

Activity 3: Percents

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CALCULATORS: Casio: *fx-260 Solar* • Casio: *fx-260 Solar School*

Teaching Notes

Grade Level: Middle School

Topic: Percent

Objective: *To find the percent of a number.*

Using the Activity:

The focus of this activity is to instruct students on how to use the *fx-260* to find the percent of a number. Typically, students change the percent to either a decimal or fraction, and then multiply that number times the given base to determine the percent. The *fx-260* has the capacity to directly compute the percent of a number. To find $a\%$ of b , enter **b x a shift %** and the calculator will automatically display the percentage.

In addition to learning how to use the calculator to find the percent of a number, this activity develops students' number sense about percent. Students are first asked to find percents of given numbers and then are asked to analyze these answers to determine their relationships. Exercises 1-4 all have the same answer.

1. 5% of 320 = 16
2. 10% of 160 = 16
3. 20% of 80 = 16
4. 40% of 40 = 16
5. All the answers are the same.
6. Each time the percent was doubled and the base was halved, resulting in the same product.

Students should understand this occurs since each time a percent is doubled, the base was cut in half. Anytime one factor in a multiplication operation is doubled and the other is halved, the product remains the same. Knowing this enables students to work from known facts to find unknown one mentally.

A discussion of questions 5 and 6 and additional examples may help those students that have not understood this relationship clearly on their own.

Questions 7-12 further develop percent relationships by analyzing the results of finding different percents of 60. The students use the automatic constant ($60 \times x$) to rapidly find the different percents. Use of the constant limits the number of keystrokes that must be entered for each problem.

Students can discover many relationships such as 100% of 60 is 60; and so forth.

Understanding these relationships will help students gain a stronger sense of percent, enabling them to make better estimates of answers to percent problems and do more problems mentally. The following questions appear on the Student Worksheet:

7. How is 20% of 60 related to 10% of 60? *Double it*
8. How is 5% of 60 related to 10% of 60? *Half of it*
9. How could you find 75% of 60 if you knew 25% of 60? *Multiply the number by 3*

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Teaching Notes (continued)

10. How is 150% of 60 related to 100% of 60? *One and half times 100%*
11. How could you find 200% of 60 if you knew 100% of 60? *Multiply the number by 2*
12. How could you find 10% of 60 without a calculator? *Divide 60 by 10, and move the decimal point one place to the left.*

Ask the students to use the calculator to find 95% of 80 and 80% of 95.

What did you observe? Have them explain why.

13. *Students should see that the resulting answers are the same. This section helps students see the important property of percent: $a\%$ of $b = b\%$ of a . You may wish to demonstrate this by using the decimal form. $(.95)(80)$ is the same as $(.80)(95)$.*

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Student Worksheet Activity 3

The *fx-260* scientific calculator can be used to find percents of a number.

To find 50% of 70 enter **70 x 50 shift %** .

The calculator displays **35**.

Use your *fx-260* to find:

1. 5% of 320
2. 10% of 160
3. 20% of 80
4. 40% of 40
5. What do you notice about the answers? _____
6. Explain why this relationship exists.

If you want to find different percents of the same number, you can use the Constant function to speed up your calculations.

Enter the following to find different percents of 60.

60 x x 100 shift %

90 shift %

75 shift %

50 shift %

25 shift %

20 shift %

10 shift %

1 shift %

150 shift %

200 shift %

7. How is 20% of 60 related to 10% of 60?
8. How is 5 % of 60 related to 10% of 60?
9. How could you find 75% of 60 if you knew 25% of 60?
10. How is 150% of 60 related to 100% of 60?
11. How could you find 200% of 60 if you knew 100% of 60?
12. How could you find 10% of 60 without a calculator?
13. Use your calculator to find 95% of 80 and 80% of 95. What did you observe? Explain why.

