

## Percentages

### **Introduction:**

Percents show fractions or decimals with a denominator of 100. Always move the decimal TWO places to the right to go from a decimal to a percentage or TWO places to the left to go from a percent to a decimal.

*Examples:*  $.85 = 85\%$ .       $.008 = .8\%$

### **Part I: Finding the Percent of a Given Number**

To find the percent of a given number, change the percent to a decimal and MULTIPLY.

*Example: 30% of 400*

*Step 1:*  $30\% = .30$

*Step 2:*    400

$\times .30$

      12000

*Step 3: Count the digits behind the decimal in the problem and add decimal to the answer.*

      12000  $\rightarrow$  120.00  $\rightarrow$  120

### **Part II: Finding the Percentage of a Number**

To find what percentage one number is of another, divide the first number by the second, then convert the decimal answer to a percentage.

*Example: What percentage is 12 of 25?*

*Step 1:*  $12/25 = .48$

*Step 2:*  $.48 = 48\%$  (12 is 48% of 25)

### **Part III: Finding Percentage Increase or Decrease**

To find a percentage increase or decrease, first find the percent change, then add or subtract the change to the original number.

*Example:* Kindles have dropped in price 18% from \$139. What is the new price of a Kindle?

*Step 1:*  $\$139 \times .18 = \$25$

*Step 2:*  $\$139 - \$25 = \$114$

### **Part IV: Finding a Total Value**

To find a total value, given a percentage of the value, DIVIDE the given number by the given percentage.

*Example:* If taxes on a new car are 8% and the taxes add up to \$1600, how much is the new car?

*Step 1:*  $8\% = .08$

*Step 2:*  $\$1600 / .08 = \$160,000 / 8 = \$20,000$  (Remember when the divisor has a decimal,

*move it to the end to make it a whole number and move the decimal in the dividend the same*

*number of places. .08 becomes 8, 1600 becomes 160000.)*

Practice: Remember to show all your work, include units if given, and NO CALCULATORS! All work and answers go on your answer sheet.

1. What is 45% of 900?

2. Thirteen percent of a 12,000 acre forest is being logged. How many acres will be logged?
3. A water heater tank holds 280 gallons. Two percent of the water is lost as steam. How many gallons remain to be used?
4. What percentage is 25 of 162.5?
5. 35 is what percentage of 2800?
6. 14,000 acres of a 40,000 acre forest burned in a forest fire. What percentage of the forest was damaged?
7. You have driven the first 150 miles of a 2000 mile trip. What percentage of the trip have you traveled?
8. Home prices have dropped 5% in the past three years. An average home in Indianapolis three years ago was \$130,000. What's the average home price now?
9. The Greenland Ice Sheet contains 2,850,000 cubic kilometers of ice. It is melting at a rate of .006% per year. How many cubic kilometers are lost each year?
10. 235 acres, or 15%, of a forest is being logged. How large is the forest?
11. A teenager consumes 20% of her calories each day in the form of protein. If she is getting 700 calories a day from protein, how many calories is she consuming per day?
12. In a small oak tree, the biomass of insects makes up 3000 kilograms. This is 4% of the total biomass of the tree. What is the total biomass of the tree?