

CHAPTER 9 CONSUMER MATHEMATICS: THE MATH OF EVERYDAY LIFE

SECTION 9.1 PERCENT

INTRODUCTION

The word “percent” comes from the Latin phrase “per centum” which means “per hundred”.

For instance, if you invest your money at an interest rate of 6%, this means that the bank pays you \$6 for every \$100 you invest. Understanding the meaning of percent is critical to interpreting information that we come across daily.

As we move forward in this chapter, we will encounter the use of percentages in different venues, shopping, banking, loans, and credit cards just to name a few. When performing mathematical computations with percentages, we will need to first express them as decimals.

$15\% = \underline{\hspace{2cm}}$

$100\% = \underline{\hspace{2cm}}$

$250\% = \underline{\hspace{2cm}}$

$6\% = \underline{\hspace{2cm}}$

$\frac{1}{2}\% = \underline{\hspace{2cm}}$

$7.5\% = \underline{\hspace{2cm}}$

We will also need to convert BACK to a percent at certain times:

$.27 = \underline{\hspace{2cm}}$

$.9 = \underline{\hspace{2cm}}$

$.04 = \underline{\hspace{2cm}}$

$.035 = \underline{\hspace{2cm}}$

$1 = \underline{\hspace{2cm}}$

$4.5 = \underline{\hspace{2cm}}$

At other times, we may be given a fraction and will need to convert it to a percent:

$\frac{1}{4} = \underline{\hspace{2cm}}$

$\frac{4}{250} = \underline{\hspace{2cm}}$

$\frac{15}{7} = \underline{\hspace{2cm}}$

Round to the nearest 100th of a percent

APPLICATIONS

There are 3 basic types of percent problems. All 3 are based on the notion that:

“a **P**ercent of a whole **B**ase is some **A**mount”

$$\textit{percent} \cdot \textit{base} = \textit{amount}$$

1. Finding the percent of a number. (What is 30% of 200? Find _____)
2. Finding what percent one number is of another. (What percent of 200 is 60? Find _____)
3. Finding a number when a percent of that number is known. (30% of how much is 60? Find _____)

Examples:

What is 35% of 140?

63 is 18% of what number?

288 is what percent of 640?

A house that sells for \$92,000 requires a 20% down payment. What is the amount of the down payment?

What is 20% of \$92,000?

If Al has 45 correct answers on an 80-question test, what percent of his answers are correct?

42% of the parents of the school children in the New Albany School District are employed at IUS. If the number of parents employed by IUS is 168, how many parents are there in the school district?

Kelly bought a bicycle and a year later sold it for 20% less than what she paid for it. If she sold the bike for \$144, what did she pay for it? *Careful here!!*

PERCENT OF CHANGE: INCREASE OR DECREASE

The media often uses percentages to explain the change in some quantity. *“The stock market is down 1.2%”* or *“the economy is up 13.5% over the last month”*. The percent of change is always in relationship to a previous or **base amount**. We then compare the **increase (or decrease)**, with the base amount as follows:

$$\text{percent change} = \frac{\text{increase (or decrease) amount}}{\text{base amount}}$$

The price of a new car was reduced from \$20,000 to \$18,000. What was the percent of the decrease?

In order to make more money, the Girl Scouts increased the price of cookies from \$3.00 to \$3.75 per box. What was the percent of the increase?

A TV ad for the local car dealership proclaims that all their cars are sold at only a 5% markup over the dealer’s cost. If they sell the new XJ450 for \$18,970, and the cost for the dealer is \$17,500, is the TV ad being honest? If not, what is the true percentage of the markup?