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Compound Interest in Maths

In maths, Compound interest can be calculated in different ways for different situations. We can use the [interest formula](#) of compound interest to ease the calculations. To calculate compound interest, we need to know the amount and principal. It is the difference between amount and principal.

Compound Interest Formula

The [compound interest formula](#) is given below:

$$\text{Compound Interest} = \text{Amount} - \text{Principal}$$

Here, the **amount** is given by:

COMPOUND INTEREST FORMULA

Amount

Interest Rate (Decimal)

Time (years)

$A = P \left(1 + \frac{r}{n}\right)^{nt}$

Principal

Number of times interest is compounded per year

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Where,

A = amount

P = principal

r = rate of interest

n = number of times interest is compounded per year

t = time (in years)

It is to be noted that the above formula is the general formula for the number of times the principal is compounded in a year. If the interest is compounded

Time (in years)	Amount	Interest
1	$P(1 + R/100)$	$PR/100$
2	$P(1+R/100)^2$	$P(1+R/100)^2 - P$
3	$P(1+R/100)^3$	$P(1+R/100)^3 - P$
4	$P(1+R/100)^4$	$P(1+R/100)^4 - P$
n	$P(1+R/100)^n$	$P(1+R/100)^n - P$

annually, the amount is given as:

$$A = P(1 + R/100)^t$$

Thus, the **compound interest rate formula** can be expressed for different scenarios such as the interest rate is compounded yearly, half-yearly, quarterly, monthly, daily, etc.

Let us see, the values of Amount and Interest in case of Compound Interest for different years-

The above formulas help determine the interest and amount in case of compound interest quickly.

NOTE:

From the data, it is clear that the interest rate for the first year in compound interest is the same as that in simple interest. $PR/100$.

Other than the first year, the interest compounded annually is always greater than that in simple interest.