



BK BIRLA CENTRE FOR EDUCATION

SARALA BIRLA GROUP OF SCHOOLS
SENIOR SECONDARY| CO-ED DAY CUM BOYS' RESIDENTIAL SCHOOL



ANNUAL EXAMINATION- 2025

MATHEMATICS (041)

Class : IX

Date : 24-02-2025

MARKING SCHEME

Duration : 3 Hrs

Max. Marks : 80

SECTION A


Each question carries 1 mark. (mcq)

1. $\frac{4}{3}$ [A]
2. 15 [B]
3. I and IV [B]
4. 8 [D]
5. 126^0 [A]
6. FIVE [C]
7. 110^0 [C]
8. SAS [B]
9. 120^0 [D]
10. Exterior [B]
11. 80^0 [A]
12. $27\sqrt{3}$ [B]
13. 84 cm [C]
14. $3\pi r^2$ [D]
15. 110 m^2 [B]
16. 85 [D]
17. 110 [B]
18. 60^0 [B]
19. [A]
20. [D]

SECTION B

21. **Ans:** $6x^2 + 5x - 6 = 6x^2 + 9x - 4x - 6$ 1
 $= 3x(2x + 3) - 2(2x + 3)$ 1/2
 $= (3x - 2)(2x + 3)$ 1/2

Q22.

- Ans:**  1/2
 $AB = AC + BC$ 1/2
 $AB = AC + AC$ [BC = AC] 1/2
 $\frac{1}{2}AB = AC$ 1/2

Q23.

- Ans:** $AC = BC$ ----- given 1/2
 $\angle PAC = \angle PCB$ ----- Each 90° 1/2
 $PC = PC$ ----- Common 1/2
 $\Delta APB \cong \Delta BPC$ ----- SAS congruence rule 1/2
 $PA = PB$ CPCT 1/2

OR

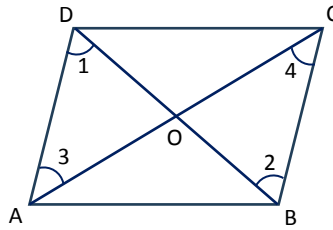
$$x + 45 + 30 = 360^\circ$$

$$x = 360^\circ - 75^\circ$$

$$x = 285^\circ$$

Q24.

Ans: $\angle 1 = \angle 2$ alternate angles
 $\angle 3 = \angle 4$ alternate angles
 $AD = BC$
 $\triangle AOD \cong \triangle BOC$ ASA rule
 $AO = OC$
 $OB = OD$ } cpct



$\frac{1}{2}$
 $\frac{1}{2}$
 $\frac{1}{2}$
 $\frac{1}{2}$

Q25.

Ans: $\pi r l = 308$
 $r \times 14 = \frac{308 \times 7}{22}$

$\frac{1}{2}$
 $\frac{1}{2}$

$$r = \frac{308 \times 7}{22 \times 14}$$

$$r = 7 \text{ cm}$$

$\frac{1}{2}$
 $\frac{1}{2}$

OR

$$\text{TSA} = 3 \times 3.14 \times 10 \times 10$$

$$= 3 \times 314$$

$$= 942 \text{ cm}^2$$

1
 $\frac{1}{2}$
 $\frac{1}{2}$

SECTION C

Q26.

Ans: $\frac{5 + \sqrt{6}}{5 - \sqrt{6}} \times \frac{5 + \sqrt{6}}{5 + \sqrt{6}} = \frac{(5 + \sqrt{6})^2}{(5)^2 - (\sqrt{6})^2}$
 $= \frac{25 + (10\sqrt{6}) + 6}{25 - 6}$
 $= \frac{31 + (10\sqrt{6})}{19}$

1
 1
 1

Q27.

Ans: $2x + y = 5$
 $y = 5 - 2x$

x	0	1	2
y	5	3	1

1
 1
 1

Q28. Ans: i) $(x+4)(x+10) = x^2 + (4 + 10)x + 40$
 $= x^2 + 14x + 40$

1
 $\frac{1}{2}$

ii) $(y^2 + \frac{3}{2})(y^2 - \frac{3}{2}) = (y^2)^2 - (\frac{3}{2})^2$
 $= y^4 - \frac{9}{4}$

1
 $\frac{1}{2}$

Q29.

Ans: Graph -

Rectangle -

$2 \frac{1}{2}$
 $\frac{1}{2}$

Q30.

Ans: Theorem

For correct figure

Correct proof :

$\frac{1}{2}$
 $2 \frac{1}{2}$

OR

$$\begin{aligned} \text{Reflex } \angle POR &= 2\angle PQR \\ &= 200^\circ \end{aligned}$$

$\frac{1}{2}$
 $\frac{1}{2}$

$$\begin{aligned} \angle POR &= 360 - 200 \\ &= 160^\circ \end{aligned}$$

$\frac{1}{2}$
 $\frac{1}{2}$

$$\begin{aligned} 2(\angle OPR) &= 180 - 160 \\ &= 20^\circ \end{aligned}$$

$\frac{1}{2}$
 $\frac{1}{2}$

$$\angle OPR = 10^\circ$$

$\frac{1}{2}$

Q31.

Ans: Graph: For correct construction of Polygon

For labelling

2
1

SECTION D

32.

Sol. Since $\angle EPA = \angle DPB$ [Given]

$$\Rightarrow \angle EPA + \angle EPD = \angle EPD + \angle DPB$$

1

[Adding $\angle EPD$ to both sides]

$$\Rightarrow \angle APD = \angle BPE \quad \dots(i)$$

Also, $AP = BP$ $\dots(ii)$ [Given]

and $\angle DAP = \angle EBP$ $\dots(iii)$ [Given]

2

(i) Consider triangles DAP and EBP,

$$\angle APD = \angle BPE, AP = BP \text{ and } \angle DAP = \angle EBP.$$

[From (i), (ii), (iii)]

$$\triangle DAP \cong \triangle EBP.$$

[SAS rule]

2

(ii) $AD = BE.$ [CPCT]

OR

So, $DB \parallel AC$ $\dots(i)$

We have $AC \perp BC$ $\dots(ii)$ [Given]

So, $DB \perp BC$ [From (i) and (ii)]

1

i.e., $\angle DBC$ is a right angle, i.e., $\angle DBC = 90^\circ.$

(i) Consider triangles AMC and DMB,

We have $AM = BM$ [Given]

1

$CM = DM$ [Given]

and $\angle AMC = \angle BMD$ [Vertically opposite angles]

$\therefore \triangle AMC \cong \triangle BMD$ [SAS rule]

(ii) As $\angle BAC = \angle DBA$ [CPCT, from part (i)]

1

and AB is the transversal.

(iii) Consider triangles ABC and DCB.

We have $AC = DB$ [Since $\triangle AMC \cong \triangle BMD$; result (i)]

	$BC = CB$	[Common]	1
and	$\angle ACB = \angle DBC$	[Each 90°]	
\therefore	$\triangle DBC \cong \triangle ACB$	[SAS rule]	
(iv) As	$DC = AB$	[CPCT from part (iii)]	
\Rightarrow	$2CM = AB$	[\because M is mid-point of DC]	
\Rightarrow	$CM = \frac{1}{2} AB.$		1

33. Ans: ABCD is a parallelogram

$$AB = CD$$

$$\frac{1}{2} AB = \frac{1}{2} DC \quad \frac{1}{2}$$

$$FC = AE \quad \frac{1}{2}$$

$$FC \parallel AE \quad \frac{1}{2}$$

\therefore AECF is a parallelogram

In $\triangle DQC$, 'F' is mid-point

$$PF \parallel QC \quad \frac{1}{2}$$

'P' is mid-point – converse of mid-point theorem $\frac{1}{2}$

$$\therefore DP = PQ \quad \frac{1}{2}$$

In $\triangle PAB$, 'Q' is mid-point

$$PQ = QB \quad \frac{1}{2}$$

$$\therefore DP = PQ = QB \quad \frac{1}{2}$$

$$\Rightarrow BD \text{ is trisected} \quad \frac{1}{2}$$

Q34. Let $a = 15\text{m}$, $b = 11\text{m}$, $c = 6\text{m}$

$$S = \frac{15+11+6}{2} \quad \frac{1}{2}$$

$$S = 16 \text{ m}$$

$$\text{Area} = \sqrt{s(s-a)(s-b)(s-c)} \quad \frac{1}{2}$$

$$= \sqrt{16} \times 1 \times 5 \times 10 \quad 1$$

$$= 4\sqrt{5} \times 2 \times 5 \quad 1$$

$$= 20\sqrt{2} \text{ m}^2 \quad 1$$

Q 35.

Ans: Slant height (l) = $\sqrt{(10)^2 + (24)^2}$ $\frac{1}{2}$

$$L = \sqrt{100 + 576} \quad \frac{1}{2}$$

$$l = 26\text{m} \quad \frac{1}{2}$$

$$\text{CSA} = \pi r l \quad \frac{1}{2}$$

$$= \frac{22}{7} \times 24 \times 26 \text{ m}^2 \quad \frac{1}{2}$$

$$\text{Cost of canvas} = \frac{22}{7} \times 24 \times 26 \times 70 \quad 1$$

$$= 22 \times 24 \times 26 \times 10 \quad 1$$

$$= \text{Rs } 137280 \quad \frac{1}{2}$$

OR

$$r = 7\text{cm}, h = 24 \text{ cm}$$

$$\text{Slant Height (l)} = \sqrt{r^2 + h^2} \quad \frac{1}{2}$$

$$= \sqrt{49 + 576} \quad \frac{1}{2}$$

$$= 25 \text{ cm} \quad 1$$

Sheet required for one clip, = $\frac{22}{7} \times 7 \times 25$ $\frac{1}{2}$

$$= 22 \times 25 \quad \frac{1}{2}$$

Sheets req. for 10 caps = $22 \times 25 \times 10$ 1

$$= 5500 \text{ cm}^2 \quad 1$$

Q36.

Ans: 1) Equilateral 1

2) 120 1

3) 30° 2

Or

60°

Q37.

Ans: $y = \frac{180 - 60}{5}$ 2

$$y = \frac{120}{5}$$

$$y = 24^\circ$$

OR

$$x + y + 60 = 180$$

$$x = 180 - 84$$

$$x = 96^\circ$$

2. $z = \frac{180 - 96}{2}$ 1

$$z = \frac{84}{2}$$

$$z = 42$$

3. $x + z = 96 + 42$ 1

$$= 138^\circ$$

Q38.

Ans: 1) $145 - 150$ 1

2) 5 1

3) $18 + 7 + 4 = 29$ 2

OR

1) $18 + 11 + 6 + 5 = 40$
