - \frac{5 \times 5}{6 \times 5}$$

Use the LCM to make fractions with common denominators.

$$\frac{27}{30} - \frac{25}{30} = \frac{2}{30}$$

Simplify.

$$\frac{2}{30} = \frac{1}{15}$$

#### EXAMPLE 2

**Multiply.**

**A.**  $\frac{4}{5} \times \frac{1}{8}$

$$\frac{4 \times 1}{5 \times 8} = \frac{4}{40}$$

Multiply numerators.

Multiply denominators.

$$\frac{4 \div 4}{40 \div 4} = \frac{1}{10}$$

Simplify by dividing by the GCF.

**B.**  $2\frac{1}{4} \times \frac{1}{5}$

$$\frac{9}{4} \times \frac{1}{5}$$

Rewrite the mixed number as a fraction greater than 1.

$$\frac{9 \times 1}{4 \times 5} = \frac{9}{20}$$

Multiply numerators.

Multiply denominators.

#### EXAMPLE 3

**Divide.**

**A.**  $\frac{2}{7} \div \frac{1}{2}$

$$\frac{2}{7} \times \frac{2}{1}$$

Rewrite the problem as multiplication using the reciprocal of the second fraction.

$$\frac{2 \times 2}{7 \times 1} = \frac{4}{7}$$

Multiply numerators.

Multiply denominators.

**B.**  $2\frac{1}{3} \div 1\frac{3}{4}$

$$\frac{7}{3} \div \frac{7}{4}$$

Write both mixed numbers as improper fractions.

$$\frac{1\cancel{7} \times 4}{3 \times \cancel{7} 1} = \frac{4}{3}$$

Multiply by the reciprocal of the second fraction.

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

Simplify:  $\frac{4}{3} = 1\frac{1}{3}$

#### EXERCISES

**Add. Write the answer in simplest form. (Lesson 4.1)**

1.  $\frac{3}{8} + \frac{4}{5}$  \_\_\_\_\_ 2.  $1\frac{9}{10} + \frac{3}{4}$  \_\_\_\_\_ 3.  $\frac{2}{8} + \frac{6}{12}$  \_\_\_\_\_

**Subtract. Write the answer in simplest form. (Lesson 4.1)**

4.  $1\frac{3}{7} - \frac{4}{5}$  \_\_\_\_\_ 5.  $\frac{7}{8} - \frac{5}{12}$  \_\_\_\_\_ 6.  $3\frac{5}{10} - \frac{4}{8}$  \_\_\_\_\_

**Multiply. Write the answer in simplest form.** (Lesson 4.1)

7.  $\frac{1}{7} \times \frac{4}{5}$  \_\_\_\_\_      8.  $\frac{5}{6} \times \frac{2}{3}$  \_\_\_\_\_      9.  $\frac{3}{7} \times \frac{14}{15}$  \_\_\_\_\_

10.  $1\frac{1}{3} \times \frac{5}{8}$  \_\_\_\_\_      11.  $1\frac{2}{9} \times 1\frac{1}{2}$  \_\_\_\_\_      12.  $2\frac{1}{7} \times 3\frac{2}{3}$  \_\_\_\_\_

**Divide. Write the answer in simplest form.** (Lessons 4.2, 4.3)

13.  $\frac{3}{7} \div \frac{2}{3}$  \_\_\_\_\_      14.  $\frac{1}{8} \div \frac{3}{4}$  \_\_\_\_\_      15.  $1\frac{1}{5} \div \frac{1}{4}$  \_\_\_\_\_

16. On his twelfth birthday, Ben was  $4\frac{3}{4}$  feet tall. On his thirteenth birthday, Ben was  $5\frac{3}{8}$  feet tall. How much did Ben grow between his twelfth and thirteenth birthdays? (Lesson 4.1)
- \_\_\_\_\_

17. Ron had 20 apples. He used  $\frac{2}{5}$  of the apples to make pies. How many apples did Ron use for pies? (Lesson 4.4)
- \_\_\_\_\_

18. The area of a rectangular garden is  $38\frac{1}{4}$  square meters. The width of the garden is  $4\frac{1}{2}$  meters. Find the length of the garden. (Lesson 4.4)
- \_\_\_\_\_

MODULE

5

## Operations with Decimals



### ESSENTIAL QUESTION

How can you use operations with decimals to solve real-world problems?

### Key Vocabulary

order of operations (*orden de las operaciones*)

### EXAMPLE 1

To prepare for a race, Lloyd ran every day for two weeks. He ran a total of 67,592 meters. Lloyd ran the same distance every day. He took a two-day rest and then started running again. The first day after his rest, he ran the same distance plus 1,607.87 meters more. How far did Lloyd run that day?

**Step 1** Divide to see how far Lloyd ran every day during the two weeks.

$$\begin{array}{r} 4,828 \\ 14 \overline{)67,592} \end{array}$$

Lloyd ran 4,828 meters a day.

**Step 2** Add 1,607.87 to 4,828 to find out how far Lloyd ran the first day after his rest.

$$\begin{array}{r} 1,607.87 \\ + 4,828.00 \\ \hline 6,435.87 \end{array}$$

Lloyd ran 6,435.87 meters that day.

**EXAMPLE 2**

Rebecca bought 2.5 pounds of red apples. The apples cost \$0.98 per pound. What was the total cost of Rebecca's apples?

$$\begin{array}{r}
 2.5 \leftarrow 1 \text{ decimal place} \\
 \times .98 \leftarrow +2 \text{ decimal places} \\
 \hline
 200 \\
 + 2250 \\
 \hline
 2.450 \leftarrow 3 \text{ decimal places}
 \end{array}$$

The apples cost \$2.45.

**EXAMPLE 3**

Rashid spent \$37.29 on gas for his car. Gas was \$3.39 per gallon. How many gallons did Rashid purchase?

**Step 1** The divisor has two decimal places, so multiply both the dividend and the divisor by 100 so that the divisor is a whole number:

$$3.39 \overline{)37.29} \qquad 339 \overline{)3729}$$

**Step 2** Divide:

$$\begin{array}{r}
 11 \\
 339 \overline{)3729} \\
 \underline{-339} \phantom{00} \\
 339 \\
 \underline{-339} \\
 0
 \end{array}$$

Rashid purchased 11 gallons of gas.

**EXERCISES**

**Add.** (Lesson 5.2)

1.  $12.24 + 3.9$  \_\_\_\_\_ 2.  $0.986 + 0.342$  \_\_\_\_\_ 3.  $2.479 + 0.31$  \_\_\_\_\_

**Subtract.** (Lesson 5.2)

4.  $6.19 - 3.05$  \_\_\_\_\_ 5.  $7.285 - 0.975$  \_\_\_\_\_ 6.  $14.31 - 13.41$  \_\_\_\_\_

**Multiply.** (Lesson 5.3)

7.  $12 \times 0.4$  \_\_\_\_\_ 8.  $0.15 \times 9.1$  \_\_\_\_\_ 9.  $3.12 \times 0.25$  \_\_\_\_\_

**Divide.** (Lessons 5.1, 5.4)

10.  $78,974 \div 21$  \_\_\_\_\_ 11.  $19,975 \div 25$  \_\_\_\_\_ 12.  $67,396 \div 123$  \_\_\_\_\_

13.  $5 \overline{)64.5}$  \_\_\_\_\_ 14.  $0.6 \overline{)25.2}$  \_\_\_\_\_ 15.  $2.1 \overline{)36.75}$  \_\_\_\_\_

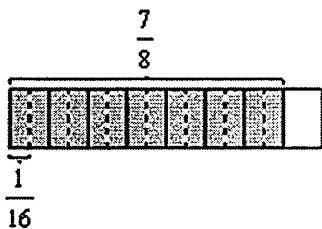
16. A pound of rice crackers costs \$2.88. Matthew purchased  $\frac{1}{4}$  pound of crackers. How much did he pay for the crackers? (Lesson 5.5) \_\_\_\_\_

**The student will solve problems involving division of fractions by fractions.**

**SELECTED RESPONSE**

Select the correct answer.

1. You have  $\frac{7}{8}$  cup of sour cream to make tacos. If each taco requires  $\frac{1}{16}$  cup of sour cream, how many tacos can you make?



- (A)  $\frac{7}{128}$  taco      (C) 14 tacos  
 (B)  $\frac{1}{14}$  taco      (D) 15 tacos
2. How many  $\frac{1}{2}$ -cup servings are there in  $\frac{7}{8}$  cup of peanut butter?
- (A)  $\frac{1}{16}$       (C)  $\frac{4}{7}$   
 (B)  $\frac{7}{16}$       (D)  $1\frac{3}{4}$
3. Circle the correct answer. Carl wants to plan a garden that is  $1\frac{1}{2}$  yards long with an area of  $3\frac{1}{2}$  square yards. The width

of the garden should be

$\frac{3}{7}$ yard
2 yards
$2\frac{1}{3}$ yards
$5\frac{1}{4}$ yards

4. Divide.  $\frac{3}{7} \div \frac{17}{19}$

- (A)  $\frac{3}{133}$       (C)  $\frac{51}{133}$   
 (B)  $\frac{57}{119}$       (D)  $\frac{119}{57}$

5. Nima uses  $\frac{2}{3}$  cup peanuts,  $\frac{1}{2}$  cup cashews,  $\frac{3}{4}$  cup pecans, and some raisins in a recipe that makes  $2\frac{1}{4}$  cups of trail mix. How many cups of peanuts are there per cup of trail mix?

- (A)  $\frac{2}{9}$       (C)  $\frac{8}{27}$   
 (B)  $\frac{3}{9}$       (D)  $\frac{27}{8}$

6. Jerry is tiling the wall behind his sink. The tiles he's using are square with sides that measure  $1\frac{3}{4}$  inches. If the area of wall he's tiling is 42 inches long and  $29\frac{3}{4}$  inches high, how many tiles will he need?

- (A) 17  
 (B) 24  
 (C) 408  
 (D)  $1249\frac{1}{2}$

**CONSTRUCTED RESPONSE**

7. The following division is being performed using multiplication by the reciprocal. Find the missing numbers.

$$\frac{5}{12} \div \frac{?}{3} = \frac{5}{12} \cdot \frac{?}{10} = \frac{1}{?}$$

\_\_\_\_\_

\_\_\_\_\_



8. Ida is cutting a  $\frac{11}{12}$ -foot wooden board into  $\frac{3}{16}$ -foot sections to do some detail work on a model she is building. How many whole  $\frac{3}{16}$ -foot sections are there in the  $\frac{11}{12}$ -foot wooden board? Explain your answer and show your work.

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9. Baruka has  $\frac{1}{2}$  gallon of milk left in the fridge.
- a. How many  $\frac{5}{64}$ -gallon (10-ounce) servings of milk does she have left? Show your work.

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- b. If she drinks 10 ounces of milk a day, how many days of milk does she have left? Explain.

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10. Juan was presented with the following problem on a math test: "Divide  $\frac{3}{4}$  by  $\frac{5}{7}$ . Show your work." His work is shown below. What was Juan's error? Correct his work and state the correct quotient.

$$\frac{5}{7} \div \frac{3}{4} = \frac{5}{7} \cdot \frac{4}{3} = \frac{20}{21}$$

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11. Consider the division statement  $\frac{1}{4} \div \frac{7}{16}$ .
- a. Describe a real world situation that might involve this expression.

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- b. Find the quotient.

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- c. Interpret the quotient in terms of the situation you described in part a.

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## UNIT 3

Study Guide **REVIEW**MODULE **6****Representing Ratios and Rates****ESSENTIAL QUESTION**

How can you use ratios and rates to solve real-world problems?

**Key Vocabulary**equivalent ratios (*razones equivalentes*)rate (*tasa*)ratio (*razón*)unit rate (*tasa unitaria*)**EXAMPLE 1**

Tina pays \$45.50 for 13 boxes of wheat crackers. What is the unit price?

$$\frac{\$45.50}{13 \text{ boxes}} = \frac{\$3.50}{1 \text{ box}}$$

The unit price is \$3.50 per box of crackers.

**EXAMPLE 2**

A trail mix recipe calls for 3 cups of raisins and 4 cups of peanuts. Mitt made trail mix for a party and used 5 cups of raisins and 6 cups of peanuts. Did Mitt use the correct ratio of raisins to peanuts?

$$\frac{3 \text{ cups of raisins}}{4 \text{ cups of peanuts}}$$

The ratio of raisins to peanuts in the recipe is  $\frac{3}{4}$ .

$$\frac{5 \text{ cups of raisins}}{6 \text{ cups of peanuts}}$$

Mitt used a ratio of  $\frac{5}{6}$ .

$$\frac{3}{4} \times \frac{3}{3} = \frac{9}{12} \quad \frac{5}{6} \times \frac{2}{2} = \frac{10}{12} \quad \frac{9}{12} < \frac{10}{12}$$

Mitt used a higher ratio of raisins to peanuts in his trail mix.

**EXERCISES**

Write three equivalent ratios for each ratio. (Lesson 7.1)

1.  $\frac{18}{6}$  \_\_\_\_\_ 2.  $\frac{5}{45}$  \_\_\_\_\_ 3.  $\frac{3}{5}$  \_\_\_\_\_

4. To make a dark orange color, Ron mixes 3 ounces of red paint with 2 ounces of yellow paint. Write the ratio of red paint to yellow paint

three ways. (Lesson 7.1) \_\_\_\_\_

5. A box of a dozen fruit tarts costs \$15.00. What is the cost of one fruit tart?

(Lesson 7.2) \_\_\_\_\_

Compare the ratios. (Lesson 7.3)

6.  $\frac{2}{5}$  ○  $\frac{3}{4}$

7.  $\frac{9}{2}$  ○  $\frac{10}{7}$

8.  $\frac{2}{11}$  ○  $\frac{3}{12}$

9.  $\frac{6}{7}$  ○  $\frac{8}{9}$

MODULE 7

# Applying Ratios and Rates



**ESSENTIAL QUESTION**

How can you use ratios and rates to solve real-world problems?

**Key Vocabulary**

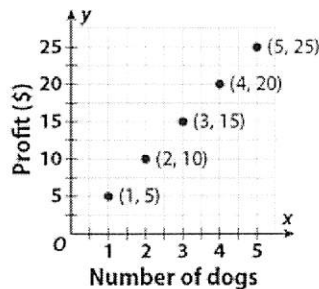
- conversion factor (*factor de conversión*)
- proportion (*proporción*)
- scale (*escala*)
- scale drawing (*dibujo a escala*)

**EXAMPLE 1**

- A. Jessica earns \$5 for each dog she walks. Complete the table, describe the rule, and tell whether the relationship is additive or multiplicative. Then graph the ordered pairs on a coordinate plane.

Number of dogs	1	2	3	4	5
Profit (\$)	5	10	15	20	25

Jessica's profit is the number of dogs walked multiplied by \$5. The relationship is multiplicative.



- B. A veterinarian tells Lee that his dog should have a 35 centimeter collar. What is this measurement in inches?

Use the conversion factor 1 inch = 2.54 centimeters, written as the rate  $\frac{1 \text{ in.}}{2.54 \text{ cm}}$ .

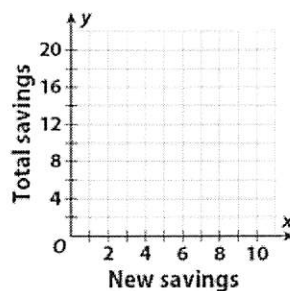
$$35 \text{ cm} \cdot \frac{1 \text{ in.}}{2.54 \text{ cm}} \approx 13.78$$

The collar should be about 14 inches.

**EXERCISES**

1. Thaddeus already has \$5 saved. He wants to save more to buy a book. Complete the table, and graph the ordered pairs on the coordinate graph. (Lessons 8.1, 8.2)

New savings	4	6	8	10
Total savings	9			



2. There are 2 hydrogen atoms and 1 oxygen atom in a water molecule. Complete the table, and list the equivalent ratios shown on the table. (Lessons 8.1, 8.2)

Hydrogen atoms	8		16	20
Oxygen atoms		6		

3. Sam can solve 30 multiplication problems in 2 minutes. How many can he solve in 20 minutes? (Lesson 8.3)

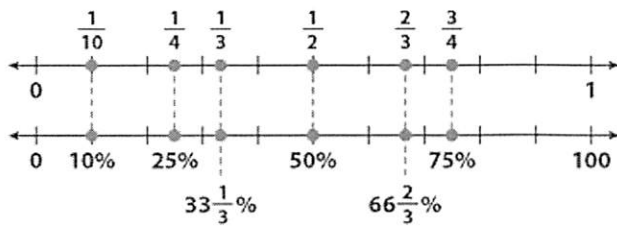
4. A male Chihuahua weighs 5 pounds. How many ounces does he weigh? (Lesson 8.4)
- 

**MODULE 8 Percents**

**ESSENTIAL QUESTION**  
How can you use percents to solve real-world problems?

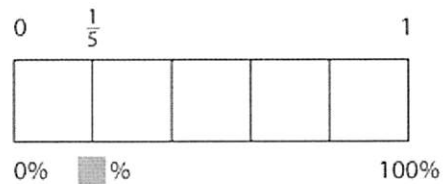
**EXAMPLE 1**

Find an equivalent percent for  $\frac{7}{10}$ .



$\frac{7}{10} = 7 \cdot \frac{1}{10}$        $\frac{7}{10} = 7 \cdot 10\%$        $\frac{7}{10} = 70\%$

Find an equivalent percent for  $\frac{1}{5}$ .



$\frac{1}{5}$  of 100 = 20, so  $\frac{1}{5}$  of 100% = 20%  
 $\frac{1}{5} = 20\%$

**EXAMPLE 2**

Thirteen of the 50 states in the United States do not touch the ocean. Write  $\frac{13}{50}$  as a decimal and a percent.

$\frac{13}{50} = \frac{26}{100}$        $\frac{26}{100} = 0.26$        $0.26 = 26\%$        $\frac{13}{50} = 0.26 = 26\%$

**EXAMPLE 3**

Buckner put \$60 of his \$400 paycheck into his savings account. Find the percent of his paycheck that Buckner saved.

$\frac{60}{400} = \frac{?}{100}$        $\frac{60 \div 4}{400 \div 4} = \frac{15}{100}$       Buckner saved 15% of his paycheck.

**EXERCISES**

Write each fraction as a decimal and a percent. (Lessons 9.1, 9.2)

1.  $\frac{3}{4}$  \_\_\_\_\_      2.  $\frac{7}{20}$  \_\_\_\_\_      3.  $\frac{8}{5}$  \_\_\_\_\_

Complete each statement. (Lessons 9.1, 9.2)

4. 25% of 200 is \_\_\_\_\_.      5. 16 is \_\_\_\_\_ of 20.      6. 21 is 70% of \_\_\_\_\_.

UNIT 4  
**Study Guide Review**

MODULE **9**

**Generating Equivalent Numerical Expressions**

**ESSENTIAL QUESTION**

How can you generate equivalent numerical expressions and use them to solve real-world problems?

**Key Vocabulary**

- base (*base (en numeración)*)
- exponent (*exponente*)
- order of operations (*orden de las operaciones*)
- power (*potencia*)

**EXAMPLE 1**

Find the value of each power.

**A.**  $0.9^2$

$$0.9^2 = 0.9 \times 0.9 = 0.81$$

**B.**  $18^0$

Any number raised to the power of 0 is 1.

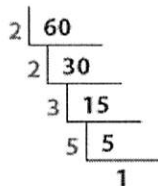
$$18^0 = 1$$

**C.**  $\left(\frac{1}{4}\right)^4$

$$\left(\frac{1}{4}\right)^4 = \left(\frac{1}{4}\right)\left(\frac{1}{4}\right)\left(\frac{1}{4}\right)\left(\frac{1}{4}\right) = \frac{1}{256}$$

**EXAMPLE 2**

Find the prime factorization of 60.



$$60 = 2 \times 2 \times 3 \times 5$$

$$60 = 2^2 \times 3 \times 5$$

The prime factorization of 60 is  $2^2 \times 3 \times 5$ .

**EXAMPLE 3**

Simplify each expression.

**A.**  $4 \times (2^3 + 5)$

$$= 4 \times (8 + 5) \quad 2^3 = 8$$

$$= 4 \times 13 \quad \text{Add.}$$

$$= 52 \quad \text{Multiply.}$$

**B.**  $27 \div 3^2 \times 6$

$$= 27 \div 9 \times 6 \quad 3^2 = 9$$

$$= 3 \times 6 \quad \text{Divide.}$$

$$= 18 \quad \text{Multiply.}$$

**EXERCISES**

Use an exponents to write each expression. (Lesson 9.1)

1.  $3.6 \times 3.6$  \_\_\_\_\_ 2.  $9 \times 9 \times 9 \times 9$  \_\_\_\_\_ 3.  $\frac{4}{5} \times \frac{4}{5} \times \frac{4}{5}$  \_\_\_\_\_

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Find the value of each power. (Lesson 9.1)

4.  $12^0$  \_\_\_\_\_ 5.  $13^2$  \_\_\_\_\_ 6.  $\left(\frac{2}{7}\right)^3$  \_\_\_\_\_  
 7.  $0.4^2$  \_\_\_\_\_ 8.  $\left(\frac{4}{9}\right)^1$  \_\_\_\_\_ 9.  $0.7^3$  \_\_\_\_\_

Find the prime factorization of each number. (Lesson 9.2)

10. 75 \_\_\_\_\_ 11. 29 \_\_\_\_\_ 12. 168 \_\_\_\_\_

13. Eduardo is building a sandbox that has an area of 84 square feet. What are the possible whole number measurements for the length and width of the sandbox? (Lesson 9.2)

\_\_\_\_\_

Simplify each expression. (Lesson 9.3)

14.  $2 \times 5^2 - (4 + 1)$  \_\_\_\_\_ 15.  $\frac{22 - (3^2 + 4)}{12 \div 4}$  \_\_\_\_\_

## MODULE 10

# Generating Equivalent Algebraic Expressions



### ESSENTIAL QUESTION

How can you generate equivalent algebraic expressions and use them to solve real-world problems?

### EXAMPLE 1

Evaluate each expression for the given values of the variables.

A.  $2(x^2 - 9)$ ;  $x = 5$

$$\begin{aligned} 2(5^2 - 9) &= 2(25 - 9) \\ &= 2(16) && \text{Subtract.} \\ &= 32 && \text{Multiply.} \end{aligned}$$

When  $x = 5$ ,  $2(x^2 - 9) = 32$ .

B.  $w + y^2 + 3w$ ;  $w = 2$ ,  $y = 6$

$$\begin{aligned} 2 + 6^2 + 3(2) &= 2 + 36 + 6 \\ &= 44 && \text{Multiply.} \\ &= 44 && \text{Add} \end{aligned}$$

When  $w = 2$  and  $y = 6$ ,  $w + y^2 + 3w = 44$ .

### Key Vocabulary

algebraic expression  
*(expresión algebraica)*  
 coefficients (*coeficiente*)  
 constant (*constante*)  
 equivalent expressions  
*(expresión equivalente)*  
 evaluating (*evaluar*)  
 term (*término (en una expresión)*)

### EXAMPLE 2

Determine whether the algebraic expressions are equivalent:

$5(x + 2)$  and  $10 + 5x$ .

$$\begin{aligned} 5(x + 2) &= 5x + 10 && \text{Distributive Property} \\ &= 10 + 5x && \text{Commutative Property} \end{aligned}$$

$5(x + 2)$  is equal to  $10 + 5x$ . They are equivalent expressions.

**EXERCISES**

Write each phrase as an algebraic expression. (Lesson 10.1)

1.  $x$  subtracted from 15 \_\_\_\_\_ 2. 12 divided by  $t$  \_\_\_\_\_  
 3. 4 groups of  $y$  \_\_\_\_\_ 4. the sum of  $z$  and 7 \_\_\_\_\_

Write a phrase for each algebraic expression. (Lesson 10.1)

5.  $8p$  \_\_\_\_\_  
 6.  $s + 7$  \_\_\_\_\_

Evaluate each expression for the given values of the variables.

(Lesson 10.2)

7.  $8z + 3; z = 8$  \_\_\_\_\_ 8.  $3(7 + x^2); x = 2$  \_\_\_\_\_  
 9.  $s - 5t + s^2; s = 4, t = -1$  \_\_\_\_\_ 10.  $x - y^3; x = -7, y = 3$  \_\_\_\_\_  
 11. The expression  $\frac{1}{2}(h)(b_1 + b_2)$  gives the area of a trapezoid, with  $b_1$  and  $b_2$  representing the two base lengths of a trapezoid and  $h$  representing the height. Find the area of a trapezoid with base lengths 4 in. and 6 in. and a height of 8 in. (Lesson 10.2) \_\_\_\_\_

Determine if the expressions are equivalent. (Lesson 10.3)

12.  $7 + 7x; 7(x + \frac{1}{7})$  \_\_\_\_\_  
 13.  $2.5(3 + x); 2.5x + 7.5$  \_\_\_\_\_

Combine like terms. (Lesson 10.3)

14.  $3m - 6 + m^2 - 5m + 1$  \_\_\_\_\_  
 15.  $7x + 4(2x - 6)$  \_\_\_\_\_  
 16.  $b^2 + 3 + 2b^2 + 4 - 7$  \_\_\_\_\_  
 17.  $3(p + 5) - 8 + 11p$  \_\_\_\_\_

# UNIT 5 Study Guide

## MODULE 11

# Equations and Relationships

### ESSENTIAL QUESTION

How can you use equations and relationships to solve real-world problems?

**Key Vocabulary**  
equation (*ecuación*)  
solution (*solución*)  
solution of an inequality (*solución de una desigualdad*)

### EXAMPLE 1

Determine if the given value is a solution of the equation.

A.  $r - 5 = 17; r = 12$

$$12 - 5 \stackrel{?}{=} 17 \quad \text{Substitute.}$$
$$7 \neq 17$$

12 is not a solution of  $r - 5 = 17$ .

B.  $\frac{x}{6} = 7; x = 42$

$$\frac{42}{6} \stackrel{?}{=} 7 \quad \text{Substitute.}$$
$$7 = 7$$

42 is a solution of  $\frac{x}{6} = 7$ .

### EXAMPLE 2

Solve each equation. Check your answer.

A.  $y - 12 = 10$

$$\begin{array}{r} +12 \quad +12 \\ y - 12 = 10 \\ \hline y = 22 \end{array} \quad \text{Add 12 to both sides.}$$

$$\begin{array}{r} \text{Check: } 22 - 12 \stackrel{?}{=} 10 \\ \hline 10 = 10 \end{array} \quad \text{Substitute.}$$

B.  $5p = 30$

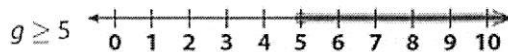
$$\begin{array}{r} 5p = 30 \\ \hline \frac{5p}{5} = \frac{30}{5} \\ p = 6 \end{array} \quad \text{Divide both sides by 5.}$$

$$\begin{array}{r} \text{Check: } 5(6) \stackrel{?}{=} 30 \\ \hline 30 = 30 \end{array} \quad \text{Substitute.}$$

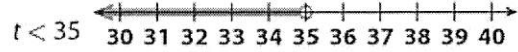
### EXAMPLE 3

Write and graph an inequality to represent each situation.

A. There are at least 5 gallons of water in an aquarium.



B. The temperature today will be less than 35 °F.



### EXERCISES

Determine whether the given value is a solution of the equation. (Lesson 11.1)

1.  $7x = 14; x = 3$  \_\_\_\_\_ 2.  $y + 13 = 17; y = 4$  \_\_\_\_\_

Write an equation to represent the situation. (Lesson 11.1)

3. Don has three times as much money as his brother, who has \$25. \_\_\_\_\_



4. There are  $s$  students enrolled in Mr. Rodriguez's class. There are 6 students absent and 18 students present today. \_\_\_\_\_

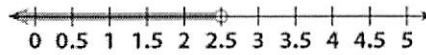
**Solve each equation. Check your answer.** (Lessons 11.2, 11.3)

5.  $p - 5 = 18$  \_\_\_\_\_      6.  $9q = 18.9$  \_\_\_\_\_  
 7.  $3.5 + x = 7$  \_\_\_\_\_      8.  $\frac{2}{7} = 2x$  \_\_\_\_\_

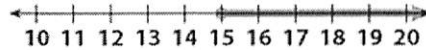
9. Sonia used \$12.50 to buy a new journal. She has \$34.25 left in her savings account. How much money did Sonia have before she bought the journal? Write and solve an equation to solve the problem. (Lesson 11.2) \_\_\_\_\_

**Write and graph an inequality to represent each situation.**  
 (Lesson 11.4)

10. The company's stock is worth less than \$2.50 per share. \_\_\_\_\_



11. Tina got a haircut, and her hair is still at least 15 inches long. \_\_\_\_\_



MODULE **12**

# Relationships in Two Variables



**ESSENTIAL QUESTION**

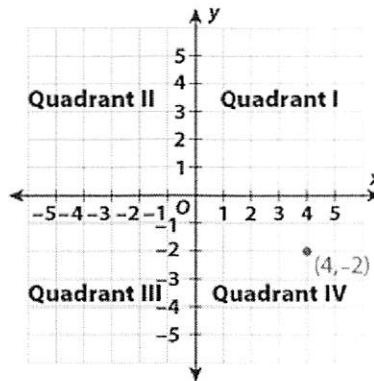
How can you use relationships in two variables to solve real-world problems?

**EXAMPLE 1**

Graph the point  $(4, -2)$  and identify the quadrant where it is located.

$(4, -2)$  is located 4 units to the right of the origin and 2 units down from the origin.

$(4, -2)$  is in quadrant IV.



**Key Vocabulary**

- axes (*ejes*)
- coordinate plane (*plano cartesiano*)
- coordinates (*coordenada*)
- ordered pair (*par ordenado*)
- origin (*origen*)
- quadrants (*cuadrante*)
- x-axis (*eje x*)

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**EXAMPLE 2**

Tim is paid \$8 more than the number of bags of peanuts he sells at the baseball stadium. The table shows the relationship between the money Tim earns and the number of bags of peanuts Tim sells. Identify the independent and dependent variables, and write an equation that represents the relationship.

Bags of peanuts, $x$	0	1	2	3
Money earned, $y$	8	9	10	11

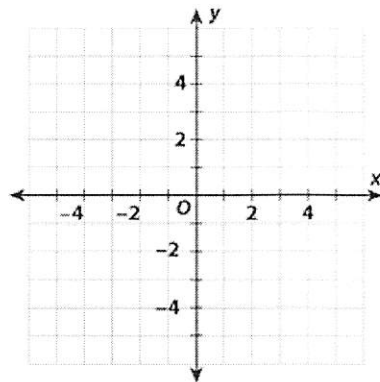
The number of bags is the independent variable, and the money Tim earns is the dependent variable.

The equation  $y = x + 8$  expresses the relationship between the number of bags Tim sells and the amount he earns.

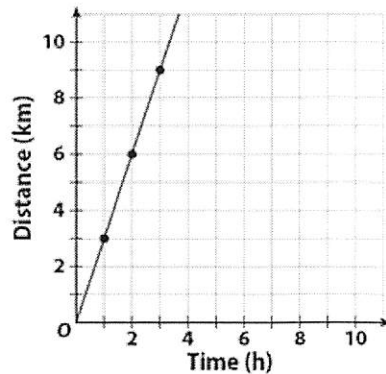
**EXERCISES**

Graph and label each point on the coordinate plane. (Lesson 12.1)

1.  $(4, 4)$
2.  $(-3, -1)$
3.  $(-1, 4)$



Use the graph to answer the questions. (Lesson 12.2)



4. What is the independent variable? \_\_\_\_\_
5. What is the dependent variable? \_\_\_\_\_
6. Describe the relationship between the independent variable and the dependent variable.  
\_\_\_\_\_

**The student will write and evaluate numerical expressions involving exponents.**

**SELECTED RESPONSE**

Select the correct answer.

1. Which exponential expression equals  $5 \times 5 \times 5 \times 5 \times 5 \times 5$ ?  
 (A)  $5^5$   
 (B)  $5^6$   
 (C)  $6^5$   
 (D)  $5^7$
2. Which is the expanded form of  $7^5$ ?  
 (A)  $7 \times 7 \times 7 \times 7 \times 7 \times 7$   
 (B)  $5 \times 5 \times 5 \times 5 \times 5 \times 5 \times 5$   
 (C)  $7 \times 7 \times 7 \times 7$   
 (D)  $7 \times 7 \times 7 \times 7 \times 7$

3. Which is the expanded form of  $3^2 \times 3^5$ ?  
 (A)  $3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3$   
 (B)  $9 \times 9 \times 9 \times 9 \times 9 \times 9 \times 9 \times 9 \times 9$   
 (C)  $3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3$   
 (D)  $9 \times 9 \times 9 \times 9 \times 9 \times 9$
4. Which is the value of  $6^4$ ?  
 (A) 216                       (C) 4,096  
 (B) 1,296                     (D) 7,776

Select all correct answers.

5. Which of the following expressions is equal to  $64$ ?  
 (A)  $2^4$   
 (B)  $8^2$   
 (C)  $6^3$   
 (D)  $2^6$   
 (E)  $4^3$

Select from the expanded forms given below to match with each given exponential expression.

- |                       |                      |
|-----------------------|----------------------|
| 6. $2^3 \times 5^4$   | <input type="text"/> |
| 7. $9^3 \times 11^5$  | <input type="text"/> |
| 8. $12^5$             | <input type="text"/> |
| 9. $2^4 \times 5^4$   | <input type="text"/> |
| 10. $9^4 \times 11^5$ | <input type="text"/> |

$2 \times 2 \times 2 \times 2 \times 5 \times 5 \times 5 \times 5$	$5 \times 5 \times 5 \times 2 \times 2$
$12 \times 12 \times 12 \times 12 \times 12 \times 12 \times 12$	$9 \times 9 \times 9 \times 11 \times 11 \times 11 \times 11 \times 11$
$9 \times 9 \times 9 \times 9 \times 11 \times 11 \times 11 \times 11 \times 11$	$2 \times 2 \times 2 \times 5 \times 5 \times 5 \times 5$
$5 \times 5 \times 5 \times 5 \times 3 \times 3 \times 3$	$12 \times 12 \times 12 \times 12 \times 12$

**CONSTRUCTED RESPONSE**

11. Louis evaluated the expression  $3^5 + 6^3$ , but he made a mistake. His work is shown. Identify Louis's mistake and show how to find the correct answer.

$$3^5 + 6^3 = 5 \times 5 \times 5 + 3 \times 3 \times 3 \times 3 \times 3 \times 3$$

$$= 854$$

---



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## The student will model and write algebraic expressions.

### SELECTED RESPONSE

Select the correct answer.

- Which expression below represents "k more than 8"?
  - (A)  $8k$
  - (B)  $8 + k$
  - (C)  $8 - k$
  - (D)  $\frac{8}{k}$
- Which statement below could be represented by the expression  $7 - t$ ?
  - (A)  $t$  less than 7
  - (B) 7 times  $t$
  - (C)  $t$  more than 7
  - (D) 7 less than  $t$
- Which statement below CANNOT be represented by the expression  $t - 16$ ?
  - (A) 16 less than  $t$
  - (B)  $t$  decreased by 16
  - (C)  $t$  less than 16
  - (D) 16 subtracted from  $t$

- Marcus and Judy are picking apples. At the end of the day, Marcus has  $a$  apples. Judy has 5 times as many apples as Marcus. How many apples does Judy have in terms of  $a$ ?
  - (A)  $a - 5$
  - (B)  $5 + a$
  - (C)  $\frac{5}{a}$
  - (D)  $5a$

Select all correct answers.

- Which of the following statements could be represented by the expression  $d - 10$ ?
  - (A) 10 less than  $d$
  - (B) 10 more than  $d$
  - (C)  $d$  decreased by 10
  - (D)  $d$  less than 10
  - (E)  $d$  minus 10
  - (F)  $d$  increased by 10
- Which of the following indicates that the operation is addition?
  - (A) 8 plus  $j$
  - (B)  $k$  fewer than 10
  - (C)  $r$  increased by 7
  - (D) 14 divided by  $n$
  - (E) 11 decreased by  $h$
  - (F) 6 more than  $s$

- Indicate the operation that is indicated by each statement by putting a check mark in the appropriate column of the table.

	+	-	×	÷
5 more than $n$				
11 fewer than $w$				
$k$ divided by 4				
$y$ less than 8				
2 times $r$				
9 increased by $g$				

**The student will identify two equivalent expressions.**

**SELECTED RESPONSE**

Select the correct answer.

1. Which expression is NOT equivalent to the expression  $11 - (3x + 2)$ ?
  - (A)  $11 - 3x - 2$
  - (B)  $9 - 3x$
  - (C)  $11 - 3x + 2$
  - (D)  $11 + (-3x - 2)$
  
2. Which expression is equivalent to  $12x - 3(x + 2)$ ?
  - (A)  $12x + 6$
  - (B)  $12x - 6$
  - (C)  $9x + 6$
  - (D)  $9x - 6$

3. Which pair of expressions are equivalent?

- (A)  $4x - 2 + 5x$  and  $7x$
- (B)  $(11 + 3x) - x$  and  $11 + 2x$
- (C)  $12(x - 2)$  and  $12x - 2$
- (D)  $9x(4)$  and  $13x$

Select all correct answers.

4. Which expressions are equivalent to the expression  $2x - (-3x + 8y) + 8$ ?

- (A)  $2x + (3x + 8y) + 8$
- (B)  $2x + (3x - 8y) + 8$
- (C)  $(2x + 3x) - 8y + 8$
- (D)  $3x + 8$
- (E)  $5x - 8y + 8$

Select from the expressions at the right to match with each given expression.

- |                    |  |           |
|--------------------|--|-----------|
| 5. $3x - 2 + 8x$   |  | $12x$     |
| 6. $4x - (2x + 1)$ |  | $2x - 1$  |
| 7. $11(x - 1) + 2$ |  | $7x$      |
| 8. $4(3x)$         |  | $11x - 9$ |
| 9. $-13x + 5x$     |  | $11x - 2$ |
|                    |  | $2x + 1$  |
|                    |  | $-8x$     |

**CONSTRUCTED RESPONSE**

10. Blaine and Tanya are selling pumpkins and tomatoes at a farm stand. Blaine sells  $p$  pumpkins and  $t$  tomatoes on the first day. The second day he sells double what he sells the first day. Over both days, Tanya sells triple what Blaine sells on the first day.

a. Write an expression for the total number of pumpkins and tomatoes Blaine sold both days.

b. Write an expression for the total number of pumpkins and tomatoes Tanya sold both days.

c. Did Blaine and Tanya sell the same amount? Explain.

**The student will write and solve equations to solve problems.**

**SELECTED RESPONSE**

1. Circle the correct answer. The equation

$x + 5 = 7$
$x + 8 = 15$
$x + 7 = 12$
$x + 12 = 20$

has the same solution as

the equation  $x + 5 = 12$ .

Select the correct answer.

2. Thomas put  $\frac{1}{4}$  of the  $c$  coins he had in his pocket into the jar under his bed. He put 16 coins into the jar. The equation

that models this situation is  $\frac{1}{4}c = 16$ .

How many coins did Thomas have in his pocket?

- (A) 4 coins
- (B) 12 coins
- (C) 20 coins
- (D) 64 coins

3. What is the procedure for solving the equation  $\frac{1}{2}x = 16$ ?

- (A) Add  $\frac{1}{2}$  to both sides of the equation.
- (B) Subtract  $\frac{1}{2}$  from both sides of the equation.
- (C) Multiply both sides of the equation by 2.
- (D) Multiply both sides of the equation by  $\frac{1}{2}$ .

4. There are 6 blue shirts and  $g$  green shirts in a drawer. There are 11 shirts total in the drawer. What equation models this situation?

- (A)  $6 + g = 11$
- (B)  $6g = 11$
- (C)  $6 - g = 11$
- (D)  $\frac{1}{6}g = 11$

**CONSTRUCTED RESPONSE**

5. What is the solution of the equation  $3 + x = 9$ ? Show your work.

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6. Sally measured the height of a flower growing in her garden. The flower was  $3\frac{1}{4}$  inches tall. Over the next week, the flower grew  $h$  inches and measured  $4\frac{1}{8}$  inches tall. Write an equation that models the situation. Then solve the equation and state how much the flower grew during the week.

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7. The sum of 6 and another number is 23. Write and solve an equation to find the other number. Show your work.

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UNIT 6  
**Study Guide**

MODULE **13** **Area and Polygons**

**ESSENTIAL QUESTION**

How can you use area and volume equations to solve real-world problems?

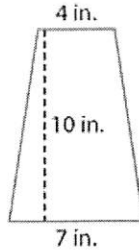
**Key Vocabulary**  
 parallelogram  
*(paralelogramo)*  
 rhombus *(rombo)*  
 trapezoid *(trapecio)*

**EXAMPLE 1**  
 Find the area of the trapezoid.

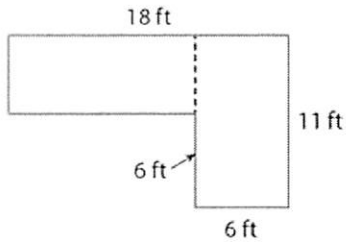
$$A = \frac{1}{2} (h) (b_1 + b_2)$$

$$A = \frac{1}{2} (10) (7 + 4)$$

$$A = 55 \text{ in}^2$$



**EXAMPLE 2**  
 Find the area of Jorge's backyard.



Find the area of the first rectangle.

$$A = bh$$

$$A = 12 (5)$$

$$A = 60 \text{ square feet}$$

Find the area of the second rectangle.

$$A = bh$$

$$A = 6 (11)$$

$$A = 66 \text{ square feet}$$

Total area of yard = 60 + 66 = 126 square feet

**EXERCISES**

Find the area of each figure. (Lessons 13.1, 13.2)

1. \_\_\_\_\_

2. \_\_\_\_\_

Find the missing measurement. (Lesson 13.3)

3. \_\_\_\_\_

4. \_\_\_\_\_

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MODULE 14

# Distance and Area in the Coordinate Plane

### Key Vocabulary

polygon (*polígono*)  
 reflection (*reflexión*)  
 vertex, vertices (*vértice, vértices*)

### ESSENTIAL QUESTION

What steps might you take to solve a polygon problem given the coordinates of its vertices?

### EXAMPLE 1

Find the distance between points A and B on the coordinate plane.

Find the distance between point A and the x-axis.

The y-coordinate is  $-4$ . The absolute value represents the distance.

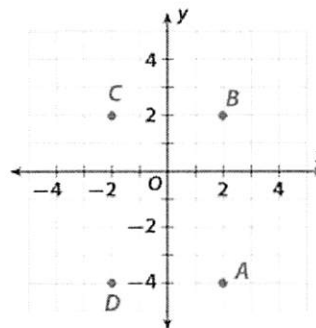
$$|-4| = 4 \quad \text{The distance is 4 units.}$$

Find the distance between point B and the x-axis.

The y-coordinate is  $2$ . The distance is 2 units.

Add the two distances to find the distance between the two points.

$$4 + 2 = 6 \quad \text{The distance between points A and B is 6 units.}$$



### EXAMPLE 2

Find the area of the rectangle whose vertices are the points on the coordinate plane in Example 1.

Use the distance between points A and B in Example 1 as the height.

$$\text{height} = 6 \text{ units}$$

Find the distance between points A and D and use it as the base.

$$\text{Distance from A to D} = |-2| + 2 = 2 + 2 = 4$$

$$\text{base} = 4 \text{ units}$$

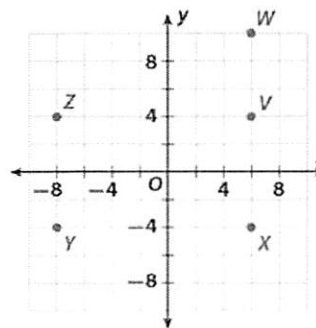
Find the area.

$$A = bh = 4 \cdot 6 = 24 \text{ square units}$$

### EXERCISES

Find the distance between the two points.

1. Z and Y \_\_\_\_\_
2. X and Y \_\_\_\_\_
3. W and X \_\_\_\_\_
4. Find the area of rectangle XYZV. \_\_\_\_\_



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## MODULE 1/5

## Surface Area and Volume of Solids



## ESSENTIAL QUESTION

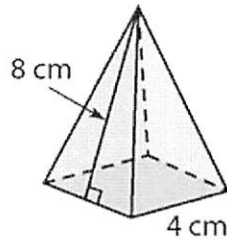
How can a model help you solve surface area and volume problems?

## Key Vocabulary

net (*plantilla*)pyramid (*pirámide*)surface area (*área total*)

## EXAMPLE 1

Draw a net and find the surface area of the pyramid.

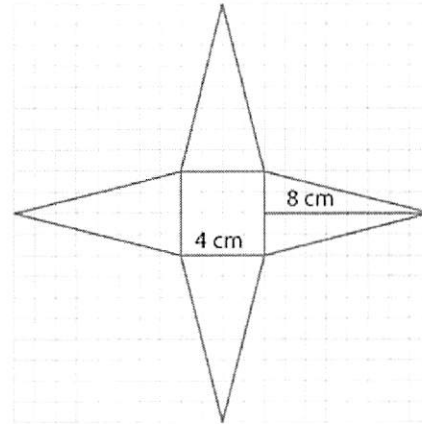


Find the area of the square base.

$$A = bh$$

$$A = 4 \cdot 4$$

$$A = 16 \text{ cm}^2$$



Find the area of one triangle and multiply by four.

$$A = \frac{1}{2}bh$$

$$A = \frac{1}{2}(4 \cdot 8)$$

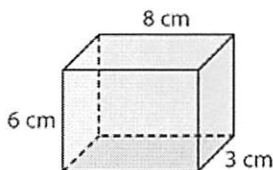
$$A = 16 \text{ cm}^2$$

The area of the 4 triangles is  $4 \cdot 16 = 64 \text{ cm}^2$ .

The total surface area of the pyramid is  $16 \text{ cm}^2 + 64 \text{ cm}^2 = 80 \text{ cm}^2$ .

## EXAMPLE 2

A cubic centimeter of gold weighs approximately 19.32 grams. Find the weight of a brick of gold that has a height of 6 centimeters, width of 3 centimeters, and length of 8 centimeters.



$$V = lwh$$

$$V = 8(3)(6)$$

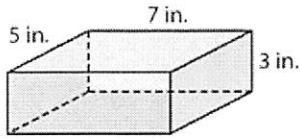
$$V = 144 \text{ cm}^3$$

The weight of the gold is  $144 \times 19.32$  grams, which is 2,782.08 grams.

**EXERCISES**

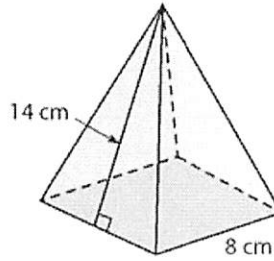
Draw a net to find the surface area of each solid shape. (Lesson 15.1)

1.



\_\_\_\_\_

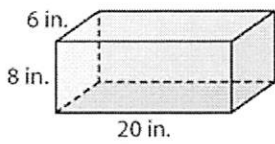
2.



\_\_\_\_\_

Find the volume of each rectangular prism. (Lesson 15.2)

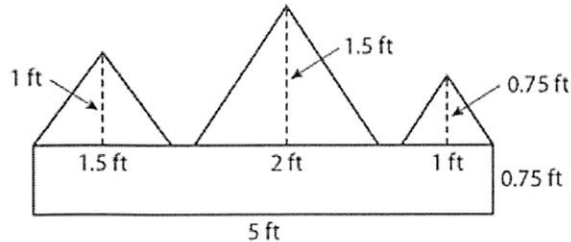
3.



\_\_\_\_\_

4. A rectangular prism with a width of 7 units, a length of 8 units, and a height of 2 units \_\_\_\_\_

1. **CAREERS IN MATH** Theater Set Construction Ahmed and Karina are building scenery of the Egyptian pyramids out of plywood for a community play. The pyramids are represented by triangles on a rectangular base. The diagram shows the measurements of the piece of scenery.



a. How many square feet of plywood is in the scenery? Show your work.

\_\_\_\_\_  
\_\_\_\_\_

b. The pyramids (the triangles) will be painted gray, and the base (the rectangle) will be painted black. How much of each paint color will they use, if one quart covers 45 square feet? Only one side of the model needs to be painted, but two coats of paint will be needed. Show your work. Round to the nearest hundredth of a square foot.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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UNIT 7  
**Study Guide**

MODULE **16** **Displaying, Analyzing, and Summarizing Data**

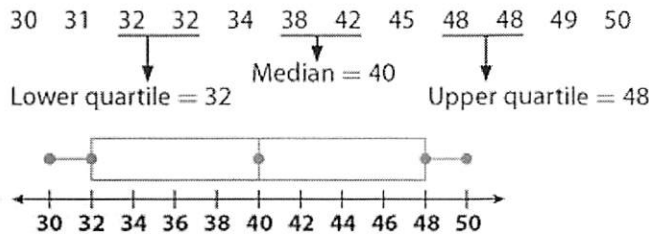
**ESSENTIAL QUESTION**

How can you solve real-world problems by displaying, analyzing, and summarizing data?

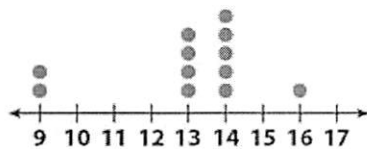
**EXAMPLE 1**  
The ages of Thomas's neighbors are shown.

Ages of Thomas's Neighbors
30, 48, 31, 45, 42, 32, 32, 38, 34, 50, 49, 48

Make a box plot of the data.



**EXAMPLE 2**  
Find the mean, median, and range of the data shown on the dot plot.



The mean is 13.       $\frac{2(9) + 4(13) + 5(14) + 16}{12} = 13$   
 The median is 13.5.      9, 9, 13, 13, 13, 13, 14, 14, 14, 14, 14, 16  
 The range is 7.       $16 - 9 = 7$

**EXAMPLE 3**  
Find the mean absolute deviation (MAD) of the data in Example 2. Round to the nearest tenth.

The MAD is the mean distance of each of the 12 data points from the mean, 13.

$$\frac{4 + 4 + 0 + 0 + 0 + 0 + 1 + 1 + 1 + 1 + 1 + 3}{12} = \frac{16}{12} \approx 1.3$$

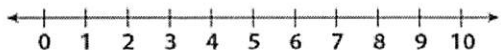
The mean absolute deviation is approximately 1.3.

- Key Vocabulary**
- box plot (*diagrama de caja*)
  - categorical data (*datos categóricos*)
  - dot plot (*diagrama de puntos*)
  - histogram (*histograma*)
  - interquartile range (*rango entre cuartiles*)
  - lower quartile (*cuartil inferior*)
  - mean (*media*)
  - mean absolute deviation (MAD) (*desviación absoluta media, (DAM)*)
  - measure of center (*medida central*)
  - measure of spread (*medida de dispersión*)
  - median (*mediana*)
  - mode (*moda*)
  - range (*rango*)
  - statistical question (*pregunta estadística*)
  - upper quartile (*cuartil superior*)

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### EXERCISES

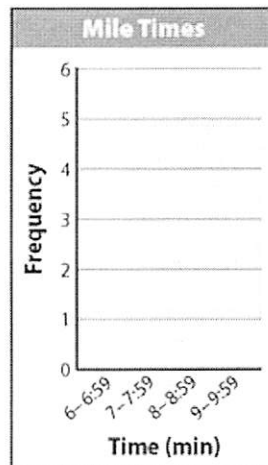
1. The number of goals for the 13 players on a soccer team are 4, 9, 0, 1, 1, 2, 0, 0, 2, 8, 8, 3, 1. Find the median, lower quartile, and upper quartile. Then make a box plot for the data. (Lesson 16.3) \_\_\_\_\_



2. The coach recorded the time it took 15 students to run a mile. The times are as follows: 9:23, 8:15, 9:23, 9:01, 6:45, 6:55, 7:20, 9:14, 6:21, 7:12, 7:34, 6:10, 9:15, 9:18. (Lesson 16.5)

Use the data to complete the frequency table. Then use the table to make a histogram.

Interval	Frequency
6–6:59	



3. Find the mean and mean absolute deviation of the set of data. Round to the nearest hundredth. (Lesson 16.2)

Distance per day (mi) driven by Juan						
12	9	7	7	11	10	7

Mean: \_\_\_\_\_ Mean absolute deviation: \_\_\_\_\_

1. **CAREERS IN MATH** Geneticist Kinesha collects data about the heights of students in her science class. What measures of center and variation are appropriate for the data? Which of the data displays that you learned about in this unit could Kinesha use to display the data? Which could be used to show the measures of center and variation you named? Explain.

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# The student will divide multi-digit numbers using the standard algorithm.

## SELECTED RESPONSE

Select the correct answer.

1. Divide.  $196 \div 28$

- A 6
- B 6 R27
- C 7 R1
- D 7

2. Divide.  $98 \overline{)308}$

- A 3
- B 3 R14
- C 4
- D 14 R3

3. An art teacher has 192 containers of paint for 17 students. If the teacher wants to provide each student with an equal number of containers, how many containers will be left over?

- A 0
- B 5
- C 7
- D 18

4. Select the correct answer. A local theater can seat 2,254 people into 98 rows.

There are 

15
20
23
32

 seats in each row.

Select all correct answers.

5. The event staff for a local concert hall has 73 tickets to sell. If they sell all of the tickets at the same price, they will have \$438. Which of the following people have enough money to buy a ticket?

- A Celia has \$4.50.
- B Louis has \$7.00.
- C Jan has \$6.50.
- D Nicola has \$6.00.
- E Chuck has \$5.00.

## CONSTRUCTED RESPONSE

6. A skyscraper with 102 floors is 1,326 feet tall. Each floor is the same height. How tall is each floor? Show your work.

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7. An apple orchard harvested 3,584 apples and separated them evenly into 112 bags.

a. How many apples are in each bag?

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b. If 56 apples were placed in each bag instead, how many bags would be left over?

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8. A movie streaming service charges its customers \$15 a month. Martina has \$98 saved up. Will she have any money left over if she pays for the maximum amount of months she can afford? Explain.

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**The student will add, subtract, multiply, and divide decimals using standard algorithms.**

**SELECTED RESPONSE**

Select the correct answer.

1. Add.  $13.389 + 1.24$

- (A) 13.513
- (B) 14.529
- (C) 14.62
- (D) 14.629

2. Subtract.  $102.596 - 10.478$

- (A) 92.118      (C) 112.122
- (B) 92.128      (D) 192.118

3. Multiply.  $1.8762 \times 4.2$

- (A) 7.88004
- (B) 78.8004
- (C) 788.004
- (D) 7,880.04

4. Divide.  $0.09975 \div 0.007$

- (A) 1.425
- (B) 14.25
- (C) 142.5
- (D) 1,425

Select from the values at right to match a product with each given multiplication expression.

5. $2.986 \times 1.26$		376,236
6. $0.2986 \times 0.126$		37,623.6
7. $29.86 \times 12.6$		3,762.36
8. $298.6 \times 126$		376.236
9. $2.986 \times 12.6$		37.6236
10. $2,986 \times 126$		3.76236
11. $298.6 \times 12.6$		0.376236
12. $2.986 \times 0.126$		0.0376236

**CONSTRUCTED RESPONSE**

13. Elsa has \$45.78 in her savings account and \$21.38 in her wallet.

a. How much money does Elsa have?

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b. If Elsa puts half of the money in her wallet in the bank, how much money will she have in her savings account?

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## The student will find and use the GCF and LCM of two whole numbers.

### SELECTED RESPONSE

Select the correct answer.

- Find the greatest common factor of 12 and 18.
  - (A) 1
  - (B) 2
  - (C) 3
  - (D) 6
- Find the least common multiple of 8 and 10.
  - (A) 32
  - (B) 40
  - (C) 50
  - (D) 80
- Find the greatest common factor of 7 and 11.
  - (A) 1
  - (B) 7
  - (C) 11
  - (D) 77
- Find the least common multiple of 6 and 12.
  - (A) 6
  - (B) 12
  - (C) 24
  - (D) 72
- Use the values below to complete equation showing the result of factoring out the greatest common factor from  $90 + 60$  using the distributive property.

$$90 + 60 = \square (\square + \square)$$

2	3	4	6
9	10	15	30

### CONSTRUCTED RESPONSE

- Is it possible to use the distributive property to rewrite  $85 + 99$  as a product of a whole number greater than 1 and a sum of two whole numbers? Explain your answer.

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- Charlie and Dasha are roommates, and they have a dog. If neither of them is home, they hire someone to watch the dog. Charlie must go on business trips every 6 months, while Dasha must go on business trips every 9 months. If they both just got back from business trips, how many months will it be before they need to hire someone to look after the dog again? Explain your answer.

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- Salvatore is making some party favors for his birthday party. He has 96 pencils and 80 boxes of raisins. He wants each party favor to be the same, and he wants to use all of the pencils and raisins. Find the GCF of 96 and 80 to figure out how many party favors he can make. How many pencils and boxes of raisins will be in each one?

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