Accelerated Course 1 and Course 1

Summer Math Packet

Due Date: The First Day of School

Please Show All Work on Binder Paper

NAME _____ DATE _____ PERIOD _____

Lesson 1 Reteach

Factors and Multiples

The **greatest common factor (GCF)** of two or more numbers is the greatest of the common factors of the numbers. The smallest number that is a multiple of two or more whole numbers is the **least common multiple (LCM)** of the numbers.

Example 1

Find the GCF of 12 and 30.

Make an organized list of the factors for each number.

Factors of 12: 1, 2, 3, 4, 6, 12

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

The common factors are 1, 2, 3, and 6. The greatest is 6.

So, the GCF of 12 and 30 is 6.

Example 2

Find the LCM of 6 and 15.

List the multiples of each number.

Multiples of 6: 6, 12, 18, 24, 30, 36, 42, 48, 54, 60, ...

Multiples of 15: 15, 30, 45, 60, ...

Notice that 30 and 60 are common multiples.

The least common multiple of 6 and 15 is 30.

Exercises

Find the GCF of each set of numbers.

1. 6, 12 _____
2. 28, 42 _____
3. 44, 55 _____
4. 35, 20, 15 _____

Find the LCM of each set of numbers.

5. 5, 6 _____
6. 6, 8 _____
7. 4, 10 _____
8. 15, 12 _____

NAME _____ DATE _____ PERIOD _____

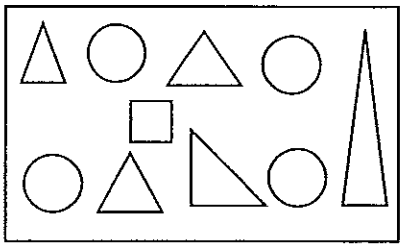
Lesson 2 Reteach

Ratios

A **ratio** is a comparison of two numbers by division. A common way to express a ratio is as a fraction in simplest form. Ratios can also be written in other ways. For example, the ratio $\frac{2}{3}$ can be written as 2 to 3, 2 out of 3, or 2:3.

Examples

Refer to the diagram at the right.



1. Write the ratio in simplest form that compares the number of circles to the number of triangles.

   circles $\rightarrow$ 4
   triangles $\rightarrow$ 5 — The GCF of 4 and 5 is 1.

   So, the ratio of circles to triangles is $\frac{4}{5}$, 4 to 5, or 4:5.

   For every 4 circles, there are 5 triangles.

2. Write the ratio in simplest form that compares the number of circles to the total number of figures.

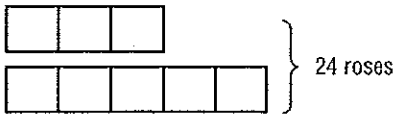
   circles $\rightarrow$ $\frac{4}{10} = \frac{2}{5}$ ← total figures — The GCF of 4 and 10 is 2. (÷2 above, ÷2 below)

   The ratio of circles to the total number of figures is $\frac{2}{5}$, 2 to 5, or 2:5.
   For every two circles, there are five total figures.

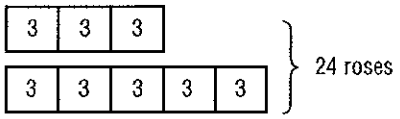
Example 3

Divide 24 roses into 2 groups so the ratio is 3 to 5.

Use a bar diagram. Show a group of 3 and a group of 5.



Because there are 8 sections, each section represents 24 ÷ 8, or 3 roses.



There are 9 roses in the first group and 15 roses in the second group.

Exercises

Write each ratio as a fraction in simplest form. Then explain its meaning.

1. 2 guppies to 6 seahorses

2. 12 puppies to 15 kittens

3. **SPELLING** A sentence has 5 misspelled words and 15 correctly spelled words. Find the ratio of misspelled words to correctly spelled words.

NAME _____ DATE _____ PERIOD _____

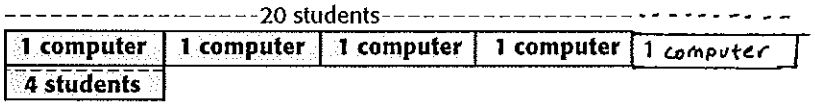
Lesson 3 Reteach

Rates

A **rate** is a ratio of two measurements having different kinds of units. When a rate is simplified so that it has a denominator of 1, it is called a **unit rate.**

Example 1

Use a bar diagram to show the ratio *20 students to 5 computers* as a unit rate.



The bar diagram shows the number of students divided by the number of computers. It represents the number of students per computer.

The ratio written as a unit rate is *4 students to 1 computer*.

You can also find a unit rate by dividing.

Example 2

Benito ate 48 raisins in 8 minutes. How many raisins did he eat per minute, if he ate the same number each minute?

$$\frac{48 \text{ raisins}}{8 \text{ minutes}} = \frac{6 \text{ raisins}}{1 \text{ minute}}$$

(÷8 over the numerator, ÷8 under the denominator)

Divide the numerator and denominator by 8 to get a denominator of 1.

The unit rate is 6 raisins per minute.

Exercises

Write each rate as a unit rate.

1. 6 eggs for 3 people
2. $12 for 4 pounds
3. 40 pages in 8 days

4. **GROCERIES** Mr. Gonzalez spends $135 for 5 bags of groceries. How much does he spend per bag of groceries, if each bag costs the same?

5. **TRAIN** Ms. Terry travels by train to see famous theme parks. She travels a distance of 728 miles in 8 hours. If the train maintains a constant speed, how many miles does she travel in one hour?

6. **FOOTBALL** A quarterback throws 222 yards in 6 games. How many yards does he throw in one game if he throws the same amount in each game?

NAME _____ DATE _____ PERIOD _____

Lesson 4 Reteach

Ratio Tables

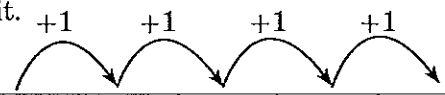
A **ratio table** organizes data into columns that are filled with pairs of numbers that have the same ratio, or are equivalent. **Equivalent ratios** express the same relationship between two quantities.

Example 1

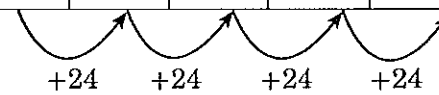
BAKING You need 1 cup of rolled oats to make 24 oatmeal cookies. Use the ratio table below to find how many oatmeal cookies you can make with 5 cups of rolled oats.

Cups of Oats	1				5
Oatmeal Cookies	24				

Find a pattern and extend it.



Cups of Oats	1	2	3	4	5
Oatmeal Cookies	24	48	72	96	120



So, 120 oatmeal cookies can be made with 5 cups of rolled oats.

Multiplying or dividing two related quanitities by the same number is called **scaling.** You may sometimes need to *scale back* and then *scale forward* or vice versa to find an equivalent ratio.

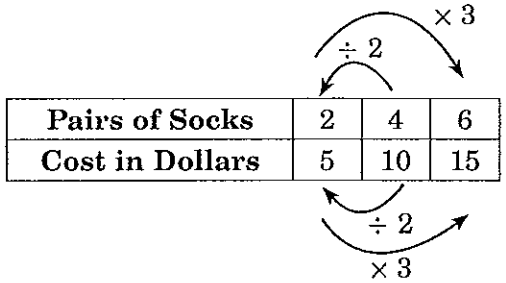
Example 2

SHOPPING A department store has socks on sale for 4 pairs for $10. Use the ratio table at the right to find the cost of 6 pairs of socks.

Pairs of Socks		4	6
Cost in Dollars		10	

There is no whole number by which you can multiply 4 to get 6. Instead, scale back to 2 and then forward to 6.

So, the cost of 6 pairs of socks would be $15.



Exercises

For Exercises 1–2, use the ratio tables given to solve each problem.

1. EXERCISE Keewan bikes 6 miles in 30 minutes. At this rate, how long would it take him to bike 18 miles?

Distance Biked (mi)	6		18
Time (min)	30		

2. HOBBIES Christine is making fleece blankets. 6 yards of fleece will make 2 blankets. How many blankets can she make with 9 yards of fleece?

Yards of Fleece		6	9
Number of Blankets		2	

NAME _____ DATE _____ PERIOD _____

Lesson 5 Reteach

Graph Ratio Tables

A **coordinate plane** is formed when two number lines intersect at their zero points. This intersection is called the **origin.** The horizontal number line is called the ***x*-axis.** The vertical number line is called the ***y*-axis.**

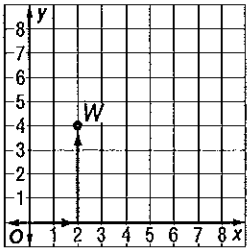
An **ordered pair** is used to name a point on a coordinate plane. The first number in the ordered pair is the ***x*-coordinate**, and the second number is the ***y*-coordinate.**

Example 1

Graph the point $W(2, 4)$.

Start at the origin. Move 2 units to the right along the x-axis.

Then move 4 units up to locate the point. Draw a dot and label the point W.



Example 2

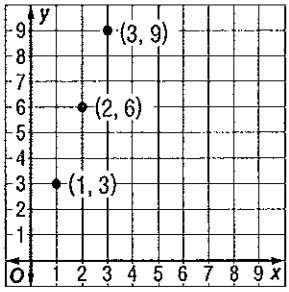
TICKETS Tickets to the school play cost $3 each. The costs of 1, 2, and 3 tickets are shown in the table. List this information as ordered pairs (number of tickets, cost).

The ordered pairs are (1, 3), (2, 6), and (3, 9).

Ticket Costs	
Number of Tickets	**Cost ($)**
1	3
2	6
3	9

Example 3

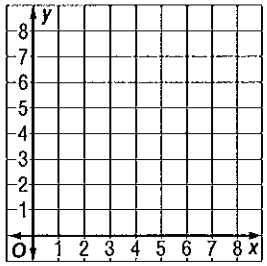
Graph the ordered pairs from Example 2.



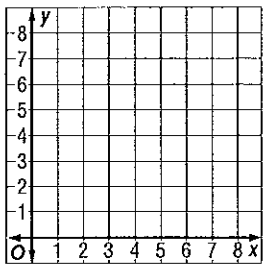
Exercises

Graph and label each point on the coordinate plane.

1. $S(1, 3)$



2. $T(4, 0)$



NAME _____ DATE _____ PERIOD _____

Lesson 6 Reteach

Equivalent Ratios

Two ratios are said to be **equivalent ratios** if they have the same unit rate.

Example 1

Determine if each pair of rates are equivalent. Explain your reasoning.

$35 for 7 balls of yarn; $24 for 4 balls of yarn.

Write each rate as a fraction. Then find its unit rate.

$$\frac{\$35}{7 \text{ balls of yarn}} \overset{\div 7}{=} \frac{\$5}{1 \text{ ball of yarn}} \qquad \frac{\$24}{4 \text{ balls of yarn}} \overset{\div 4}{=} \frac{\$6}{1 \text{ ball of yarn}}$$

Since the rates do not share the same unit rate, they are not equivalent.

Example 2

Determine if each pair of ratios are equivalent. Explain your reasoning.

8 boys out of 24 students; 4 boys out of 12 students

Write each ratio as a fraction.

$$\frac{8 \text{ boys}}{24 \text{ students}} \overset{\div 2}{=} \frac{4 \text{ boys}}{12 \text{ students}}$$

← The numerator and the denominator are divided by the same number.

Since the fractions are equivalent, the ratios are equivalent.

Exercises

Determine if each pair of ratios or rates are equivalent. Explain your reasoning.

1. $12 saved after 2 weeks; $36 saved after 6 weeks

2. $9 for 3 magazines; $20 for 5 magazines

3. 135 miles driven in 3 hours; 225 miles driven in 5 hours

4. 24 computers for 30 students; 48 computers for 70 students

NAME _____ DATE _____ PERIOD _____

Lesson 7 Reteach

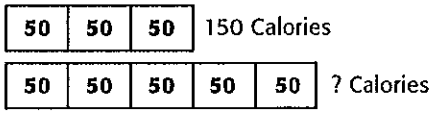
Ratio and Rate Problems

You can solve rate and ratio problems by using a bar diagram or by using a unit rate.

Example 1

NUTRITION Three servings of broccoli contain 150 Calories. How many Calories will 5 servings contain?

Method 1 Use a bar diagram.



Draw a bar diagram to represent the situation.

Each section represents 150 ÷ 3, or 50 Calories.

So, 5 servings of broccoli contain 250 Calories.

Method 2 Use a unit rate.

Step 1 Find the unit rate. $\frac{150 \text{ Calories}}{3 \text{ servings}} = \frac{\text{Calories}}{1 \text{ serving}}$ ($\div 3$) $\quad \frac{150 \text{ Calories}}{3 \text{ servings}} = \frac{50 \text{ Calories}}{1 \text{ serving}}$

Step 2 Multiply. $\frac{50 \text{ Calories}}{1 \text{ serving}} \times 5 \text{ servings} = 250 \text{ Calories}$

You can also solve ratio and rate problems by using equivalent fractions.

Example 2

SURVEY In one survey, three out of five students agreed that the school needs a new cafeteria. Predict how many of the 600 students in the school would agree that the school needs a new cafeteria.

agree → $\frac{3}{5} = \frac{\quad}{600}$ ← agree, total → ← total

Write a ratio comparing the number of students who agree to the total number of students.

$\frac{3}{5} = \frac{360}{600}$ ($\times 120$)

Since $5 \times 120 = 600$, multiply 3 by 120.

So, 360 students would agree that the school needs a new cafeteria.

Exercises

Solve.

1. **MUSIC** Jeremy spent $33 on 3 CDs. At this rate, how much would 5 CDs cost?

2. **AQUARIUM** At an aquarium, 6 out of 18 deliveries are plants. Out of 15 deliveries in one week, how many are plants?

3. **ELECTIONS** Three out of four students surveyed in a school said they will vote for Nuncio for class president. Predict how many of the 340 students in the school would vote for Nuncio.

NAME _____ DATE _____ PERIOD _____

Standardized Test Practice

Read each question. Then fill in the correct answer on the answer sheet provided by your teacher or on a sheet of paper.

1. The ratio of cats to dogs seen by a veterinarian in one day is 2 to 5. If a vet saw 40 dogs in one day, how many cats did he see?

   A. 5 **C.** 29

   B. 16 **D.** 40

2. At a sports camp, there is one counselor for every 12 campers. If there are 156 campers attending the camp, which equivalent ratios could be used to find the number of counselors?

Campers	Counselors
12	1
24	2
156	▩

   F. $\frac{▩}{12} = \frac{1}{156}$ **H.** $\frac{12}{1} = \frac{▩}{156}$

   G. $\frac{1}{12} = \frac{▩}{156}$ **I.** $\frac{▩}{1} = \frac{12}{156}$

3. GRIDDED RESPONSE A car jack requires a force of 110 pounds to lift a 2,500-pound car. In simplest form, what is the ratio of the car's weight to the force required to lift the car?

4. A baker is making an oversized sheet cake for a school dance. The recipe calls for 2 cups of sugar for every 3 cups of flour. How many cups of flour are needed, if she is using 18 cups of sugar?

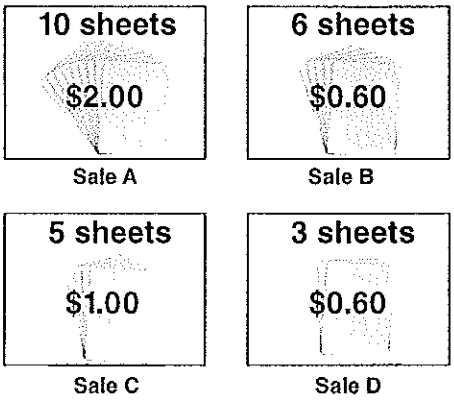
   A. 27 cups

   B. 18 cups

   C. 9 cups

   D. 6 cups

5. Which rate gives the best price for scrapbook paper?



   F. Sale A **H.** Sale C

   G. Sale B **I.** Sale D

6. Which of the following ratios is equivalent to $\frac{5}{7}$?

   A. $\frac{10}{12}$ **C.** $\frac{15}{17}$

   B. $\frac{3}{5}$ **D.** $\frac{10}{14}$

7. GRIDDED RESPONSE The table shows the cups of whole wheat flour required to make dog biscuits.

Number of Dog Biscuits	10		35
Cups of Whole Wheat Flour	2		

   How many cups of whole wheat flour are required to make 35 biscuits?

8. A school population was predicted to increase by 50 students a year for the next 10 years. If the current population is 700 students, what will be the enrollment after 10 years?

   F. 50 students **H.** 1,200 students

   G. 500 students **I.** 7,000 students

NAME _____ DATE _____ PERIOD _____

9. **SHORT RESPONSE** There are 12 boys and 15 girls in your class. Four new students, 3 boys and 1 girl, join your class. Compare the ratio of boys to girls before and after the new students enrolled.

10. The table shows the cost of different kinds of fruit.

Fruit	banana	apple	orange	grapes
Cost per pound ($)	0.60	1.89	0.99	1.00

To the nearest cent, what is the cost of 3.5 pounds of grapes?

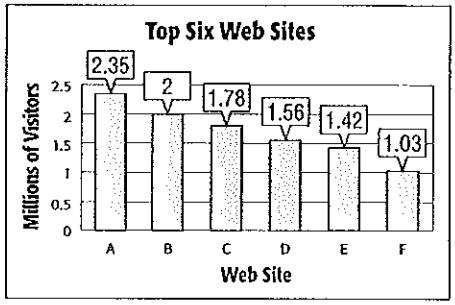
A. $2.84 **C.** $3.50

B. $2.88 **D.** $3.63

11. **GRIDDED RESPONSE** Mr. Reinard bought 5 pounds of feed for his chickens for $10. How much did the feed cost per pound in dollars?

12. **SHORT RESPONSE** The length of a track around a football field is $\frac{1}{4}$ mile How many miles do you walk if you walk $2\frac{3}{4}$ times around the track?

13. The bar graph below shows the average number of visitors to different Web sites during one month.



How many visitors can Web site B expect to have in one year?

F. 2.4 million

G. 24 million

H. 240 million

I. 2,400 million

14. **EXTENDED RESPONSE** Cesar's sixth-grade class sorted books in the library. The class sorted 45 books in 90 minutes.

Part A Write an equivalent ratio to find how long it would take to sort 120 books.

Part B How many hours will it take the class to sort 120 books?

Part C Suppose their rate slowed to 30 books in 90 minutes. How long would it take the class to sort the 120 books? Explain your reasoning.