General Science and Ability

Section-II

Question No 6:

(a)

Given:

Original population = 18,000

Increased population = 22,500 in a decade

To Find:

percentage increase of population per year = ?

Solution:

$$\text{percentage increase in population} = \frac{\text{Increase}}{\text{Original}} \times 100$$

$$= \frac{4500}{18000} \times 100$$

$$= \frac{45^{5}}{18_{9}} \times 10^{5}$$

$$= 25\% \text{ in a decade}$$

$$\text{per year percentage increase} = \frac{25}{10 \times 100}$$

$$= \frac{25}{1000}$$

$$= 0.025\% \text{ per year increase}$$

(b)

Units	Days	Machines
600 ↑	9	20
x	12 ↑	8 ↑

$$\frac{x}{600} = \frac{\cancel{12}^{\,3}}{\cancel{9}_{\,1}} \times \frac{\cancel{8}^{\,2}}{\cancel{20}_{\,5}}$$

$$\frac{x}{600} = \frac{6}{5}$$

$$x = \frac{6}{5} \times \cancel{600}^{120}$$

$$x = 120 \times 6$$

$$x = 720$$

∴ 720 Units can be made in 12 days with the help of 18 machines

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(C)

Given:

Distance covered by car = 450m

Time taken by car = 1 minute = 60sec

Distance covered by train = 69km

= 69000m

Time taken by train = 45 minutes

= 45 × 60sec

= 2700seconds

To find:

Ratio of their speeds = ?

Solution:

Formula of Speed is as,

$$\text{Speed} = \frac{\text{Distance covered}}{\text{Time taken}}$$

$$\text{Speed of car} = \frac{450}{60}$$

$$= 7.5 \text{ m sec}^{-1}$$

$$\text{Speed of train} = \frac{69000}{2700}$$

$$= 25.5 \text{ m/sec}^{-1}$$

Ratios of their speed:

Speed of car : Speed of train

7.5m/s : 25.5m/s

(d)

Perimeter of a pentagon = Sum of all sides length

length of one side = 15cm

$$\text{Perimeter} = 15+15+15+15+15$$

$$= 75\text{cm}$$

Question No 8:

(a)

If BROTHER is written as QDGSNQA
then SISTER will be written as RHRSDQ

~~In the give~~

In the given case it is one step backward for each letter ~~while~~ during reverse reading, i.e "B" to one step backward in "A" and so on.

(b)

1, 2, 6, 21 42

(c)

Let the average temperature of 7 days as

$$T_1 + T_2 + T_3 + T_4 + T_5 + T_6 + T_7 = 33°C$$

$$\text{Average} = \frac{\text{Sum of Observations}}{\text{No. of observations}}$$

$$33°C = \frac{T_1 + T_2 + T_3 + T_4 + T_5 + T_6 + T_7}{7}$$

$$33 \times 7 = T_1 + T_2 + T_3 + T_4 + T_5 + T_6 + T_7$$

$$231°C = T_1 + T_2 + T_3 + T_4 + T_5 + T_6 + T_7 \rightarrow \text{eq(i)}$$

Temperature of first 3 days → $T_1 + T_2 + T_3$

$$\text{Average} = \frac{\text{Sum of observations}}{\text{No. of observations}}$$

$$30°C = \frac{T_1 + T_2 + T_3}{3}$$

$$90° = T_1 + T_2 + T_3 \rightarrow \text{eq (ii)}$$

Temperature of last 3 days → $T_5 + T_6 + T_7$

According to formula

$$35°C = \frac{T_5 + T_6 + T_7}{3}$$

$$105°C = T_5 + T_6 + T_7 \rightarrow \text{eq (iii)}$$

Now put the value of eq (ii) and eq (iii) into eq (i)

$$T_1 + T_2 + T_3 + T_4 + T_5 + T_6 + T_7 = 231°C$$

$$90°C + T_4 + 105°C = 231°C$$

$$195°C + T_4 = 231°C$$

$$T_4 = 231°C - 195°C$$

$$T_4 = 36°C$$

∴ Temperature of 4th day will be 36°C.