

**Dear Family,**

The student is learning how to write and solve problems involving ratios, rates, and proportions. A **ratio** compares two items or quantities using division. Ratios can be written to compare a part to a part, a part to the whole, or the whole to a part.

Use the table to write each ratio.

Boys	Girls
11	12

**boys to girls**

$\frac{11}{12}$  or 11 to 12 or 11:12 part to part

**boys to total number of students**

$\frac{11}{23}$  or 11 to 23 or 11:23 part to whole

**total number of students to girls**

$\frac{23}{12}$  or 23 to 12 or 23:12 whole to part

A **rate** compares two quantities that have different units of measure. By learning to find the **unit rate** between two items, the student will be able to determine which rate is the better deal.

**Grocery Store A is selling 5 pounds of potatoes for \$3.50. Grocery Store B is selling 3 pounds of potatoes for \$1.89. Which is the better deal?**

Grocery Store A		Grocery Store B	
$\frac{\$3.50}{5 \text{ lb}}$	Write the rate.	$\frac{\$1.89}{3 \text{ lb}}$	Write the rate.
$\frac{\$3.50 \div 5}{5 \text{ lb} \div 5}$	Divide both terms by 5.	$\frac{\$1.89 \div 3}{3 \text{ lb} \div 3}$	Divide both terms by 3.
$\frac{\$0.70}{1 \text{ lb}}$	\$0.70 per pound	$\frac{\$0.63}{1 \text{ lb}}$	\$0.63 per pound

Grocery Store B has the better deal. The unit rate of \$0.63 per pound is cheaper than that of \$0.70 per pound.

**Vocabulary**

These are the math words we are learning:

**equivalent ratios**  
ratios that name the same comparison

**corresponding angles**  
congruent angles in similar figures

**corresponding sides**  
sides of similar figures whose lengths are proportional to each other

**indirect measurement**  
the use of similar figures and proportions to find the measure of an object that cannot be directly measured

**proportion** an equation that shows two equivalent ratios

**rate** a comparison of two quantities that have different units of measure

**ratio** a comparison of two quantities by division

**scale** a ratio between two sets of measurements

**scale drawing** a drawing of a real object that is proportionally smaller or larger than the real object

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

**Practice C**  
**Ratios and Rates**

*Maths Week 10 Homework*  
*Due Oct 31, 2019*

Use the table to write each ratio.

1. red and blue T-shirts to green T-shirts

\_\_\_\_\_

2. purple T-shirts to yellow and green T-shirts

\_\_\_\_\_

3. blue and green T-shirts to purple and red T-shirts

\_\_\_\_\_

4. red T-shirts to all other T-shirt colors

\_\_\_\_\_

Red	24
Blue	42
Green	36
Purple	51
Yellow	60

Write each ratio two different ways.

5. 7:21

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

6.  $\frac{12}{50}$

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

7. 18 to 10

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

Write three equivalent ratios for each ratio.

8. 19 to 38

\_\_\_\_\_

9. 5:3

\_\_\_\_\_

10.  $\frac{20}{24}$

\_\_\_\_\_

11. A 12-ounce bag of birdseed costs \$3.12. A 16-ounce bag of birdseed costs \$3.84. Which is the better deal? How much money per ounce would you save by buying that size bag instead of the other?

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

12. There are 60 players on a high school football team. The ratio of juniors and seniors to freshmen and sophomores on the team is 2:3. The ratio of juniors to seniors on the team is 1:2. How many juniors are on the team? How many seniors?

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

## LESSON

7-2

**Puzzles, Twisters & Teasers***Unlike the Others*

Each row of problems has 3 equivalent ratios and 1 that is not. Circle the one that is not equivalent to the others. Write the circled letters above their problem numbers to solve the riddle.

1.  $\frac{5}{10}$  S

20:30 N

10 to 20 M

$\frac{1}{2}$  P

2. 24:36 U

$\frac{12}{16}$  C

6:9 Z

48 to 72 I

3.  $\frac{96}{120}$  F

24 to 30 A

12:15 X

$\frac{5}{4}$  L

4. 88 to 100 D

22 to 25 B

116:200 E

$\frac{264}{300}$  O

5. 9 to 5 C

$\frac{81}{40}$  E

99:55 K

135 to 75 Y

No sooner spoken than broken. What is it?

S I                                                    
           3            5            1            2            4

## LESSON

7-1

## Review for Mastery

*Ratios and Rates (continued)*

A rate is a comparison of two quantities that have different units of measure.

Suppose a bus travels 150 miles in 3 hours. The rate could be written as  $\frac{150 \text{ miles}}{3 \text{ hours}}$ .

When the second term of a rate is 1 unit, the rate is a unit rate.

To write  $\frac{150 \text{ miles}}{3 \text{ hours}}$  hours as a unit rate, divide each term by 3.

$$\begin{aligned} & \frac{150 \text{ miles}}{3 \text{ hours}} \\ = & \frac{150 \text{ miles} \div 3}{3 \text{ hours} \div 3} \\ = & \frac{50 \text{ miles}}{1 \text{ hour}} \end{aligned}$$

The unit rate is  $\frac{50 \text{ miles}}{\text{hour}}$ .

Find each unit rate.

7.  $\frac{40 \text{ books}}{2 \text{ shelves}}$

8.  $\frac{36 \text{ students}}{6 \text{ groups}}$

9.  $\frac{300 \text{ seconds}}{5 \text{ minutes}}$

10.  $\frac{54 \text{ miles}}{2 \text{ gallons}}$

11.  $\frac{4 \text{ miles}}{20 \text{ minutes}}$

12.  $\frac{\$1.29}{3 \text{ pounds}}$

13.  $\frac{72 \text{ hours}}{3 \text{ days}}$

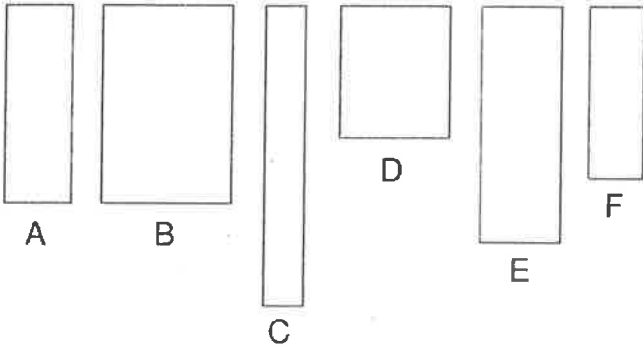
14.  $\frac{42 \text{ trading cards}}{6 \text{ packs}}$

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

**Challenge**

**The Golden Ratio**

For centuries, people all over the world have considered a certain rectangle to be one of the most beautiful shapes. Which of these rectangles do you find the most attractive?



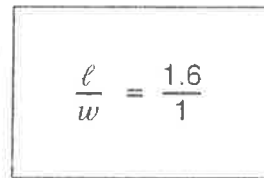
If you are like most people, you chose rectangle B. Why? It's a golden rectangle, of course! In a golden rectangle, the ratio of the length to the width is called the **golden ratio**—about 1.6 to 1.

The golden ratio pops up all over the place—in music, sculptures, the Egyptian pyramids, seashells, paintings, pinecones, and of course in rectangles.

To create your own golden rectangle, just write a ratio equivalent to the golden ratio. This will give you the length and width of another golden rectangle.

**Use a ruler to draw a new golden rectangle in the space below. Then draw several non-golden rectangles around it. Now conduct a survey of your family and friends to see if they choose the golden rectangle as their favorite.**

**Golden Ratio**



$w = 1 \text{ in.}$

$l = 1.6 \text{ in.}$