

2021 Mathematics Level - I (E) - O

716162

Subject Code	2021		
Subject	MATHEMATICS LEVE-I		
Date	11/03/2025		
Supplements attached			
Main Answer Book	No. of Supplements	Total	
1	+	2	= 3
Specific remarks of centre conductor regarding malpractices (in Red Ink)			

- Mobile Phones and other electronic gadgets are strictly prohibited inside the examination hall.
- Use of non-programmable calculator is allowed ONLY in some subjects.
- Writing in any form on the Hollow craft sticker and Bar code sticker is strictly prohibited.
- Only blue ink/ball pen is to be used for writing the answers. Black lead pencil may be used for drawing figures, diagrams and graphs. Use of any other Colour pencil/pen is strictly prohibited.
- Disclosing of identity on the answer book (except in the space provided) in any form is strictly prohibited.
- Candidate should check that the printed seat number is correct and verify that the answer book has all pages serial numbered before filling all other details.

Pg No	Examiner	Moderator	Chief Moderator
03	4.0	4.0	
04 & 05	7.0	7.0	
06 & 07	8.0	8.0	
08 & 09	7.0	7.0	
10 & 11	8.0	6.0	
12 & 13	4.0	4.0	
14 & 15	8.0	8.0	
16 & 17	7.0	7.0	
18	—	0.0	
Supp. 1	18.0	18.0	
Supp. 2	11.0	11.0	
Supp. 3	—		
Supp. 4	—		
Supp. 5	—		
Supp. 6	—		
TOTAL	80.0	80.0	
Total in words	Eighty point zero	Eighty pt. zero	

MARKS	E	M	CM
Pg. 03	4.0	4.0	—

03

Q. No.

1.

$$6x^2 - 7x - 3$$

$$\text{sum of zeroes} = -\frac{(-7)}{6}$$

$$= \frac{7}{6} \checkmark$$

$$\frac{7}{6} \checkmark$$

2.

$$6x^2 - 3$$

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

$$6x^2 = 3$$

$$x^2 = \frac{1}{2}$$

$$x = \pm \sqrt{\frac{1}{2}}$$

$$= \frac{1}{\sqrt{2}}, -\frac{1}{\sqrt{2}} \checkmark$$

$$-\frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}$$

3.

$$x + 3y = 6$$

$$2x - 3y = 12$$

unique solution ✓

4.

$$3 \text{ years ago: } x + y$$

$$\text{Present: } x + y + 6$$

$$5 \text{ years from now: } x + y + 6 + 5 + 5 \\ = x + y + 16 \checkmark$$

$$(x + y + 16) \text{ years} \checkmark$$

42

Q. No.

5.

$$\begin{aligned}
 d &= q_2 - a \\
 &= -6 - (-10) \\
 &= -6 + 10 \\
 &= 4 \quad \checkmark
 \end{aligned}$$

• 4 ✓

6.

$$\text{[BPT]} \frac{AD}{DB} = \frac{AE}{EC}$$

$$\frac{DB + 1}{AD} = \frac{EC + 1}{AE}$$

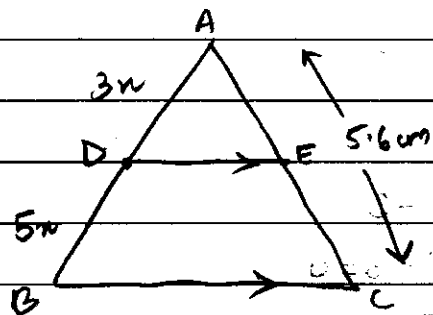
$$\frac{DB + AD}{AD} = \frac{EC + AE}{AE}$$

$$\frac{8x}{3x} = \frac{5.6}{AE}$$

$$\therefore AE = \frac{0.7}{8} \times 3$$

$$= 2.1 \text{ cm} \quad \checkmark$$

• 2.1 cm ✓



$$7. \sin 90^\circ \times \cos 90^\circ$$

$$1 \times 0$$

$$= 0$$

• 0 ✓ ✓

$$8. \sin 56^\circ = \cos 34^\circ$$

$$= \sin 56^\circ - \sin 56^\circ$$

$$= 0 \quad \checkmark$$

• 0 ✓

MARKS	E	M	CM
Pg. 04 & 05	7.0	7.0	

05

Q. No.

9.

$$\tan \theta + \cot \theta = 2$$

$$\frac{\sin \theta}{\cos \theta} + \frac{\cos \theta}{\sin \theta} = 2$$

$$\frac{\sin^2 \theta + \cos^2 \theta}{\sin \theta \cos \theta} = 2$$

$$\frac{1}{\sin \theta \cos \theta} = 2$$

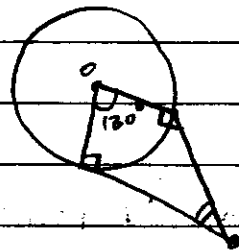
$$\sin \theta \cos \theta = \frac{1}{2}$$

$$\begin{aligned} \tan^2 \theta + \cot^2 \theta &= (\tan \theta + \cot \theta)^2 - 2 \sin \theta \cos \theta \\ &= (2)^2 - 2 \left(\frac{1}{2} \right) \\ &= 4 - 1 \\ &= 3 \end{aligned}$$

$$\begin{aligned} \tan^2 \theta + \cot^2 \theta &= (\tan \theta + \cot \theta)^2 - 2 \times \frac{\sin \theta}{\cos \theta} \times \frac{\cos \theta}{\sin \theta} \\ &= 4 - 2 \\ &= 2 \end{aligned}$$

• 2 ✓

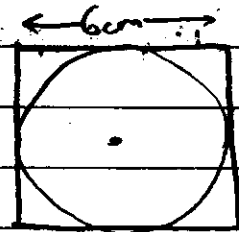
$$\begin{aligned} 10. \text{ Required angle} &= 360^\circ - 180^\circ - 130^\circ \\ &= 180^\circ - 130^\circ \\ &= 50^\circ \end{aligned}$$



• 50° ✓

$$11. r = \frac{\text{side}}{2} = 3 \text{ cm}$$

$$\begin{aligned} \text{Ar}(\odot) &= \pi \times 3^2 \\ &= 9\pi \text{ cm}^2 \end{aligned}$$



• 9 π cm² ✓

Q. No.

12.

$$\pi(R_1^2 + R_2^2) = \pi R^2$$

$$\therefore R_1^2 + R_2^2 = R^2$$

$$\bullet R_1^2 + R_2^2 = R^2 \quad \checkmark$$

$$13. \text{L.S.A (cube)} = 4a^2$$

$$= 4 \times 1.5 \times 1.5$$

$$= 4 \times 2.25$$

$$= 9 \text{ m}^2 \quad \checkmark$$

$$\bullet 9 \text{ m}^2$$

$$14. \text{T.S.A (hemisphere)} = 3\pi r^2$$

$$= 3 \times 22 \times 7 \times 7$$

$$= 3 \times 154$$

$$= 462 \text{ cm}^2 \quad \checkmark$$

$$\bullet 462 \text{ cm}^2$$

$$15. \text{Numbers of cards} = (101-2) + 1$$

$$= 99 + 1$$

$$= 100$$

Cards with perfect square : 4, 9, 16, 25, 36, 49, 64, 81, 100
= 9 cards

$$P(\text{perfect square on card}) = \frac{9}{100} = \frac{1}{11.11} \approx 0.09$$

$$= 0.09 \quad \checkmark$$

$$\bullet 0.09 \quad \checkmark$$

4

MARKS	E	M	CM
Pg. 06 & 07	8.0	8.0	

07

Q. No.

16.

$$\log 10^2$$

$$= 2 \log 10$$

$$= 2$$

01

2 ✓

17.

$$2x + ky = 1$$

$$3x - 5y = 7$$

If no solution then:

$$\frac{2}{3} = \frac{k}{-5} \neq \frac{1}{7}$$

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

$$= \frac{-10}{3}$$

$\therefore$ The value of k is $-\frac{10}{3}$.

18.

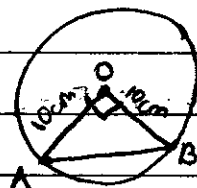
$$AB = \sqrt{100 + 100}$$

$$= \sqrt{2 \times 100}$$

$$= 10\sqrt{2} \text{ cm}$$

01

$\therefore$ The value of AB is $10\sqrt{2} \text{ cm}$.



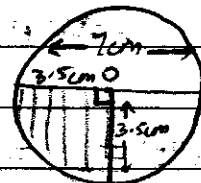
19.

$$\text{Ar}(\text{quadrant}) = \frac{1}{4} \times \pi \times \frac{7}{2} \times \frac{7}{2}$$

$$= \frac{49\pi}{16} \text{ cm}^2$$

01

$\therefore$ The area of the quadrant is $\frac{49\pi}{16} \text{ cm}^2$.



Q. No.

20.

(1,1) (2,1) (3,1) (4,1) (5,1) (6,1)
 (1,2) (2,2) (3,2) (4,2) (5,2) (6,2)
 (1,3) (2,3) (3,3) (4,3) (5,3) (6,3)
 (1,4) (2,4) (3,4) (4,4) (5,4) (6,4)
 (1,5) (2,5) (3,5) (4,5) (5,5) (6,5)
 (1,6) (2,6) (3,6) (4,6) (5,6) (6,6)

$$P(\text{Same number on both dice}) = \frac{6}{36}$$

$$= \frac{1}{6}$$

∴ The probability is $\frac{1}{6}$.

21.

2 112

2 56

2 28

2 14

7 7

1

2 84

2 42

3 21

7 7

1

$$\therefore 112 = 2^4 \times 7$$

$$\therefore 84 = 2^2 \times 3 \times 7$$

$$\therefore \text{The HCF of 112 and 84} = 2^2 \times 7$$

$$= 4 \times 7$$

$$= 28$$

∴ The HCF of 112 and 84 is 28.

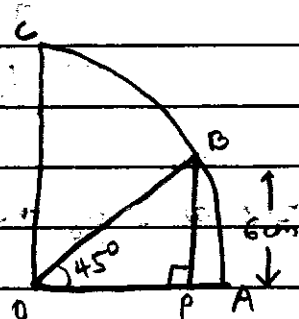
22.

$$\sin 45^\circ = \frac{1}{\sqrt{2}} = \frac{6}{OB}$$

$$\therefore OB = 6\sqrt{2} \text{ cm}$$

∴ The radius is $6\sqrt{2} \text{ cm}$.

$$\tan 45^\circ = 1 = \frac{6}{OP}$$



MARKS	E	M	CM
Pg. 08 & 09	7.0	7.0	

09

Q. No.

1

$$\therefore OP = 6 \text{ cm}$$

$$Ar(\Delta) = \frac{1}{2} \times OP \times BP$$

$$= \frac{1}{2} \times 6 \times 6$$

$$= 18 \text{ cm}^2$$

$$Ar(\text{quadrant}) = 3.14 \times \frac{1}{4} \times (6\sqrt{2})^2$$

$$= 3.14 \times \frac{1}{4} \times 72$$

$$= 56.52 \text{ cm}^2$$

$$\therefore Ar(\text{shaded region}) = 56.52 - 18$$

$$= 38.52 \text{ cm}^2$$

$\therefore$ The area of the shaded region is 38.52 cm^2 .

23. In $\triangle ADE$ and $\triangle ABC$,

$$1) \angle DAE = \angle BAC \text{ [common]}$$

$$2) \angle ADE = \angle ABC \text{ [cor. $\angle$ s, $DE \parallel BC$]}$$

$$3) \therefore \triangle ADE \sim \triangle ABC \text{ [AA criterion]}$$

$$4) \therefore \frac{AD}{AB} = \frac{DE}{BC}$$

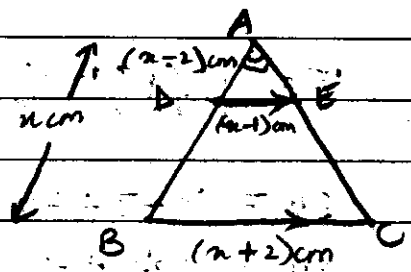
$$5) \frac{x-2}{x} = \frac{x-1}{x+2}$$

$$6) (x+2)(x-2) = x(x-1)$$

$$7) x^2 - 4 = x^2 - x$$

$$8) \therefore x = 4 \text{ cm}$$

$\therefore$ The value of x is 4 cm .



Q. No.

24.

A (5, -2), B(-3, 2)

Point on y-axis has coordinates X(0, y)

$$AX = BX$$

$$AX = \sqrt{25 + (y+2)^2}$$

$$= \sqrt{25 + y^2 + 4y + 4}$$

$$BX = \sqrt{9 + (y-2)^2}$$

$$= \sqrt{9 + y^2 - 4y + 4}$$

$$(\because AX = BX) \therefore AX^2 = BX^2$$

$$25 + y^2 + 4y + 4 = 9 + y^2 - 4y + 4$$

$$\therefore 8y = 9 - 25$$

$$8y = -16$$

$$y = -2$$

$\therefore$ The coordinates are (0, -2).

25.

 $P(1, -3), Q(4, k), R(-9, 7)$

$$15 = \frac{1}{2} \{ 1(k-7) + 4(10) + (-9)(-3-k) \}$$

$$30 = k - 7 + 40 + 27 + 9k$$

$$30 = 10k + 60$$

$$\therefore 10k = -30$$

$$\therefore k = -3$$

$\therefore$ The value of k is -3.

MARKS	E	M	CM
Pg. 10 & 11	60	6.0	

11

Q. No.

25.

A (3,0) B(4,5) C(-1,4) D(-2,-1)

$$\text{diagonal AC} = \sqrt{16 + 16} = \sqrt{2 \times 16} = 4\sqrt{2} \text{ units}$$

$$\begin{aligned} \text{diagonal BD} &= \sqrt{36 + 36} \\ &= \sqrt{36 \times 2} \\ &= 6\sqrt{2} \text{ units} \end{aligned}$$

$$\therefore \text{Ar (rhombus)} = \frac{1}{2} \times d_1 \times d_2$$

$$= \frac{1}{2} \times 4\sqrt{2} \times 6\sqrt{2}$$

$$= 12 \times 2$$

$$= 24 \text{ sq. units}$$

$\therefore$ The area of the rhombus is 24 sq. units

$$26. \sin M = \frac{\sqrt{5}}{3} = \frac{KL}{KM}$$

$$\therefore KL = \sqrt{5}k$$

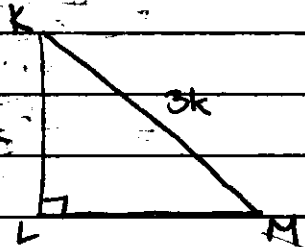
$$KM = 3k$$

$$\begin{aligned} LM &= \sqrt{9k^2 - 5k^2} \\ &= \sqrt{4k^2} \end{aligned}$$

$$\therefore LM = 2k$$

$$\cot K = \frac{KL}{LM} = \frac{\sqrt{5}k}{2k} = \frac{\sqrt{5}}{2}$$

$\therefore$ The measure of LM is 2k and $\cot K$ is $\frac{\sqrt{5}}{2}$.



Q. No.

26.

$$\frac{1}{3} \csc^2 30^\circ - \frac{5}{6} \sin^2 45^\circ$$

$$= \frac{1}{3} \times \left(\frac{2}{\sqrt{3}}\right)^2 - \frac{5}{6} \times \left(\frac{1}{\sqrt{2}}\right)^2$$

$$= \frac{1}{3} \times \frac{4}{3} - \frac{5}{6} \times \frac{1}{2} \checkmark$$

$$= \frac{4}{9} - \frac{5}{12}$$

$$= \frac{16 - 15}{36}$$

$$= \frac{1}{36} \checkmark$$

27.

$$\frac{\tan \theta - \cot \theta}{\sin \theta \cos \theta} = \sec^2 \theta - \operatorname{cosec}^2 \theta$$

$$\text{LHS} = \frac{\tan \theta - \cot \theta}{\sin \theta \cos \theta}$$

$$= \frac{\frac{\sin \theta}{\cos \theta} - \frac{\cos \theta}{\sin \theta}}{\sin \theta \cos \theta}$$

$$= \frac{\frac{\sin^2 \theta - \cos^2 \theta}{\sin \theta \cos \theta}}{\sin \theta \cos \theta}$$

$$= \frac{\sin^2 \theta - \cos^2 \theta}{\sin \theta \cos \theta} \times \frac{1}{\sin \theta \cos \theta} \checkmark$$

$$= \frac{\sin^2 \theta}{\sin^2 \theta \cos^2 \theta} - \frac{\cos^2 \theta}{\sin^2 \theta \cos^2 \theta}$$

$$= \frac{1}{\cos^2 \theta} - \frac{1}{\sin^2 \theta} \checkmark$$

$$= \sec^2 \theta - \operatorname{cosec}^2 \theta \checkmark$$

$$\text{RHS} = \sec^2 \theta - \operatorname{cosec}^2 \theta$$

$$\therefore \text{LHS} = \text{RHS}$$

hence proved

Q. No.

-

$$= 120 + (1 \times 5)$$

$$= 120 + 5 \quad \checkmark$$

$$= 125 \quad \checkmark$$

✓ 02

∴ The mode income is ₹ 125.

Question: Find the largest number which divides 120 and 125.

30. If $\sqrt{3}$ and $-\sqrt{3}$ are zeroes, $\therefore x = \sqrt{3}; x = -\sqrt{3}$

$$\therefore x - \sqrt{3} = 0; x + \sqrt{3} = 0 \text{ are factors}$$

$$\therefore (x - \sqrt{3})(x + \sqrt{3}) = 0 \text{ is a factor}$$

$$\therefore (x)^2 - 3 = 0 \text{ is a factor.}$$

$$x^2 - 3 = 0 \quad \checkmark$$

$$x^2 - 3x - 4$$

$$x^2 - 3 \quad x^4 - 3x^3 - 7x^2 + 9x + 12$$

$$(-) x^4 \quad -3x^2 \quad \checkmark$$

$$-3x^3 - 4x^2 + 9x + 12$$

$$(-) -3x^3 \quad +9x \quad \checkmark$$

$$-4x^2 + 12$$

$$(-) -4x^2 + 12 \quad \checkmark$$

$$0 \quad \checkmark$$

$$\therefore x^2 - 3x - 4 = 0 \text{ is a factor.}$$

$$x^2 - 3x - 4 = 0$$

✓ 03

$$D = 9 + 16$$

$$= 25 \quad \checkmark$$

$$x = \frac{3 \pm 5}{2} \quad \checkmark$$

$$= 4; -1 \quad \checkmark$$

∴ The zeroes of the polynomial are $\sqrt{3}, -\sqrt{3}, -1$ and 4 .

MARKS	E	M	CM
Pg. 14 & 15	8.0	8.0	

15

Q. No.

31.

$$3x + 2y = 24 \rightarrow \text{eq}^n \textcircled{1}$$

$$20x - 11y = 47 \rightarrow \text{eq}^n \textcircled{2}$$

$$(\text{from eq}^n \textcircled{1}) \quad \cancel{3x + 2y} \quad 33x + 44y = 264 \quad \checkmark$$

$$(\text{from eq}^n \textcircled{2}) \quad \rightarrow \quad \begin{array}{r} 80x - 44y = 188 \\ (+) \quad 33x + 44y = 264 \\ \hline 113x = 452 \end{array} \quad \checkmark$$

$$113x = 452$$

$$\therefore x = 4$$

$$\text{Put } x = 4 \text{ in eq}^n \textcircled{1}$$

$$3(4) + 4y = 24$$

$$y = \frac{24 - 12}{4}$$

$$= \frac{12}{4}$$

$$= 3$$

$$\therefore x = 4, y = 3 \quad \checkmark$$

$\therefore$ the solution is $x = 4$ and $y = 3$.

$$21. \quad 2x + y = 11 \rightarrow \text{eq}^n \textcircled{1}$$

$$3x + 4y = 9 \rightarrow \text{eq}^n \textcircled{2}$$

$$(\text{from eq}^n \textcircled{1}) \quad 2x + y - 11 = 0$$

$$(\text{from eq}^n \textcircled{2}) \quad 3x + 4y - 9 = 0$$

$$a_1 = 2, b_1 = 1, c_1 = -11$$

$$a_2 = 3, b_2 = 4, c_2 = -9$$

$$\frac{x}{-9 + 44} = \frac{y}{-32 + 18} = \frac{1}{8 - 3}$$

$$\frac{x}{35} = \frac{y}{-14} = \frac{1}{5}$$

Q. No.

-

$$\frac{x}{35} = \frac{1}{5}$$

$$x = \frac{35}{5}$$

$$\therefore x = 7$$

$$\frac{y}{15} = \frac{1}{5}$$

$$\therefore y = \frac{15}{5}$$

$$\therefore y = 3$$

$\therefore$ The solution is $x=7, y=3$.

32.

$$4x^2 - 5x - 21 = 0$$

$$4x^2 + 7x - 12x - 21 = 0$$

$$4x^2 - 12x + 7x - 21 = 0$$

$$4x(x-3) + 7(x-3) = 0$$

$$(4x+7)(x-3) = 0$$

$$(4x+7) = 0, (x-3) = 0$$

$$\therefore x = -\frac{7}{4}; x = 3$$

$\therefore$ The roots are $-\frac{7}{4}$ and 3.

33.

$$2x^2 - 9x + 10 = 0$$

$$x^2 - \frac{9x}{2} + \left(\frac{9}{4}\right)^2 = \left(\frac{9}{4}\right)^2 - \frac{10 \cdot 5}{2}$$

$$\left(x - \frac{9}{4}\right)^2 = \frac{81}{16} - 5$$

$$\left(x - \frac{9}{4}\right)^2 = \frac{81 - 80}{16} = \frac{1}{16}$$

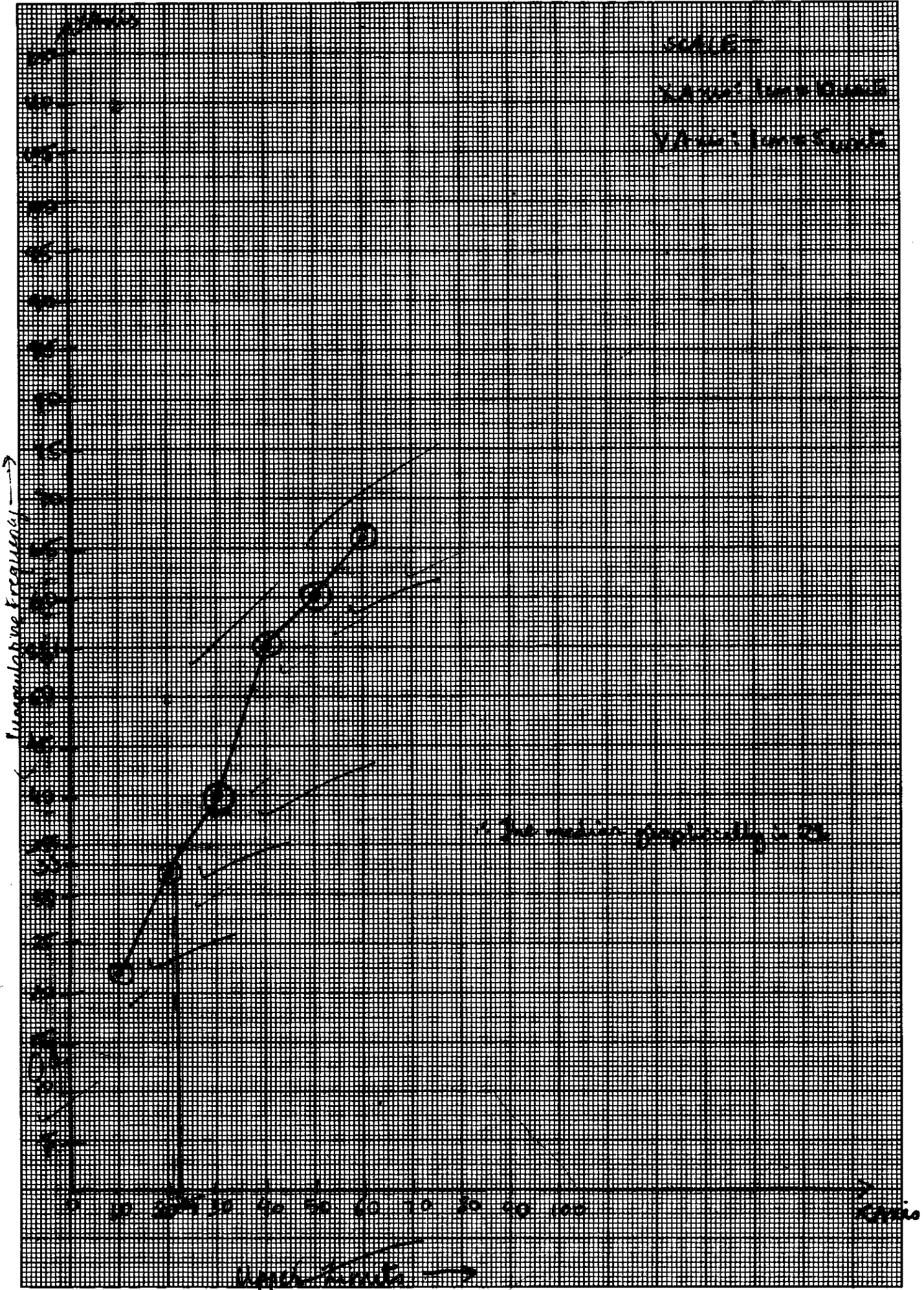
$$\therefore x - \frac{9}{4} = \pm \frac{1}{4}$$

MARKS	E	M	CM
Pg. 16 & 17	40	7.0	

17

Q. No. 42

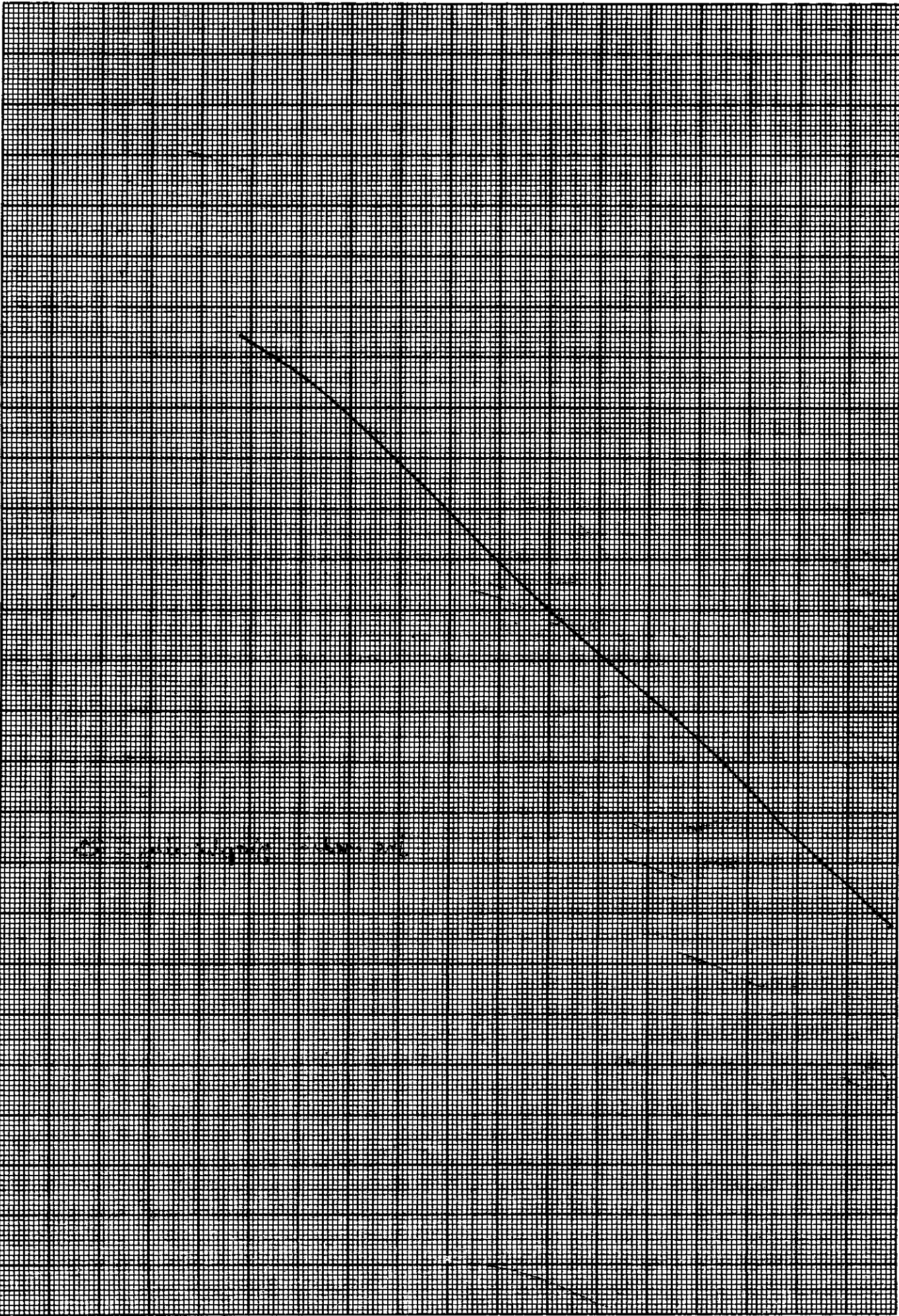
Centimeters



MARKS	E	M	CM
Pg. 18	—	0.0	

Q. No.

Centimeters



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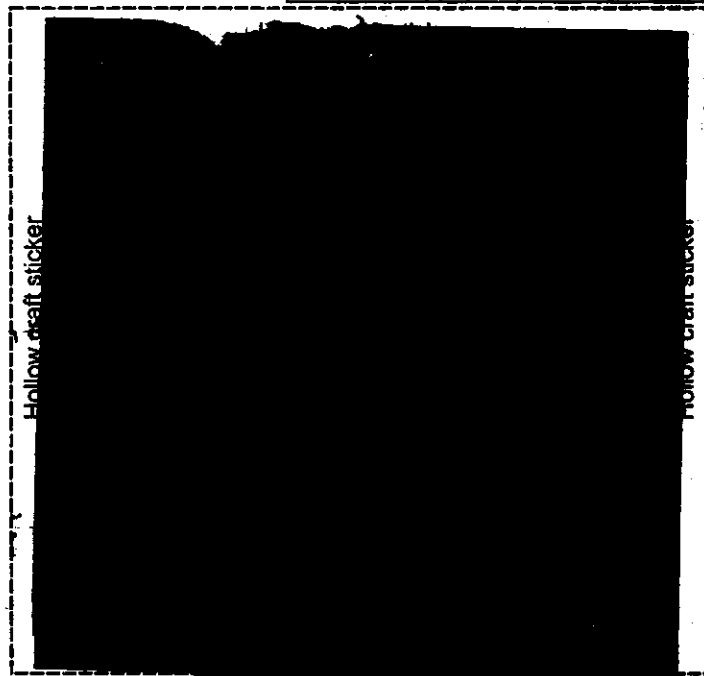


SSC/HSSC Examination March/April/June 20

Supplement Answer Book

Subject Code	2021
Date	11/3/2025

MARKS	E	M	CM
Pg. 1 to 4	18.0		



Q. No.

CONTD
32

01

$$m = \pm \frac{1}{4} + \frac{9}{4}$$

$$\therefore m = 2; \frac{5}{2}$$

~~The roots are 2 and 5/2~~

$$33. S_{14} = 7 \cdot [10 + a_{14}]$$

$$\frac{215}{7} \cdot 10 = a_{14}$$

$$\therefore a_{14} = 205$$

$$205 = 10 + 13(d)$$

$$195 = d$$

$$\therefore d = 15$$

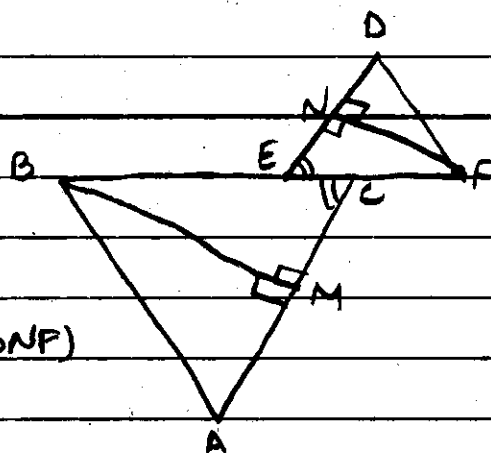
$$\begin{aligned} \therefore a_{25} &= 10 + 24(15) \\ &= 10 + 240 + 120 \\ &= 370 \end{aligned}$$

$\therefore$ The 25th term of the AP is 370.

Given: $BE = EC$

$$CF = 2EC$$

$DE \parallel CA$, $DE = \frac{1}{2}CA$



To prove: $Ar(\triangle AMB) = 4 \times Ar(\triangle DNF)$

Proof:

- 1) $BC = BE + EC = 2EC = 2$ [given]
 $EF = EC + CF = 3EC = 3$
- 2) $\frac{CA}{DE} = \frac{2}{1}$ [given]
- 3) $\angle BCA = \angle DEF$ [$\because DE \parallel CA$... alt. int. $\angle$ s]
- 4) $\therefore \triangle BCA \sim \triangle FED$ [SAS criterion] (from 1, 2, 3)
- 5) $\therefore \angle CAB = \angle EDF$ [$\because$ CPST]
- 6) $\angle BMA = \angle FND$ [$\because 90^\circ$]
- 7) $\therefore$ (from 5 and 6) $\triangle AMB \sim \triangle DNF$ [$\because$ AA criterion]
- 8) $\therefore \frac{Ar(\triangle AMB)}{Ar(\triangle DNF)} = \left(\frac{AM}{DN}\right)^2 = \left(\frac{MB}{NF}\right)^2 = \left(\frac{AB}{DF}\right)^2$
- 9) [$\because \triangle BCA \sim \triangle FED$] $\therefore \frac{AB}{DF} = \frac{CA}{ED}$ [$\because$ CPST] (from 4)
- 10) $\therefore \frac{Ar(\triangle AMB)}{Ar(\triangle DNF)} = \left(\frac{CA}{ED}\right)^2 = \left(\frac{2}{1}\right)^2 = 4$ [from 8 and 9]
- $\therefore Ar(\triangle AMB) = 4 \times Ar(\triangle DNF)$

Hence proved.

35. 34.

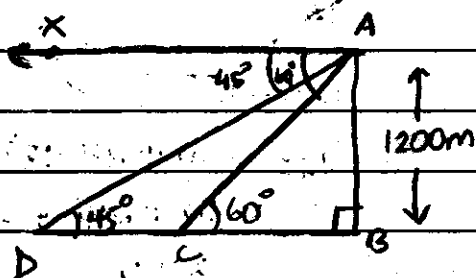
$$\angle ACB = \angle CA \times [\because \parallel] = 60^\circ$$

$$\angle ADC = \angle DA \times [\because \parallel] = 45^\circ$$

$$\tan 60^\circ = \sqrt{3} = \frac{1200}{BC}$$

$$\therefore BC = \frac{1200}{\sqrt{3}} \text{ m}$$

$$\tan 45^\circ = 1 = \frac{1200}{BC + CD}$$



Q. No.

—

$$BC + CD = 1200$$

$$1200 + CD = 1200\sqrt{3}$$

$$\sqrt{3}$$

$$\therefore CD = 1200 - \frac{1200}{\sqrt{3}}$$

$$= 1200 - \frac{1200\sqrt{3}}{3}$$

$$= \frac{3600 - 1200\sqrt{3}}{3}$$

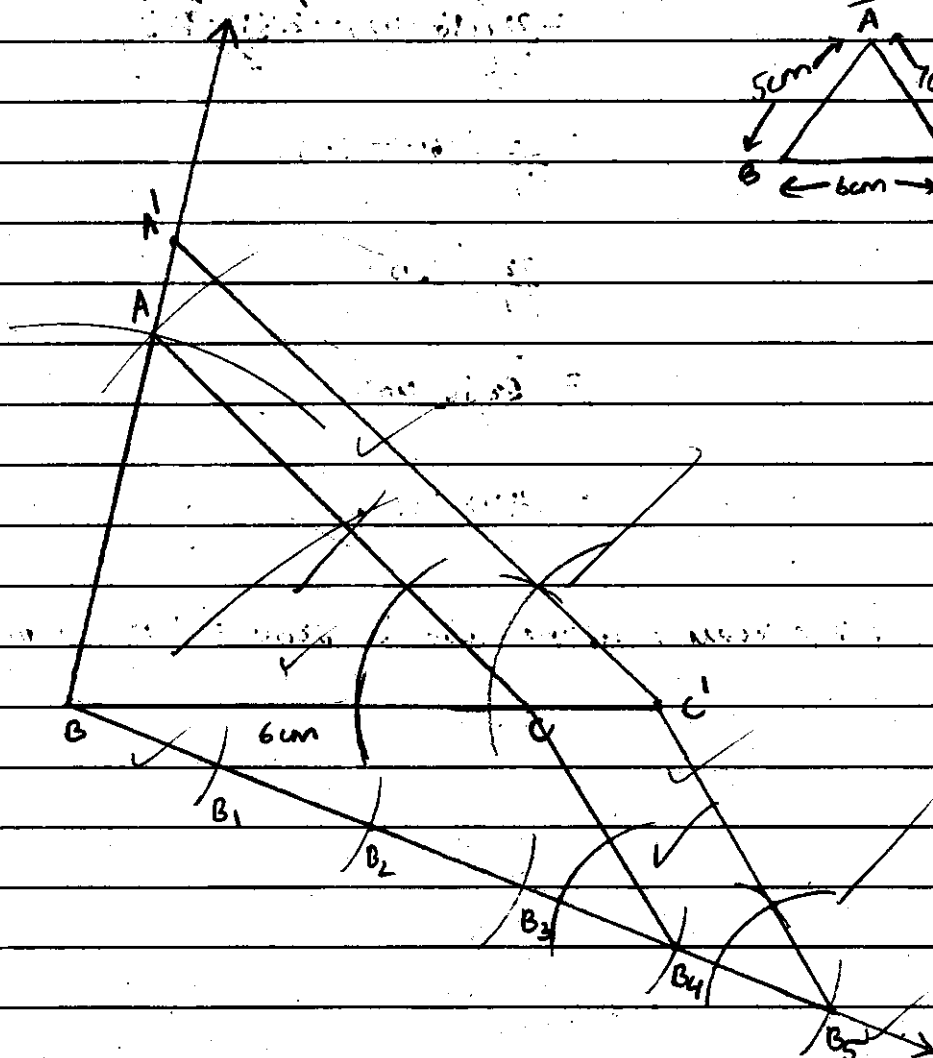
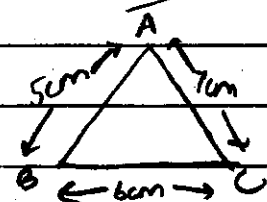
$$= \frac{400}{3} (3 - \sqrt{3})$$

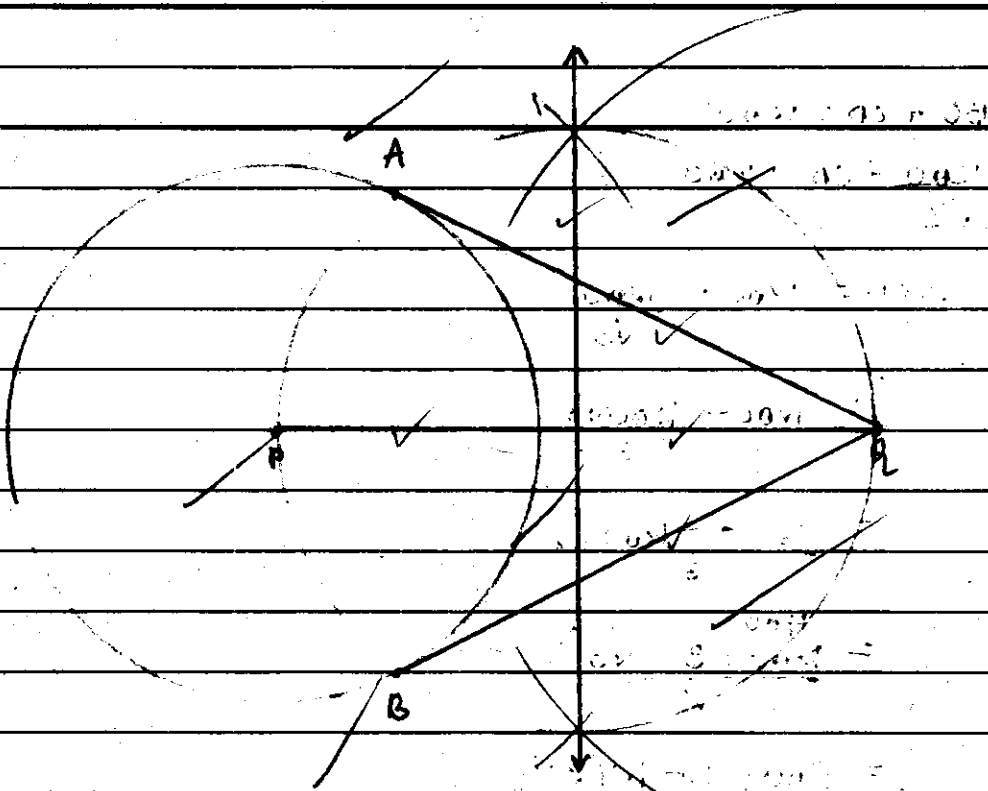
$$= 400 (3 - 1.732)$$

$$= 400 (1.268)$$

$$= 507.2 \text{ m}$$

$\therefore$ The distance between the two ships was 507.2m.





03

$$\text{tangent } QA = \text{tangent } QB = 7.1 \text{ cm}$$

$$28. \text{ Vol (remaining solid)} = \text{Vol (cylinder)} - 2(\text{Vol (cone)})$$

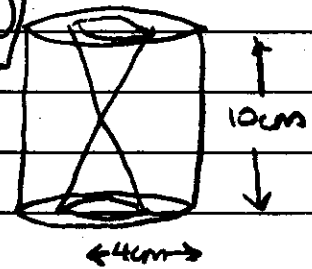
$$= \frac{22}{7} (16 \times 10) - (2 \times \frac{1}{3} \times 4 \times 5)$$

$$= \frac{22}{7} (160 - 30)$$

$$= \frac{22}{7} (130)$$

$$= 2860 \text{ cm}^3$$

$$= 408.57 \text{ cm}^3$$



03

$\therefore$ The volume of the solid is $\frac{2860}{7} = 408.57 \text{ cm}^3$.

Goa Board of Secondary and
Higher Secondary Education
Alto - Betim, Goa



SSC/HSSC Examination March/April/June 20

Supplement Answer Book

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Hollow craft sticker

Q. No.

39.

01

$$\frac{(5.96)^2 \times 29}{\sqrt{21.56}}$$

$$\text{Let } n = \frac{(5.96)^2 \times 29}{\sqrt{21.56}}$$

Taking logs on LHS and RHS:

$$\log n = 2 \log 5.96 + \log 29 - \frac{1}{2} \log 21.56$$

$$= 2 \times 0.7752 + 1.4624 - \frac{1}{2} \times 1.3336$$

$$= 1.5504 + 1.4624 - 0.6668$$

$$= 3.0128 - 0.6668$$

$$= 2.3460$$

$$n = \text{antilog } 2.3460$$

$$= 2.218 \times 10^2$$

$$= 221.8$$

40.

Let the initial no of students in class A be x and B be y .

$$x - 5 = y + 5$$

$$\therefore x - y = 10 \rightarrow \text{eq}^n (1)$$

$$x + 10 = 2(y - 10)$$

$$x + 10 = 2y - 20$$

$$\therefore x - 2y = -30 \rightarrow \text{eq}^n (2)$$



$$x - y = 10 \rightarrow \text{eq}^n \textcircled{1}$$

$$x - 2y = -30 \rightarrow \text{eq}^n \textcircled{2}$$

$$(\text{from eq}^n \textcircled{1}) \quad 2x - 2y = 20$$

$$\text{or (eq}^n \textcircled{2}) \quad x - 2y = -30$$

$$x = 50$$

$$\text{Put } x = 50 \text{ in eq}^n \textcircled{1}$$

$$y = x - 10$$

$$= 40$$

$$\therefore x = 50; y = 40$$

04 ✓ $\therefore$ The initial number of students in Classroom A was 50 and that in Classroom B was 40.

42.	Rainfall (in cm) C.I	No. of days (f)	C.f
	0 - 10	22	less than 10 : 22
	10 - 20	10	less than 20 : 32
	20 - 30	8	less than 30 : 40
	30 - 40	15	less than 40 : 55
	40 - 50	5	less than 50 : 60
	50 - 60	6	less than 60 : 66

$\therefore$ The median graphically is 21.

Q. No.

41.

Let the original cost of each pen be ₹ n .

∴ the original total no. of pens is n .

∴ the original price of all pens = n^2 .

$$(2n)(n-3) = 432 + n^2$$

$$2n^2 - 6n = 432 + n^2$$

$$\frac{1}{2}n^2 - 6n = 432 + n^2$$

$$n^2 - 12n = 864 + 2n^2$$

$$n^2 + 12n + 216 = 0$$

$$D = 144 -$$

$$(2n)(n - [\frac{n-3}{4}]) = 432 + n^2$$

$$(2n)(n - \frac{n-3}{4} + 3) = 432 + n^2$$

$$2n^2 - \frac{2n^2}{4} + 6n = 432 + n^2$$

$$4n^2 - n^2 + 12n = 864 + 2n^2$$

$$n^2 + 12n - 864 = 0$$

$$D = 144 + 3456$$

$$= 1600$$

$$n = \frac{-12 \pm 40}{2}$$

$$n = \frac{-12 \pm 40}{2}$$

$n = -26$ is discarded since it does not satisfy the condition of the given equation.

$$\therefore n = 14$$

04

Q. No.

—

$$D = 144 + 3456$$

$$= 3600$$

$$x = \frac{-12 \pm 60}{2}$$

$$= \frac{-12 \pm 60}{2}$$

$$x = -36, 24$$

$x = -36$ is discarded, since it does not satisfy the condition of the equation.

$$x = 24$$

$\therefore$ The original cost for each pen is ₹24.