

# PREPARATORY MATH SKILLS LAB

Lab **PM**  
**S** 7

## MATH ACTIVITY

### Working with Percents

## MATH SKILLS LAB OBJECTIVES

When you complete this activity, you should be able to do the following:

1. Change a number written as a fraction to a number written as a percent.
2. Change a decimal number to a number written as a percent.

## MATERIALS

For this activity, you'll need a pencil, paper and a hand calculator.

The word "percent" means "one hundredth." The word "percentage" means "the part of a whole number expressed in hundredths." In technology, technicians often have to change fractions or decimals to percents. That's especially true when they're trying to calculate

the **efficiency** of a machine—or an electric motor. Efficiency is usually given as a "percent," say 85% (85 percent) or 90.5%. When you calculate efficiencies, the number may first come out as a fraction or a decimal. It's not hard to change that number to a percent.

### A. How Do You Change Fractions to Percents?

To change a simple fraction or whole number to a percent, first write the fraction or whole number as an equal *number* of hundredths. This result, with percent (or "%") written after it, is the fraction or whole number written as a percent. For example:

$$\begin{aligned} \text{one-half} &= 50 \text{ hundredths} = 50 \text{ percent—or } 50\% \\ \text{one-fourth} &= 25 \text{ hundredths} = 25 \text{ percent—or } 25\% \\ \text{one (whole)} &= 100 \text{ hundredths} = 100 \text{ percent—or } 100\% \\ \text{two (two wholes)} &= 200 \text{ hundredths} = 200 \text{ percent—or } 200\% \\ \text{two-fifths} &= 40 \text{ hundredths} = 40 \text{ percent—or } 40\% \end{aligned}$$

### B. How Do You Change Decimals to Percents?

To change a decimal to a percent, simply multiply the decimal by 100 and attach the "%" sign. For example:

To change 0.25 to a percent,  
 $0.25 \times 100 = 25\%$ ; therefore,  $0.25 = 25\%$ .

To change 1.20 to a percent,  
 $1.20 \times 100 = 120\%$ ; therefore,  $1.20 = 120\%$ .

**C. How Do You Change Non-simple Fractions to Percents?**

To change a non-simple fraction like  $\frac{7}{9}$  or  $\frac{65}{131}$  to a percent, first use your calculator to change the fraction to a decimal number. Then change the decimal number (as in Part B) to a percent. For example:

To change  $\frac{11}{15}$  to a percent, first divide the top number (11) by the bottom number (15) on your calculator. This gives you:

$$\frac{11}{15} = 0.7333, \text{ or about } 0.733 \text{ (calculator answer)}$$

Then multiply the decimal by 100. Attach the % sign.

$$0.733 \times 100 = 73.3\% \text{ (You can do this on the calculator, also.)}$$

Therefore,  $\frac{11}{15} = 73.3\%$ , or “73.3 percent.”

**PRACTICE EXERCISES**

**Problem 1:** Change each of the following “simple” fractions to a number written as a percent. (You can do these “in your head”—or you can use a calculator.)

- three-fourths ( $\frac{3}{4}$ )
- one-fifth ( $\frac{1}{5}$ )
- two-tenths ( $\frac{2}{10}$ )
- nine-tenths ( $\frac{9}{10}$ )
- one and one-half ( $1\frac{1}{2}$ )

**Problem 2:** Change each of the following decimals to a number written as a percent.

- 0.33
- 0.95
- 0.10
- 1.50
- 0.50

**Problem 3:** Change each of the “non-simple” fractions to a number written as a percent. (You’ll need to use your calculator on these.)

- $\frac{7}{9}$
- $\frac{65}{131}$
- $\frac{127}{98}$
- $\frac{25}{57}$
- $\frac{\pi}{4}$
- $\frac{2}{7}$