

Section Overview

Multiplying Fractions and Mixed Numbers

Lesson 4-4

Why? Some practical problems require students to find a fraction of a number by using multiplication.

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.

$$\begin{aligned} 2 \cdot \frac{3}{8} &= \frac{2}{1} \cdot \frac{3}{8} \\ &= \frac{2 \cdot 3}{1 \cdot 8} \\ &= \frac{6}{8} \\ &= \frac{3}{4} \end{aligned}$$

Simplify the answer.

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

Dividing Fractions and Mixed Numbers

Lesson 4-5

Why? Real-world measurement problems, such as those relating to sewing and woodworking, sometimes involve division by fractions or mixed numbers.

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

Write the mixed number as an improper fraction.

$$\begin{aligned} 2\frac{1}{2} \div \frac{1}{4} &= \frac{5}{2} \cdot \frac{2}{1} \\ &= \frac{10}{1}, \text{ or } 10 \end{aligned}$$

Write the division as multiplication by the reciprocal.

Mary can make 10 lengths of ribbon.

Solving Equations Containing Fractions

Lesson 4-6

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?

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

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

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

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