

KSEEB Model paper-01

Mathematics MCQ

1) $3x + 2ky = 2$ $2x + 5y + 1 = 0$
 $a_1x + b_1y + c_1 = 0$ $a_2x + b_2y + c_2 = 0$

$a_1 = 3$ $b_1 = 2k$ $c_1 = 2$

$a_2 = 2$ $b_2 = 5$ $c_2 = 1$

$$\frac{a_1}{a_2} = \frac{b_1}{b_2}$$

$$\frac{3}{2} = \frac{2k}{5}$$

$$2k = \frac{3 \times 5}{2}$$

$$k = \frac{15}{2 \times 2} = \frac{15}{4}$$

A) $k = \frac{15}{4}$

2) $2x + 5y + 4 = 0$ $2x + y + 8 = 0$
 $a_1x + b_1y + c_1 = 0$ $a_2x + b_2y + c_2 = 0$

$a_1 = 2$ $b_1 = 5$ $c_1 = 4$

$a_2 = 2$ $b_2 = 1$ $c_2 = 8$

$$\frac{a_1}{a_2} \neq \frac{b_1}{b_2} \Rightarrow \text{Intersecting lines}$$

C) A unique soln

3) $2x - 3y = 12$

d) $x = 3, y = -2$

4) B) If the lines are perpendicular to each other
no, soln

5) $a = -3$ $a_{10} = a + 9d$

$d = -1 + 3 = 2$ $a_{10} = -3 + 9(2)$

$n = 10$ $a_{10} = -3 + 18$

$a_{10} = 15$ $a_{10} = 15$

D) 15

$$6) \quad a_n = 7 - 4n$$

$$a_1 = 7 - 4(1) \quad a_2 = 7 - 4(2)$$

$$a_1 = 3 \quad a_2 = -1$$

$$d = a_2 - a_1 = -1 - 3 = -4$$

$$\underline{\underline{B) -4}}$$

$$7) \quad 4, a, b, 28$$

$$a_1, a_2, a_3, a_4$$

$$a_2 - a_1 = a_3 - a_2 \quad a_3 - a_2 = a_4 - a_3$$

$$a - 4 = b - a \quad b - a = 28 - b$$

$$a + a = b + 4 \quad b + b = 28 + a$$

$$2a = b + 4 \quad 2b = 28 + a$$

$$a = \frac{b+4}{2} \quad 2b = \frac{56+b+4}{2}$$

$$\underline{\underline{A) 20}} \quad 2b \times 2 = 60 + b$$

$$4b - b = 60$$

$$3b = 60$$

$$\boxed{b = 20}$$

$$8) \quad \begin{array}{l} 1^{st} \text{ AP} \\ d = d \\ a = 3 \\ a_3 = a + 2d \\ a_3 = 3 + 2d \quad \text{--- (1)} \end{array} \quad \begin{array}{l} 2^{nd} \text{ AP} \\ d = d \\ A = 8 \\ a_3 = A + 2d \\ a_3 = 8 + 2d \quad \text{--- (2)} \end{array}$$

$$\text{(2)} - \text{(1)}$$

$$8 + 2d - 3 - 2d \Rightarrow 8 - 3$$

$$+ 5$$

$$\underline{\underline{D) 5}}$$

$$9) \quad S_n = 3n^2 + n$$

$$S_1 = 3(1)^2 + 1 \quad S_2 = 3(2)^2 + 2 \quad a_3 = a + 2d$$

$$S_1 = 4 \quad S_2 = 14 \quad a_3 = 4 + 2(6)$$

$$S_1 = a_1 = 4 \quad S_2 = a_1 + a_2 \quad a_3 = 4 + 12$$

$$14 = 4 + a_2 \quad a_3 = 16$$

$$\boxed{a_2 = 10}$$

$$d = 10 - 4 = 6$$

$$\underline{\underline{B) 16}}$$

$$10) \quad 3x^2 - 3(2x - 4) = 0$$

$$3x^2 - 6x + 12 = 0$$

$$ax^2 + bx + c = 0$$

$$D) 12$$

$$11) \quad (2x - 3)(x + 5) = 0$$

$$2x - 3 = 0$$

$$2x = 3$$

$$x = 3/2$$

$$C) 3/2$$

$$12) \quad x^2 - 2x + 1 = 0$$

$$ax^2 + bx + c = 0$$

$$a = 1 \quad \Delta = b^2 - 4ac$$

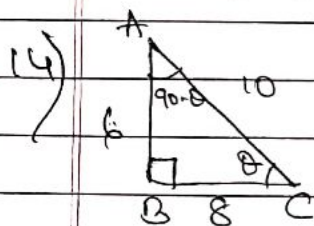
$$b = -2 \quad \Delta = (-2)^2 - 4 \times 1 \times 1$$

$$c = 1 \quad \Delta = 4 - 4$$

$$\Delta = 0$$

A) real & equal

$$13) \quad B) \quad x^2 + (x + 2)^2 = 394$$



$$\sin(90 - \theta) = \cos \theta$$

$$\cos \theta = \frac{8}{10}$$

$$D) \frac{8}{10}$$

$$15) \quad 2 \sin 2\theta = \sqrt{3} \quad \theta = ?$$

$$\sin 2\theta = \frac{\sqrt{3}}{2}$$

$$\sin 2\theta = \sin 60'$$

$$2\theta = 60'$$

$$\theta = 30'$$

$$C) 30'$$

16) $OC = 4\text{cm}$ $\sin \theta = \frac{OA}{OC}$
 $\angle C = 30^\circ$

$OA = r = ?$ $\sin 30^\circ = \frac{OA}{4}$

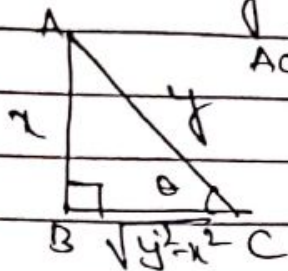
$\frac{1}{2} = \frac{OA}{4}$

$OA = \frac{4}{2}$

$OA = 2\text{cm}$

C) 2cm

17) $\sin \theta = \frac{x}{y}$



$AC^2 = BC^2 + AB^2$

$BC^2 = AC^2 - AB^2$

$BC^2 = y^2 - x^2$

$BC = \sqrt{y^2 - x^2}$

$\cos \theta = \frac{\text{adj}}{\text{hyp}} = \frac{\sqrt{y^2 - x^2}}{y}$

D) $\frac{\sqrt{y^2 - x^2}}{y}$

4

18) $\sin A + \sin^2 A = 1$ $\cos^2 A + \cos^4 A = ?$

$\cos^2 A + \cos^4 A$

~~$\cos^2 A (1 + \cos^2 A)$~~

$\sin A + \sin^2 A = 1$

$\sin A = 1 - \sin^2 A$

$\sin A = \cos^2 A$

$\cos^2 A + \cos^4 A$

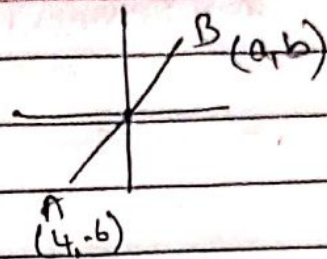
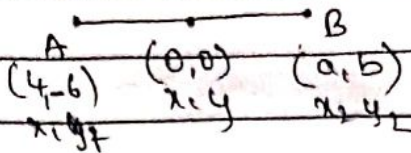
$\cos^2 A + \cos^2 A \cdot \cos^2 A$

$\sin A + \sin A \cdot \sin A$

$\sin A + \sin^2 A = 1$

D) 1

19)



$$P(x, y) = \left[\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right]$$

$$(0, 0) = \left[\frac{4 + a}{2}, \frac{-6 + b}{2} \right]$$

$$\frac{4 + a}{2} = 0$$

$$\frac{-6 + b}{2} = 0$$

$$4 + a = 0$$

$$-6 + b = 0$$

$$\boxed{a = -4}$$

$$\boxed{b = 6}$$

$$\underline{\underline{c) a = -4 \text{ \& } b = 6}}$$

20) A) $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

21) A(1, 2) O(0, 0) C(a, b)
 x_1, y_1 x_2, y_2 x_3, y_3

$$A = \frac{1}{2} [x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2)]$$

$$0 = \frac{1}{2} [1(0 - b) + 0(b - 2) + a(2 - 0)]$$

$$0 = [-b + 0 + 2a]$$

$$2a - b = 0$$

$$2a = b$$

$$\underline{\underline{B) 2a = b}}$$

22) c) 3 units

23) $\text{Ilang} + \text{Sci} + \text{SS} + \text{Math} = 60$
 \uparrow

$$65 + 50 + 55 + \text{math} = 60 \times 4$$

$$170 + \text{math} = 240$$

$$\text{math} = 240 - 170$$

$$\text{math} = 70$$

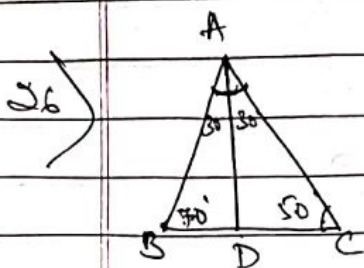
$$\underline{\underline{D) 70}}$$

24) A) 3 median = mode + 2 mean

CI	f	cf	$\frac{N}{2} = \frac{60}{2} = 30$
0-10	5	5	
10-20	8	13	
20-30	12	25	
<u>30-40</u>	<u>15</u>	<u>40</u>	
40-50	20	60	

N = 60

C) 30-40



A) 30'

27)

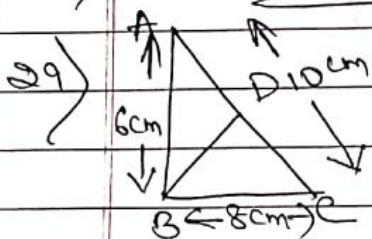
$$\frac{AB}{DE} = \frac{AC}{DF}$$

$$\frac{4.8}{2.4} = \frac{AC}{1.8}$$

$$AC = 1.8 \times 2 = 3.6$$

B) 3.6 cm

28) D) 25:9



B) 3.6 cm

30) C) 3 cm, 8 cm, 6 cm

31) c) Only two tangents can be drawn from a point lying outside a circle.

32) c) Chord AB = 5 cm

33) $180 - 130 = 50'$

D) 50'

34) A) 7cm & 9.8cm

ratio should be

$\frac{7}{5}$ not $\frac{5}{7}$

35) 7, 24, 25 are pythagorean triplet

so B) 7cm

36) D) $2\pi r h$

37) B) $l^2 = h^2 + r^2$

38) $4\pi r^2 = 616$

$4 \times \frac{22}{7} \times r^2 = 616$

$r^2 = \frac{616 \times 7}{22 \times 4}$

$r^2 = 7^2$

$r = 7$

hemisphere

$SA = 2\pi r^2$

$= 2 \times \frac{22}{7} \times 7 \times 7$

$= 44 \times 7$

$SA = 308 \text{ cm}^2$

B) 308 cm²

39) $C = 44 \text{ cm}$

$C = 2\pi r$

$V = \pi r^2 h$

$h = 10 \text{ cm}$

$44 = 2 \times \frac{22}{7} \times r$

$r = 7$

$r = 7 \text{ cm}$

$V = \pi \times 7 \times 7 \times 10$

$V = 490\pi \text{ cc} = \text{A) } 490\pi \text{ cc}$

40) D) frustum of a cone