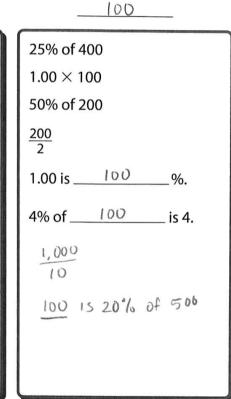
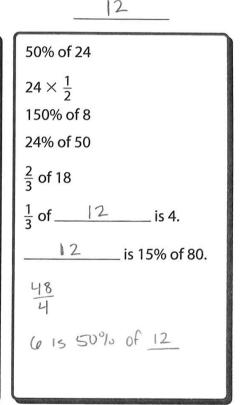
OCurriculum Associates, LLC Copying is not permitted.

Prepare for Percents and Statistical Samples

➤ Look at the expressions and missing values in each box. Write a title for each box that represents what the expressions and missing values have in common. Then add at least two of your own examples to each box.

250 1,000
14
25 hundredths
0.2500
half of $\frac{1}{2}$
25°/ ₀ of 80 is 20.
5 is25°10 of 20.
15 60
1 is 25% of 4





Pick one given example from each box and explain how it represents your title. Then meet with a partner and compare your titles and examples.

Last Year's

Middle School Band Students

Explore Percents

Previously, you learned how to find the percent of a number. In this lesson, you will learn about solving problems that involve percents.

Use what you know to try to solve the problem below.

Last year, a middle school band had 80 students. This year, the band has 120% of that number of students. How many students are in the band this year?









Math Toolkit double number lines, grid paper, hundredths grids



DISCUSS IT

Ask: How did you get started finding the number of students?

Share: I got started by . . .



Learning Targets SMP 1, SMP 2, SMP 3, SMP 4, SMP 5, SMP 6, SMP 7, SMP 8

- Solve problems about simple interest.
- Solve percent problems involving markups, markdowns, tax, tips, and commission.
- Solve multi-step percent problems that include multiple percents.

CONNECT IT

- 1 Look Back How many students are in the band this year? How do you know?
 96 members. I found 100°10 and 20°10 and then
 added those two groups of students to get my total.
- 2 Look Ahead You can think of 120% as 100% + 20%. Similarly, you can think of 80% as 100% 20%. Many real-world situations involve calculations with percents. Percents are used to calculate **simple interest**. You can owe interest on a loan or earn interest on a bank account or investment.

Simple interest formula: *I* = *Prt*

The formula shows that the amount of interest, *I*, is based on the principal, *P*, the interest rate, *r*, and the time you borrow or invest the money for, *t*. The principal is the starting amount. The rate is a percent written as a decimal. For simple interest, time is often measured in years.

a. Suppose you borrow \$300 at a yearly, or annual, simple interest rate of 3.4% for 3 years. What values would you use for *P*, *r*, and *t*?

$$P = 300 r = 0.034 t = 3$$

b. Suppose you borrow \$400 at a yearly simple interest rate of 3% for 3 months. What values would you use for P, r, and t?

- **c.** A **markdown** decreases the cost of an item. A **markup** increases the cost. Suppose a store puts an item on sale for 25% off. Is that an example of a *markup* or a *markdown*? Markdown
- **d.** Often when you buy something, you pay a percent of the price as a **tax**. Suppose the total amount you pay for an item includes a 7% tax. What percent of the price of the item do you pay? 107% (100%) (the item) +7% ($+a\times$) = 107%)
- e. Many people gives tips, or gratuities, for good service. Many salespeople earn commission on their sales. Suppose Jason earns a 9% commission on a \$1,000 sale. How much is Jason's commission? 1000 0,09 = 90,00 \$90
- **Reflect** Is it possible for a single price change to be both a markup and a markdown? Explain your thinking.

No, A markupis an increase and a markdown is a decrease, so one change cannot be both.