

Marking Scheme
Class X Session 2024-25

MATHEMATICS STANDARD (Code No.041) (FOR VISUALLY IMPAIRED)

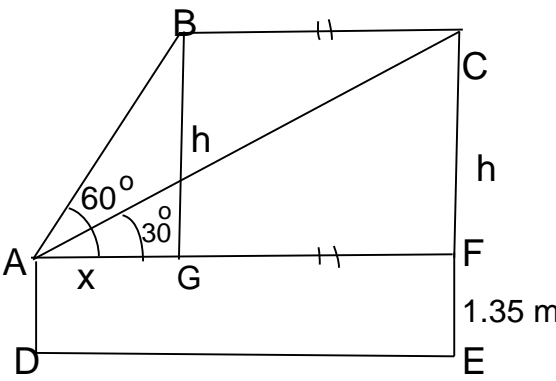
TIME: 3 hours

MAX.MARKS: 80

Q.No.	Section A	Marks
1.	D) -6,6	1
2.	B) -5	1
3.	D) From a point inside a circle only two tangents can be drawn.	1
4.	A) 7	1
5.	B) 20 cm	1
6.	A) $\frac{11}{9}$	1
7.	C) 2	1
8.	B) $8x^2 - 20$	1
9.	C) 30	1
10.	B) 12 cm	1
11.	A) Irrational and distinct	1
12.	C) $\frac{3}{\sqrt{3}}$	1
13.	B) $\frac{594}{7}$	1
14.	B) $\frac{3}{8}$	1
15.	B) (-4, 0)	1
16.	A) median	1
17.	C) (3,0)	1
18.	D) $\frac{3}{26}$	1
19.	B)	1
20.	D)	1

Section B		
21. (A)	$480 = 2^5 \times 3 \times 5$ $720 = 2^4 \times 3^2 \times 5$ LCM (480,720) = $2^5 \times 3^2 \times 5 = 1440$ HCF (480, 720) = $2^4 \times 3 \times 5 = 240$	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$
	OR	
(B)	$85 = 5 \times 17, 238 = 2 \times 7 \times 17$ HCF(85, 238) = 17 $17 = 85x - 238y$ $m = 3$	1 1
22.(A)	Total number of possible outcomes = $6 \times 6 = 36$ For a product to be odd, both the numbers should be odd. Favourable outcomes are (7,7) (7,9) (7,11) (9,7) (9,9) (9, 11) (11,7) (11,9) (11,11) no. of favourable outcomes = 9 P (product is odd) = $\frac{9}{36}$ OR $\frac{1}{4}$	$\frac{1}{2}$ 1 $\frac{1}{2}$
	OR	
(B)	Total number of three-digit numbers = 900. Numbers with hundredth digit 8 & and unit's digit 5 are 805,815, 825,.....,895 Number of favourable outcomes = 10 P(selecting one such number) = $\frac{10}{900}$ OR $\frac{1}{90}$	$\frac{1}{2}$ 1 $\frac{1}{2}$
23.	$\frac{2 \left(\frac{\sqrt{3}}{2}\right)^2 - \left(\frac{1}{\sqrt{3}}\right)^2}{(\sqrt{2})^2}$ $= \frac{7}{12}$	$1 \frac{1}{2}$ $\frac{1}{2}$
24	Let the required point be (x,0) $\sqrt{(8-x)^2 + 25} = \sqrt{41}$ $\Rightarrow (8-x)^2 = 16$ $\Rightarrow 8-x = \pm 4$ $\Rightarrow x = 4, 12$ Two points on the x-axis are (4,0) & (12,0).	$\frac{1}{2}$ $\frac{1}{2}$ 1

27.	<p>Let the numbers be x and $18-x$.</p> $\frac{1}{x} + \frac{1}{18-x} = \frac{9}{40}$ $\Rightarrow 18 \times 40 = 9x(18-x)$ $\Rightarrow x^2 - 18x + 80 = 0$ $\Rightarrow (x-10)(x-8) = 0$ $\Rightarrow x = 10, 8.$ $\Rightarrow 18-x = 8, 10$ <p>Hence two numbers are 8 and 10.</p>	<p>$\frac{1}{2}$</p> <p>1</p> <p>1</p> <p>$\frac{1}{2}$</p>
28.	<p>From given polynomial $\alpha + \beta = \frac{5}{6}, \alpha\beta = \frac{1}{6}$</p> $\alpha^2 + \beta^2 = \left(\frac{5}{6}\right)^2 - 2 \times \frac{1}{6} = \frac{13}{36}$ <p>And $\alpha^2 \beta^2 = \left(\frac{1}{6}\right)^2 = \frac{1}{36}$</p> $\Rightarrow x^2 - \frac{13}{36}x + \frac{1}{36}$ <p>\Rightarrow Required polynomial is $36x^2 - 13x + 1$</p>	<p>1</p> <p>1</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p>
29.	$(\cos\theta + \sin\theta)^2 + (\cos\theta - \sin\theta)^2 = 2(\cos^2\theta + \sin^2\theta) = 2$ $\Rightarrow (1)^2 + (\cos\theta - \sin\theta)^2 = 2$ $\Rightarrow (\cos\theta - \sin\theta)^2 = 1$ $\Rightarrow \cos\theta - \sin\theta = \pm 1$	<p>$1 \frac{1}{2}$</p> <p>1</p> <p>$\frac{1}{2}$</p>
30.(A)	<p>Angle described by minute hand in 5 min = 30°.</p> <p>Length of minute hand = 18 cm = r.</p> <p>Area swept by minute hand in 35 minutes</p> $= \left(\frac{22}{7} \times 18 \times 18 \times \frac{30}{360}\right) \times 7$ $= 594 \text{ cm}^2.$ <p style="text-align: center;">OR</p>	<p>2</p> <p>1</p>
(B)	<p>Angle subtended by minor arc = $360^\circ - 300^\circ = 60^\circ$</p> <p>Area of minor arc = $\frac{60^\circ}{360^\circ} \times 3.14 \times 6 \times 6$</p> $= 18.84 \text{ cm}^2$	<p>1</p> <p>2</p>
31.	<p>Let $\sqrt{3}$ be a rational number.</p> <p>$\therefore \sqrt{3} = \frac{p}{q}$, where $q \neq 0$ and let p & q be co-prime.</p> $3q^2 = p^2 \Rightarrow p^2 \text{ is divisible by } 3 \Rightarrow p \text{ is divisible by } 3 \text{ ----- (i)}$ $\Rightarrow p = 3a, \text{ where 'a' is some integer}$ $9a^2 = 3q^2 \Rightarrow q^2 = 3a^2 \Rightarrow q^2 \text{ is divisible by } 3 \Rightarrow q \text{ is divisible by } 3 \text{ ----- (ii)}$	<p>$\frac{1}{2}$</p> <p>1</p> <p>1</p>

	<p> $AB=AC$ $AB-AP=AC-AP$ $AB-AP=AC-AQ$ (as $AP=AQ$) $\Rightarrow BP=CQ$ $\Rightarrow BR=CR$ (as $CQ=CR$) Hence, BC is bisected at the point of contact. </p>	<p> $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ </p>
<p>34.</p>	 <p> Let A be the eye level & B, C are positions of balloon Distance covered by balloon in 12 sec = $3 \times 12 = 36$ m $BC = GF = 36$ m </p> <p> $\tan 60^\circ = \sqrt{3} = \frac{h}{x}$ $\Rightarrow h = x \sqrt{3}$ (i) </p> <p> $\tan 30^\circ = \frac{1}{\sqrt{3}} = \frac{h}{x+36}$ $\Rightarrow h = \frac{x+36}{\sqrt{3}}$ (ii) </p> <p> Solving (i) and (ii) $h = 18\sqrt{3} = 31.14$ m Height of balloon from ground = $1.35 + 31.14 = 32.49$ m </p>	<p> Correct figure 1 mark </p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>

35.

Class	x	f	$u = \frac{x-102.5}{5}$	fu	cf
85-90	87.5	15	-3	-45	15
90-95	92.5	22	-2	-44	37
95-100	97.5	20	-1	-20	57
100-105	102.5	18	0	0	75
105-110	107.5	20	1	20	95
110-115	112.5	25	2	50	120
		$\Sigma f = 120$		$\Sigma fu = -39$	

$$\text{Mean} = \bar{x} = 102.5 - 5 \times \frac{39}{120}$$

$$= 100.875$$

Median class is 100-105

$$\text{Median} = 100 + \frac{5}{18} (60-57) = 100.83$$

OR

Monthly Expenditure	f_i	x_i	fix_i
1000-1500	24	1250	30,000
1500-2000	40	1750	70,000
2000-2500	33	2250	74,250
2500-3000	X=28	2750	77,000
3000-3500	30	3250	97,500
3500-4000	22	3750	82,500
4000-4500	16	4250	68,000
4500-5000	7	4750	33,250

$$172+x=200$$

$$X=28$$

$$\text{Mean} = \frac{532500}{200}$$

$$= 2662.5$$

Correct table
2marks

1
½

½

1

Correct table
2marks

1

1

1

Section E

36.(i)

First term a = 3, A.P is 3, 6, 9, 12.....,24
common difference d = 6-3 = 3

½
½

(ii)

$$34 = 3 + (n-1)3$$

(iii)(A)	<p>$\Rightarrow n = 34/3 = 11\frac{1}{3}$ which is not a positive integer. Therefore, it is not possible to have 34 jars in a layer if the given pattern is continued.</p> $S_n = \frac{n}{2} [2 \times 3 + (n-1) 3]$ $= \frac{n}{2} [6 + 3n-3]$ $= \frac{n}{2} [3+3n]$ $= 3 \frac{n}{2} [1+n]$ $s_8 = 3 \times \frac{8}{2} (1+8)$ $= 108$ <p style="text-align: center;">OR</p>	<p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>1</p> <p>$\frac{1}{2}$</p>
37. (i)	<p>$\frac{h_1}{20} = \frac{50}{10}$ (where h_1=height of tower)</p> <p>height of tower, $h_1 = 100\text{m}$</p>	<p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p>
(ii)	<p>$\frac{h_2}{20} = \frac{20}{10}$ (where h_2=height of student's house)</p> <p>height of student's house, $h_2 = 40\text{m}$</p>	<p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p>
(iii) A)	<p>$\frac{l_1}{12} = \frac{100}{20}$ (where l_1 = length of the shadow of the tower)</p> <p>length of the shadow of the tower, $l_1 = 60\text{m}$</p> <p style="text-align: center;">OR</p>	<p>1</p> <p>1</p>
(iii) B)	<p>$\frac{l_2}{40} = \frac{40}{100}$ (where l_2 = length of the shadow of Student's house)</p> <p>length of the shadow of Student's house, $l_2 = 16\text{m}$</p>	<p>1</p> <p>1</p>
38. (i)	<p>$l = \sqrt{r^2 + h^2}$</p> $= \sqrt{(1.5)^2 + (2)^2}$ $= \sqrt{2.25 + 4}$ $= \sqrt{6.25}$ $= 2.5 \text{ m}$	<p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p>

(ii)	CSA of cone = $\pi r l$ $= \frac{22}{7} \times 1.5 \times 2.5$ $= 11.78 \text{ m}^2$	$\frac{1}{2}$ $\frac{1}{2}$
(iii) (A)	CSA of cylinder = $2\pi r h$ $= 2 \times \frac{22}{7} \times 1.5 \times 7$ $= 66 \text{ m}^2$ Cost of metal sheet used = 66×2000 $= ₹1,32,000$	 1 1
(iii) (B)	<p style="text-align: center;">OR</p> Volume of cylinder = $\pi r^2 h$ $= \frac{22}{7} \times (1.5)^2 \times 7$ $= 49.5 \text{ m}^3$ Volume of cone = $\frac{1}{3} \pi r^2 h$ $= \frac{1}{3} \times \frac{22}{7} \times (1.5)^2 \times 2$ $= 4.71 \text{ m}^3$ Total capacity = $49.5 + 4.71 = 54.21 \text{ m}^3$	 $\frac{1}{2}$ 1 $\frac{1}{2}$