

ATOMIC ENERGY EDUCATION  
SOCIETY, MUMBAI

CLASS 8 SUBJECT MATHEMATICS

MODULE - 3/3

TOPIC :-COMPAIRING QUANTITIES

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# INTEREST

**Interest** is the extra money paid by institution like as bank or post office on money deposited with them. Interest is also paid by people when they were land money.

# INTEREST

## Simple Interest

$$\text{Simple interest(SI)} = \frac{p \times r \times t}{100}$$

## Compound Interest

$$A = P \left( 1 + \frac{r}{100} \right)^n$$
$$CI = P - A$$



# Example of compound interest

1. Find compound interest of ₹12604 for 2 years at 10% per annum compounded annually.

$$\begin{aligned}\text{Solution :- } A &= P \left( 1 + \frac{r}{100} \right)^n = 12604 \left( 1 + \frac{10}{100} \right)^2 \\ &= 12604 \times \frac{11}{10} \times \frac{11}{10} = \frac{1525084}{100} \\ &= ₹ 15250.84\end{aligned}$$

$$\text{Compound interest} = A - P = ₹15250.84 - ₹12604 = ₹2646.84$$

# APPLICATION OF COMPOUND INTEREST

There are some situations where we could use the formula for calculation of amount in compound interest here are a few

Increase or decrease in population

The growth of bacteria if the rate of growth is known.

The value of an item if its price increase or decrease in the intermediate years.

Question:- The population of a village named Mehandipur is 3000 in the year 2000 it increased the rate of 10% per annum find the population of the at the end of year 2003.

**Solution:-** There is a 10% increase in the population every year. So every new year has a new population as we can say it is increasing in compounded form population in the beginning of every year.

After year 2001 the population will be  $3000 + 10\% \text{ of } 3000 = 3000 + 300$   
 $= 3300$

After year 2002 the population will be  $3300 + 10\% \text{ of } 3300 = 3300 + 330$   
 $= 3630$

After year 2003 the population will be  $3630 + 10\% \text{ of } 3630 = 3630 + 363$   
 $= 3993$



on the other end we can calculate this by the using of compound interest formula

Here  $P = 3000$   $r=10\%$   $n=3$

$$\text{So } A = P \left( 1 + \frac{r}{100} \right)^n \text{ so}$$

$$A = 3000 \left( 1 + \frac{10}{100} \right)^3$$

$$= 3000 \times \frac{11}{10} \times \frac{11}{10} \times \frac{11}{10}$$

$$= 3 \times 1331$$

$$= 3993$$

A mobile sell out at price of ₹ 21000 after one year the value of the mobile bars depreciated by 10% depreciation means reduction of the value due to use and the age of the item find the value of the mobile after 2 year.

Solution:-

Method 1

$$\begin{aligned}\text{After 1 year the price of mobile} &= ₹ 21000 + 10\% \text{ of } ₹ 21000 \\ &= ₹ 21000 + ₹ 2100 = ₹ 23100\end{aligned}$$

$$\begin{aligned}\text{After 2 year the price of mobile} &= ₹ 23100 + 10\% \text{ of } ₹ 23100 \\ &= ₹ 23100 + ₹ 2310 = ₹ 25410\end{aligned}$$

Here we can use the formula directly

$$\begin{aligned}A &= P \left( 1 + \frac{r}{100} \right)^n \\ &= 21000 \left( 1 + \frac{10}{100} \right)^2 = 21000 \times \frac{11}{10} \times \frac{11}{10} \\ &= ₹ 25410\end{aligned}$$





THANKS