

# Key Concepts

Lesson  
10-7

## Percent of a Number

**Objective** Teach students what the percent of a number means and how to compute it.

**Note to the Teacher** *When computing a percent of a number, a useful “trick” to point out to your students is that they should change the percent to a fraction (or perhaps a decimal), and where they see the word “of” in the percent problem, they should substitute a multiplication symbol.*

Do an example like the following to show how the procedure works.

**Example 1** Akili and his mother went out to lunch and their bill was \$18. His mother said that she wanted to leave a 15% tip for the waitress. How much she should leave as a tip?

**Solution** Since Akili’s mother wants to leave a 15% tip, she needs to compute 15% of \$18. Substituting a multiplication symbol for the word “of” in the phrase “15% of \$18” gives the multiplication expression

$$15\% \times \$18.$$

To find the value of this expression, recall that 15% can be expressed as the fraction  $\frac{15}{100}$ . Replacing 15% by  $\frac{15}{100}$  gives

$$\begin{aligned} 15\% \times \$18 &= \frac{15}{100} \times \$18 \\ &= \frac{15 \times \$18}{100} \\ &= \frac{\$270}{100} \\ &= \$2.70 \end{aligned}$$

So, a 15% tip for an \$18 bill is \$2.70.

Point out that 15% is also equivalent to the decimal 0.15, which alternately could have replaced 15% in the calculations shown in Example 1 above.

Have your students do work on some sample problems on their own or in small groups. Here are two more sample problems.

**Example 2** In a recent California state election, approximately 15,000,000 people voted. Of those casting ballots, 52% voted in favor of Proposition A. How many people voted in favor of Proposition A?

**Solution** We need to compute 52% of 15,000,000. Replace 52% with its decimal equivalent 0.52. Then replace the word “of” with a multiplication symbol.

$$52\% \text{ of } 15,000,000 \rightarrow 0.52 \times 15,000,000$$

Use a calculator.

$$0.52 \times 15,000,000 = 7,800,000$$

So, 7,800,000 voters cast ballots in favor of Proposition A.

**Example 3** In a recent study of cancer patients, it was found that among a group of patients who contracted lung cancer, 35% survived at least 5 years after their diagnosis. A total of 4,200 patients were involved in the study. How many of the patients survived at least 5 years after diagnosis?

**Solution** In this problem we want to compute 35% of 4,200. We translate this phrase into the multiplication  $0.35 \times 4,200$ .

$$0.35 \times 4,200 = 1,470$$

So there were 1,470 patients involved in the study who survived at least 5 years beyond diagnosis.

**Note to the Teacher** *Calculating the percent of a number occurs in many everyday circumstances, as shown in the examples presented here. It is therefore an extremely important skill for students to learn. Moreover, calculating the percent of a number exercises the students' skills with multiplication of fractions and decimals. To make sure students master these skills, they should be given lots of problems to work, not only word problems like those in the examples, but also basic calculations like those in the following exercises.*

## Exercises

Find the percent of each number.

- |               |              |                 |              |
|---------------|--------------|-----------------|--------------|
| 1. 15% of 72  | <b>10.8</b>  | 2. 32% of 108   | <b>34.56</b> |
| 3. 24% of 234 | <b>56.16</b> | 4. 12.5% of 320 | <b>40</b>    |

