You can compare two quantities by using a ratio. A common way to express a ratio is as a fraction in simplest form. If the two quantities you are comparing have different units of measure, this kind of ratio is called a **rate**. A rate is in the form of a **unit rate** when the denominator is 1.

### Writing a Rate and a Unit Rate

A rate is a ratio of two measurements that have different units. To write a ratio as a unit rate, divide the numerator and denominator by the same number to rewrite the ratio as a fraction with a denominator of 1.

### EXAMPLES

**A** Write the ratio in three different ways:

5 sixth-graders out of 15 students.

Express this ratio as a fraction in simplest form.

As a fraction \( \frac{5}{15} \)

As a ratio 5:15

In words 5 to 15

Another way is in the problem: 5 out of 15.

\( \frac{5}{15} \) in simplest form is \( \frac{1}{3} \).

**B** Express the ratio as a unit rate: 15 pencils for $5. How many pencils can you buy for $1?

Write the ratio as a fraction. \( \frac{15 \text{ pencils}}{5 \text{ dollars}} \)

To rewrite the fraction with a denominator of 1, divide numerator and denominator by 5.

\( \frac{15 \text{ pencils}}{5 \text{ dollars}} \times \frac{1}{5} = \frac{3 \text{ pencils}}{1 \text{ dollar}} \) or 3 pencils for $1

### Try These Together

1. Write the ratio in three different ways:

7 sodas out of 20 are sugar free.

*HINT: Write the numbers in the same order as they appear in the problem.*

2. Express the ratio as a rate: $14.50 for 7 sodas. What is the cost for one ride?

*HINT: Divide numerator and denominator by 5.*

### PRACTICE

**Express each ratio as a fraction in simplest form.**

3. 4 out of 16 papers are typed

4. 5 out of 10 horses are white

5. 7 blue bicycles out of 21 bicycles

6. 4 watermelons out of 10 melons

**Express each ratio as a rate.**

7. $1.50 for 3 bottles of juice

8. 5 bracelets for $25.00

9. **Standardized Test Practice** If milk costs $5.50 for 2 gallons, how much does it cost per gallon?

   - **A** $11.00
   - **B** $10.50
   - **C** $2.75
   - **D** $3.50

   **Answer:** 9c