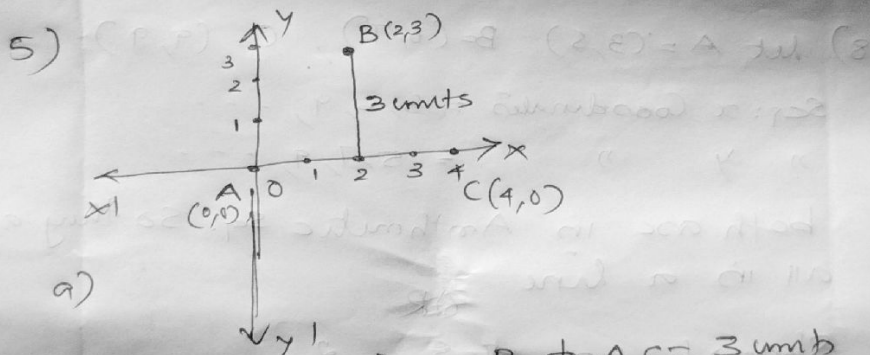


SSLC EXAMINATION 2024

MATHEMATICS

- 1) Since $\angle P = 110^\circ > 90^\circ \therefore P$ is inside the Semicircle.
 $\angle Q = 80^\circ < 90^\circ$, so Q is outside the Semicircle.
- 2) Ascending order is
 12, 12.5, 12.6, 12.9, 13.4, 13.7, 14.1
 median = 12.9 gm/dl.
- 3) a) seq: is 4, 8, 12, ...
 b) $d = 8 - 4 = \underline{4}$
- 4) Probability = $\frac{\text{Area of Shaded part}}{\text{Total Area}}$
 $= \frac{2 \times 5}{5 \times 5}$
 $= \frac{2}{5}$



b) \perp^r distance from B to AC = 3 units

- 6) Age of Renuka = 2
 a) \therefore Age of Ajay = $2 + 10$
 b) Given $x(x + 10) = 144$
 $x^2 + 10x = 144$
 $x^2 + 10x + 25 = 144 + 25$
 $(x + 5)^2 = 169$

$$x+5 = \sqrt{169}$$

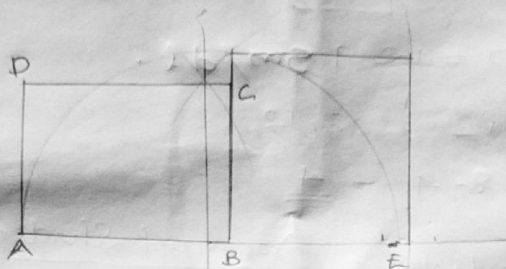
$$x+5 = 13$$

$$\therefore x = 13 - 5 \\ = \underline{8}$$

\therefore Age of RemuKA = 8 yrs.

" " Ajay = $8 + 10$
 $= \underline{18}$ yrs

7) fig.



8) let $A = (3, 5)$ $B = (6, 7)$, $C = (9, 9)$

Seq: x Coordinates = 3, 6, 9, ...

" y " = 5, 7, 9, ...

both are in Arithmetic Seq: So they are
all in a line OR

$$\text{Slope of } AB = \frac{7-5}{6-3} = \frac{2}{3}$$

$$\text{Slope of } BC = \frac{9-7}{9-6} = \frac{2}{3}$$

Same slope, so A, B, C are in a line

9) $a_n = 4n + 1$

a) $d = 4$, b) $f = 4 + 1$ c) remainder = 1
 $= \underline{5}$

$$\begin{aligned} \angle QOR &= 360 - (100 + 110) \\ &= 360 - 210 \\ &= \underline{150^\circ} \end{aligned}$$

$$\angle A = 180 - 100 = \underline{80^\circ}$$

$$\angle B = 180 - 110 = \underline{70^\circ}$$

$$\angle C = 180 - 150 = \underline{30^\circ}$$

11) Total no. of no.s = 50

multiples of 4 = 4, 8, 12, ... 48

" " 6 = 6, 12, ... 48

a) $P(\text{multiple of 4}) = \frac{12}{50}$

b) $P(\text{multiple of 6}) = \frac{8}{50}$

c) $P(\text{multiple of 4 & 6})$

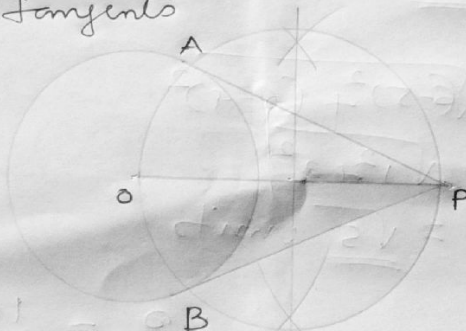
$$= P(\text{multiple of 12})$$

$$= P(12, 24, 36, 48)$$

$$= \frac{4}{50}$$

12) a) 2 tangents

b)



$$\frac{100}{200} = \frac{OB}{12}$$

$$\frac{100 \times 12}{200} = OB$$

$$OB = 6$$

$$OB = 6$$

13) 8, 14, 20, ...

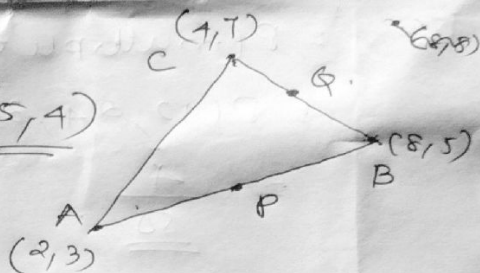
$$\begin{aligned} \text{Here } x_n &= dn + (f-a) \\ &= 6n + (8-8) \\ &= \underline{\underline{6n+2}} \end{aligned}$$

$$\begin{array}{r} 4 \\ 6 \overline{) 25} \\ \underline{24} \\ 1 \\ 24 \\ \underline{24} \\ 0 \end{array}$$

- a) Since 25 does not leave 2 as remainder on dividing by $d=6$
 $\therefore 25$ is not a term of this seq.
- b) Also 144 does not leave 2 as remainder on dividing by 6 $\therefore 144$ is not a term
- c) Since no perfect square numbers leave 2 as remainder on dividing by 6 so no perfect square No. comes as a term of this seq.

14) a) $P = \left(\frac{2+8}{2}, \frac{3+5}{2} \right) = \underline{\underline{(5, 4)}}$

b) $Q = \left(\frac{8+4}{2}, \frac{5+7}{2} \right)$
 $= \underline{\underline{(6, 6)}}$



c) $PQ = \sqrt{(6-5)^2 + (6-4)^2}$
 $= \sqrt{1^2 + 2^2}$
 $= \underline{\underline{\sqrt{5} \text{ units}}}$

5) Here .

a) $l = R = 15 \text{ cm}$. $\frac{10}{15} = \frac{120}{360}$

b) $\frac{r}{l} = \frac{x}{360}$. $\therefore r = 15 \times \frac{120}{360}$
 $= \underline{\underline{5 \text{ cm}}}$

$$\begin{aligned}
 c) \quad C.S.A. &= \pi r l \\
 &= \pi \times 5 \times 15 \\
 &= \underline{\underline{75\pi \text{ cm}^2}}
 \end{aligned}$$

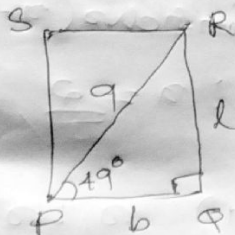
16)

$$\sin 49^\circ = \frac{\text{opp. side}}{\text{hyp}}$$

$$0.75 = \frac{l}{9}$$

$$\therefore l = 9 \times 0.75$$

$$= \underline{\underline{6.75 \text{ cm}}}$$



$$\cos 49^\circ = \frac{\text{adj. side}}{\text{hyp}}$$

$$0.66 = \frac{b}{9}$$

$$\therefore b = 9 \times 0.66$$

$$= \underline{\underline{5.94 \text{ cm}}}$$

17) $D = (-4, 0)$

$$BQ = 2\sqrt{3}$$

$$B = (2, 2\sqrt{3})$$

$$E = (-2, -2\sqrt{3})$$

18)

$$\text{let number} = x$$

$$\therefore x^2 = 12 + x$$

$$x^2 - x - 12 = 0$$

$$(x-4)(x+3) = 0$$

$$\therefore x = 4, \quad x = -3$$

$$\text{Number} = 4 \quad \underline{\underline{-3}}$$

$$19) x^2 - 5x + 6 = (x-a)(x-b)$$

$$a) \quad = (x-2)(x-3) \quad a+b=5$$

$$ab=6$$

$$a=2, b=3$$

$$b) \text{ Konstante } (x-2)(x-3) = 0$$

$$\therefore x = \underline{\underline{2}}, \quad x = \underline{\underline{3}}$$

$$20) a) r_1 : r_2 = \underline{\underline{5 : 3}}$$

$$20) b) A_1 : A_2 = \underline{\underline{5^2 : 3^2}} \\ = \underline{\underline{25 : 9}}$$

$$c) A_1 = 100, \quad \frac{A_1}{A_2} = \frac{25}{9}$$

$$\frac{100}{A_2} = \frac{25}{9}$$

$$\therefore A_2 = 100 \times \frac{9}{25}$$

$$= \underline{\underline{36 \text{ cm}^2}}$$

$$21) a) \angle D = \frac{1}{2} \times 110 = \underline{\underline{55^\circ}}$$

$$b) \angle A = \frac{1}{2} \times 80 = \underline{\underline{40^\circ}}$$

$$c) \angle P = 180 - (55 + 40) \\ = \underline{\underline{85^\circ}}$$



23)

Age	No. of workers	Age	No. of workers
20-30	9	upto 30	9
30-40	10	" 40	19 ← 17th
40-50	8	" 50	27
50-60	5	" 60	32
60-70	1	" 70	33
TOTAL	33	X	X

a) position of median = $\frac{33+1}{2}$
 $= 17^{th}$ worker

b) $d = \frac{40-30}{10} = \frac{1}{10}$

$x_{10} = 30 + \frac{d}{2} = 30 + \frac{1}{20} = 30\frac{1}{20}$

$\therefore x_{17} = x_{10} + 7d$
 $= 30\frac{1}{20} + 7 \times \frac{1}{10}$
 $= 30\frac{1}{20} + 7 \times \frac{2}{20}$
 $= 30\frac{1+14}{20}$
 $= 30\frac{15}{20}$

median Age = $30\frac{15}{20}$ yrs

24) a)



b) In $\triangle AOB$, angles are $45^\circ, 45^\circ, 90^\circ$
 So sides are $1:1:\sqrt{2}$

$$\therefore AO = 100 \text{ m}$$

Hgt. of tower = 100 m

In $\triangle AOC$, $\tan 65^\circ = \frac{\text{opp side}}{\text{adj side}}$
 $2.14 = \frac{OC}{OA}$

$$2.14 = \frac{OC}{100}$$

$$\therefore OC = 2.14 \times 100$$

214 m

Distance of Car from tower = 214 m

25) $x_3 = 26, x_8 = 61$

$$a) d = \frac{x_8 - x_3}{8 - 3} = \frac{61 - 26}{5} = \frac{35}{5} = 7$$

$$b) f = x_3 - 2d = 26 - 2 \times 7 = 12$$

$$c) x_n = dn + (f - d)$$

$$= 7n + (12 - 7)$$

$$= \underline{7n + 5}$$

$$d) S_n = \frac{d}{2} n^2 + (f - \frac{d}{2}) n$$

$$S_{15} = \frac{7}{2} \times 15^2 + (12 - \frac{7}{2}) \times 15$$

$$S_{13} = \frac{7}{2} \times 225 + \frac{17}{2} \times 15$$

$$= \frac{15}{2} [7 \times 15 + 17]$$

$$= \frac{15}{2} [105 + 17]$$

$$= \frac{15}{2} \times 122$$

$$= 15 \times 61$$

$$= \underline{\underline{915}}$$

26) Given $4a = 80$, $l = 26$ cm

$$2a = \frac{80}{2}$$

$$= \underline{\underline{20}} \text{ cm}$$

a) L.S.A = $2a \times l$

$$= 2 \times 20 \times 26$$

$$= \underline{\underline{1040}} \text{ cm}^2$$

$$= \underline{\underline{10400}} \text{ cm}^2$$

b) $h^2 = l^2 - (a/2)^2$

$$= 26^2 - 10^2$$

$$= 24^2$$

$$\therefore h = \underline{\underline{24}} \text{ cm}$$

c) $V = \frac{1}{3} a^2 h$

$$= \frac{1}{3} \times 20 \times 20 \times 24$$

$$= 3200 \text{ cm}^3$$

$$= \underline{\underline{8.2}} \text{ litres}$$