



DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING 19GET275 - VQAR-1

Interest formulas mainly refer to the formulas of simple and compound interests. The [simple interest](#) (SI) is a type of interest that is applied to the amount borrowed or invested for the entire duration of the loan, without taking any other factors into account, such as past interest (paid or charged) or any other financial considerations. Simple interest is generally applied to short-term loans, usually one year or less, that are administered by financial companies. The same applies to money invested for a similarly short period of time. The simple interest rate is a ratio and is typically expressed as a percentage.

On the other hand, the compound interest is the interest which is calculated on the principal and the interest that is accumulated over the previous tenure. Thus, the [compound interest](#) (CI) is also called “interest on interest”. It plays an important role in determining the amount of interest on a loan or investment. The formulas for both the compound and simple interest are given below.

Interest Formulas for SI and CI

The **Interest formulas** are given as,

Formulas for Interests (Simple and Compound)	
SI Formula	$S.I. = \text{Principal} \times \text{Rate} \times \text{Time}$
CI Formula	$C.I. = \text{Principal} (1 + \text{Rate})^{\text{Time}} - \text{Principal}$

Q1

What is Compound interest?

Compound interest is the interest calculated on the principal and the interest accumulated over the previous period.

Q2

How do you calculate compound interest?

Compound interest is calculated by multiplying the initial principal amount (P) by one plus the annual interest rate (R) raised to the number of compound periods (nt) minus one. That means, $CI = P[(1 + R)^{nt} - 1]$ Here,

P = Initial amount

R = Annual rate of interest as a percentage

n = Number of compounding periods in a given time

Q3

Who benefits from compound interest?

The investors benefit from the compound interest since the interest pair here on the principle plus on the interest which they already earned.

Q4

What is interest compounded quarterly formula?

The formula for interest compounded quarterly is given by:

$$A = P(1 + (R/4)/100)^{4T}$$

Q5

How do you find the compound interest rate?

The compound interest rate can be found using the formula,

$$A = P(1 + r/n)^{nt}$$

A = Total amount

P = Principal

r = Annual nominal interest rate as a decimal

n = Number of compounding periods

t = Time (in years)

Thus, compound interest (CI) = A – P

Q6

What is the formula of compound interest with an example?

The compound interest formula is given below:

Compound Interest = Amount – Principal

Where the amount is given by:

$$A = P(1 + r/n)^{nt}$$

P = Principal

r = Annual nominal interest rate as a decimal

n = Number of compounding periods

t = Time (in years)

For example, If Mohan deposits Rs. 4000 into an account paying 6% annual interest compounded quarterly, and then the money will be in his account after five years can be calculated as:

Substituting, $P = 4000$, $r = 0.06$, $n = 4$, and $t = 5$ in $A = P(1 + r/n)^{nt}$, we get $A = \text{Rs. } 5387.42$

Q7

What is the compounded daily formula?

The compound interest formula when the interest is compounded daily is given by:

$$A = P(1 + r/365)^{(365 * t)}$$