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

$$\begin{aligned} A &= P + Prt \\ &= P(1 + rt) \end{aligned}.$$

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 $685. The IRS generally takes 10 days to electronically deposit the tax refund check after a tax return is filed electronically. Instead of waiting patiently, you utilize a “rapid refund” tax service. In addition to the $29.95 tax preparation fee, 24 Hour Tax Services charges $40 for a 24-hour refund anticipation loan. . The company gives you an instant check for $615.05, and you sign away your rights to your tax refund. What interest rate would you pay?