

# SUMMER READING PROGRAM FOR THE 4<sup>TH</sup> FORM

Read a total of 1200 pages.

**REQUIRED:**

Within this total of 1200 pages, every student has one required book that he or she *must* read.

THIS SUMMER: ALL must read *Robin Hood* by Roger Lancelyn Green. We will be having a book discussion on this book the first week of school in the fall.

(This book can be a part of the 1200 page total. There are copies that can be checked out from 4th form humanities, but must be returned the 2nd day of school.

Fill out the form on the back of this sheet,  
listing the books read.

Note: A parental signature is  
required.

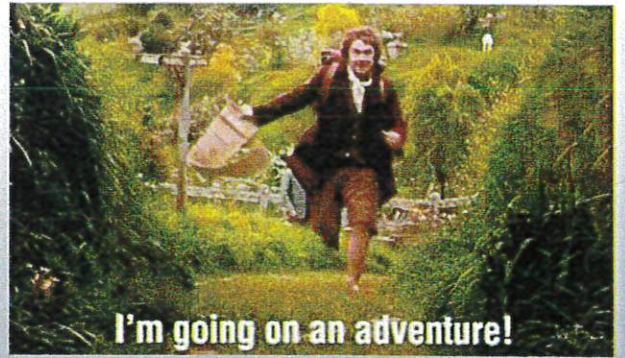
This form will be collected on the 1<sup>st</sup> day of school,

Extra credit will be given to those students who  
turn the form in on time.

On the second day of school, the form may be  
turned in without penalty,  
BUT no extra credit points will be offered.

After the first two days of school, summer  
reading forms will be counted as "late" with  
points being deducted from the student's grade.

How I act when I  
get a new book:



Additional books we strongly recommend:

- *Ender's Game*
- *The Scarlet Pimpernel*
- *Jane Eyre*
- *Pride & Prejudice*
- *The Bridge to Terabithia*
- *The Outsiders*
- *Banner in the Sky*
- *The Space Trilogy* by C.S. Lewis

Books can be read via audible or kindle, but we recommend that students have a visual copy of the book to follow along with.

**This form will be collected on the first day of school.**

- **On the first day of school,**  
extra credit will be given to those students who turn the form in on time.
- **On the second day of school,**  
the form may be turned in without penalty, BUT no extra credit points will be offered.
- **After the first two days of school,**  
summer reading forms will be counted as “late”--w/ points being deducted from the student’s grade.

**--Summer Reading Pledge and Report: 1200 Pages Total--**

I have read the following books this summer:

<u>Title</u>	<u>Author</u>	<u>Number of Pages</u>
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- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.

**Total number of pages read:** \_\_\_\_\_

**Student’s Signature:** \_\_\_\_\_

**Parent’s Signature:** \_\_\_\_\_

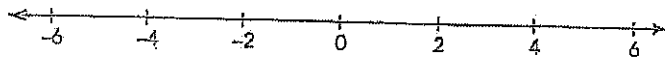
# Recognize Types of Numbers

**Example**

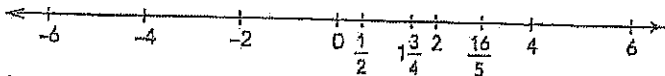
Type of Number	Whole Numbers	Negative Numbers	Fractions	Decimals
Examples	0, 2, 4, 6	-2, -4, -6	$\frac{1}{2}, 1\frac{3}{4}, \frac{16}{5}$	2.8, 5.75

Graph the numbers in the table on a horizontal number line.

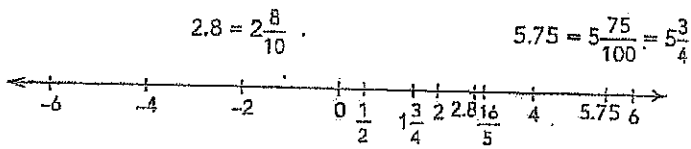
**STEP 1** Draw a number line from -6 to 6. Graph the whole and negative numbers.



**STEP 2** Graph the fractions. To help locate an improper fraction, convert it to a mixed number:  $\frac{16}{5} = 3\frac{1}{5}$ .



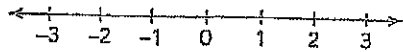
**STEP 3** Graph the decimals. To help locate a decimal, you may want to convert it to a fraction or mixed number.



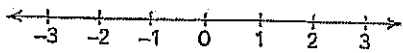
**Quick Check**

Use the < symbol. Order the numbers from least to greatest. Graph each number on a horizontal number line.

①  $2.3, 0, -3, \frac{1}{3}, -1$  \_\_\_\_\_



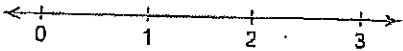
②  $\frac{8}{5}, 0.5, \frac{5}{4}, 3, -2$  \_\_\_\_\_



**Practice on Your Own**

Use the < symbol. Order the numbers from least to greatest. Graph each number on a horizontal number line.

③  $\frac{17}{8}, 0.8, 2.5, \frac{1}{5}, 1.8$  \_\_\_\_\_



④  $2.12, \frac{18}{7}, \frac{1}{6}, 1\frac{10}{17}, \frac{12}{13}$  \_\_\_\_\_





Name \_\_\_\_\_ Date \_\_\_\_\_

## Round Numbers

Rounding a number provides an estimate of the number.

**STEP 1** Find the place to which you are rounding.

**STEP 2** Look at the digit immediately to the right of that place. For example, when rounding to ones, look at the digit in the tenths place.

- If this digit is greater than or equal to 5, then round up the digit in the rounding place by 1.
- If this digit is less than 5, then the digit in the rounding place is unchanged.

**STEP 3** If you are rounding to a decimal place or to the nearest whole number, drop the digits to the right of the rounding place. If you are rounding to tens, hundreds, or any larger place value, then fill in zeros as needed.



Next digit  $\geq 5$

Round 2,386.024 to the nearest ten.

2,386.024 8 is in the rounding place, tens. Look at the digit to its right, 6.

2,390 6 > 5, so round up 8 to 9. Fill in a zero for the ones place and drop the decimal digits.

2,386.024 rounded to the nearest ten is 2,390.



Next digit  $< 5$

Round 2,386.024 to the nearest tenth.

2,386.024 2 is in the rounding place, tenths. Look at the digit to its right, 4.

2,386.02 4 < 5, so do not change the 2 in the tenths place. Drop all the digits to the right of 2.

2,386.024 rounded to the nearest tenth is 2,386.02.

### Quick Check

Round 3,062.845 to each place indicated below.

① to 2 decimal places

② to the nearest ten

③ to the nearest whole number

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Practice on Your Own**  
Round each number.

④ 4,285.7 to the nearest hundred

\_\_\_\_\_

⑤ 12.03 to the nearest tenth

\_\_\_\_\_

⑥ 64.48 to the nearest whole number

\_\_\_\_\_

⑦ 351.709 to the nearest hundred

\_\_\_\_\_

⑧ 0.076 to the nearest hundredth

\_\_\_\_\_

⑨ 109.95 to the nearest tenth

\_\_\_\_\_

## Find Cubes and Cube Roots

The cube of a number is its third power, or multiplying the number as a factor three times.

$$2^3 = 2 \cdot 2 \cdot 2 = 8$$

The cube root of a number is a number that produces the original quantity when multiplied as a factor three times.

$$3^3 = 2 \cdot 2 \cdot 2 = 8, \text{ so } \sqrt[3]{8} = 2.$$

Cubing a number and finding the cube root of a number are inverse operations.

### Example 1 Cubes

Find the cube of 5.

**STEP 1** Write a multiplication expression using 5 as a factor 3 times.

$$5 \cdot 5 \cdot 5$$

**STEP 2** Multiply to find the square.

$$5 \cdot 5 \cdot 5 = 25 \cdot 5 = 125$$

$$5^3 = 125$$

### Example 2 Cube Roots

Find the square root of 125.

**STEP 1** Think: What number can be used as a factor 3 times for a product of 125?

$$n \cdot n \cdot n = 125$$

**STEP 2** Use your knowledge of multiplication facts to find the cube root.

$$5 \cdot 5 \cdot 5 = 125$$

$$\sqrt[3]{125} = 5$$

### Quick Check

Find the cube of each number.

① 4 \_\_\_\_\_

② 1 \_\_\_\_\_

③ 10 \_\_\_\_\_

Find the cube root of each number.

④ 27 \_\_\_\_\_

⑤ 8 \_\_\_\_\_

⑥ 512 \_\_\_\_\_

Practice on Your Own

Find the cube of each number.

⑦ 3 \_\_\_\_\_

⑧ 6 \_\_\_\_\_

⑨ 2 \_\_\_\_\_

⑩ 9 \_\_\_\_\_

⑪ 7 \_\_\_\_\_

⑫ 8 \_\_\_\_\_

⑬ 15 \_\_\_\_\_

⑭ 12 \_\_\_\_\_

⑮ 20 \_\_\_\_\_

Find the cube root of each number.

⑯ 216 \_\_\_\_\_

⑰ 1 \_\_\_\_\_

⑱ 729 \_\_\_\_\_

⑲ 1,331 \_\_\_\_\_

⑳ 64 \_\_\_\_\_

㉑ 343 \_\_\_\_\_

㉒ 1,000,000 \_\_\_\_\_

㉓ 2,197 \_\_\_\_\_

㉔ 27,000 \_\_\_\_\_

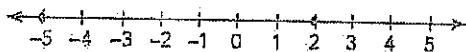
# Compare Numbers on a Number Line

You can use a number line to help you compare numbers. On a horizontal number line, numbers increase in value as you move to the right. On a vertical number line, numbers increase in value as you move up.

### Example 1

Use  $>$  or  $<$  to compare 2 and  $-5$ .

STEP 1 Draw a number line. Plot 2 and  $-5$ .



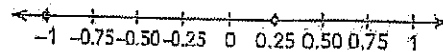
STEP 2 Compare the positions of the numbers.  
2 lies to the right of  $-5$ , so it is the greater number.

$$2 > -5$$

### Example 2

Use  $>$  or  $<$  to compare  $-0.75$  and  $0.25$ .

STEP 1 Draw a number line. Plot  $-0.75$  and  $0.25$ .



STEP 2 Compare the positions of the numbers.  
 $-0.75$  lies to the left of  $0.25$ , so it is the lesser number.

$$-0.75 < 0.25$$

### Quick Check

Complete each  $\square$  with  $>$  or  $<$ .

1  $12 \square -8$

2  $-0.32 \square -1.55$

3  $\frac{1}{3} \square \frac{4}{5}$

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### Practice on Your Own

Complete each  $\square$  with  $>$  or  $<$ .

4  $-22 \square -3$

5  $2\frac{1}{2} \square -3\frac{1}{4}$

6  $0.05 \square 0.95$

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7  $-\frac{1}{3} \square -\frac{1}{2}$

8  $2.15 \square -2.68$

9  $3 \square -289$

\_\_\_\_\_

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10  $-15 \square 15$

11  $-\frac{3}{4} \square -1\frac{1}{4}$

12  $-10.88 \square -10.89$

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# Express Improper Fractions and Mixed Numbers in Other Forms

**Example 1** Improper Fraction to Mixed Number

You can express improper fractions as mixed numbers.

$$\frac{17}{5} = \frac{15}{5} + \frac{2}{5} \quad \text{Rewrite as a sum.}$$

$$= 3 + \frac{2}{5} \quad \text{Write the improper fraction as a whole number.}$$

$$= 3\frac{2}{5} \quad \text{Write the sum as a mixed number.}$$

**Example 2** Mixed Number to Improper Fraction

You can express mixed numbers as improper fractions.

$$3\frac{1}{7} = 3 + \frac{1}{7} \quad \text{Rewrite as a sum.}$$

$$= \frac{21}{7} + \frac{1}{7} \quad \text{Write the whole number as a fraction.}$$

$$= \frac{22}{7} \quad \text{Write the sum as an improper fraction.}$$

## Quick Check

Express each improper fraction as a mixed number in simplest form.

1  $\frac{12}{8}$  \_\_\_\_\_

2  $\frac{19}{11}$  \_\_\_\_\_

3  $\frac{11}{3}$  \_\_\_\_\_

Express each mixed number as an improper fraction.

4  $4\frac{7}{9}$  \_\_\_\_\_

5  $6\frac{2}{7}$  \_\_\_\_\_

6  $5\frac{3}{10}$  \_\_\_\_\_

## Practice on Your Own

Express each improper fraction as a mixed number in simplest form.

7  $\frac{12}{9}$  \_\_\_\_\_

8  $\frac{24}{5}$  \_\_\_\_\_

9  $\frac{11}{7}$  \_\_\_\_\_

10  $\frac{22}{8}$  \_\_\_\_\_

11  $\frac{13}{11}$  \_\_\_\_\_

12  $\frac{27}{9}$  \_\_\_\_\_

13  $\frac{14}{5}$  \_\_\_\_\_

14  $\frac{32}{10}$  \_\_\_\_\_

15  $\frac{60}{8}$  \_\_\_\_\_

Express each mixed number as an improper fraction.

16  $2\frac{2}{7}$  \_\_\_\_\_

17  $3\frac{4}{9}$  \_\_\_\_\_

18  $5\frac{1}{6}$  \_\_\_\_\_

19  $6\frac{5}{12}$  \_\_\_\_\_

20  $1\frac{1}{7}$  \_\_\_\_\_

21  $2\frac{8}{9}$  \_\_\_\_\_

22  $4\frac{2}{9}$  \_\_\_\_\_

23  $7\frac{5}{8}$  \_\_\_\_\_

24  $8\frac{4}{7}$  \_\_\_\_\_

# Multiply Fractions

**Example 1**

Method 1

Find  $\frac{3}{5} \cdot \frac{5}{6}$ .

$$= \frac{3 \cdot 5}{5 \cdot 6}$$

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

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

Multiply the numerators.  
Multiply the denominators.

Find the products.

Simplify.

**Example 2**

Method 2

Find  $\frac{3}{5} \cdot \frac{5}{6}$ .

$$= \frac{3}{\cancel{5}^1} \cdot \frac{\cancel{5}_1}{6}$$

$$= \frac{\cancel{3}_1}{1} \cdot \frac{1}{\cancel{6}_2}$$

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

Divide a numerator and denominator by the common factor 5.

Divide the other numerator and denominator by the common factor 3.

Multiply the numerators.  
Multiply the denominators.

**Quick Check**

Multiply. Express your answer in simplest form.

①  $\frac{4}{5} \cdot \frac{3}{4}$

\_\_\_\_\_

②  $\frac{4}{9} \cdot \frac{5}{6}$

\_\_\_\_\_

③  $\frac{3}{8} \cdot \frac{1}{6}$

\_\_\_\_\_

**Practice on Your Own**

Multiply. Express your answer in simplest form.

④  $\frac{4}{7} \cdot \frac{7}{12}$

\_\_\_\_\_

⑤  $\frac{2}{9} \cdot \frac{3}{14}$

\_\_\_\_\_

⑥  $\frac{12}{15} \cdot \frac{5}{6}$

\_\_\_\_\_

⑦  $\frac{3}{10} \cdot \frac{2}{10}$

\_\_\_\_\_

⑧  $\frac{4}{5} \cdot \frac{3}{8}$

\_\_\_\_\_

⑨  $\frac{2}{3} \cdot \frac{8}{9}$

\_\_\_\_\_

⑩  $\frac{7}{10} \cdot \frac{6}{11}$

\_\_\_\_\_

⑪  $\frac{4}{8} \cdot \frac{2}{7}$

\_\_\_\_\_

⑫  $\frac{5}{8} \cdot \frac{5}{10}$

\_\_\_\_\_



# Multiply Decimals

## Example 1

First multiply. Then count the number of decimal places in the original numbers. Place the decimal point so that the product has the same number of decimal places.

$$\begin{array}{r}
 42.6 \leftarrow 1 \text{ decimal place} \\
 \times 2.3 \leftarrow + 1 \text{ decimal place} \\
 \hline
 1278 \\
 + 8520 \\
 \hline
 97.98 \leftarrow 2 \text{ decimal places}
 \end{array}$$

## Example 2

Find  $5.15 \cdot 3.7$ .

First multiply. Then place the decimal point.

$$\begin{array}{r}
 5.15 \leftarrow 2 \text{ decimal places} \\
 \times 3.7 \leftarrow + 1 \text{ decimal place} \\
 \hline
 3605 \\
 + 15450 \\
 \hline
 19.055 \leftarrow 3 \text{ decimal places}
 \end{array}$$

## Quick Check

Multiply. Express your answer in its simplest form.

1  $6.4 \cdot 11.3$

2  $8.3 \cdot 10.1$

3  $4.52 \cdot 2.9$

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## Practice on Your Own

Multiply. Express your answer in its simplest form.

4  $12.33 \cdot 2.1$

5  $3.5 \cdot 8.02$

6  $15.4 \cdot 2.7$

\_\_\_\_\_

\_\_\_\_\_

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7  $9.6 \cdot 0.75$

8  $13.63 \cdot 5.6$

9  $7.8 \cdot 3.9$

\_\_\_\_\_

\_\_\_\_\_

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10  $6.05 \cdot 7.2$

11  $12.98 \cdot 6.4$

12  $34 \cdot 5.6$

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

13  $15.4 \cdot 0.17$

14  $18.92 \cdot 0.1$

15  $8.5 \cdot 10.5$

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

# Use Percents

A percent is a ratio or comparison of a quantity to 100.

### Example 1 Find Percent

At a going-out-of-business sale, Jamie buys a microwave oven for 60% off. The original cost of the oven is \$125. Find the amount that Jamie saves on the cost of the oven.

Write the percent as a fraction.

$$60\% = \frac{60}{100}$$

Multiply by the original cost to solve.

$$\begin{aligned} \frac{60}{100} \cdot 125 &= \frac{7,500}{100} \\ &= 75 \end{aligned}$$

Jamie saves \$75.

### Example 2 Find Percent Change

Last winter, a town received 90 cm of snow. This winter, it received 135 cm of snow. Find the increase in the amount of snow. Then find the percent increase in the amount of snow.

$135 - 90 = 45$  cm Subtract to find the increase in the amount of snow.

$$\begin{aligned} \frac{45}{90} \cdot 100\% \\ &= 0.5 \cdot 100\% \\ &= 50\% \end{aligned}$$

To find the percent increase, write a fraction with the difference you calculated as the numerator and the original amount of snow as the denominator. Then multiply the quotient by 100% to find the percent.

The percent increase in the amount of snow is 50%.

### Quick Check

Solve each percent problem.

- 1 What is 15% of 80? \_\_\_\_\_
- 2 45 is what percent of 125? \_\_\_\_\_
- 3 A sports store sells 105 pairs of sneakers in April. In May, the store sells 42 pair of sneakers.
  - a) Find the decrease in the number of pairs of sneakers sold from April to May. \_\_\_\_\_
  - b) Find the percent decrease in the number of sneakers sold from April to May. \_\_\_\_\_

### Practice on Your Own

Solve each percent problem.

- 4 What is 40% of 200? \_\_\_\_\_
- 5 33 is what percent of 120? \_\_\_\_\_
- 6 What is 70% of \$70? \_\_\_\_\_
- 7 10 is what percent of 200? \_\_\_\_\_
- 8 Kai's dog weighed 4 pounds when he adopted it. The dog now weighs 34 pounds.
  - a) Find the increase in the weight of Kai's dog. \_\_\_\_\_
  - b) Find the percent increase in the weight of Kai's dog. \_\_\_\_\_

# Evaluate Algebraic Expressions

## Example 1

Given that  $x = 3$  in the expression  $4x - 5$ , find the value of the expression.

STEP 1 Substitute. Replace the variable  $x$  in the expression with the value 3.

$$4x - 5 = 4 \cdot 3 - 5$$

STEP 2 According to the order of operations, multiply before subtracting.

$$4 \cdot 3 - 5 = 12 - 5$$

STEP 3 Subtract.

$$12 - 5 = 7$$

## Example 2

Given that  $d = -2$  in the expression  $-4d + 6$ , find the value of the expression.

STEP 1 Substitute. Replace the variable  $d$  in the expression with the value  $-2$ .

$$-4d + 6 = (-4) \cdot (-2) + 6$$

STEP 2 According to the order of operations, multiply before adding.

$$(-4) \cdot (-2) + 6 = 8 + 6$$

STEP 3 Add.

$$8 + 6 = 14$$

## Quick Check

Evaluate each expression for the given value of the variable.

①  $15 - 2a$  when  $a = 3$

\_\_\_\_\_

②  $7b + 3$  when  $b = 2$

\_\_\_\_\_

③  $3c + 5$  when  $c = 0$

\_\_\_\_\_

④  $\frac{t}{2} - 3$  when  $t = 16$

\_\_\_\_\_

⑤  $-r + 7$  when  $r = 5$

\_\_\_\_\_

⑥  $-3x - 6$  when  $x = -4$

\_\_\_\_\_

Practice on Your Own  
Complete the table.

$y$	$y - 4$	$5y$	$3y + 2$
3	$3 - 4 = -1$		
0			
-2			
5			
-4			

# Expand Algebraic Expressions

## Example 1

Expand the expression.

$$5(2d - 4)$$

STEP 1 Apply the distributive property. Multiply by 5 each of the terms  $2d$  and  $4$ .

$$5(2d - 4) = 5(2d) - 5(4)$$

STEP 1 Multiply within each term.

$$5(2d) - 5(4) = 10d - 20$$

The expanded form of  $5(2d - 4)$  is  $10d - 20$ .

## Example 2

Expand the expression.

$$7(3 + h)$$

STEP 1 Apply the distributive property. Multiply by 7 each of the terms  $3$  and  $h$ .

$$7(3 + h) = 7(3) + 7(h)$$

STEP 1 Multiply within each term.

$$7(3) + 7(h) = 21 + 7h$$

The expanded form of  $7(3 + h)$  is  $21 + 7h$ .

## Quick Check

Expand each expression.

①  $3(3y - 2)$

\_\_\_\_\_

②  $8(1 + 6a)$

\_\_\_\_\_

③  $4(4e + 5)$

\_\_\_\_\_

Practice on Your Own  
Expand each expression.

④  $6(7s + 3)$

\_\_\_\_\_

⑤  $8(2 - r)$

\_\_\_\_\_

⑥  $3(8 + 4m)$

\_\_\_\_\_

⑦  $5(b - 8)$

\_\_\_\_\_

⑧  $9(5d + 7)$

\_\_\_\_\_

⑨  $4(10s - 2)$

\_\_\_\_\_

⑩  $7(7 + 7g)$

\_\_\_\_\_

⑪  $10(2k - 9)$

\_\_\_\_\_

⑫  $12(3v - 2)$

\_\_\_\_\_

⑬  $9(8 + 4w)$

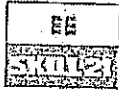
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⑭  $8(6n - 8)$

\_\_\_\_\_

⑮  $11(11p + 5)$

\_\_\_\_\_



# Recognize Equivalent Expressions

## Example 1 Through Expanding

Determine whether the algebraic expressions below are equivalent.

$$3(2g - 4) \text{ and } 6g - 12$$

**STEP 1** Use the distributive property to expand the first expression.

$$\begin{aligned} 3(2g - 4) &= 3(2g) - 3(4) \\ &= 6g - 12 \end{aligned}$$

**STEP 2** Compare the expanded expression to the second expression. They are the same, so they are equivalent.

So, you can write  $3(2g - 4) = 6g - 12$ .

## Example 2 Through Factoring

Determine whether the algebraic expressions below are equivalent.

$$25 + 20t \text{ and } 5(6 + 4t)$$

**STEP 1** Factor the first expression. The GCF of 25 and 20 is 5.

$$\begin{aligned} 25 + 20t &= 5(5) + 5(4t) \\ &= 5(5 + 4t) \end{aligned}$$

**STEP 2** Compare the factored expression to the second expression. They are not the same, so they are not equivalent.

So, you can write  $25 + 20t \neq 5(6 + 4t)$ .

## Quick Check

Choose an equivalent expression.

1  $8a - 4$  is equivalent to \_\_\_\_\_

- a)  $4(2a - 1)$       b)  $2(8a - 4)$       c)  $3(5a - 1)$       d)  $4(2a + 1)$

2  $12 + 3y$  is equivalent to \_\_\_\_\_

- a)  $6(2 + 3y)$       b)  $12(1 + y)$       c)  $3(4 + y)$       d)  $4(3 + 2y)$

## Practice on Your Own

Choose an equivalent expression.

3  $4n - 10$  is equivalent to \_\_\_\_\_

- a)  $4(n - 5)$       b)  $5(2n - 2)$       c)  $2(n - 5)$       d)  $2(2n - 5)$

4  $11(3d - 6)$  is equivalent to \_\_\_\_\_

- a)  $33d - 6$       b)  $33d - 66$       c)  $3d - 66$       d)  $11d - 66$

5  $30 + 18p$  is equivalent to \_\_\_\_\_

- a)  $6(5 + 3p)$       b)  $2(15 + 3p)$       c)  $3(5p + 6)$       d)  $3(10 + 3p)$

6  $8(7r + 2)$  is equivalent to \_\_\_\_\_

- a)  $56r + 16$       b)  $15r + 10$       c)  $56r + 2$       d)  $7r + 16$

# Solve Algebraic Equations by Balancing

You can use inverse operations to solve an equation. This is also called *balancing an equation*.

**STEP 1** Get the variable alone on one side of the equation. To do that, you add, subtract, multiply, or divide both sides of the equation by the same nonzero number.

**STEP 1** Simplify the equation.

**Example 1** Addition or subtraction

Solve the equation.

$$x - 4 = 7$$

$$x - 4 = 7$$

$$x - 4 + 4 = 7 + 4 \quad \text{Add 4 to both sides.}$$

$$x = 11 \quad \text{Simplify the equation.}$$

**Example 2** Multiplication or division

Solve the equation.

$$\frac{1}{4}x = 12$$

$$\frac{1}{4}x \div \frac{1}{4} = 12 \div \frac{1}{4} \quad \text{Divide both sides by } \frac{1}{4}.$$

$$\frac{1}{4}x \cdot \frac{4}{1} = 12 \cdot \frac{4}{1} \quad \text{Multiply both sides by the reciprocal of } \frac{1}{4}.$$

$$x = 48 \quad \text{Simplify the equation.}$$

## Quick Check

Solve each equation.

1  $x + 3 = 12$

\_\_\_\_\_

2  $x - 7 = 1$

\_\_\_\_\_

3  $5x = 75$

\_\_\_\_\_

**Practice on Your Own**  
Solve each equation.

4  $\frac{2}{5}x = 20$

\_\_\_\_\_

5  $x + \frac{1}{4} = 1$

\_\_\_\_\_

6  $x + 7.5 = 12$

\_\_\_\_\_

7  $x - \frac{3}{4} = 4$

\_\_\_\_\_

8  $x - 13 = 21$

\_\_\_\_\_

9  $1.1x = 3.3$

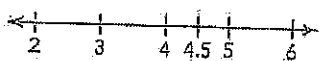
\_\_\_\_\_

# Graph Inequalities on a Number Line

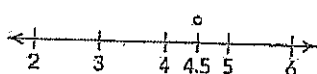
## Example 1

Graph the inequality  $x < 4.5$  on a number line.

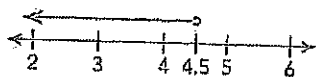
STEP 1 Locate 4.5 on the number line.



STEP 2 The inequality states that  $x$  is less than 4.5. Use an open circle at 4.5 to show that it is not a solution of the inequality.



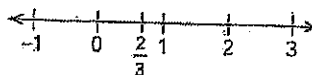
STEP 3 Draw an arrow to the left of 4.5 to indicate that all numbers less than 4.5 are solutions of the inequality.



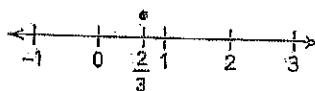
## Example 2

Graph the inequality  $t \geq \frac{2}{3}$  on a number line.

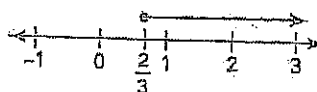
STEP 1 Locate  $\frac{2}{3}$  on the number line.



STEP 2 The inequality states that  $t$  is greater than or equal to  $\frac{2}{3}$ . Use a shaded circle at  $\frac{2}{3}$  to show that it is a solution of the inequality.



STEP 3 Draw an arrow to the right of  $\frac{2}{3}$  to indicate that all numbers greater than or equal to  $\frac{2}{3}$  are solutions of the inequality.



## Quick Check

Draw a number line to represent each inequality.

①  $p < 6$

②  $c \geq 5.5$

③  $f \leq -2$

④  $w > \frac{1}{2}$

⑤  $n > 11.5$

⑥  $j \leq 20$

## Practice on Your Own

Draw a number line to represent each inequality.

⑦  $m \geq 18$

⑧  $g < \frac{3}{4}$

⑨  $r \leq 12.5$

⑩  $d > -7$

⑪  $x \geq 2\frac{1}{3}$

⑫  $b < 8.6$

# Compare Quantities Using a Ratio

**Example 1**

**Write a Ratio**

One day Alexis sent 45 text messages, Casey sent 75, and Sara sent 60. Write a ratio to compare the number of text messages Alexis sent to the number Casey sent.

**STEP 1** Write the ratio. A ratio has 2 terms.

Alexis 45 ← term

Casey 75 ← term

**STEP 2** Express the ratio in simplest form.

$$\frac{45}{75} = \frac{45 \div 15}{75 \div 15} \text{ Divide by the GCF.}$$

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

**Example 2**

**Write a Ratio Three Ways**

Use the data from Example 1. Write a ratio in three ways to compare the number of text messages Sara sent to the number Alexis sent.

**STEP 1** Write the ratio 3 ways: using "to," using a colon, and as a fraction.

$$60 \text{ to } 45 \quad 60 : 45 \quad \frac{45}{75}$$

**STEP 2** Express each ratio in simplest form by dividing each term by the GCF, 15.

$$4 \text{ to } 3 \quad 4 : 3 \quad \frac{3}{5}$$

**Quick Check**

Write a ratio in simplest form three ways to compare quantities.

Juan recycled 42 plastic bottles, 28 cans, and 35 glass bottles.

① number of glass bottles to number of plastic bottles \_\_\_\_\_

② number of cans to number of plastic bottles \_\_\_\_\_

**Practice on Your Own**

Write a ratio in simplest form to compare quantities.

After the 2010 Census, eight states gained seats in the U.S. House of Representatives.

The table below shows how many representatives each of these states will now have.

Write ratios to compare the number of state representatives.

Arizona	9
Florida	28
Georgia	14
Nevada	4

South Carolina	7
Texas	36
Utah	4
Washington	10

③ Arizona to Texas \_\_\_\_\_

④ Washington to Nevada \_\_\_\_\_

⑤ Utah to Florida \_\_\_\_\_

⑥ Texas to Arizona \_\_\_\_\_

⑦ Georgia to South Carolina \_\_\_\_\_

⑧ Washington to Texas \_\_\_\_\_



# Find Rates and Unit Rates

**Example 1** Finding Unit Rates

Nia drove 225 miles in 5 hours. Find her average speed in miles per hour.

**STEP 1** Write the rate. Label the terms.

$$\frac{225 \leftarrow \text{miles}}{5 \leftarrow \text{hours}}$$

**STEP 2** Use the unitary method to find the unit rate, the average number of miles Nia drove in 1 hour.

$$5 \text{ hours} \leftarrow 225 \text{ miles}$$

$$1 \text{ hour} \leftarrow \frac{225}{5} = 45 \text{ miles per hour}$$

Nia drove at an average speed of 45 mi/h.

**Example 2** Comparing Unit Rates

The price of cereal at two stores is shown. At which store is the cereal less expensive?

Store A: \$3.29 for a 12-oz box  
 Store B: \$5.00 for an 18-oz box

**STEP 1** Find the unit price at each store.

Store A:  $\frac{\$5.00}{12} \approx \$0.27$  per oz  
 Store B:  $\frac{\$5.00}{18} \approx \$0.28$  per oz

**STEP 2** Compare the unit prices.

$$\$0.27 < \$0.28$$

The cereal is less expensive at Store A.

**Quick Check**

Solve.

1 A cyclist rode 36 miles in 4 hours. What was her average speed in miles per hour?

\_\_\_\_\_

2 Mr. Leonard paid \$35.75 for 10 gallons of gas. At another gas station, Ms. Lu paid \$36.90 for 11 gallons. Who got the better deal?

\_\_\_\_\_

**Practice on Your Own**

3 A 5-pound bag of white onions costs \$4.25. A 5-pound bag of red onions costs \$4.45. Find the unit prices for each.

\_\_\_\_\_

4 The Write-On Company sells packs of 3 pens for \$1.50. The Ink Company sells packs of 7 pens for \$3.50. Find the unit price for each.

\_\_\_\_\_

5 Jenna drove 298 miles in 5 hours. Barry drove 238 miles in 4 hours. Who was driving at a greater average speed?

\_\_\_\_\_

6 Julieta bought  $\frac{1}{4}$  lb of bologna for \$1.50; 1 lb of ham for \$7.00, and  $\frac{1}{2}$  lb of salami for \$3.99. Which deli meat cost the most per pound?

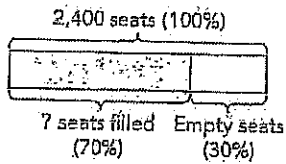
\_\_\_\_\_

# Solve Percent Problems

## Example 1 Finding a Part

A theater has 2,400 seats. For a performance of a play, it is 70% full. How many seats are filled?

First, draw a bar model that relates the number of seats to percent values.



From the bar model, use the unitary method.

$$100\% \rightarrow 2,400$$

$$1\% \rightarrow \frac{2,400}{100} = 24$$

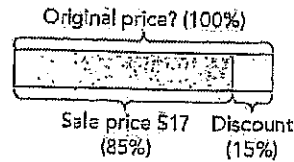
$$70\% \rightarrow 70 \times 24 = 1,680$$

1,680 of the seats in the theater are filled.

## Example 2 Finding the Whole

Bala paid \$17 for a shirt. It was on sale for 15% off. What was the original price of the shirt?

The shirt was 15% off. Since  $100\% - 15\% = 85\%$ , the sale price was 85% of the original price.



From the bar model, use the unitary method.

$$85\% \rightarrow \$17$$

$$1\% \rightarrow \frac{17}{85} = \$0.20$$

$$100\% \rightarrow 100 \times \$0.20 = \$20$$

The original price of the shirt was \$20.

## Quick Check

Find the quantity represented by each percent.

1. 80% of \$360 \_\_\_\_\_

2. 125% of 48 \_\_\_\_\_

3. 36% of \$690 \_\_\_\_\_

4. 215% of 68 \_\_\_\_\_

## Practice on Your Own

Find the quantity represented by each percent.

5. 4% of 196 \_\_\_\_\_

6. 72% of 900 \_\_\_\_\_

7. 135% of \$520 \_\_\_\_\_

8. 37.5% of 8,888 \_\_\_\_\_

## Solve.

9. At a park, 20% of employees are rangers. There are 7 rangers. How many people are employed at the park?  
\_\_\_\_\_

10. A hotel room is priced at \$125 per night. A 6% sales tax is added to the price. How much does one night at the hotel cost, including tax?  
\_\_\_\_\_

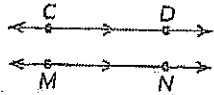
# Identify Parallel and Perpendicular Lines

Two lines in the same plane that do not intersect are parallel lines. Parallel lines are always the same distance apart. They have no points in common.

Two lines that intersect and form a  $90^\circ$  angle are perpendicular lines.

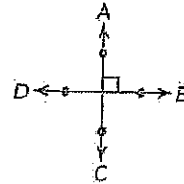
## Example Parallel Lines

Lines  $\overleftrightarrow{CD}$  and  $\overleftrightarrow{MN}$  are parallel. They do not intersect. They are the same distance apart. They share no common points. The  $\parallel$  symbols on the lines indicate that  $\overleftrightarrow{CD}$  and  $\overleftrightarrow{MN}$  are parallel.



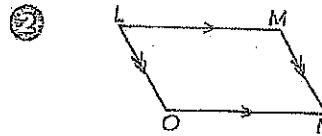
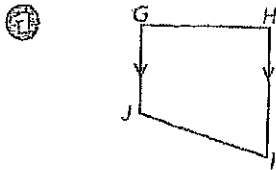
## Example Perpendicular Lines

Lines  $\overleftrightarrow{AC}$  and  $\overleftrightarrow{DB}$  are perpendicular. They intersect to form  $90^\circ$  angles, as indicated by the right angle symbol.

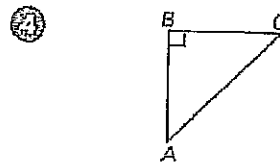
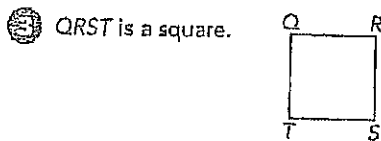


## Quick Check

Identify each pair of parallel line segments.

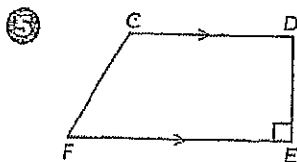


Identify each pair of perpendicular line segments.



## Practice on Your Own

Identify each pair of parallel or perpendicular line segments.



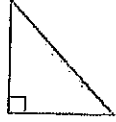
Parallel: \_\_\_\_\_

Perpendicular: \_\_\_\_\_

# Classify Triangles by Angle Measures

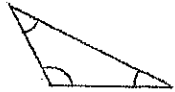
**Example 1** **Right Triangle**

An angle that measures  $90^\circ$  is called a right angle.  
Any triangle that includes a right angle is called a right triangle.




**Example 2** **Obtuse Triangle**

An angle with a measure greater than  $90^\circ$  is called an obtuse angle.  
Any triangle that includes an obtuse angle is called an obtuse triangle.



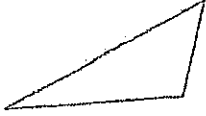
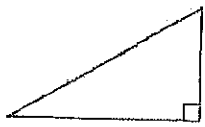
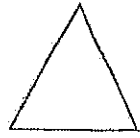
**Example 3** **Acute Triangle**

An angle that measures less than  $90^\circ$  is called an acute angle.  
Any triangle that includes three acute angles is called an acute triangle.

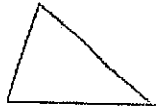




**Quick Check**

Classify each triangle by its angle measures.

①	②	③
		
_____	_____	_____

**Practice on Your Own**  
Classify each triangle by its angle measures.

④	⑤	⑥
		
_____	_____	_____

Classify the triangle described below.

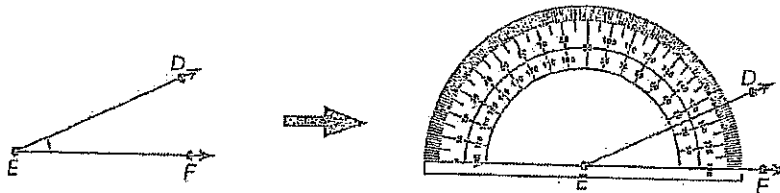
⑦ None of the angles measure greater than  $80^\circ$ .

\_\_\_\_\_

# Use a Protractor to Measure an Angle in Degrees

## Example

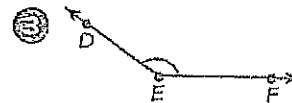
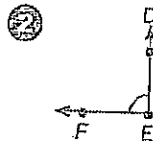
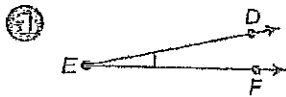
An angle is formed by two rays that share a common endpoint called the vertex. An angle's measure is between  $0^\circ$  and  $180^\circ$ . Use the following steps to find the measure of angle  $DEF$ .



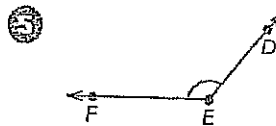
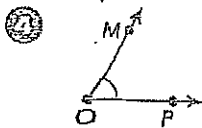
- STEP 1** Place the base line of the protractor on ray  $EF$ .
- STEP 2** Place the center of the base line of the protractor at the vertex of the angle,  $E$ .
- STEP 3** Read the scale. Since ray  $EF$  crosses the  $0$  mark on the inner scale, read the angle measure from the inner scale. If  $EF$  crossed the  $0$  mark on the outer scale, you would read the angle measure from the outer scale.
- Ray  $ED$  passes through the  $25^\circ$  mark. So, the measure of angle  $DEF$  is  $25^\circ$ .

## Quick Check

Measure  $\angle DEF$ .



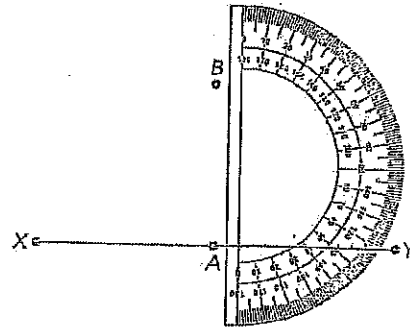
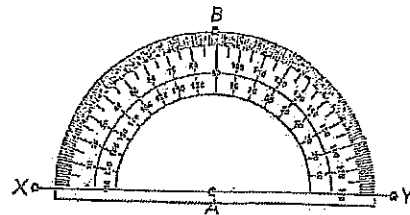
Practice on Your Own  
Measure  $\angle MOP$ .



# Use a Protractor to Draw Perpendicular Line Segments

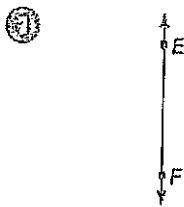
**Example**

- STEP 1 Mark a point on line XY and label it A.
- STEP 2 Place the base line of the protractor on line XY.
- STEP 3 Align the center of the base line with point A.
- STEP 4 Locate the 90° mark on the protractor. Plot point B at the 90° mark.
- STEP 5 Align the straight edge of the protractor with points A and B. Draw a line connecting them. Line AB is perpendicular to line XY.

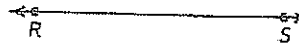


**Quick Check**

Draw a line perpendicular to each line.



②

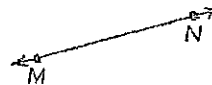


**Practice on Your Own**

Draw a line perpendicular to each line.



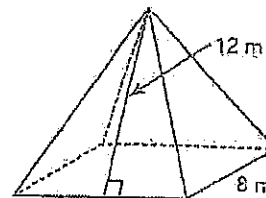
④



# Find the Surface Area of a Square Pyramid

**Example**

A pyramid has a square base measuring 8 m on each side. It has four faces that are congruent isosceles triangles. The height of each triangle is 12 m. What is the surface area of the square pyramid?



**STEP 1** The surface area of a square pyramid is the sum of the area of the base and the areas of the 4 triangular faces.

You can use the formula:

$$S.A. = s^2 + 4\left(\frac{1}{2}bh\right)$$

**STEP 2** Substitute values for the side, base, and height.

$$S.A. = (8)^2 + 4\left(\frac{1}{2}\right)(8)(12)$$

**STEP 3** Multiply, then add.

$$S.A. = 64 + 192 = 256$$

**STEP 4** Write the answer using square units.

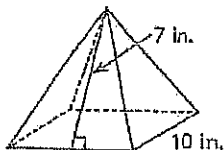
$$S.A. = 256 \text{ m}^2$$

The surface area of the pyramid is  $256 \text{ m}^2$ .

**Quick Check**

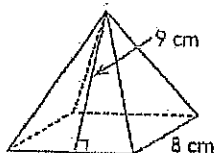
Find the surface area of each pyramid.

1



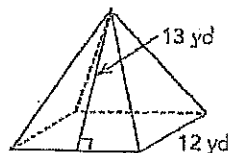
S.A. = \_\_\_\_\_

2



S.A. = \_\_\_\_\_

3

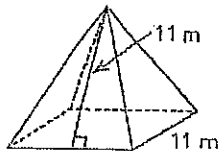


S.A. = \_\_\_\_\_

**Practice on Your Own**

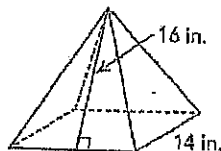
Find the surface area of each pyramid.

4



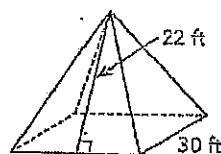
S.A. = \_\_\_\_\_

5



S.A. = \_\_\_\_\_

6



S.A. = \_\_\_\_\_

**Solve.**

- 7 A square pyramid has four faces that are congruent isosceles triangles. Find the surface area of the pyramid if the area of the base is  $196 \text{ cm}^2$  and the height of each triangular face is 9 cm.
- \_\_\_\_\_

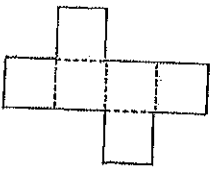
# Identify Nets of Prisms and Pyramids

### Example 1

#### Cube

This net shows six congruent squares. It can be folded to form a square prism, also called a cube.

This is a net of a cube.

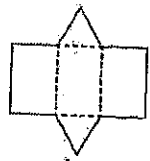


### Example 3

#### Triangular Prism

This net shows two congruent triangles (parallel bases) and three rectangles (faces).

This is a net of a triangular prism.

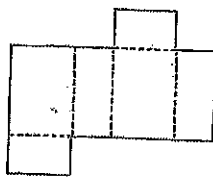


### Example 2

#### Rectangular Prism

This net shows three pairs of congruent rectangles. Any pair can be considered the bases of the prism.

This is a net of a rectangular prism.

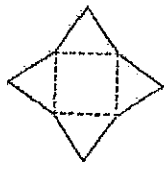


### Example 4

#### Square Pyramid

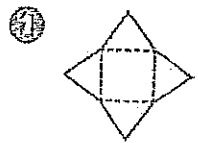
This net shows a square base and four faces that are congruent triangles.

This is a net of a square pyramid.

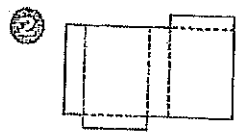


## Quick Check

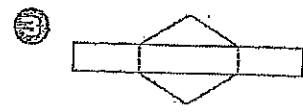
Classify each triangle by its side lengths.



\_\_\_\_\_



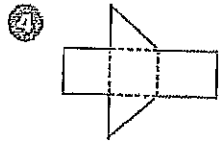
\_\_\_\_\_



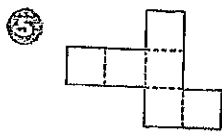
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### Practice on Your Own

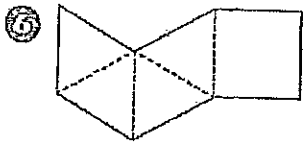
Classify each triangle by its side lengths.



\_\_\_\_\_



\_\_\_\_\_



\_\_\_\_\_

Classify the triangle described below.

⑦ The net for a solid has 6 faces. None of the faces are squares or triangles.

What solid does this net form? \_\_\_\_\_



## Find the Median of a Set of Data

### Example 1 Odd Number of Values

Find the median of the values 32, 27, 52, 3, and 29.

STEP 1 Write the values from least to greatest.

3 27 29 32 52

STEP 2 Count to identify the middle value.

There are two values less than 29 and two values greater than 29. So, 29 is the middle value.

3 27 29 32 52

The median is 29.

### Example 2 Even Number of Values

Find the median of the values 66, 33, 34, 78, 9, and 15.

STEP 1 Write the values from least to greatest.

9 15 33 34 66 78

STEP 2 Count to identify the middle value.

9 15 33 34 66 78

Since the number of values is an even number (6), there are two middle values, 33 and 34.

STEP 3 Find the mean of the two middle values.

$$\frac{33 + 34}{2} = \frac{67}{2} = 33.5$$

The median is 33.5.

### Quick Check

Find the median of each set of numbers.

① 98, 102, 56, 45, 99

\_\_\_\_\_

② 1, 13, 3, 64, 51, 79

\_\_\_\_\_

③ 2, 5, 2, 1, 13, 6, 7, 12, 9, 0, 10

\_\_\_\_\_

④ 334, 434, 333, 443, 343, 444, 433, 443

\_\_\_\_\_

**Practice on Your Own**  
 Solve. Show your work.

⑤ The weekly rainfall, in inches, for the past 7 weeks is shown below.

2, 1.8, 1, 0.5, 0, 2, 1.5

What was the median rainfall? \_\_\_\_\_

⑥ A student's spelling test scores are shown below.

76, 83, 62, 85, 92, 51, 71, 78, 100, 88, 95, 78

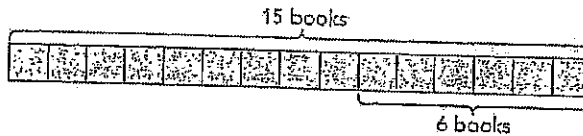
What was the median test score? \_\_\_\_\_

## Express Part of a Whole as a Fraction and a Percent

### Example

Charlie places 15 books on a shelf. Six of them are math books. Express 6 books out of 15 books as a fraction and as a percent.

**STEP 1** Draw a model to represent the fraction. Write the fraction in simplest form.



$\frac{6}{15} = \frac{2}{5}$  So, 6 books out of 15 books can be expressed as the fraction  $\frac{2}{5}$ .

**STEP 2** Express the fraction as a percent. First rewrite  $\frac{2}{5}$  as an equivalent fraction with 100 as the denominator.

$$\frac{2}{5} = \frac{2 \cdot 20}{5 \cdot 20} = \frac{40}{100} = 40\%$$

**STEP 3** Express the remaining 9 books out of 15 books as a percent.

Subtract 40% from 100%;  $100\% - 40\% = 60\%$ .

So, 9 books out of 15 books can be expressed as 60%.

### Quick Check

Solve.

① Express 15 goldfish out of 60 goldfish as a fraction in simplest form.

\_\_\_\_\_

② If there are 21 dogs in a group of 30 animals, what percent of the animals are dogs?

\_\_\_\_\_

### Practice on Your Own

Solve.

③ There are 28 violinists in an orchestra of 100 musicians. What percent of the musicians in the orchestra are violinists?

\_\_\_\_\_

④ Express 40 sandwiches out of 50 sandwiches as a fraction in simplest form.

\_\_\_\_\_

⑤ 18 out of 54 coins are dimes. What fraction of the coins are dimes? Write your answer in simplest form.

\_\_\_\_\_

⑥ 48 out of 150 flowers are roses. What percent of the flowers are not roses?

\_\_\_\_\_

## Express a Percent as a Fraction or Decimal

### Example 1 Percent as Fraction

Express 52% as a fraction in simplest form.

$$52\% = \frac{52}{100}$$

$$= \frac{52 \div 4}{100 \div 4}$$

$$= \frac{13}{25}$$

Express the percent as a fraction with a denominator of 100.

Divide both the numerator and the denominator by 4, their greatest common factor.

### Example 2 Percent as Decimal

Express 132% as a decimal.

$$132\% = \frac{132}{100}$$

$$= 1.32$$

Express the percent as a fraction with a denominator of 100.

Divide 132 by 100 to express the fraction as a decimal.

### Quick Check

Write each percent as a fraction or a mixed number in simplest form.

1 76%

2 21%

3 124%

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Write each percent as a decimal.

4 299%

5 42.3%

6 8%

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

### Practice on Your Own

Write each percent as a fraction or a mixed number in simplest form.

7 148%

8 2.6%

9 65%

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Write each percent as a decimal.

10 413%

11 9.3%

12 0.1%

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

# Solve a Histogram Problem

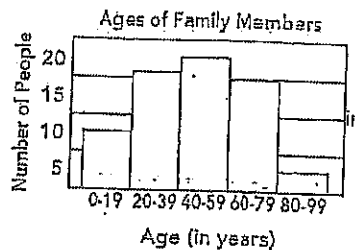
**Example**

The table shows the ages of 60 people who attended a family reunion.

Age (years)	0-19	20-39	40-59	60-79	80-99
Number of People	8	16	18	15	3

a) Draw a histogram to display the information in the table.

Label the x-axis with the age ranges in the table. Choose an appropriate scale and interval for the y-axis. Use the information the second row of the table to draw the correct height for each bar. Label each axis, and write a title for the histogram.



b) How many people are younger than 60 years old?

To find the total, add the number of people in the 0-19, 20-39, and 40-59 age ranges in the histogram:  $8 + 16 + 18 = 42$ .

c) What percent of people are 40 years old or older?

Write a fraction to represent the people who are 40 or older:  $\frac{36}{60} = \frac{3}{5}$ .

Write the fraction as a percent 60%.

**Quick Check**

Draw a histogram to display the data. Answer the questions.

1 The table shows the mass of fish caught in a lake one day.

a) Draw a histogram to display this information.

b) How many of the fish have a mass of 2 kg or more? \_\_\_\_\_

c) What percent of the fish have a mass of 3 kg or more? \_\_\_\_\_

Mass (kg)	Number of Fish
0-0.9	4
1.0-1.9	7
2.0-2.9	9
3.0-3.9	11
4.0-4.9	9

**Practice on Your Own**

Draw a histogram to display the data. Answer the questions.

2 The table shows the average number of minutes that 25 students study each night.

a) Draw a histogram to display this information.

b) How many the students spend less than 60 minutes studying?

\_\_\_\_\_

c) What percent of the students spend 90 minutes or more studying?

\_\_\_\_\_

Time (min)	Number of Students
0-29	2
30-58	5
60-89	6
90-119	8
120-148	4

## Operations with Fractions (A)

Calculate the answer to each question.

1.  $\frac{2}{11} + \frac{1}{17} + \frac{2}{3}$

2.  $\frac{21}{5} + \frac{11}{6} - \frac{5}{2}$

3.  $\frac{28}{17} \times \frac{6}{19} \div \frac{3}{4}$

4.  $\frac{12}{5} - \frac{18}{17} + \frac{1}{2}$

5.  $\frac{31}{12} + \frac{1}{2} + \frac{7}{3}$

6.  $\frac{6}{5} \div \frac{5}{6} \times \frac{7}{16}$

7.  $\frac{16}{3} - \frac{4}{3} - \frac{7}{6}$

8.  $\frac{7}{3} \div \frac{3}{4} \times \frac{26}{17}$

9.  $\frac{46}{9} - \frac{28}{11} + \frac{7}{6}$

10.  $\frac{5}{3} \times \frac{5}{4} \div \frac{5}{2}$

Answer

Key

**Skills**

## Quick Check

1. 12                      2. 4                      3. 0

## Practice on Your Own

4. 55                      5. 8                      6. 27  
 7. 62                      8. 7                      9. 0  
 10. 1                      11. 6                      12. 69  
 13. 57                      14. 13                      15. 111

**Skills**

## Quick Check

1.  $1\frac{1}{2}$                       2.  $1\frac{7}{12}$                       3.  $3\frac{2}{3}$   
 4.  $\frac{43}{9}$                       5.  $\frac{44}{7}$                       6.  $\frac{53}{10}$

## Practice on Your Own

7.  $1\frac{1}{3}$                       8.  $4\frac{4}{5}$                       9.  $1\frac{4}{7}$   
 10.  $2\frac{3}{4}$                       11.  $1\frac{2}{11}$                       12. 3  
 13.  $2\frac{4}{5}$                       14.  $3\frac{1}{5}$                       15.  $7\frac{1}{2}$   
 16.  $\frac{16}{7}$                       17.  $\frac{31}{9}$                       18.  $\frac{31}{6}$   
 19.  $\frac{77}{12}$                       20.  $\frac{8}{7}$                       21.  $\frac{26}{9}$   
 22.  $\frac{38}{9}$                       23.  $\frac{61}{8}$                       24.  $\frac{60}{7}$

**Skills**

## Quick Check

1.  $7\frac{17}{20}$                       2.  $4\frac{1}{9}$                       3.  $\frac{13}{35}$

## Practice on Your Own

4.  $4\frac{13}{28}$                       5.  $8\frac{43}{72}$                       6.  $7\frac{14}{40}$   
 7.  $7\frac{29}{35}$                       8.  $1\frac{11}{36}$                       9.  $3\frac{1}{10}$

**Skills**

## Quick Check

1.  $\frac{3}{5}$                       2.  $\frac{10}{21}$                       3.  $\frac{1}{16}$

## Practice on Your Own

4.  $\frac{1}{3}$                       5.  $\frac{1}{21}$                       6.  $\frac{2}{3}$   
 7.  $\frac{3}{50}$                       8.  $\frac{3}{10}$                       9.  $\frac{16}{27}$

10.  $\frac{21}{55}$                       11.  $\frac{1}{7}$                       12.  $\frac{5}{16}$

**Skills**

## Quick Check

1.  $\frac{3}{4}$                       2.  $\frac{1}{2}$                       3.  $2\frac{4}{7}$

## Practice on Your Own

4.  $1\frac{3}{5}$                       5.  $\frac{1}{9}$                       6.  $\frac{5}{6}$   
 7.  $1\frac{1}{2}$                       8.  $\frac{9}{25}$                       9.  $1\frac{3}{7}$   
 10.  $1\frac{1}{15}$                       11.  $2\frac{1}{10}$                       12.  $1\frac{7}{18}$

**Skills**

## Quick Check

1. 72.32                      2. 83.83                      3. 13.108

## Practice on Your Own

4. 25.893                      5. 28.07                      6. 41.58  
 7. 7.2                      8. 76.328                      9. 30.42  
 10. 43.56                      11. 83.072                      12. 190.4  
 13. 2.618                      14. 1.892                      15. 89.25

**Skills**

## Quick Check

1. 4.5                      2. 42                      3. 12.3

## Practice on Your Own

4. 15.4                      5. 4.7                      6. 5.6  
 7. 4.8                      8. 9.2                      9. 13.3  
 10. 0.05                      11. 2.95                      12. 4.05  
 13. 3.25                      14. 9.2                      15. 23.7

**Skills**

## Quick Check

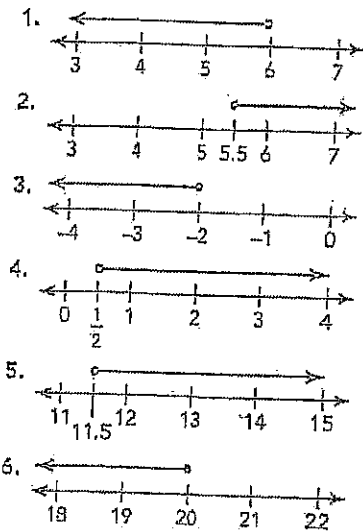
1. 12                      2. 36%  
 3. (a) 63  
     (b) 60%

## Practice on Your Own

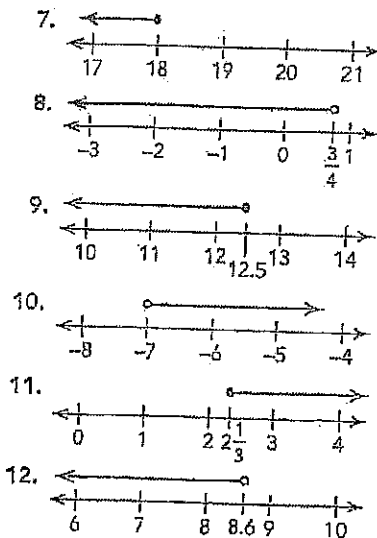
4. 80                      5. 27.5%  
 6. \$49                      7. 5%  
 8. (a) 30 pounds  
     (b) 750%

**5.11P3**

**Quick Check**



**Practice on Your Own**



**5.11P4**

**Quick Check**

- 1. <
- 2. >
- 3.  $x > 4$
- 4.  $x \leq 10$

**Practice on Your Own**

- 5. =
- 6. >
- 7.  $x \geq 25$
- 8.  $x < 35$
- 9.  $x \leq 80$
- 10.  $x > 24$

**5.11P7**

**Quick Check**

- 1. 5 to 6,  $5 : 6, \frac{5}{6}$
- 2. 2 to 3,  $2 : 3, \frac{2}{3}$

**Practice on Your Own**

- 3. 1 : 4
- 4. 5 : 2
- 5. 1 : 7
- 6. 4 : 1
- 7. 2 : 1
- 8. 5 : 18

**5.11P8**

**Quick Check**

- 1. No
- 2. Yes
- 3. No; samples: 3 : 4, 9 : 12
- 4. Yes; samples: 6 to 14, 9 to 21
- 5. No; samples: 3 to 5, 12 to 20

**Practice on Your Own**

- 5. No; samples: 3 to 5, 12 to 20
- 6. Yes; samples:  $\frac{4}{10}, \frac{6}{15}$
- 7. No; samples:  $\frac{2}{9}, \frac{18}{81}$
- 8. Yes; samples:  $\frac{2}{16}, \frac{3}{24}$
- 9. No; samples: 2 : 3, 8 : 12
- 10. Yes; samples: 42 : 16, 63 : 24
- 11. Yes; samples: 8 : 30, 12 : 45
- 12. No; samples: 1 to 3, 2 to 6
- 13. No; samples: 5 to 1, 60 to 12
- 14. No; samples: 3 to 8, 12 to 32

**5.11P9**

**Quick Check**

- 1. 9 mi/h
- 2. Ms. Lu

**Practice on Your Own**

- 3. white: \$0.85 per lb; red: 50.89 per lb
- 4. Write-On: \$0.50 per pen; Ink: \$0.50 per pen
- 5. Jenna
- 6. salami

**5.11E10**

**Quick Check**

- 1. (4, 4)
- 2. (7, 6)
- 3. (5, 0)
- 4. (0, 3)

**Practice on Your Own**

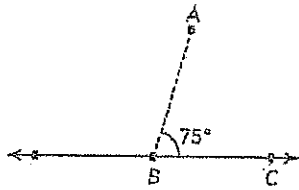
- 5. (5, 3)
- 6. (2, 8)



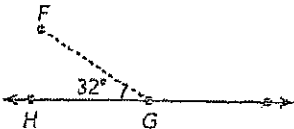
**STAGE 3**

**Quick Check**

1.

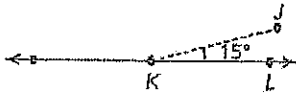


2.

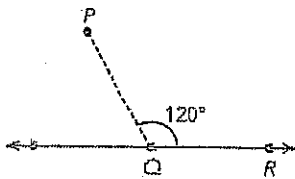


**Practice on Your Own**

4.



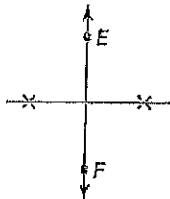
5.



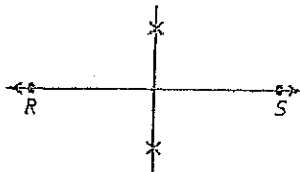
**STAGE 3**

**Quick Check**

1.



2.

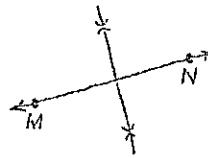


**Practice on Your Own**

3.



4.



**STAGE 3**

**Quick Check**

1.  $390 \text{ cm}^2$       2.  $96 \text{ in.}^2$       3.  $198 \text{ m}^2$   
 $378 \text{ cm}^3$        $64 \text{ in.}^3$        $108 \text{ m}^3$

**Practice on Your Own**

4.  $190 \text{ ft}^2$       5.  $126 \text{ yd}^2$       6.  $600 \text{ in.}^2$   
 $150 \text{ ft}^3$        $81 \text{ yd}^3$        $1,000 \text{ in.}^3$   
 7.  $6 \text{ m}$

**STAGE 3**

**Quick Check**

1.  $240 \text{ in.}^2$       2.  $208 \text{ cm}^2$       3.  $456 \text{ yd}^2$

**Practice on Your Own**

4.  $363 \text{ m}^2$       5.  $644 \text{ in.}^2$       6.  $2,220 \text{ ft}^2$   
 7.  $448 \text{ cm}^2$

**STAGE 3**

**Quick Check**

1. a)  $2,826 \text{ cm}^2$       2. a)  $12.56 \text{ ft}^2$   
 b)  $188.4 \text{ cm}$       b)  $12.56 \text{ ft}$

**Practice on Your Own**

3. a)  $379.94 \text{ in.}^2$       4. a)  $200.96 \text{ m}^2$   
 b)  $69.08 \text{ in.}$       b)  $50.24 \text{ m}$

**STAGE 3**

**Quick Check**

1. square pyramid      2. rectangular prism  
 3. triangular prism

**Practice on Your Own**

4. triangular prism      5. cube  
 6. square pyramid      7. rectangular prism

**STAGE 3**

**Quick Check**

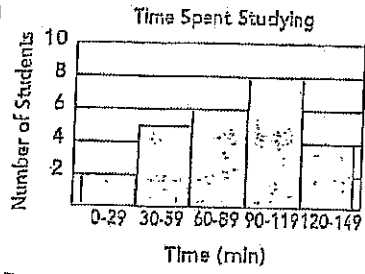
1. 37      2. 13.4      3. 14.24

**Practice on Your Own**

4.  $47.13 \text{ mi/h}$       5.  $40.86 \text{ lb}$

Practice on Your Own

2. a)



b) 7

c) 48%

# Operations with Fractions (A) Answers

Calculate the answer to each question.

$$\begin{array}{r} 1. \quad \frac{2}{11} + \frac{1}{17} + \frac{2}{3} \\ \hline 509 \\ \hline 561 \end{array}$$

$$\begin{array}{r} 2. \quad \frac{21}{5} + \frac{11}{6} - \frac{5}{2} \\ \hline 53 \\ \hline 15 \end{array}$$

$$\begin{array}{r} 3. \quad \frac{28}{17} \times \frac{6}{19} \div \frac{3}{4} \\ \hline 224 \\ \hline 323 \end{array}$$

$$\begin{array}{r} 4. \quad \frac{12}{5} - \frac{18}{17} + \frac{1}{2} \\ \hline 313 \\ \hline 170 \end{array}$$

$$\begin{array}{r} 5. \quad \frac{31}{12} + \frac{1}{2} + \frac{7}{3} \\ \hline 65 \\ \hline 12 \end{array}$$

$$\begin{array}{r} 6. \quad \frac{6}{5} \div \frac{5}{6} \times \frac{7}{16} \\ \hline 63 \\ \hline 100 \end{array}$$

$$\begin{array}{r} 7. \quad \frac{16}{3} - \frac{4}{3} - \frac{7}{6} \\ \hline 17 \\ \hline 6 \end{array}$$

$$\begin{array}{r} 8. \quad \frac{7}{3} \div \frac{3}{4} \times \frac{26}{17} \\ \hline 728 \\ \hline 153 \end{array}$$

$$\begin{array}{r} 9. \quad \frac{46}{9} - \frac{28}{11} + \frac{7}{6} \\ \hline 739 \\ \hline 198 \end{array}$$

$$\begin{array}{r} 10. \quad \frac{5}{3} \times \frac{5}{4} \div \frac{5}{2} \\ \hline 5 \\ \hline 6 \end{array}$$