8.1 Percent, Sales Tax, and Discounts

Fractions, decimals, and percent are three ways of showing the same value. A **fraction** is a ratio expression where the numerator is divided by denominator. A **decimal** results when the division is actually carried out. **Percent** means per hundred and is expressed as the numerator of a fraction when the denominator is 100. Converting among these representations is a prerequisite skill for financial math topics.

# Objective 1: Express a Fraction as a Percent

1. Divide the numerator by the denominator to express the fraction as a decimal.
2. Multiply the decimal quotient by 100 and add a percent sign.

# Objective 2: Express a Decimal as a Percent

Multiply the number by 100 and add a percent sign.

# Objective 3: Express a Percent as a Decimal

1. If the percent is a fraction or mixed number convert it to a decimal.
2. Divide the whole number or decimal by 100 and remove the percent sign.

**** When converting a small percent to a decimal, there may be a lot of zeroes. Be careful. Check the answer by converting the decimal back to a percent.

# Objective 4: Solve Applied Problems involving Sales Tax and Discounts

Applications involving percent are often stated in the form *A is P % of B.*  For example, sales tax is a percent of an item’s cost or a discount is a percent of the original price. Since the word “of” implies multiplication, we can write this as multiplication by the decimal form of *P.*

**APPLICATIONS OF PERCENT**

 (where *P* is written as a decimal)

This formula can be solved for any of its variables:  or 

| ***A*** | ***P*** | ***B*** |
| --- | --- | --- |
| Sales tax amount | Tax rate | Item’s cost |
| Discount amount | Discount rate | Original price |





# Objective 5: Determine Percent Increase or Percent Decrease

Changes such as increases or decreases in sales, population, prices, and production are often compared by computing the percent increase or decrease from the original value.

**FINDING PERCENT INCREASE OR PERCENT DECREASE**

1. If necessary, find the amount of increase or decrease by subtracting the new value from the original or the original from the new value.
2. Express the fractional change as either  or .
3. Find the percent increase or percent decrease by expressing this fraction as a percent.

# Objective 6: Investigate some of the ways Percent can be Abused

There are many ways in which percent can be misused to deliberately or inadvertently mislead. One of these occurs when using percent increase or decrease several times in succession without taking into account that the ‘original’ quantity changes for each subsequent computation. Simply adding percent numbers to get a total percent increase or decrease often gives incorrect results.

** Always think carefully about results and decide whether or not they are reasonable.**