Compound Interest

Amount $= P + SI$

Amnt $(n) = P\left(1 + \dfrac{R}{100}\right)^n$

$P + CI$

4 different formula

Simple
Diff btw CI & SI for 2y
Diff btw CI & SI for 3yrs
Installment

Difference compound I & SI for 2h-s

$$\text{Diff} = P\left(\dfrac{R}{100}\right)^2 = \dfrac{SI \times R}{200}$$

Difference for 3yrs $= P\left(\dfrac{R}{100}\right)^2\left(\dfrac{R}{100} + 3\right)$

Population

Population 'n grs $= P\left(1 + \dfrac{R}{100}\right)^n$

1) what will be the interest earned on sum of 6400 kept for 6 months at 25% rate Compounded anually

$CM = P\left(1 + \dfrac{R}{100}\right)^n$ $Y = \dfrac{Y}{4}$ $T = An = 4 \times 0.5 = 1$

6 months $= 0.5$

$$6400\left(1 + \dfrac{25}{100 \times 4}\right)^2 = 7225$$

2.) what compound interest will be Rs 5000 fetch in 3 years 10 months at 30%.

$$3 \text{ years and } 10 \text{ months} = 3\frac{10}{12}$$

if its in mixed fraction

$$Amt = P + 1 \qquad Amt = P\left(1+\frac{R}{100}\right)^{n}\left[1+\frac{\frac{9}{6}R}{100}\right]$$

for mixed fraction

$$5000\left(1+\frac{30}{100}\right)^{3}\left(1+\frac{\frac{10}{12} \cdot 30}{100}\right) = 13\,731.25$$

$$13731.25 - 5000 = 8731.25$$

3.) how much money invested at compound interest will yield Rs 6350.40 at end of 3 yrs for first year it increases to 12% and for 3rd decreases to 8%. Calculate for y⁻,

$$P\left(1+\frac{R}{100}\right)^{n} = P\left(1+\frac{5}{100}\right)\left(1+\frac{12}{100}\right)\left(1+\frac{8}{100}\right) = 6350.40$$

$$6350 = P\left(\frac{115}{100}\right)\left(\frac{112}{100}\right)\left(\frac{108}{100}\right)$$

$$Rs = 5000$$

4.) An amount becomes 4 times in 6 years. In how many years it will becomes 64 times the roi when remains same

$$A \to 6yrs \to 4A \to ?8yrs \to 4(A) = 16 \to 16(A) = 64$$

$$3(6) = 18 yrs$$

5.) RS 400 is SI for a sum for 4yrs at 10% rate of interest per annum. For CI for same sum rate of interest for same time po-n

$$400 = \frac{P \times 10 \times 4}{100}$$

$$P\left(1 + \frac{R}{T}\right)^n$$

$$R = 1000$$

$$1000\left(1 + \frac{10}{100}\right)^4$$

$$Rs = 1464.0$$

$$A = P + CI$$

$$Rs = 1464.10 - 1000$$

$$Rs\ 464.10$$

6) In But in

7.)

6) In 3 years by CI, a sum becomes ₹900.
But in 4 years by CI becomes 1000₹, what
is sum & rate of interest

$$ST = CI = 1^{st}\ year.$$

$$P = 900 = x + 3\ yr$$

$$\underbrace{900}_{①}$$

$$ST = \frac{P \times R \times T}{100} = 100 \quad = \quad R = 100/9\ \% = 11:11\ \%.$$

$$A = 900 = P\left(1 + \frac{100}{9 \times 100}\right)^3 = Rs\ 656.$$

See in this case we are taking x+3y as
compound and 900 — 1000 as SI cor of
1yr rule so we get answer

7) The Population of a city is 50,000 at
Present. It increases at the rate of 10% Per
annum. what will be the population 3yr fm
now

$$P = P\left(1 \pm \frac{R}{100}\right)$$

$$50,000\left(1 + \frac{10}{100}\right)^3 = 66550$$

8) The population of city is 50,000 at present. If increases at rate of 10% per annum. What was its population 4 yrs ago from present

$$P = P\left(1 + \frac{v}{100}\right)^n$$

for past $\Rightarrow \dfrac{P}{\left(1 + \dfrac{v}{100}\right)^n}$

$$\frac{50,000}{\left(1 + \dfrac{10}{100}\right)^4} = \underline{34,151}$$

9) what will be difference in population 3 yrs ago and 2 yrs ago of Devron village; whose current population is 1,00,000 which is increasing at a rate of 25%.

$$P_3 < P_2$$

$$P_2 - P_3$$

$$P_3 = \frac{P}{\left(1 \pm \dfrac{R}{100}\right)^n} = \frac{1,00,000 \times 64}{125} \quad -①$$

$$P_2 = \frac{100000}{\left(\frac{1+25}{100}\right)^1} = \frac{100000 \times 16}{25}$$

$$P_3 - P_3$$

$$\frac{100000 \times 16}{25} - \frac{10,0,000 \times 64}{125} = \frac{12800}{2}$$

10) CI The difference between simple &
on a certain sum of money for
2yrs at 4 percent per annum isRe.1 . The sum of
money

DIff · SI - CI for 2yrs

$$P\left(\frac{R}{100}\right)^2 = \frac{R \times SI}{100}$$

$$1 = P\left(\frac{4}{100}\right)^2 = \frac{P = 625 Rs}{}$$

11) Sarang invested some money in HDFC at 3%.
rate of interest. what would be corresponding
SI after 2yrs , Sarang get ₹ 101·50 (?)

$$Diff = CI - SI = P\left(\frac{R}{100}\right) = \frac{SI \times R}{200}$$

$$101.50 - CI = \frac{SI \times 3}{200}$$

$$SI = \frac{Rs 100}{}$$

12.) Find the principal amount invested if difference between CT and SI for 3 years at reI of 25% is 320

$$\text{Diff} = CI - SI = P\left(\frac{R}{100}\right)^2\left(\frac{R+3}{100}\right)$$

$$320 = P\left(\frac{25}{100}\right)^2\left(\frac{25+3}{100}\right)$$

$$P = 1575.38$$