

SECTION - II

QUESTION # 7

Part a:

$$\text{Diameter} = 14 \text{ cm}$$

$$\text{Radius} = \frac{D}{2} = \frac{14}{2} = 7 \text{ cm}$$

$$\text{Volume of Sphere} = \frac{4}{3} \pi r^3$$

$$= \frac{4}{3} \times \frac{22}{7} \times (7)^3$$

$$= \frac{4}{3} \times 22 \times 49$$

$$= \frac{4388}{3}$$

$$= 1462.67$$

Part b:

$$\text{Total Saving} = 25,000$$

$$\text{Ratio} = 1:2:3:4:5$$

$$\text{Sum of ratio} = 15$$

$$\text{Smallest Share} = \frac{\text{Smallest ratio}}{\text{Sum of ratio}} \times \text{Saving}$$

$$= \frac{1}{15} \times 25000$$

$$= 1666.67$$

$$\text{Smallest Share is } 1666.67$$

Part C:

(i) 2, 6, 18, 54, 162, 486

All the numbers are correct. There is no error.

$$2 \times 3 = 6$$

$$6 \times 3 = 18$$

$$18 \times 3 = 54$$

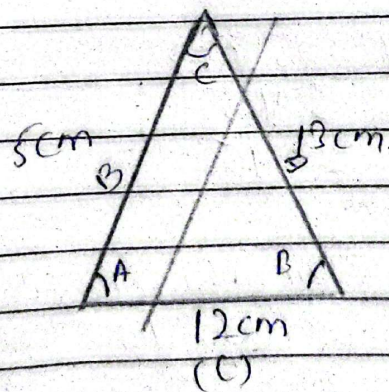
$$54 \times 3 = 162$$

$$162 \times 3 = 486$$

(ii) 3, 5, 7, 11, 13

These are consecutive prime numbers

3, 5, 7, 11, 13, 17

Part d:

$$\frac{5}{\sin B} = \frac{13}{\sin A} = \frac{12}{\sin C}$$

$$5 \sin A = 13 \sin B$$

$$\sin A = \frac{13}{5} \sin B$$

$$\frac{13}{\sin A} = \frac{12}{\sin C}$$

$$13 \sin C = 12 \sin A$$

$$\sin A = \frac{13 \sin C}{12}$$

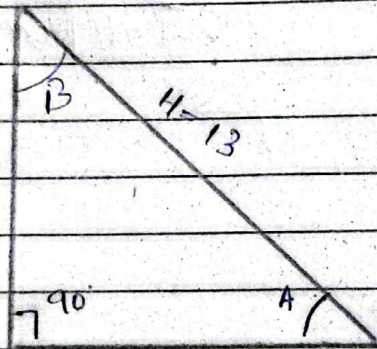
$$\text{Q. } A + B + C = 180$$

According to pythagoras theorem

$$5^2 + 12^2 = 13^2$$

$$5^2 + 12^2 = 13^2$$

Q. Hypotenuse is 13



$$\sin A = \frac{5}{13}$$

$$A = \sin^{-1} \frac{5}{13}$$

$$A = 22.62$$

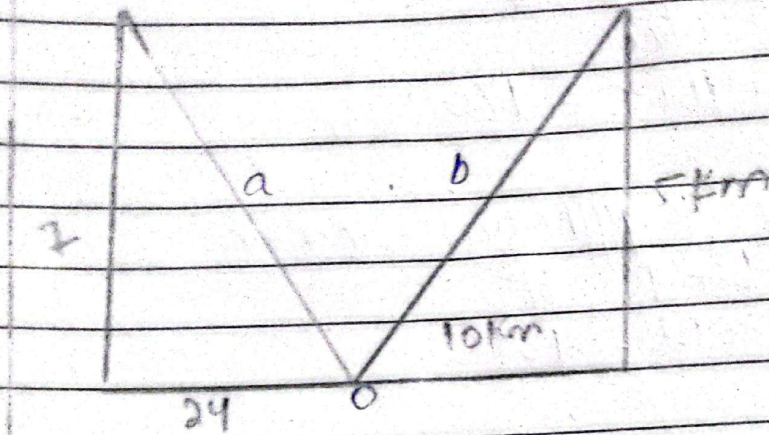
$$A + B + C = 180$$

$$22.62 + 90 + B = 180$$

$$B = 67.38$$

QUESTION 8

Part a:



$$\begin{aligned} \text{Total distance} &= 7^2 + 24^2 \\ a &= 25 \text{ km (from Pythagoras theorem)} \end{aligned}$$

$$b^2 = 10^2 + 5^2$$

$$b^2 = 100 + 25$$

$$b = \sqrt{125}$$

$$b = 11.18 \text{ km}$$

$$\text{Total distance travelled} = 7 + 24 + 25 + 10 + 5 = 71 \text{ km}$$

He travelled 71 km

Let the hike starts at point O so he is 11.18 km from start.

Part b:

9000 = sum of money

$$\Rightarrow A = \frac{1}{2}B; \quad B = 3C, \quad C = 4D, \quad D = 2E,$$

$$E = F$$

Bring all the relation in one form

$$A = \frac{1}{2}B \quad \text{--- (I)}$$

$$2A = 3C \Rightarrow B = 2A$$

$$A = \frac{3}{2}C \quad \text{--- (II)} \quad \frac{2A}{3} = C \quad \text{--- (II)}$$

$$C = 4D$$

$$\frac{2A}{3} = 4D$$

$$\frac{2A}{12} = D \Rightarrow \frac{A}{6} = D \quad \text{--- (III)}$$

$$D = 2E$$

$$\frac{A}{6} = 2E$$

$$6$$

$$\frac{A}{12} = E \quad \text{--- (IV)}$$

$$E = F$$

$$F = \frac{A}{12} \quad \text{--- (V)}$$

$$A + B + C + D + E + F = 9000$$

$$A + 2A + \frac{2A}{3} + \frac{A}{6} + \frac{A}{12} + \frac{A}{12} = 9000$$

$$12A + 24A + 8A + 12A + A + A = 9000$$

12

$$448A = 9000$$

121

$$4A = 9000$$

$$A =$$

$$\frac{9000}{4}$$

$$2250$$

$$A = 2250$$

$$B = 2A$$

$$B = 2 \times 2250$$

$$B = 4500$$

$$C = \frac{2A}{3}$$

3

$$C = \frac{2 \times 2250}{3}$$

3

$$C = 1500$$

$$D = \frac{A}{6}$$

6

$$D = \frac{2250}{6}$$

$$375$$

6

$$D = 375$$

$$E = \frac{A}{12}$$

12

$$E = \frac{2250}{12}$$

12

$$E = 187.5$$

$$F = 187.5$$

Part C:

$$L = 8$$

$$B = 6$$

$$W = 4$$

$$\begin{aligned}\text{Volume} &= L \times B \times W \\ &= 8 \times 6 \times 4 \\ &= 192 \text{ m}^3\end{aligned}$$

$$\begin{aligned}\text{Surface Area, } LW + BW + B \cdot LB \\ &= 204 \text{ m}^2\end{aligned}$$

Part d:

Average before joining of Anna =

$$= \frac{(4 \times 72) + (4 \times 56)}{8}$$

$$= 61 \text{ kg}$$

Sum of obs before joining of

$$\begin{aligned}\text{Anna} &= 61 \times 8 \\ &= 488\end{aligned}$$

Average after joining of Anna

$$67 = \frac{\text{sum of obs} + \text{Anna eating}}{9}$$

$$67 \times 9 = 488 + x$$

$$603 = 488 + x$$

$$603 - 488 = x$$

Date: _____

Anna eats 115 kg of food

115 kg = 2