



Study Guide and Intervention

Ratios

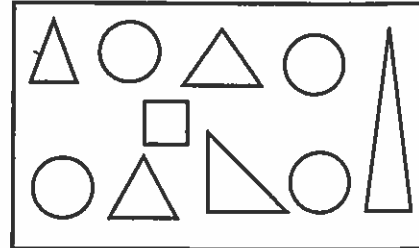
A **ratio** is a comparison of two numbers by division. A common way to express a ratio is as a fraction in simplest form. Ratios can also be written in other ways. For example, the ratio $\frac{2}{3}$ can be written as 2 to 3, 2 out of 3, or 2:3.

EXAMPLES Refer to the diagram at the right.

- 1 Write the ratio that compares the number of circles to the number of triangles.

$$\begin{array}{l} \text{circles} \rightarrow \frac{4}{5} \\ \text{triangles} \rightarrow \frac{5}{5} \end{array} \quad \text{The GCF of 4 and 5 is 1.}$$

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 that compares the number of circles to the total number of figures.

$$\begin{array}{l} \text{circles} \rightarrow \frac{4}{10} \\ \text{total figures} \rightarrow \frac{10}{10} \end{array} \xrightarrow{+2} \frac{2}{5} \quad \text{The GCF of 4 and 10 is 2.}$$

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.

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 3 Write the ratio *20 students to 5 computers* as a unit rate.

$$\frac{20 \text{ students}}{5 \text{ computers}} \xrightarrow{+5} \frac{4 \text{ students}}{1 \text{ computer}} \quad \text{Divide the numerator and the denominator by 5 to get a denominator of 1.}$$

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

EXERCISES

Write each ratio as a fraction in simplest form.

1. 2 guppies out of 6 fish 2. 12 puppies to 15 kittens 3. 5 boys out of 10 students

Write each ratio as a unit rate.

4. 6 eggs for 3 people 5. \$12 for 4 pounds 6. 40 pages in 8 days

Lesson 10-1

10-1**Practice: Word Problems****Ratios**

<p>1. FOOTBALL In the NFL 2001–2002 season, the Miami Dolphins won 11 games and the Oakland Raiders won 10 games. What is the ratio of wins for the Dolphins to wins for the Raiders?</p>	<p>2. GARDENING Rod has 10 rosebushes, 2 of which produce yellow roses. Write the ratio <i>2 yellow rosebushes out of 10 rosebushes</i> in simplest form.</p>
<p>3. TENNIS Nancy and Lisa played 20 sets of tennis. Nancy won 12 of them. Write the ratio of Nancy's wins to the total number of sets in simplest form.</p>	<p>4. AGES Oscar is 16 years old and his sister Julia is 12 years old. What will be the ratio of Oscar's age to Julia's age in 2 years? Write as a fraction in simplest form.</p>
<p>5. MOVIES Four friends paid a total of \$32 for movie tickets. What is the ratio <i>\$32 for 4 people</i> written as a unit rate?</p>	<p>6. WORKING At a warehouse, the employees can unload 18 trucks in 6 hours. What is the unit rate for unloading trucks?</p>
<p>7. ANIMALS A reindeer can run 96 miles in 3 hours. At this rate, how far can a reindeer run in 1 hour? Explain.</p>	<p>8. SHOPPING Jenny wants to buy cereal that comes in large and small boxes. The 32-ounce box costs \$4.16, and the 14-ounce box costs \$2.38. Which box is less expensive per ounce? Explain.</p>