Section Overview

Professional Development

Multiplying Fractions by Whole Numbers — Lesson 5-6

Why? Some practical problems require multiplying fractions by whole numbers.

If Jo and Helena each ate $\frac{3}{8}$ of a pizza, how much of the pizza did they eat altogether?

Write **2** as a fraction, and multiply numerators and denominators.

$$2 \cdot \frac{3}{8} = \frac{2}{1} \cdot \frac{3}{8}$$
$$= \frac{2 \cdot 3}{1 \cdot 8}$$
$$= \frac{6}{8}$$
$$= \frac{3}{4}$$

Simplify the answer.

Together, Jo and Helena ate $\frac{3}{4}$ of the pizza.

Multiplying and Dividing Fractions and Mixed Numbers — Lessons 5-7, 5-8, 5-9

Why? Solving real-world problems often involves multiplying or dividing fractions and mixed numbers.

Joe ran two-thirds as far as Adam. If Adam ran $1\frac{4}{5}$ miles, how far did Joe run?

$$\frac{2}{3} \cdot 1\frac{4}{5}$$

Write the mixed number as an improper fraction.

Multiply numerators. Multiply denominators.

$$\frac{2}{3} \cdot \frac{9}{5} = \frac{18}{15}$$
$$= \frac{6}{5}, \text{ or } 1\frac{1}{5}$$

Joe ran $1\frac{1}{5}$ miles.

Mary has $2\frac{1}{2}$ yards if ribbon. How many $\frac{1}{4}$ yard lengths of ribbon can she make?

$$2\frac{1}{2} \div \frac{1}{4} = \frac{5}{2} \cdot \frac{2}{1}$$

Write the division as multiplication by the reciprocal.

$$= \frac{10}{1}, \text{ or } 10$$

Mary can make 10 lengths of ribbon.

Fraction Equations with Addition and Subtraction — Lesson 5-10

Why? Many application problems can be solved using fraction equations.

Cathy uses 3 cans of paint to paint $\frac{2}{3}$ of her room. How many cans of paint will she use to paint the whole room?

$$\frac{2}{3}r = 3$$

Multiply both sides of the equation by $\frac{3}{2}$, the reciprocal of $\frac{2}{3}$.

$$\frac{3}{2} \cdot \frac{2}{3}r = \frac{3}{2} \cdot \frac{3}{1}$$
$$r = \frac{9}{2}, \text{ or } 4\frac{1}{2}$$

Write the solution as a mixed number to represent cans of paint.

Cathy will use $4\frac{1}{2}$ cans of paint.