Simple Interest

Objective 1

Solve a Simple Interest Problem

When we take a loan from a bank we must pay an interest amount on the loan amount. The interest amount is a portion of the total loan amount.

Credit cards can sometimes have high interest rates sometimes upwards of 20%! In these cases the amount of interest you must pay can be very large.

Simple Interest is calculated based on the loan amount. With simple interest problems we refer to the loan amount as the **principal**.

The formula for calculating simple interest is given below.

$$\text{Interest} = \text{Principal} \cdot \text{Rate} \cdot \text{Time}$$

$$I = P \cdot R \cdot T$$

"I" represents the amount of interest.

"P" represents the amount borrowed.

"R" represents the annual interest rate.

"T" represents the time in years.

Note: In finance calculations such as simple interest calculations, it is assumed that 1 year = 360 days or equivalently 1 month = 30 days.

Therefore, if you took out a loan for 1 month or 30 days (any month of the year), the time in years of your loan would be $\frac{30}{360}$ or $\frac{1}{12}$ of a year.

If you took out a loan for 6 months or 180 days, the time in years of your loan would be $\frac{180}{360}$ or $\frac{1}{2}$ year.

Example 1: A student takes out a loan for $700 at an annual interest rate of 14%. How much does the student pay in interest if the student pays off the loan on 90 days?

$$I = P \cdot R \cdot T$$
$$I = 700 \cdot 0.14 \cdot \frac{90}{360}$$
$$I = 700 \cdot 0.14 \cdot 0.25$$
$$I = 24.5$$

Therefore the student must pay $24.50 in interest to pay off the loan in 90 days.

Example 2: A student takes out an emergency loan for $600 to buy school supplies. If the annual interest rate is 6%, how much must the student pay to completely pay off the loan in 6 months?

$$I = P \cdot R \cdot T$$

$$I = 600 \cdot 0.06 \cdot \frac{180}{360}$$

$$I = 600 \cdot 0.06 \cdot 0.5$$

$$I = 18$$

After 6 months, the student owes $18 in interest. Therefore to completely pay off the loan, the student must pay $618.

We can also use the simple interest formula to calculate the amount of interest we earn when depositing money into a savings account. Although it should be noted that most banks today do not use the simple interest formula when calculating interest owed or interest gained. A compound interest formula is generally used.

Example 3: How much interest is gained after 1 year if $10,000 is put into a savings account at an annual interest rate of 7%?

Example 4: Everlyn deposited $8,500 into a savings account for 30 months at 5% interest. How much money is in the account after this time?