

Simple Interest

Raise My
Marks

RaiseMyMarks.com

2021

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 P that you deposited into the bank 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,

$$I = Prt \quad \text{and} \quad (1)$$

$$A = P + I = P + Prt \quad (2)$$

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

- Find the principal when,
 - $I = \$550$, $r = 2.25\%/year$, $t = 7$ years.
 - $I = \$600$, $r = 4\%/year$, $t = 3$ years.
- Find the rate when,
 - $P = \$4215$, $t = 12years$, $I = \$3400$
 - $P = \$750$, $t = 20years$, $I = \$1750$
- Find the time when,
 - $P = \$10000$, $r = 8\%$, $I = \$3200$
 - $P = \$6200$, $r = 12.75\%$, $I = \$3952.5$
- Find the interest and total amount given,
 - $P = \$750$, $r = 2.75\%/year$, $t = 2years$
 - $P = \$900$, $r = 3\%/year$, $t = 3years$
- Mickey lends \$3000 to Donald at 10%/year and then Donald lends the same sum to Goofy at 12%/year. Find Mickey's gain over a period of 3 years.
- What sum lent out at 6.25%/year produces the same simple interest in 2 years as \$2100 lent out at 5%/year produces in 16 months?