3.1: Simple Interest

Simple interest is generally only used on short-term loans (1 year or less).

Principal: Amount of money on which interest is earned.

Interest: Cost to borrow money.

Simple Interest:

$$I = Prt$$

where

$P =$ principal
$r =$ annual simple interest rate (written as a decimal)
$t =$ time in years

The future value, A, (the amount of money after simple interest accrues) is given by

$$A = P + Prt$$
$$= P(1 + rt).$$

Example 1:   Your car needs repairs, but you are short on cash. Uncle Albert has agreed to loan you $500, but you have to pay it back with interest. How much will you owe Uncle Albert after 5 months at 9% simple interest?

Example 2:   How much should you invest so that you will receive $1000 after 10 months at 10% simple interest?

Example 3:   You put $10,000 into a short-term simple interest account for 180 days. After that time, the bank pays you $10,150. What was the interest rate?

Example 4:   You are due to receive a tax refund of $1685. IRS guidelines state that you should receive your refund 21 days after electronically filing your tax return. Instead of waiting, you utilize a "rapid refund" tax service. In addition to the tax preparation fee, which starts at $59 for the simplest tax return, you must also pay $40 to receive your refund in a refund transfer account set up by the tax preparation service. This allows you to access your refund amount immediately, less deductions and fees. While this is technically a tax product rather than a loan, you can calculate the annual interest rate that corresponds to a loan that has the same length of time, principal, and payback amount. What is this equivalent interest rate?