

Simple Interest

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2020

What is Simple Interest?

Suppose you put an amount of money in the bank. Let's call this initial amount P . We are told that after t years your money will earn interest each year. That yearly or *annual* amount of interest that your money earns is denoted by r or r is the *interest rate*. This value is usually expressed as a decimal value or as a percentage. e.g. 0.06 or 6%. Our goal is to try and figure out how much money you will earn after t years and what your total amount will be after those t years. Let's start by defining a few values with variables.

Variable	Name	Description
P	Principal	This is the original amount you deposited into the bank or put into the investment
r	annual interest rate	This is the rate at which your money will "grow" per year.
t	time in years	This is the amount of time that you have invested your money P for.
I	interest earned	This is the amount of interest you earned over the time period t .
A	total amount	This is the total amount you have, $P + I$, after the investment period t .

The relationship between these variables is,

$$I = Prt \text{ and} \tag{1}$$

$$A = P + I = P + Prt \tag{2}$$

Now we have the interest earned over that time period t ,

$$I = Prt$$

and the total amount of money you have after t years is,

$$A = P + I$$

Exercises

1. Find the principal when,
 - a) $I = \$50$, $r = 3\%/year$, $t = 18$ months.
 - b) $I = \$475$, $r = 6.15\%/year$, $t = 2$ years.
2. Find the rate when,
 - a) $P = \$7500$, $t = 25years$, $I = \$4000$
 - b) $P = \$6250$, $t = 15years$, $I = \$2500$
3. Find the time when,
 - a) $P = \$1500$, $r = 5.85\%$, $I = \$263.25$
 - b) $P = \$4500$, $r = 6.25\%$, $I = \$1687.5$
4. Find the interest an total amount given,
 - a) $P = \$8000$, $r = 4.75\%/year$, $t = 1years$
 - b) $P = \$1950$, $r = 10.25\%/year$, $t = 9months$
5. A certain sum ampunts to \$2200 in 2 years to \$2800 in 4 years at simple interest. Find the sum and rate of interest per year.
6. In how mcuh time with the interest on a certain sum of money at 12.5% / year by 7/4 of itself?