

Simple Interest

Converting interest rate to decimal:

Show the interest rates as they would appear in the formula as r . (Divide by 100, or move decimal 2 spaces to the left)

- a) 13% b) 2.5% c) 0.5%
 0.13 0.025 0.005

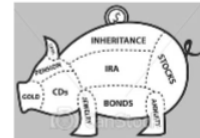
Relating Units of Time

Remember that there are 365 days or 52 weeks or 12 months in 1 year.

Express each as a fraction of a year.

- a. 26 weeks b. 8 months c. 400 days
 $\frac{26}{52}$ $\frac{8}{12}$ $\frac{400}{365}$

- An investment is an item (real estate, coins, antiques, stocks, etc.) that is purchased with the hope that it will create income in the future.
- A loan is the act of giving money to someone in exchange for future repayment of the money plus interest.
- Interest is the amount of money earned on an investment or paid for a loan.



Simple interest is a quick method used to calculate the amount of money earned on an investment or charged on a loan.

SIMPLE INTEREST FORMULA: $I = Prt$ I = interest
 P = the principal (initial amount of investment/loan)
 r = the interest rate, in decimal form
 t = the length of time in years

To determine the total amount of an investment/loan after interest is calculated and included, use:
 $A = P + I$ A = total amount of investment/loan
OR $A = P + Prt$ P = the principal (initial amount of investment/loan)
 I = interest

Example 1

Calculate the simple interest and final amount of a \$675 investment at 7.25% over 2 years.

$$I = Prt$$

$$I = (675)(0.0725)(2)$$

$$I = 97.88$$

$$A = P + I$$

$$A = 675 + 97.88$$

$$= 772.88$$

∴ interest only \$97.88
 total investment after 2yrs \$772.88

Example 2

Calculate the interest and final amount of a \$750 investment at $4\frac{3}{4}\%$ over 30 months. *t → convert to years!!*

$$I = Prt$$

$$I = (750)(0.0475)\left(\frac{30}{12}\right)$$

$$I = 89.06$$

$$r = 4.75\%$$

$$r = 0.0475$$

$$t = \frac{30}{12}$$

$$A = P + I$$

$$A = 750 + 89.06$$

$$A = 839.06$$

∴ interest was \$89.06
and total was \$839.06

Example 3

Find the principal invested at 5% if after 10 years it earned \$650 in interest.

$$P = ?$$

$$r = 0.05$$

$$t = 10$$

$$I = 650$$

$$I = Prt$$

$$650 = P(0.05)(10)$$

$$\frac{650}{0.5} = \frac{0.5P}{0.5}$$

$$1300 = P$$

∴ Principal was \$1300

Example 4

Determine how long \$1000 was invested at 6.15% if at the end of the investment \$153.75 was earned.

$$t = ?$$

$$P = 1000$$

$$r = 0.0615$$

$$I = 153.75$$

$$I = Prt$$

$$153.75 = 1000(0.0615)t$$

$$\frac{153.75}{61.5} = \frac{61.5t}{61.5}$$

∴ it was invested for 2.5 yrs.

$$2.5 = t$$

Example 5

What rate of simple interest is needed to get \$7000 to grow to \$10000 in 5 years?

$$\left. \begin{array}{l} I = Prt \\ A = P + I \end{array} \right\} \text{together } A = P + Prt$$

$$10000 = 7000 + 7000(r)5$$

$$-7000$$

$$\frac{3000}{35000} = \frac{35000r}{35000}$$

$$0.0857 = r$$

∴ rate was 8.57%