

EX-6.2  
Uniform rate of Growth.

Ex-4

Suppose that 2 yrs before,  $x$  no of student admitted.

$$\begin{aligned} \therefore \text{After 2 yrs, no of students} &= x \left(1 + \frac{5}{100}\right)^2 \\ &= x \left(\frac{105}{100}\right)^2 = x \times \frac{21}{20} \times \frac{21}{20} \end{aligned}$$

$$\therefore \text{A.T.P. } x \times \frac{21}{20} \times \frac{21}{20} = 3528$$

504 72 218

$$\therefore x = \frac{3528 \times 20}{21} \times \frac{20}{21} = 3200.$$

$\therefore$  2 yrs before, 3200 students were admitted.

Ex-7

Suppose that 2 yrs before, the height of tree was  $x$  m.

$$\begin{aligned} \therefore \text{A.T.P. After 2 yrs, the height of tree} \\ \text{tree} &= x \left(1 + \frac{20}{100}\right)^2 \\ &= x \times \frac{6}{5} \times \frac{6}{5} \end{aligned}$$

$$x \times \frac{6}{5} \times \frac{6}{5} = 28.8$$

72 12 4

$$\therefore x = \frac{28.8 \times 5 \times 5}{6 \times 6} = 20 \text{ m.}$$

12 3

Ex-10

Suppose that 3 yrs before, the no of student was  $x$ .

$$\begin{aligned} \therefore \text{After 3 yrs, no of student} \\ &= x \left(1 + \frac{10}{100}\right)^3 \\ &= x \times \frac{110}{100} \times \frac{110}{100} \times \frac{110}{100} \end{aligned}$$

$$\therefore \text{So, } x \times \frac{110}{100} \times \frac{110}{100} \times \frac{110}{100} = 3993$$

$$\therefore x = \frac{3993 \times 100 \times 100 \times 100}{110 \times 110 \times 110} = 3000$$

Three yrs before, the no of student = 3000

S.N-13

Every year for 75% of the families having no electricity.

$$\begin{aligned} \text{After 2 yrs, no of families having no} \\ \text{electricity} &= 1200 \left(1 - \frac{75}{100}\right)^2 \\ &= 1200 \times \left(\frac{25}{100}\right)^2 \\ &= 1200 \times \frac{1}{4} \times \frac{1}{4} \\ &= 75 \end{aligned}$$

After 2 yrs, no of family = 75.

S.N-14

no of users of cold drinks has decreased by 25% every year in comparison to its previous year.

$$\begin{aligned} \therefore \text{The no of users of cold drink in the} \\ \text{present year} &= 80000 \left(1 - \frac{25}{100}\right)^3 \\ &= 80000 \times \frac{3}{4} \times \frac{3}{4} \times \frac{3}{4} = 33750. \end{aligned}$$

S.N-15

no of smoker has decreased by  $6\frac{1}{4}\%$  every year in comparison to its previous year.

3 yrs before, the no of smokers =  $x$ .

$$\begin{aligned} \therefore \text{After 3 yrs, the no of smokers} \\ &= x \left(1 - \frac{25}{400}\right)^3 = x \left(1 - \frac{1}{16}\right)^3 \\ &= x \times \left(\frac{15}{16}\right)^3 \end{aligned}$$

$$\begin{aligned} \text{A.T.P. } x \left(\frac{15}{16}\right)^3 &= 33750 \\ x &= 33750 \times \frac{16 \times 16 \times 16}{15 \times 15 \times 15} = 40960 \end{aligned}$$

3 yrs before, the no of smokers = 40960.

16. A (i) (c) Both equal and unequal.

$$(ii) (d) P \left(1 + \frac{r}{50}\right)^n$$

(v) Let the rate of interest be  $r\%$ .

$$\therefore 100 \left(1 + \frac{r}{100}\right)^2 = 121$$

$$\text{or } \left(1 + \frac{r}{100}\right)^2 = \frac{121}{100} \quad \text{or } 1 + \frac{r}{100} = \frac{11}{10}$$

$$\text{or } \frac{r}{100} = \frac{11}{10} - 1 = \frac{1}{10}$$

$$\text{or } r = 10$$

16 (B) (i) False.

16 (C) (i) Equal

(ii) ~~Decrease~~ Decrease.

(SA)

17 (ii) Let sum of money be  $Rs\ x$ .

It will be  $Rs\ 2x$  at  $r\%$  rate of CI per annum in  $n$  yrs.

$$\therefore 2x = x \left(1 + \frac{r}{100}\right)^n \quad \dots (1)$$

and it will be  $Rs\ 4x$  in  $y$  yrs (suppose).

$$\therefore 4x = x \left(1 + \frac{r}{100}\right)^y \quad \text{or } 4 = \left(1 + \frac{r}{100}\right)^y$$

$$\text{or } 2^2 = \left(1 + \frac{r}{100}\right)^y = \left(1 + \frac{r}{100}\right)^{2n}$$

$$\therefore y = 2n, \quad [\text{by using } (1)]$$

$\therefore$  It will be  $Rs\ 4x$  in  $2n$  yrs.

(iii) Let the principal be  $Rs\ x$ .

$$\therefore x \left(1 + \frac{5}{100}\right)^2 = 615$$

$$\text{or } x \left\{ \left(1 + \frac{5}{100}\right)^2 - 1 \right\} = 615$$

$$\therefore x \left(1 + \frac{5}{100}\right)^2 - x = 615$$

$$\text{or } x \left\{ \left(\frac{21}{20}\right)^2 - 1 \right\} = 615$$

$$\text{or } x \times \frac{41 \times 1}{400 \times 15} = 615$$

$$\therefore \text{principal} = Rs\ 6000, \quad \text{or } x = \frac{615 \times 400}{41} = 6000$$