	KENDRIYA VIDYALAYA SANGATHAN **MUMBAI REGION** **I-PREBOARD EXAMINATION-(2025-26)** **Class-10** **MATHEMATICS (STANDARD)** **MARKING SCHEME** **Maximum Marks: 80** **Time: 3 hours**	
	SECTION A	1
1	(b) 2:1	1
2	(b) 2/3	1
3	(d) 6	1
4	(b) 8	1
5	(c) 3	1
6	(c) 8 units	1
7	(a) (3,-10)	1
8	(c) 3	1
9	(b) 1	1
10	(b) $75\sqrt{3}$	1
11	(a)90°	1
12	(c) $9\ \pi\ cm^2$	1
13	(c) 125°	1
14	(a) $R_1{}^2 + R_2{}^2 = R^2$	1
15	(a) 3 cm	1
16	(c) 2/7	1
17	(d) 5/6	1
18	(d) 12/13	1
19	(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).	1
20	(d) Assertion (A) is false but reason (R) is true.	1
	SECTION B	
21	404 = 2 × 2 × 101 96 = 2 × 2 × 2 × 2 × 2 × 3 Common factor = 2 × 2 = 4 ∴ HCF = 4 LCM of 404 and 96 = 2 × 2 × 101 × 2 × 2 × 2 × 3 = 9696 Verification: HCF × LCM = 4 × 9696 = 38784 Product of two numbers = 404 × 96 = 38784 ∴ HCF × LCM = Product of two numbers	1 1 1
22	Sin 60=$\sqrt{3}/2$ and simplification For correct answer $15\sqrt{3}$m **OR** For Correct Values For correct simplification and correct answer =55/6=9(1/6)	1 1 1 1

23	Given/TPT Correct proof/similar criteria	½ 1½
24	Given/TPT/Construction Correct proof	1 1
25	Correct Formula /Identification of sector angle and radius. Simplification and correct Area of the shaded portion that horse can graze = $616m^2$ OR Correct Formula /Identification of sector angle and radius. Simplification and correct Area=$51.31cm^2$	1 1 1 1
	SECTION C	
26	Let us assume, to the contrary, that $\sqrt{5}$ is rational. So, we can find integers a and b such that $\sqrt{5} = \frac{a}{b}$ where a and b are coprime. So, b $\sqrt{5}$ = a. Squaring both sides, we get $5b^2 = a^2$. Therefore, 5 divides a^2 and so 5 divides a. So, we can write a = 5c for some integer c. Substituting for a, we get $5b^2 = 25c^2$, that is, $b^2 = 5c^2$. This means that 5divides b^2, and so 5 divides b Therefore, a and b have at least 5 as a common factor. But this contradicts the fact that a and b have no common factors other than 1. This contradiction has arisen because of our incorrect assumption that $\sqrt{5}$ is rational. So, we conclude that $\sqrt{5}$ is irrational.	½ ½ ½ ½ ½ ½
27	For correct graph and point of intersection (1,0),(2,2) (3,0) the solution is x=2, y=2 Area=2 sq. units	2 ½ ½
28	Finding s =21 using area. S=[(x+6)+(x+8)+(6+8)]/2 21=(2x+28)/2 x=7 AB=7+6=13cm AC=7+8=15cm **OR** Tangents drawn to a circle from an external point are equal. So, AP = AS, PB = BQ, CR = CQ, DR = DS On adding the above equations, (AP+PB)+ (CR+RD) = (AS+BQ)+ (CQ+DS) $\Rightarrow$AB+CD = AD+BC	½ ½ ½ ½ ½ ½ 1½ 1 ½
29	$p(x) = 2x^2 – x – 6$ $= 2x^2 – 4x + 3x – 6$ $= 2x (x – 2) + 3 (x – 2)$ $= (x – 2) (2x + 3)$ Zeroes are: $x – 2 = 0$ or $2x + 3 = 0$	½ ½ ½

	$x = 2$ or $x = -32$ Correct Verification: $a = 2, b = -1, c = -6$	½ ½ ½
30	For correct expansion with proper use of algebraic identity For correct use of trigonometric identities Correct Result **OR** L.H.S. = $x^2 - y^2$ $= (p \sec\theta + q \tan\theta)^2 - (p \tan\theta + q \sec\theta)^2$ $= p^2 \sec\theta + q^2 \tan^2\theta + 2pq \sec^2 \tan^2 -(p^2 \tan^2\theta + q^2 \sec^2\theta + 2pq \sec\theta \tan\theta)$ $= p^2 \sec\theta + 2 \tan^2\theta + 2pq \sec\theta \tan\theta - p^2 \tan^2\theta - q^2 \sec\theta - 2pq \sec\theta \tan\theta$ $= p^2(\sec^2\theta - \tan^2\theta) - q^2(\sec?^2\theta - \tan^2\theta) =$ $= p^2 - q^2$ …[$\sec^2\theta - \tan^2\theta = 1$ = R.H.S.	1 1 1 ½ ½ ½ ½ ½ ½
31	∵ Maximum frequency = 12 ∴ Modal class = 40 – 60 Now, $l = 40, f_0 = 10, f_1 = 12, f_2 = 6, h = 20$ $\text{Mode} = l + \left(\frac{f_1 - f_0}{2f_1 - f_0 - f_2}\right) \times h = 40 + \frac{12-10}{2\times12-10-6} \times 20 = 40 + \frac{2}{8} \times 20 = 45$	 ½ ½ ½+½ ½+½
	SECTION D	
32	Correct given, figure and construction Correct Proof For the correct proof of second part	2 1 2
33	Let the present age of the son be x years. Then, the present age of the man is ($2x^2$) years. Age of the son 8 years hence =(x+8) years. Age of the man 8 years hence ($2x^2$+8) years. ∴ ($2x^2$+8)=3(x+8)+4 $2x^2-3x-20=0 \Rightarrow 2x^2-8x+5x-20=0$ $2x(x-4)+5(x-4)=0 \Rightarrow (x-4)=0 \Rightarrow (x-4)(2x+5)=0$ $x-4=0$ or $2x+5=0$ $x=4$ or $x=-52$ $x=4$ [∵ age cannot be negative]. ∴ son's present age = 4 years, and man's present age =(2×4^2) years = 32 years.	 1 1 1 1 1
34	Height (h) of the cone = 8 cm radius (r) of the cone = 5 cm ∴ Volume of water flows out = 1 /4 × volume of cone =1 /4 x1/3x πr^2 h =1/12 x25x 8 ∴ Volume of water flows out =100× volume of spherical ball 1/12x25x8=100x4/3 xπR^3 $\Rightarrow \pi R^3 = 1/8 \Rightarrow$ R =1/2cm=0.5cm **OR**	 ½ 1 1 1 1 ½

	Radius of the cylindrical tent (r) = 14 m Total height of the tent = 13.5 m Height of the cylinder = 3 m Height of the Conical part = 10.5 m Slant height of the cone (l) = $\sqrt{(110.25 + 196)} = \sqrt{306.25} = 17.5$ m Curved surface area of cylindrical portion = $2\pi rh = 264\ m^2$ Curved surface area of conical portion = $\pi rl = 770\ m^2$ Total curved surface area = $264\ m^2 + 770\ m^2 = 1034\ m^2$ Provision for stitching and wastage = $26\ m^2$ Area of canvas to be purchased = $1060\ m^2$ Cost of canvas = Rate × Surface area = 500 x 1060 = ₹ 5,30,000/-	½ 1 1 1 ½ ½ ½
35	<table><tr><th>Class interval</th><th>f_i</th><th>Class mark x_i</th><th>$f_i x_i$</th></tr><tr><td>20 – 60</td><td>7</td><td>40</td><td>280</td></tr><tr><td>60 – 100</td><td>5</td><td>80</td><td>400</td></tr><tr><td>100 – 140</td><td>16</td><td>120</td><td>1920</td></tr><tr><td>140 – 180</td><td>12</td><td>160</td><td>1920</td></tr><tr><td>180 – 220</td><td>2</td><td>200</td><td>400</td></tr><tr><td>220 – 260</td><td>3</td><td>240</td><td>720</td></tr><tr><td>Total</td><td>$\sum f_i = 45$</td><td></td><td>$\sum f_i x_i = 5640$</td></tr></table> $\bar{x} = \frac{\sum f_i x_i}{\sum f_i} = \frac{5640}{45} = 125.33$ <table><tr><th></th><th></th><th>Cumulative Frequency</th></tr><tr><td>20 – 60</td><td>7</td><td>7</td></tr><tr><td>60 – 100</td><td>5</td><td>12</td></tr><tr><td>100 – 140</td><td>16</td><td>28</td></tr><tr><td>140 – 180</td><td>12</td><td>40</td></tr><tr><td>180 – 220</td><td>2</td><td>42</td></tr><tr><td>220 – 260</td><td>3</td><td>45</td></tr></table> $n = 45$ $\Rightarrow \frac{n}{2} = \frac{45}{2} = 22.5$ Median class = 100 – 140 $\text{Median} = l + \frac{\left(\frac{n}{2} - cf\right)}{f} \times h$ $l = 100,\ \frac{n}{2} = 22.5,\ cf = 12,\ f = 16,\ h = 40$ $\text{Median} = 100 + \frac{22.5 - 12}{16} \times 40$ $= 100 + 26.25$ $= 126.25$ OR	½ ½ 1 1 1 1

Class	Frequency	cf
0 – 5	4	4
5 – 10	6	10
10 – 15	10	20
15 – 20	f_1	$20 + f_1$
20 – 25	25	$45 + f_1$
25 – 30	f_2	$45 + f_1 + f_2$
30 – 35	18	$63 + f_1 + f_2$
35 – 40	5	$68 + f_1 + f_2$

Median = 24
median class = 20 – 25
I = 20. h = 5, n/2 = 50, cf = 20 + f1, f = 25

$$\therefore \text{Median} = l + \left(\frac{\frac{n}{2} - cf}{f} \times h\right)$$

$$\Rightarrow 24 = 20 + \frac{50 - (20 + f_1)}{25} \times 5 \Rightarrow 4 = \frac{30 - f_1}{5} \Rightarrow 30 - f_1 = 20 \Rightarrow f_1 = 10$$

sum of frequencies = 100
$\Rightarrow$ 68 + f1 + f2 = 100
$\Rightarrow$ f1 + f2 = 32
$\Rightarrow$ 10 + f2 = 32
$\Rightarrow$ f2 = 22
f1 = 10, f2 = 22.

SECTION E

36 (i)

PR= $\sqrt{(8-2)^2 + (3-5)^2} = 2\sqrt{10}$ — 1

(ii) Co-ordinates of Q (4,4). — ½ ½
The mid-point of PR is (5,4)
∴Q is not the mid-point of PR

(iii) (A) Let the point be $(x,0)$ — 1

So, $\sqrt{(2-x)^2 + 25} = \sqrt{(4-x)^2 + 16}$ — 1

Hence $x = \frac{3}{4}$. Therefore the point is $(\frac{3}{4}, 0)$.

OR

(B) The coordinates of S will be — 1

$\left(\frac{2\times4+3\times2}{2+3}, \frac{2\times4+3\times5}{2+3}\right)$ — 1

$= \left(\frac{14}{5}, \frac{23}{5}\right)$

37	(i) sin 60° = PC/ PA ⇒ √3/ 2 = 18 /PA ⇒ PA = 12 √3 m (ii) sin 30° = PC/ PB ⇒ 1 /2 = 18 /PB ⇒ PB = 36 m (iii) tan 60° = PC /AC ⇒ √3 = 18/ AC ⇒ AC = 6 √3 m tan 30° = PC/ CB ⇒ 1 /√3 = 18 /CB ⇒ CB = 18 √3 m Width AB = AC + CB = 6 √3 + 18 √3 = 24 √3 m OR RB = PC =18 m & PR = CB = 18 √3 m tan 30° = QR /PR ⇒ 1/ √3 = QR/ 18 √3 ⇒ QR = 18 m QB = QR + RB = 18 + 18 = 36m. Hence height BQ is 36m	½ ½ ½ ½ 1 ½ ½ ½ 1 ½
38	(i) Savings of Ananya are Rs. 24, Rs. 30, Rs. 36, ... Since it is uniformly increasing by Rs. 6, therefore it forms an AP. Here, a = 24, d = 30 – 24 = 6 (ii) a15 = a + 14d = 24 +14 × 6 = 24 + 84 = Rs. 108 (iii) an = 66 ⇒ a + (n – 1)d = 66 ⇒ 24 + (n – 1)6 = 66 ⇒ n – 1 = 42/6 = 7 ⇒ n = 8 OR an = 8 – 5n a1 = 8 – 5 = 3 a2 = 8 – 10 = –2 ⇒ d = a2 – a1 = –2 – 3 = – 5	1 1 ½ ½ ½ ½ ½ ½ ½

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