



# *The Dominican*

COMMUNITY *of* SCHOOLS

May, 2023

Dear Parents/Guardians,

The attached math enrichment packet is meant to provide your child with a review of the skills she learned in 6th grade. Your child is expected to turn the completed packet in to Mrs. Butler (7th grade) on the first day of the 2023-2024 school year. Please encourage your child to schedule time throughout the summer to work on the packet; do not wait until the end of summer to begin.

Reminders for your child:

- Read and follow all directions.
- Number each problem and show work for ANY/ALL problems in an organized manner to receive full credit.

Have a great summer!

Sincerely,

Mrs. Tartera

**LESSON**  
**1-1**

# Identifying Integers and Their Opposites

## Reteach

Positive numbers are greater than 0. Use a positive number to represent a gain or increase. Include the positive sign (+).

an increase of 10 points      +10

a flower growth of 2 inches      +2

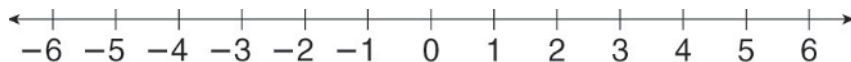
a gain of 15 yards in football      +15

Negative numbers are less than 0. Use a negative number to represent a loss or decrease. Also use a negative number to represent a value below or less than a certain value. Include the negative sign (-).

a bank withdrawal of \$30      -30

a decrease of 9 points      -9

2° below zero      -2



negative numbers

positive numbers

Opposites are the same distance from zero on the number line, but in different directions. -3 and 3 are opposites because each number is 3 units from zero on a number line.

Integers are the set of all whole numbers, zero, and their opposites.

**Name a positive or negative number to represent each situation.**

1. an increase of 3 points

2. spending \$10

\_\_\_\_\_

\_\_\_\_\_

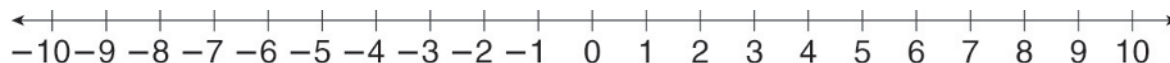
3. earning \$25

4. a loss of 5 yards

\_\_\_\_\_

\_\_\_\_\_

**Write each integer and its opposite. Then graph them on the number line.**



5. -1

6. 9

7. 6

8. -5

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**LESSON**  
**1-2**

**Comparing and Ordering Integers**

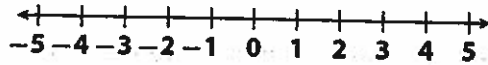
**Reteach**

You can use a number line to compare integers.

As you move *right* on a number line, the values of the integers *increase*.

As you move *left* on a number line, the values of the integers *decrease*.

Compare  $-4$  and  $2$ .



$-4$  is to the left of  $2$ , so  $-4 < 2$ .

Use the number line above to compare the integers. Write  $<$  or  $>$ .

1.  $1$    $-4$

2.  $-5$    $-2$

3.  $-3$    $2$

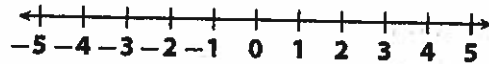
4.  $-1$    $-4$

5.  $5$    $0$

6.  $-2$    $3$

You can also use a number line to order integers.

Order  $-3$ ,  $4$ , and  $-1$  from least to greatest.



List the numbers in the order in which they appear from left to right.

The integers in order from least to greatest are  $-3$ ,  $-1$ ,  $4$ .

Order the integers from least to greatest.

7.  $-2, -5, -1$

\_\_\_\_\_

8.  $0, -5, 5$

\_\_\_\_\_

9.  $-5, 2, -3$

\_\_\_\_\_

10.  $3, -1, -4$

\_\_\_\_\_

11.  $3, -5, 0$

\_\_\_\_\_

12.  $-2, -4, 1$

\_\_\_\_\_

**LESSON**  
**2-1**

**Greatest Common Factor**

**Reteach**

The *greatest common factor*, or GCF, is the largest number that is the factor of two or more numbers.

To find the GCF, first write the factors of each number.

**Example**

Find the GCF of 18 and 24.

**Solution** Write the factors of 18 and 24. Highlight the *largest* number that is common to both lists of factors.

Factors of 18: 1, 2, 3, 6, 9, and 18

Factors of 24: 1, 2, 3, 4, 6, 8, 12, and 24

The GCF of 18 and 24 is 6.

This process works the same way for more than two numbers.

**Find the GCF.**

1. 32 and 48  
\_\_\_\_\_

2. 18 and 36  
\_\_\_\_\_

3. 28, 56, and 84  
\_\_\_\_\_

4. 30, 45, and 75  
\_\_\_\_\_

The *distributive principle* can be used with the GCF to rewrite a sum of two or more numbers.

**Example**

Write  $30 + 70$  as the product of the GCF of 30 and 70 and a sum.

**Solution**

**Step 1** Find the GCF of 30 and 70.

Factors of 30: 1, 2, 3, 5, 6, 10, 15, and 30

Factors of 70: 1, 2, 5, 7, 10, 14, 35, and 70.  
The GCF is 10.

**Step 2** Write " $10 \times (? + ?)$ ." To find the questions marks, divide:  $30 \div 10 = 3$ ;  
 $70 \div 10 = 7$

**Step 3** So,  $30 + 70$  can be written as  $10 \times (3 + 7)$ .

**Rewrite each sum as a product of the GCF and a new sum.**

5.  $9 + 15 =$   
\_\_\_\_\_

6.  $100 + 350 =$   
\_\_\_\_\_

7.  $12 + 18 + 21 =$   
\_\_\_\_\_

**LESSON**  
**2-2**

# Least Common Multiple

## Reteach

The smallest number that is a multiple of two or more numbers is called the least common multiple (LCM) of those numbers.

To find the least common multiple of 3, 6, and 8, list the multiples for each number and put a circle around the LCM in the three lists.

Multiples of 3: 3, 6, 9, 12, 15, 18, 21, 24

Multiples of 6: 6, 12, 18, 24, 30, 36, 42

Multiples of 8: 8, 16, 24, 32, 40, 48, 56

So 24 is the LCM of 3, 6, and 8.

List the multiples of each number to help you find the least common multiple of each group.

1. 2 and 9

Multiples of 2:

\_\_\_\_\_

Multiples of 9:

\_\_\_\_\_

LCM: \_\_\_\_\_

2. 4 and 6

Multiples of 4:

\_\_\_\_\_

Multiples of 6:

\_\_\_\_\_

LCM: \_\_\_\_\_

3. 4 and 10

Multiples of 4:

\_\_\_\_\_

Multiples of 10:

\_\_\_\_\_

LCM: \_\_\_\_\_

4. 2, 5, and 6

Multiples of 2:

\_\_\_\_\_

Multiples of 5:

\_\_\_\_\_

Multiples of 6:

\_\_\_\_\_

LCM: \_\_\_\_\_

5. 3, 4, and 9

Multiples of 3:

\_\_\_\_\_

Multiples of 4:

\_\_\_\_\_

Multiples of 9:

\_\_\_\_\_

LCM: \_\_\_\_\_

6. 8, 10, and 12

Multiples of 8:

\_\_\_\_\_

Multiples of 10:

\_\_\_\_\_

Multiples of 12:

\_\_\_\_\_

LCM: \_\_\_\_\_

7. Pads of paper come 4 to a box, pencils come 27 to a box, and erasers come 12 to a box. What is the least number of kits that can be made with paper, pencils, and erasers with no supplies left over?

\_\_\_\_\_

**LESSON**  
**3-3**

**Comparing and Ordering Rational Numbers**

**Reteach**

You can write decimals as fractions or mixed numbers. A place value table will help you read the decimal. Remember the decimal point is read as the word "and."

To write 0.47 as a fraction, first think about the decimal in words.

Ones	Tenths	Hundredths	Thousandths	Ten Thousandths
0	4	7		

0.47 is read "forty-seven hundredths." The place value of the decimal tells you the denominator is 100.

$$0.47 = \frac{47}{100}$$

To write 8.3 as a mixed number, first think about the decimal in words.

Ones	Tenths	Hundredths	Thousandths	Ten Thousandths
8	3			

8.3 is read "eight and three tenths." The place value of the decimal tells you the denominator is 10. The decimal point is read as the word "and."

$$8.3 = 8\frac{3}{10}$$

**Write each decimal as a fraction or mixed number.**

1. 0.61 \_\_\_\_\_

2. 3.43 \_\_\_\_\_

3. 0.009 \_\_\_\_\_

4. 4.7 \_\_\_\_\_

5. 1.5 \_\_\_\_\_

6. 0.13 \_\_\_\_\_

7. 5.002 \_\_\_\_\_

8. 0.021 \_\_\_\_\_

**LESSON**  
**4-1**

# Applying GCF and LCM to Fraction Operations

## Reteach

### How to Multiply a Fraction by a Fraction

$$\frac{2}{3} \cdot \frac{3}{8}$$

$$\frac{2}{3} \cdot \frac{3}{8} = \frac{6}{24}$$

$$\frac{2}{3} \cdot \frac{3}{8} = \frac{6}{24}$$

$$\frac{6 \div 6}{24 \div 6} = \frac{1}{4}$$

Multiply numerators.

Multiply denominators.

Divide by the greatest common factor (GCF).

The GCF of 6 and 24 is 6.

### How to Add or Subtract Fractions

$$\frac{5}{6} + \frac{11}{15}$$

$$\frac{25}{30} + \frac{22}{30}$$

$$\frac{25}{30} + \frac{22}{30} = \frac{47}{30}$$

$$= 1 \frac{17}{30}$$

Rewrite over the least common multiple (LCM).

The least common multiple of 6 and 15 is 30.

Add the numerators.

If the sum is an improper fraction, rewrite it as a mixed number.

### Multiply. Use the greatest common factor.

1.  $\frac{3}{4} \cdot \frac{7}{9}$

\_\_\_\_\_

2.  $\frac{2}{7} \cdot \frac{7}{9}$

\_\_\_\_\_

3.  $\frac{7}{11} \cdot \frac{22}{28}$

\_\_\_\_\_

4.  $8 \cdot \frac{3}{10}$

\_\_\_\_\_

5.  $\frac{4}{9} \cdot \frac{3}{4}$

\_\_\_\_\_

6.  $\frac{3}{7} \cdot \frac{2}{3}$

\_\_\_\_\_

### Add or subtract. Use the least common multiple.

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

\_\_\_\_\_

8.  $\frac{21}{24} - \frac{3}{8}$

\_\_\_\_\_

9.  $\frac{11}{15} + \frac{7}{12}$

\_\_\_\_\_

**LESSON**  
**4-2**

# Dividing Fractions

## Reteach

Two numbers are reciprocals if their product is 1.

$$\frac{2}{3} \text{ and } \frac{3}{2} \text{ are reciprocals because } \frac{2}{3} \cdot \frac{3}{2} = \frac{6}{6} = 1.$$

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

$$\frac{1}{4} \div \frac{1}{2} = \frac{1}{2} \quad \longrightarrow \quad \frac{1}{4} \cdot \frac{2}{1} = \frac{1}{2}$$

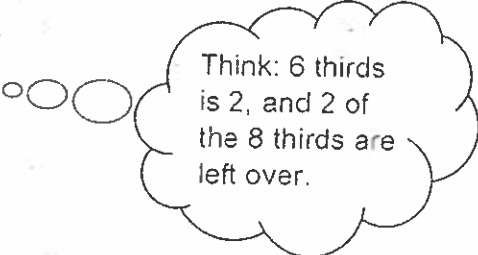
So, you can use reciprocals to divide by fractions.

Find  $\frac{2}{3} \div \frac{1}{4}$ .

First, rewrite the expression as a multiplication expression.

Use the reciprocal of the divisor:  $\frac{1}{4} \cdot \frac{4}{1} = 1$ .

$$\begin{aligned} \frac{2}{3} \div \frac{1}{4} &= \frac{2}{3} \cdot \frac{4}{1} \\ &= \frac{8}{3} \\ &= 2\frac{2}{3} \end{aligned}$$



Think: 6 thirds is 2, and 2 of the 8 thirds are left over.

Rewrite each division expression as a multiplication expression. Then find the value of the expression. Write each answer in simplest form.

1.  $\frac{1}{4} \div \frac{1}{3}$

\_\_\_\_\_

2.  $\frac{1}{2} \div \frac{1}{4}$

\_\_\_\_\_

3.  $\frac{3}{8} \div \frac{1}{2}$

\_\_\_\_\_

4.  $\frac{1}{3} \div \frac{3}{4}$

\_\_\_\_\_

Divide. Write each answer in simplest form.

5.  $\frac{1}{5} \div \frac{1}{2}$

\_\_\_\_\_

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

\_\_\_\_\_

7.  $\frac{1}{8} \div \frac{2}{5}$

\_\_\_\_\_

8.  $\frac{1}{8} \div \frac{1}{2}$

\_\_\_\_\_



**LESSON**  
**5-2**

# Adding and Subtracting Decimals

## Reteach

You can use a place-value chart to help you add and subtract decimals.

Add 1.4 and 0.9.

	Tens	Ones	Tenths	Hundredths	Thousandths
+		1	4		
		0	9		

So,  $1.4 + 0.9 = 2.3$ .

Subtract 2.4 from 3.1.

	Tens	Ones	Tenths	Hundredths	Thousandths
-		3	1		
		2	4		

So,  $3.1 - 2.4 = 0.7$ .

Find each sum or difference.

1.

	Tens	Ones	Tenths	Hundredths	Thousandths
+		2	6		
		1	1	5	

\_\_\_\_\_

2.

	Tens	Ones	Tenths	Hundredths	Thousandths
-		2	5	3	
		1	7		

\_\_\_\_\_

3.  $4.3 + 1.4$

	Tens	Ones	Tenths	Hundredths	Thousandths
+					

\_\_\_\_\_

4.  $14.4 - 3.8$

	Tens	Ones	Tenths	Hundredths	Thousandths
-					

\_\_\_\_\_

5.  $7.3 + 8.5$

	Tens	Ones	Tenths	Hundredths	Thousandths
+					

\_\_\_\_\_

6.  $12.34 - 6.9$

	Tens	Ones	Tenths	Hundredths	Thousandths
-					

\_\_\_\_\_

Estimate the answers to Exercises 3–6 by rounding to the nearest whole number. Compare your estimate to the exact answers.

7.  $4.3 + 1.4$

\_\_\_\_\_

\_\_\_\_\_

8.  $14.4 - 3.8$

\_\_\_\_\_

\_\_\_\_\_

9.  $7.3 + 8.5$

\_\_\_\_\_

\_\_\_\_\_

10.  $12.34 - 6.9$

\_\_\_\_\_

\_\_\_\_\_

**LESSON**  
**5-3**

# Multiplying Decimals

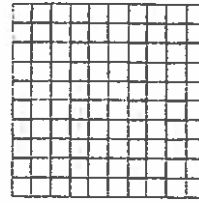
## Reteach

You can use a model to help you multiply a decimal by a whole number.

Find the product of 0.12 and 4.

Use a 10-by-10 grid. Shade 4 groups of 12 squares.

Count the number of shaded squares. Since you have shaded 48 of the 100 squares,  $0.12 \times 4 = 0.48$ .



Find each product.

1.  $0.23 \times 3$

\_\_\_\_\_

2.  $0.41 \times 2$

\_\_\_\_\_

3.  $0.01 \times 5$

\_\_\_\_\_

4.  $0.32 \times 2$

\_\_\_\_\_

5.  $0.15 \times 3$

\_\_\_\_\_

6.  $0.42 \times 2$

\_\_\_\_\_

7.  $0.04 \times 8$

\_\_\_\_\_

8.  $0.22 \times 4$

\_\_\_\_\_

You can also use a model to help you multiply a decimal by a decimal.

Find the product of 0.8 and 0.4.

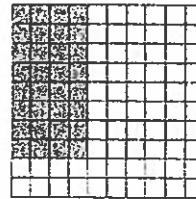
**Step 1** Shade 8 tenths of the figure.

**Step 2** Shade darker 4 tenths of the shaded area.

**Step 3** How many squares have you shaded twice?

You have twice shaded 32 of the squares.

So,  $0.8 \times 0.4 = 0.32$ .



Find each product.

9.  $0.2 \times 0.8$

\_\_\_\_\_

10.  $0.7 \times 0.9$

\_\_\_\_\_

11.  $0.5 \times 0.5$

\_\_\_\_\_

12.  $0.3 \times 0.6$

\_\_\_\_\_

13.  $0.5 \times 0.2$

\_\_\_\_\_

14.  $0.4 \times 0.4$

\_\_\_\_\_

15.  $0.1 \times 0.9$

\_\_\_\_\_

16.  $0.4 \times 0.7$

\_\_\_\_\_

**LESSON**  
**6-2**

**Rates**

**Reteach**

You can divide to find a unit rate or to determine a best buy.

A. Find the unit rate.

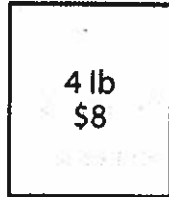
Karin bikes 35 miles in 7 hours.

$$35 \div 7 = 5 \text{ mph}$$

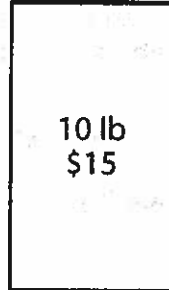
B. Find the best buy.



$$5 \div 2 = \$2.50 \text{ per lb}$$



$$8 \div 4 = \$2.00 \text{ per lb}$$



$$15 \div 10 = \$1.50 \text{ per lb}$$

**BEST BUY!**

**Divide to find each unit rate. Show your work.**

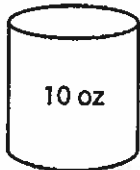
1. Jack shells 315 peanuts in 15 minutes. \_\_\_\_\_
2. Sharmila received 81 texts in 9 minutes. \_\_\_\_\_
3. Karim read 56 pages in 2 hours. \_\_\_\_\_

**Find the best buy. Show your work.**

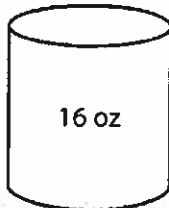
4.



\$0.90



\$1.10



\$1.44

5.

Bread	Weight (oz)	Cost (\$)
Whole wheat	16	2.24
Pita	20	3.60
7-grain	16	2.56

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**LESSON**  
**7-1**

# Ratios, Rates, Tables, and Graphs

## Reteach

A ratio shows a relationship between two quantities.

Ratios are **equivalent** if they can be written as the same fraction in lowest terms.

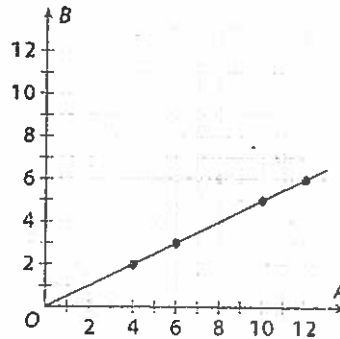
A **rate** is a ratio that shows the relationship between two different units of measure in lowest terms.

You can make a table of equivalent ratios. You can graph the equivalent ratios.

A	4	6	10	12
B	2	3	5	6

$$\frac{4}{2} = \frac{2}{1} \qquad \frac{6}{3} = \frac{2}{1}$$

$$\frac{10}{5} = \frac{2}{1} \qquad \frac{12}{6} = \frac{2}{1}$$



1. Use equivalent ratios to complete the table.

A	6	9			18		
B	2		4	5		7	8

2. Show the ratios are equivalent by simplifying any 4 of them.

\_\_\_\_\_

3. Find the rate of  $\frac{A}{B}$  and complete the equivalent ratio:  $\frac{69}{\underline{\quad}}$

\_\_\_\_\_

4. Use the rate to find how many As are needed for 63 Bs, then write the ratio.

\_\_\_\_\_

**LESSON**  
**7-2**

**Solving Problems with Proportions**

**Reteach**

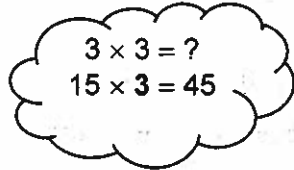
You can solve problems with proportions in two ways.

**A. Use equivalent ratios.**

Hanna can wrap 3 boxes in 15 minutes.  
How many boxes can she wrap in 45 minutes?

$$\frac{3}{15} = \frac{\quad}{45}$$

$$\frac{3 \cdot 3}{15 \cdot 3} = \frac{9}{45}$$



Hanna can wrap 9 boxes in 45 minutes.

**B. Use unit rates.**

Dan can cycle 7 miles in 28 minutes.  
How long will it take him to cycle 9 miles?

$$\frac{28 \text{ min}}{7 \text{ mi}} = \frac{\quad}{1 \text{ mi}}$$



$$\frac{28}{7} = \frac{28 \div 7}{1} = \frac{4}{1}, \text{ or 4 minutes per mile}$$

To cycle 9 miles, it will take Dan  $9 \times 4$ , or 36 minutes.

**Solve each proportion. Use equivalent ratios or unit rates. Round to the nearest hundredth if needed.**

1. Twelve eggs cost \$2.04. How much would 18 eggs cost?

\_\_\_\_\_

2. Seven pounds of grapes cost \$10.43. How much would 3 pounds cost? \_\_\_\_\_

3. Roberto wants to reduce a drawing that is 12 inches long by 9 inches wide. If his new drawing is 8 inches long, how wide will it be?

\_\_\_\_\_

**LESSON**  
**8-1**

**Understanding Percent**

**Reteach**

- A.** A percent is a ratio of a number to 100. Percent means "per hundred."  
To write 38% as a fraction, write a fraction with a denominator of 100.

$$\frac{38}{100}$$

Then write the fraction in simplest form.

$$\frac{38}{100} = \frac{38 \div 2}{100 \div 2} = \frac{19}{50}$$

So,  $38\% = \frac{19}{50}$ .

- B.** To write 38% as a decimal, first write it as fraction.

$$38\% = \frac{38}{100}$$

$\frac{38}{100}$  means "38 divided by 100."

$$\begin{array}{r} 0.38 \\ 100 \overline{)38.00} \\ \underline{-300} \phantom{00} \\ 800 \phantom{00} \\ \underline{-800} \\ 0 \end{array}$$

So,  $38\% = 0.38$ .

**Write each percent as a fraction in simplest form.**

1. 43%

2. 72%

3. 88%

4. 35%

\_\_\_\_\_

**Write each percent as a decimal.**

5. 64%

6. 92%

7. 73%

8. 33%

\_\_\_\_\_

**LESSON**  
**8-2**

**Percents, Fractions, and Decimals**

*Reteach*

To change a decimal to a percent:

- move the decimal point two places to the right:  $0.07 = .07 = 7\%$
- write the % symbol after the number. u

Write each decimal as a percent.

- |                   |                   |                    |                   |
|-------------------|-------------------|--------------------|-------------------|
| 1. 0.34<br>_____  | 2. 0.06<br>_____  | 3. 0.93<br>_____   | 4. 0.57<br>_____  |
| 5. 0.8<br>_____   | 6. 0.734<br>_____ | 7. 0.082<br>_____  | 8. 0.225<br>_____ |
| 9. 0.604<br>_____ | 10. 0.09<br>_____ | 11. 0.518<br>_____ | 12. 1.03<br>_____ |

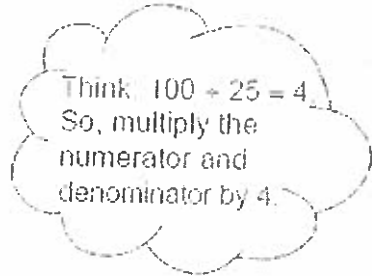
To change a fraction to a percent:

- Find an equivalent fraction with a denominator of 100.
- Use the numerator of the equivalent fraction as the percent.

$$\frac{8}{25} = \frac{x}{100}$$

$$\frac{8 \cdot 4}{25 \cdot 4} = \frac{32}{100}$$

$$\frac{8}{25} = \frac{32}{100} = 32\%$$



Write each fraction as a percent.

- |                              |                              |                              |                              |
|------------------------------|------------------------------|------------------------------|------------------------------|
| 13. $\frac{3}{10}$<br>_____  | 14. $\frac{2}{50}$<br>_____  | 15. $\frac{7}{20}$<br>_____  | 16. $\frac{1}{5}$<br>_____   |
| 17. $\frac{1}{8}$<br>_____   | 18. $\frac{3}{25}$<br>_____  | 19. $\frac{3}{4}$<br>_____   | 20. $\frac{23}{50}$<br>_____ |
| 21. $\frac{11}{20}$<br>_____ | 22. $\frac{43}{50}$<br>_____ | 23. $\frac{24}{25}$<br>_____ | 24. $\frac{7}{8}$<br>_____   |

**LESSON**  
**9-3**

**Order of Operations**

**Reteach**

A mathematical phrase that includes only numbers and operations is called a *numerical expression*.

$9 + 8 \times 3 \div 6$  is a numerical expression.

When you evaluate a numerical expression, you find its value.

You can use the order of operations to evaluate a numerical expression.

Order of operations:

1. Do all operations within *parentheses*.
2. Find the values of numbers with *exponents*.
3. *Multiply and divide* in order from left to right.
4. *Add and subtract* in order from left to right.

**Evaluate the expression.**

$60 \div (7 + 3) + 3^2$

$60 \div 10 + 3^2$

Do all operations within parentheses.

$60 \div 10 + 9$

Find the values of numbers with exponents.

$6 + 9$

Multiply and divide in order from left to right.

15

Add and subtract in order from left to right.

**Simplify each numerical expression.**

1.  $7 \times (12 + 8) - 6$

2.  $10 \times (12 + 34) + 3$

3.  $10 + (6 \times 5) - 7$

$7 \times \underline{\hspace{2cm}} - 6$

$10 \times \underline{\hspace{2cm}} + 3$

$10 + \underline{\hspace{2cm}} - 7$

$\underline{\hspace{2cm}} - 6$

$\underline{\hspace{2cm}} + 3$

$\underline{\hspace{2cm}} - 7$

$\underline{\hspace{2cm}}$

$\underline{\hspace{2cm}}$

$\underline{\hspace{2cm}}$

4.  $2^3 + (10 - 4)$

5.  $7 + 3 \times (8 + 5)$

6.  $36 \div 4 + 11 \times 8$

$\underline{\hspace{2cm}}$

$\underline{\hspace{2cm}}$

$\underline{\hspace{2cm}}$

7.  $5^2 - (2 \times 8) + 9$

8.  $3 \times (12 \div 4) - 2^2$

9.  $(3^3 + 10) - 2$

$\underline{\hspace{2cm}}$

$\underline{\hspace{2cm}}$

$\underline{\hspace{2cm}}$

**Solve.**

10. Write and evaluate your own numerical expression. Use parentheses, exponents, and at least two operations.

\_\_\_\_\_



**LESSON**  
**10-3**

**Generating Equivalent Expressions**

*Reteach*

Look at the following expressions:  $x = 1x$   
 $x + x = 2x$   
 $x + x + x = 3x$

The numbers 1, 2, and 3 are called **coefficients** of  $x$ .

**Identify each coefficient.**

1.  $8x$  \_\_\_\_\_      2.  $3m$  \_\_\_\_\_      3.  $y$  \_\_\_\_\_      4.  $14t$  \_\_\_\_\_

An algebraic expression has terms that are separated by  $+$  and  $-$ .  
 In the expression  $2x + 5y$ , the **terms** are  $2x$  and  $5y$ .

Expression	Terms
$8x + 4y$	$8x$ and $4y$
$5m - 2m + 9$	$5m$ , $-2m$ , and $9$
$4a^2 - 2b + c - 2a^2$	$4a^2$ , $-2b$ , $c$ , and $-2a^2$

Sometimes the terms of an expression can be combined.  
 Only **like terms** can be combined.

- $2x + 2y$  NOT like terms, the variables are different.  
 $4a^2 - 2a$  NOT like terms, the exponents are different.  
 $5m - 2m$  Like terms, the variables and exponents are both the same.  
 $n^3 + 2n^3$  Like terms, the variables and exponents are both the same.

To **simplify** an expression, combine like terms by adding or subtracting the coefficients of the variable.

$$5m - 2m = 3m$$

$$4a^2 + 5a + a + 3 = 4a^2 + 6a + 3 \quad \text{Note that the coefficient of } a \text{ is } 1.$$

**Simplify.**

5.  $8x + 2x$  \_\_\_\_\_      6.  $3m - m$  \_\_\_\_\_      7.  $6y + 6y$  \_\_\_\_\_      8.  $14t - 3t$  \_\_\_\_\_
9.  $3b + b + 6$  \_\_\_\_\_      10.  $9a - 3a + 4$  \_\_\_\_\_      11.  $n + 5n - 3c$  \_\_\_\_\_      12.  $12d - 2d + e$  \_\_\_\_\_

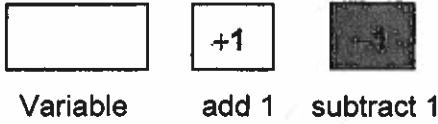
**LESSON**  
**11-2**

# Addition and Subtraction Equations

## Reteach

To solve an equation, you need to get the variable alone on one side of the equal sign.

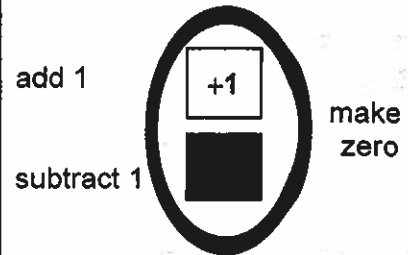
You can use tiles to help you solve subtraction equations.



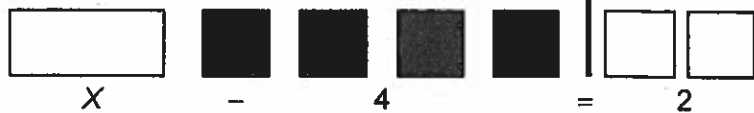
Addition undoes subtraction, so you can use addition to solve subtraction equations.

One positive tile and one negative tile make a zero pair.

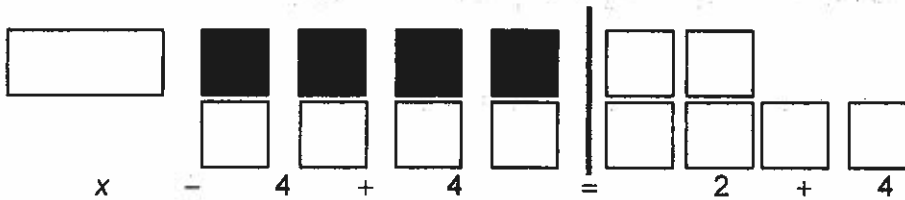
Zero pair:  $+1 + (-1) = 0$



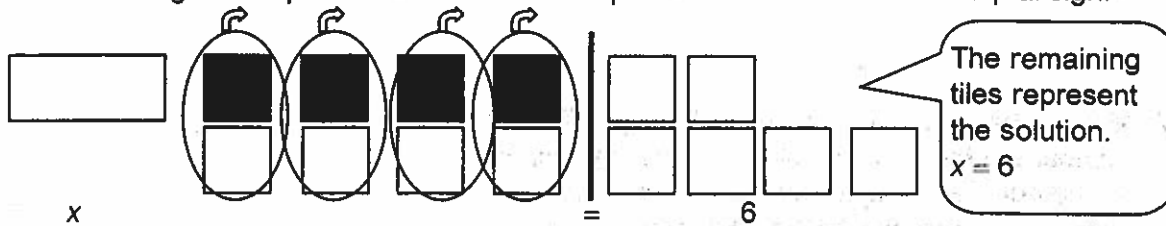
To solve  $x - 4 = 2$ , first use tiles to model the equation.



To get the variable alone, you have to add positive tiles. Remember to add the same number of positive tiles to each side of the equation.



Then remove the greatest possible number of zero pairs from each side of the equal sign.



Use tiles to solve each equation.

1.  $x - 5 = 3$

$x = \underline{\quad}$

2.  $x - 2 = 7$

$x = \underline{\quad}$

3.  $x - 1 = 4$

$x = \underline{\quad}$

4.  $x - 8 = 1$

$x = \underline{\quad}$

5.  $x - 3 = 3$

$x = \underline{\quad}$

6.  $x - 6 = 2$

$x = \underline{\quad}$

**LESSON**  
**11-3**

**Multiplication and Division Equations**

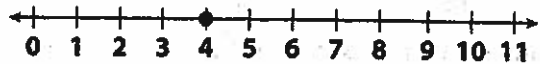
*Practice and Problem Solving: D*

Solve each equation. Graph the solution on the number line.  
Check your work. The first is done for you.

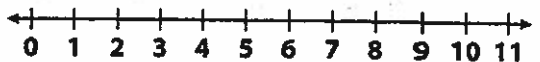
1.  $8 = 2m$        $m = \underline{4}$

$$\frac{8}{2} = \frac{2m}{2}$$

$4 = m$        $8 = 2 \cdot 4 \checkmark$



2.  $\frac{a}{4} = 2$        $a = \underline{\hspace{2cm}}$

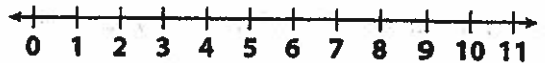



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3.  $12 = 3s$        $s = \underline{\hspace{2cm}}$

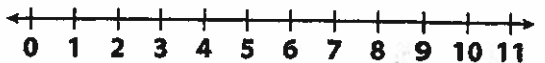



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4.  $\frac{u}{2} = 5$        $u = \underline{\hspace{2cm}}$




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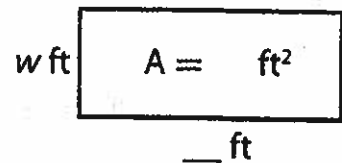


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Use the situation below to complete Exercises 5–8.  
The first one is done for you.

Jim knows the length of his garden is 12 feet. He knows the area of the garden is  $60 \text{ ft}^2$ . What is the width of Jim's garden?

- Fill in the known values in the picture at the right.
- Write an equation you can use to solve the problem.



7. Solve the equation.  $w = \underline{\hspace{2cm}}$

8. Write the solution to the problem.

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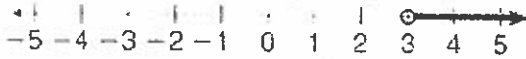
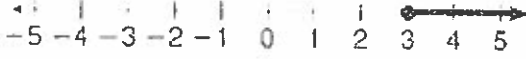
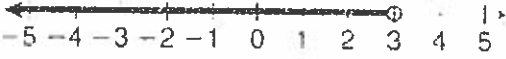

**LESSON**  
**11-4**

# Writing Inequalities

## Reteach

An equation is a statement that says two quantities are equal. An **inequality** is a statement that says two quantities are **not** equal.

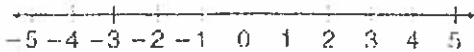
A **solution of an inequality** that contains a variable is any value or values of the variable that makes the inequality true. All values that make the inequality true can be shown on a graph.

Inequality	Meaning	Solution of Inequality
$x > 3$	All numbers <i>greater than</i> 3	 The <i>open circle</i> at 3 shows that the value 3 is <b>not</b> included in the solution.
$x \geq 3$	All numbers <i>greater than or equal to</i> 3	 The <i>closed circle</i> at 3 shows that the value 3 is included in the solution.
$x < 3$	All numbers <i>less than</i> 3	 The <i>open circle</i> at 3 shows that the value 3 is <b>not</b> included in the solution.
$x \leq 3$	All numbers <i>less than or equal to</i> 3	 The <i>closed circle</i> at 3 shows that the value 3 is included in the solution.

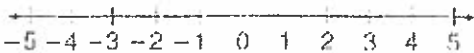
Graph the solutions of each inequality.

1.  $x > -4$

- Draw an open circle at  $-4$ .
- Read  $x > -4$  as "x is greater than  $-4$ ."
- Draw an arrow to the right of  $-4$ .

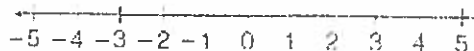


3.  $a > -1$

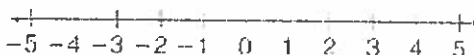


2.  $x \leq 1$

- Draw a closed circle at 1.
- Read  $x \leq 1$  as "x is less than or equal to 1."
- Draw an arrow to the left of 1.



4.  $y \leq 3$



Write an inequality that represents each phrase.

5. the sum of 2 and 3 is less than y

6. the sum of y and 2 is greater than or equal to 6

\_\_\_\_\_

\_\_\_\_\_

**LESSON**  
**12-1**

**Graphing on the Coordinate Plane**

**Reteach**

Each quadrant of the coordinate plane has a unique combination of positive and negative signs for the  $x$ -coordinates and  $y$ -coordinates as shown here.

Quadrant	$x$ -coordinate	$y$ -coordinate
I	+	+
II	-	+
III	-	-
IV	+	-

Use these rules when naming points on the coordinate plane.

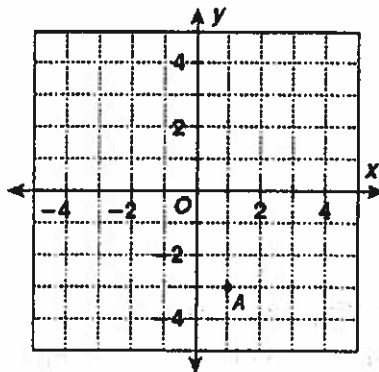
**Example 1**

Draw the point  $A(1, -3)$  on the coordinate grid.

**Solution**

According to the table, this point will be in Quadrant IV.

So, go to the *right* (+) one unit, and go *down* (-) three units.



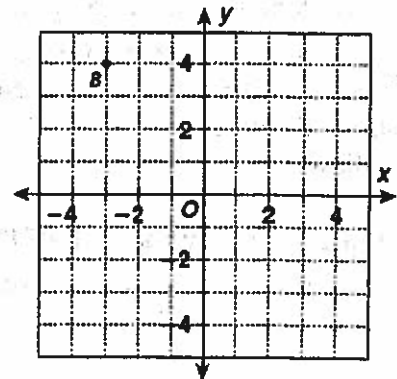
**Example 2**

What are the coordinates of point  $B$ ?

**Solution**

According to the table, this point will have a negative  $x$ -coordinate and a positive  $y$ -coordinate.

Point  $B$  is 3 units to the *left* (-) and four units *up* (+). So the coordinates of point  $B$  are  $(-3, 4)$ .



Add the correct sign for each point's coordinates.

1. ( \_\_\_ 3, \_\_\_ 4) in

Quadrant II

2. ( \_\_\_ 2, \_\_\_ 5) in

Quadrant IV

3. ( \_\_\_ 9, \_\_\_ 1) in

Quadrant I

4. In which quadrant is the point  $(0, 7)$  located? Explain your answer.

**LESSON**  
**12-2**

**Independent and Dependent Variables in Tables and Graphs**  
*Reteach*

In a table, the *independent variable* is often represented by  $x$ . The *dependent variable* is often represented by  $y$ . Look at this example.

$x$	0	1	2	3	4	5	6	7
$y$	4	5	6	7	8	9	10	?

What  $y$  value goes for the question mark?

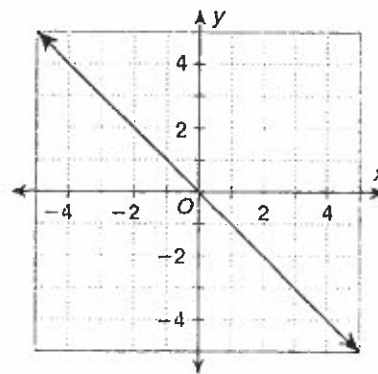
**Step 1** Notice that 4 is added to each value of  $x$  to give the  $y$  value.

**Step 2** So, add 4 to 7. What does this give?  $4 + 7 = 11$

On a chart or graph,

- the  $x$ -axis is usually used for the *independent variable*, and
- the  $y$ -axis is usually used for the *dependent variable*.

Look at the example.  $\longrightarrow$



How does  $y$  depend on  $x$ ?

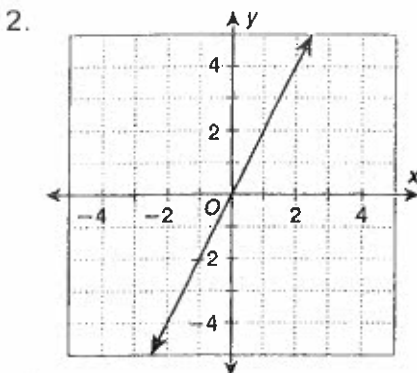
**Step 1** Each value of  $y$  is the opposite of the value of  $x$ .

**Step 2** What equation shows this fact?  
 $y = -x$

Give the relationship between  $x$  and  $y$ .

1.

$x$	1	2	3	4	5
$y$	3	4	5	6	7



a. What is  $y$  when  $x = 2$ ?

\_\_\_\_\_

b. What value of  $x$  gives  $y = -2$ ?

\_\_\_\_\_

c. Write the equation for the graph.

\_\_\_\_\_

**LESSON**  
**13-1**

# Area of Quadrilaterals

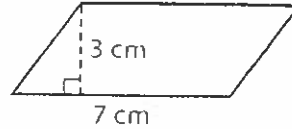
## Reteach

You can use formulas to find the areas of quadrilaterals.

The area  $A$  of a **parallelogram** is the product of its base  $b$  and its height  $h$ .

$$A = bh$$

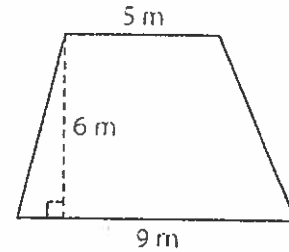
$$\begin{aligned} A &= bh \\ &= 3 \cdot 7 \\ &= 21 \text{ cm}^2 \end{aligned}$$



The area of a **trapezoid** is half its height multiplied by the sum of the lengths of its two bases.

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

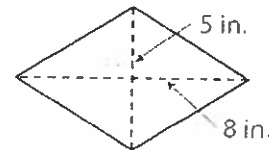
$$\begin{aligned} A &= \frac{1}{2}h(b_1 + b_2) \\ &= \frac{1}{2} \cdot 6(5 + 9) \\ &= \frac{1}{2} \cdot 6(14) \\ &= 3 \cdot 14 \\ &= 42 \text{ m}^2 \end{aligned}$$



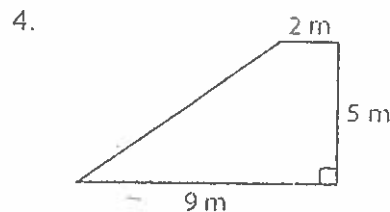
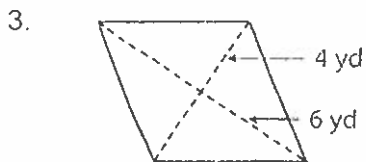
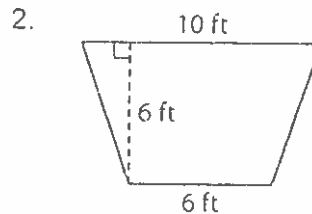
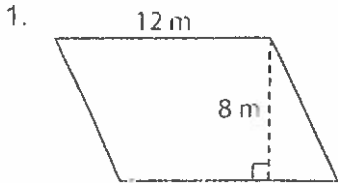
The area of a **rhombus** is half of the product of its two diagonals.

$$A = \frac{1}{2}d_1d_2$$

$$\begin{aligned} A &= \frac{1}{2}d_1d_2 \\ &= \frac{1}{2}(5)(8) \\ &= 20 \text{ in}^2 \end{aligned}$$



Find the area of each figure.

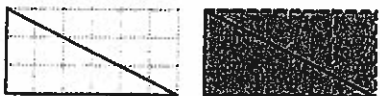


**LESSON**  
**13-2**

# Area of Triangles

## Reteach

To find the area of a triangle, first turn your triangle into a rectangle.



Next, find the area of the rectangle.  $6 \cdot 3 = 18$  square units

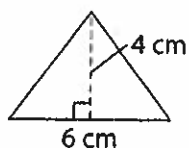
The triangle is half the area of the formed rectangle or  $A = \frac{1}{2}bh$ , so

divide the product by 2.

$18 \div 2 = 9$  So, the area of the triangle is 9 square units.

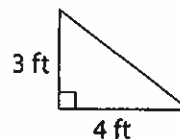
Find the area of each triangle.

1.



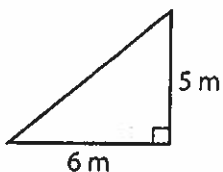
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2.



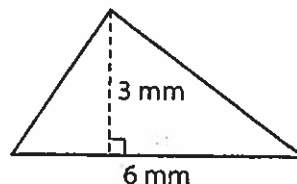
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3.



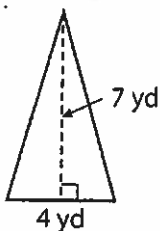
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4.



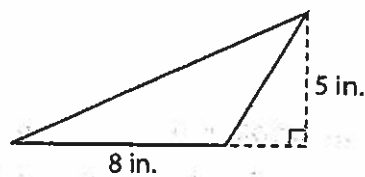
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5.



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6.



\_\_\_\_\_



**LESSON**  
**13-4**

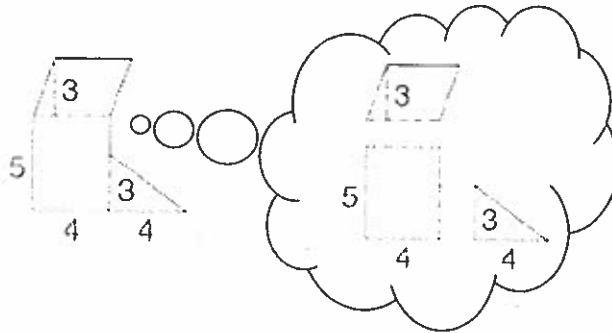
# Area of Polygons

## Reteach

Sometimes you can use area formulas you know to help you find the area of more complex figures.

You can break a polygon into shapes that you know. Then use those shapes to find the area.

The figure at right is made up of a triangle, a parallelogram, and a rectangle.



**Triangle**

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

$$= \frac{1}{2}(3 \times 4)$$

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

**Parallelogram**

$$A = bh$$

$$= 3 \times 4$$

$$= 12 \text{ square units}$$

**Rectangle**

$$A = lw$$

$$= 4 \times 5$$

$$= 20 \text{ square units}$$

Finally, find the sum of all three areas.

$$6 + 12 + 20 = 38$$

The area of the whole figure is 38 square units.

Find the area of each figure.

