

# S.S.L.C EXAMS MARCH 2020

## MATHS ANSWER KEY

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### GTHS KRISHNAPURAM

1) a) Given  $f=1, d=24$   
 $x_6 = f + 5d = 1 + 5 \times 24 = \underline{121}$

b) 97, 73, 49, 25, 1, ...  
these are 3 perfect square terms

2.

a)  $PA = AB - PB = 10 - 4 = \underline{6 \text{ cm}}$

b) We have  $PA \times PB = PC \times PD$   
 $6 \times 4 = PC \times 3 \therefore PC = \frac{6 \times 4}{3}$

$PC = \underline{8 \text{ cm}}$

3.  $x^2 - 4 = (x+2)(x-2)$

4. Given circle is  $x^2 + y^2 = 5^2$

a)  $r = 5$  unit

b)  $x^2 + y^2 = 3^2$

5. Given  $x_n = 3n + 5$

a)  $f = 8, d = 3$

b)  $f = 8, d = 5$

$x_n = dn + (f-d)$

$x_n = \underline{5n + 3}$

6) In  $\triangle ABC$ ,  
 $AB:BC:AC = 1:1:\sqrt{2}$

a)  $AC = 10\sqrt{2} \text{ cm}$

b)  $5\sqrt{2} \text{ cm}$

c)  $5\sqrt{2} \text{ cm}$

7) fig.

8) a)  $d = 1$

b)  $x + 1$

c) We have  $(n-1)(n+1) + 1 = x^2$   
which is a perfect square.

9. Let 'O' be the pt. of I.S of the diagonals

Here  $A = (3, 2), AC = BD = 6$

$\therefore O$  is  $(6, 2)$   $C$  is  $(9, 2)$

$B$  is  $(6, -1)$   $D$  is  $(6, 5)$

10. Given  $\angle D + \angle A = 210^\circ \rightarrow ①$

$\angle D + \angle C = 250^\circ \rightarrow ②$

$② - ① \Rightarrow \angle C - \angle A = 40^\circ \rightarrow ③$

# 1



⊙  $\angle A + \angle C = 180^\circ$  (cyclic)

b)  $\angle C - \angle A = 40^\circ$  — ⑤

By solving we get,

$\angle C = 110^\circ, \angle A = \underline{70^\circ}$

1) a)  $a = 10 \text{ cm}$

b)  $l = \frac{36 - 10}{2} = \underline{13 \text{ cm}}$

c)  $L.S.A = 2al$   
 $= 2 \times 10 \times 13$   
 $= \underline{260 \text{ cm}^2}$

2) a)  $S_5 = 5^2 = 25$

b)  $S_n = n^2, a_n = 2n - 1$

c)  $S_n = \frac{1}{n}(1 + 3 + 5 + \dots)$   
 $= \frac{1}{n} \times n^2 = \underline{n}$

d)  $\text{Sum} = \underline{2020}$

b)  $P(\text{a girl from IOA}) = \frac{30}{50} = \frac{3}{5}$

c) Given  $P(\text{a boy from IOB}) = \frac{3}{5}$

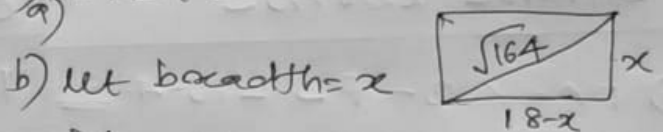
$\therefore \frac{3}{5} = \frac{y}{50}$  (y is boys of IOB)

$\therefore y = \underline{30}$

No. of boys of IOB = 30

d)  $P(\text{both boys}) = \frac{20 \times 30}{50 \times 50} = \frac{6}{25}$

15)  $AB + BC = 18$



b) let base =  $x$

$\therefore$  length =  $18 - x$

By Pyth. theorem

$x^2 + (18 - x)^2 = 164$

$x^2 - 18x + 80 = 0$

$(x - 8)(x - 10) = 0$

$x = 8, x = 10$

$\therefore$  Sides of AB =  $8 \text{ cm}$  or  $10 \text{ cm}$

B) fig.

14) Given  $P(\text{a boy from IOA}) = \frac{2}{5}$

a) ~~let~~ No. of boys of IOA =  $2x$

$\therefore \frac{2}{5} = \frac{2x}{50}$  [Strength of IOA =  $x$ ]

$\therefore x = \underline{50}$

No. of Students in IOA = 50

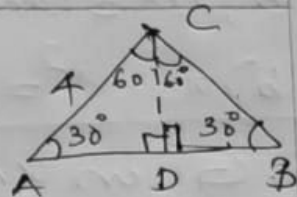
16).

a)  $BC = 4 \text{ cm}$

b) Here  $AD = BD = 2\sqrt{3}$

$\therefore AB = 4\sqrt{3} \text{ cm}$

c) fig.



17)  $P(x) = x^2 - 7x + 13$

$P(3) = 3^2 - 7 \times 3 + 13$

$P(3) = \underline{1}$





$$17.b) P(x) - P(3) = x^2 - 7x + 13 - 1$$

$$= x^2 - 7x + 12$$

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

c) Consider  $(x-4)(x-3) = 0$

$$\therefore x = \underline{4}, x = \underline{3}$$

18

a)  $AQ = AP = 5 \text{ cm}$

b) Since  $OP = OQ = r$

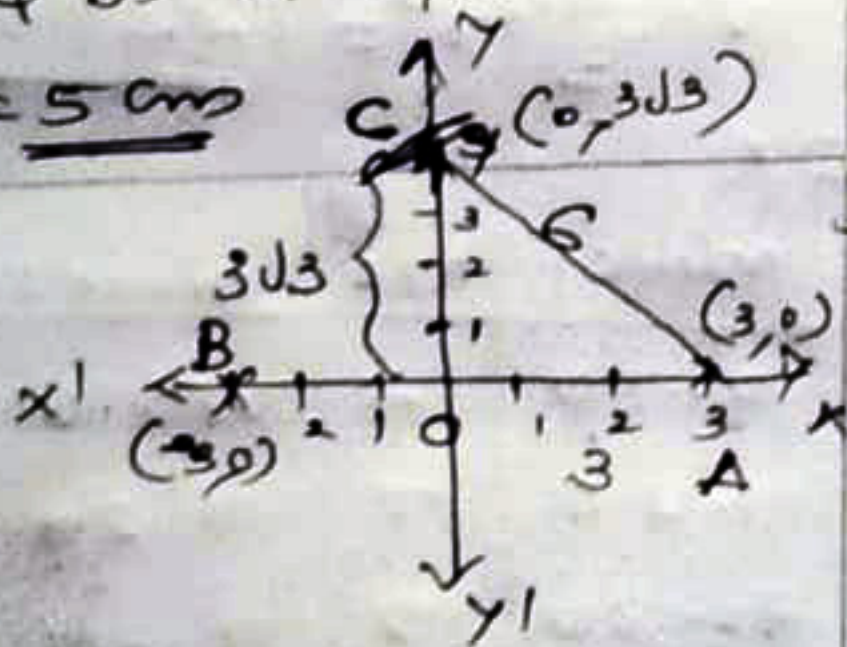
$\therefore AB = AC$ , Chords which lie at equidistant from the Centre are equal.

c) Here  $\angle A = 90^\circ$

$$\therefore \angle O = 90^\circ$$

$\therefore OPAQ$  is a square

$$\therefore r = \underline{5 \text{ cm}}$$



by drawing an arc of length 6 unit we get a point in y axis which is  $3\sqrt{3}$  from O

$$h = \sqrt{l^2 - r^2} = \sqrt{12^2 - 4^2} = \underline{8\sqrt{2} \text{ cm}}$$

c) Here  $l = \sqrt{h^2 + r^2}$

$$= \sqrt{4^2 + 12^2}$$

$$= \underline{3\sqrt{2} \text{ cm}}$$

$$\therefore r = \frac{l \times x}{360}$$

$$\sqrt{2} = \frac{3\sqrt{2} \times x}{360}$$

$$\therefore x = \underline{120^\circ}$$

Central angle =  $\underline{120^\circ}$

21) a) Slope =  $\frac{2-0}{3-5} = \underline{-1}$

eq. of line is

$$y - 0 = -1(x - 5)$$

$$y = -x + 5$$

$$\text{i.e., } \underline{x + y = 5}$$

b) Given  $x - y = 5, x = 5$

$$\therefore y = \underline{0}$$

c) Given  $x + y = 5$   
 $x - y = 5$

by solving we get  $x = 5, y = 0$

$\therefore$  Pt of I.S is  $\underline{(5, 0)}$

20.

a)  $L = 12 \text{ cm}$

$$\frac{2 \times 120}{360} = 4 \text{ cm}$$

3



Vivo V15

AI Triple Camera



22. Given  $S_4 = 72$ ,  $S_9 = 72$

a)  $x_5 = \frac{S_9}{9} = \frac{72}{9} = \underline{8}$

b)  $S_5 = S_4 + x_5 = 72 + 8 = \underline{80}$

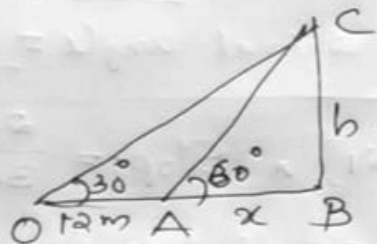
c)  $x_3 = \frac{S_5}{5} = \frac{80}{5} = \underline{16}$

$\therefore d = \frac{x_5 - x_3}{5 - 3} = \frac{8 - 16}{2} = \underline{-4}$

Seq: is  $-, -, 16, - - -$

ie,  $8, 12, \underline{16}, - - -$

23.



Here  $\tan 60 = \frac{h}{x}$

$\sqrt{3} = \frac{h}{x} \therefore h = \underline{\underline{\sqrt{3}x}}$

$\tan 30 = \frac{h}{12+x}$

$\frac{1}{\sqrt{3}} = \frac{\sqrt{3}x}{12+x}$

$\therefore 12+x = 3x, 2x = 12$

$\therefore x = \underline{6}$

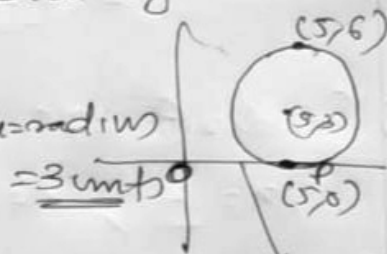
$\therefore$  Ht of tower =  $\underline{\underline{12\sqrt{3} \text{ m}}}$

24. fig.

25.  $r = 6 - 3 = 3$  units.

a)  $(x-5)^2 + (y-3)^2 = 3^2$

ie,  $x^2 + y^2 - 10x - 6y + 25 = 0$



c) distance = radius

= 3 units

d) length of tangent = 4

26. Given  $r = 6$  cm

a)  $V = \frac{4}{3}\pi r^3 = \underline{\underline{288\pi \text{ cm}^3}}$

$A = 4\pi r^2 = \underline{\underline{144\pi \text{ cm}^2}}$

b) For Hemisphere,

$r = 6$  cm

T.S.A =  $3\pi r^2 = 3\pi \times 6^2 = \underline{\underline{108\pi \text{ cm}^2}}$

$V = \frac{2}{3}\pi r^3 = \underline{\underline{144\pi \text{ cm}^3}}$

27.

Marks	No.	Marks	No.
0-10	4	upto 10	4
10-20	7	" 20	11
20-30	10	" 30	21
30-40	12	" 40	33
40-50	8	" 50	41
TOTAL	41		

These medians =  $\left(\frac{41+1}{2}\right)^{\text{th}}$  student's mark  
= 21<sup>th</sup> "

$\therefore$  median class = 20-30.

