



TAGORE INTERNATIONAL SCHOOL
EAST OF KAILASH, NEW DELHI

MID-TERM (2025 - 2026)
MATHEMATICS
CLASS - IX
SET- 1



Date: 22.09.2025
No. of pages: 08

Duration: 3 Hours
M. Marks: 80

GENERAL INSTRUCTIONS

1. This Question Paper has 5 Sections A, B, C, D and E.
2. Section A has 20 MCQs carrying 1 mark each
3. Section B has 5 questions carrying 02 marks each.
4. Section C has 6 questions carrying 03 marks each.
5. Section D has 4 questions carrying 05 marks each.
6. Section E has 3 case based integrated units of assessment (04 marks each) with subparts of the values of 1, 1 and 2 marks each respectively.
7. All Questions are compulsory. However, an internal choice in 2 Qs of 5 marks, 2 Qs of 3 marks and 2 Questions of 2 marks has been provided. An internal choice has been provided in the 2marks questions of Section E
8. Draw neat figures wherever required. Take $\pi = 22/7$ wherever required if not stated.

SECTION -A

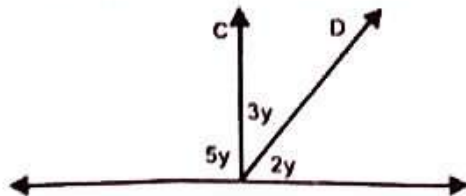
Section A consists of 20 questions of 1 marks each

1. The solution of the equation $x - 2y = 4$ is:
a) (0, 2) b) (4, 0) c) (1, 1) d) (2, 0)
2. The point at which two coordinate axes meet is called
a) abscissa b) ordinate c) origin d) quadrant
3. The points A (-5, 2) and B (2, -5) are situated in
a) same quadrants b) I and III quadrants, respectively
c) I and II quadrant d) II and IV quadrants, respectively
4. The graph of the linear equation $2x + 3y = 6$ cuts the y-axis at the point
a) (2, 0) b) (0, 3) c) (3, 0) d) (0, 2)



5. In $\triangle ABC$ and $\triangle DEF$, $AC = FD$ and $\angle C = \angle F$. The triangles will be congruent by SAS axiom if
 a) $CB = DE$ b) $AB = FD$ c) $AB = DE$ ☒ d) $BC = EF$

6. In the figure given below the value of y is



- a) 60° ☒ b) 18° c) 30° d) 90°
7. If $p(x) = x^2 - 4$, then $p(3)$ is:
☒ a) 5 b) -5 c) 13 d) -13
8. The number of linear equations in variables x and y that can be satisfied by $x = 1$ and $y = 2$ is/ are
☒ a) only one b) two ☒ c) infinitely many d) three
9. An irrational number lying between 3 and 5 is
☒ a) $\sqrt{15}$ b) $\sqrt{8}$ c) $\sqrt{27}$ d) 3.5
10. Rationalizing factor for the denominator of the expression $\frac{1}{3 + \sqrt{2}}$ is:
 a) $3 + \sqrt{2}$ b) $2 - \sqrt{3}$ c) $\sqrt{3} - 2$ ☒ d) $3 - \sqrt{2}$
11. If $A(2, -3)$ and $B(-3, 5)$ are two given points then (abscissa of A) - (abscissa of B) is
 a) -2 ☒ b) 5 c) 1 d) 2
12. If the area of an equilateral triangle is $36\sqrt{3} \text{ cm}^2$ then its side is
 a) $\frac{9\sqrt{3}}{2} \text{ cm}$ b) $9\sqrt{3} \text{ cm}$ ☒ c) 12 cm d) 9 cm
13. The degree of a zero polynomial is
 a) 0 b) 1 ☒ c) not defined d) any number
14. The graph of the linear equation $3x - 3y = 6$ cuts the x -axis at the point
☒ a) (2, 0) b) (0, 3) c) (3, 0) d) (0, -2)

$$36\sqrt{3} = \frac{\sqrt{3}}{4} s^2$$

$$2 \times 6$$

$$s = 12$$

$\frac{\sqrt{3}}{4} a^2$

15. A traffic signal board indicating 'SCHOOL AHEAD' is an equilateral triangle with side a . then the height of the traffic signal board is:

- a) $\frac{\sqrt{3}}{4} a^2$ b) $\frac{\sqrt{3}}{2} a^2$ ☒ c) $\frac{\sqrt{3}}{2} a$ d) $\frac{\sqrt{2}}{3} a$

16. Which of the following is an irrational number?

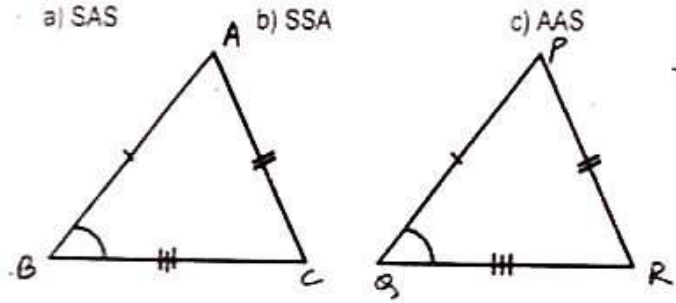
- a) $\frac{4}{5}$ ☒ b) $\sqrt{2}$ c) 0.75 d) -3

17. The perpendicular distance of the point P (3, 4) from the y-axis is

- ☒ a) 3 b) 4 c) 5 d) 7

18. By which congruence rule/rules the following triangles will be congruent

- a) SAS b) SSA c) AAS ☒ d) SSS and SAS



19. DIRECTION: In the following questions 19 and 20, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.

Assertion: Two angles measures $a - 60^\circ$ and $123^\circ - 2a$. If each one is opposite to equal sides of an isosceles triangle, then the value of a is 61° . ✓

Reason: Sides opposite to equal angles of a triangle are equal. ✓

- ☒ a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
☒ b) Both Assertion and Reason are true and Reason is not the correct explanation of Assertion.
 c) Assertion is true but Reason is false.
 d) Assertion is false but Reason is true.

$a - 60 = 123 - 2a$
 $3a = 183$
 $a = 61$

20. **Assertion:** $3x^2 - 1$ is a quadratic polynomial.

Reason: A polynomial of degree 2 is called a quadratic polynomial.

- a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
 b) Both Assertion and Reason are true and Reason is not the correct explanation of Assertion.
 c) Assertion is true but Reason is false.
☒ d) Assertion is false but Reason is true.

$\frac{183}{3} = 61$ $3a = 183$
 $a = 61$

SECTION-B

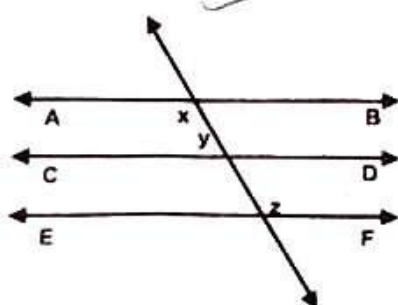
Section B consists of 5 questions of 2 marks each

21. Evaluate using a suitable identity : 101×102 2

[OR]

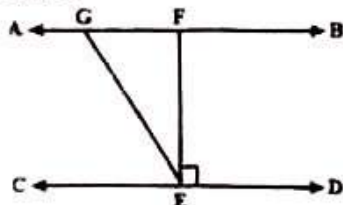
Expand using a suitable identity: $\left(\frac{x^2}{2} + y\right)^2$

22. In the figure given below, $AB \parallel CD$, $CD \parallel EF$ and $y : z = 3 : 7$ then value of x is: 2



[OR]

In the figure given below, $AB \parallel CD$, EF is perpendicular to CD and $\angle GED = 126^\circ$. Find the measure of $\angle AGE$ and $\angle CEG$.



23. Find the area of a triangle, whose two sides are 8 cm and 11 cm, and the perimeter is 32 cm. 2
24. If point $A(3, 2)$ lies on the graph $3y = ax + 5$, then find the value of a . 2
25. The sides of a triangle are in the ratio 5 : 12 : 13 and its perimeter is 150 cm. Find the area of the triangle. 2

SECTION - C

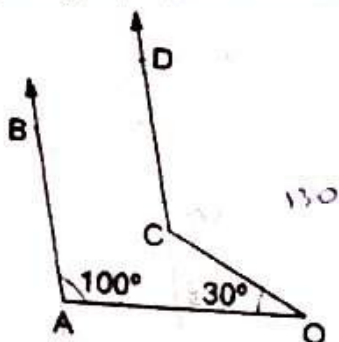
Section C consists of 6 questions of 3 marks each

26. Without plotting name in which quadrant or axis do each of the points: $K(5, 0)$, $L(0, 3)$, $M(2, 5)$, $N(5, 2)$, $O(-3, 5)$, and $P(-5, -3)$ lie in the Cartesian plane. 3

27.

In the given figure, $AB \parallel CD$. If $\angle AOC = 30^\circ$ and $\angle OAB = 100^\circ$ then find the measure of $\angle OCD$

3



28.

Find any three solutions of the equation $4x - 4y = 16$.

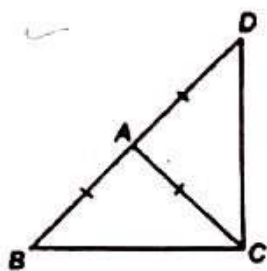
0, -4 4, 0 1, -3

3

29.

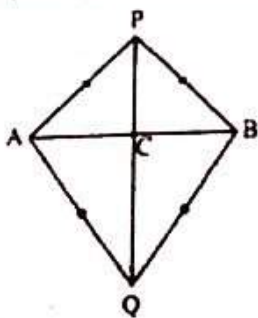
$\triangle ABC$ is an isosceles triangle in which $AB = AC$. Side BA is produced to D such that $AD = AB$. Show that $\angle BCD$ is a right angle.

3



[OR]

AB is a line-segment. P and Q are points on opposite sides of AB such that both of them are equidistant from the points A and B . Show that the line PQ is the perpendicular bisector of AB .



30.

Factorise $2y^3 + y^2 - 2y - 1$

$\frac{y+1}{y-1}$

3

[OR]

Factorise $27 - 125a^3 - 135a + 225a^2$

31. Express $0.7 + 0.4\bar{7}$ in the form of $\frac{p}{q}$, where p and q are integers and $q \neq 0$.

3

SECTION - D

Section D consists of 4 questions of 5 marks each

32.

If a and b are rational numbers and $\frac{7+\sqrt{5}}{7-\sqrt{5}} - \frac{7-\sqrt{5}}{7+\sqrt{5}} = a + \frac{7}{11}b\sqrt{5}$. Find the values of a and b.

5

33. i) Check if $g(x) = x-2$ is a factor of $p(x) = x^3 - x^2 + 2x - 4$
ii) Factorise $4x^2 + 12x + 9$

[OR]

- i) Expand using suitable identity: $(4a - 2b - 3c)^2$
ii) Factorise $x^2 + 9x + 18$

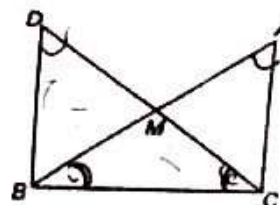
34. In which quadrant or on which axis do each of the points $(-2, 4)$, $(3, -1)$, $(-1, 0)$, $(1, 2)$ and $(0, 0)$ lie? Verify your answer by locating them on the Cartesian plane.

5

[OR]

Three vertices of a rectangle are $P(3, 2)$, $Q(-4, 2)$ and $R(-4, 5)$. Plot these points and find the coordinates of the fourth vertex. Also find the area of the rectangle.

35. In a right triangle ABC, right angled at C, M is the mid-point of hypotenuse AB. C is joined to M and produced to a point D such that $DM = CM$. Point D is joined to point B (see figure). Show that
(i) $\triangle AMC \cong \triangle BMD$
(ii) $\angle DBC$ is a right angle
(iii) $\triangle DBC \cong \triangle ACB$

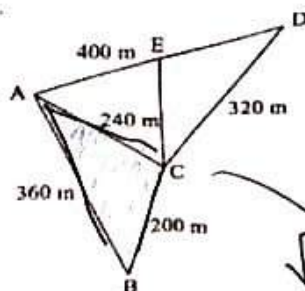


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SECTION - E

Section E consists of 3 Case Studies of 4 marks each

36. Kamla has a triangular field with sides 240 m, 200 m, 360 m, where she grew wheat first. In another triangular field with sides 240 m, 320 m, 400 m adjacent to the field, she wanted to grow potatoes and onions. She divided the field in two parts by joining the mid-point of the longest side to the opposite vertex she grew potatoes in one part and onions in the other part. On the basis of given information, answer the following answers



$$\sqrt{(200)(40)(160 \times 40)}$$

$$\sqrt{20(200 \times 40 \times 160)}$$

$$20 \times 100 \times 2\sqrt{2}$$

$$\sqrt{(120)(160)(40)}$$

$$4 \times 16 \times 2\sqrt{2}$$

$$2 \times 4 \times 16 \times 2\sqrt{2}$$

- i) What is the area of the field where she grew wheat? 1600 52
- ii) What is the area of entire field where she grew potatoes and onions? 38400
- iii) If the cost of fencing of 10m boundary is ₹60. Find the respective cost of fencing wheat, potatoes and onions fields. 3460, 4200

[OR]

If expenditure for growing wheat in 1m^2 area is ₹65 and for potatoes and onions is ₹75. Find the respective costs of both.

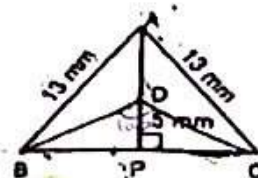
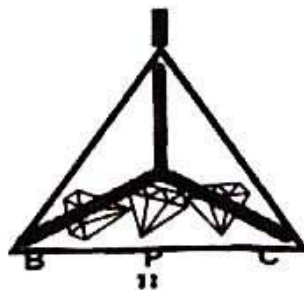
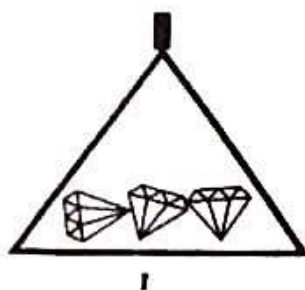
In Delhi, cabs are running on compressed gas. To hire a cab, one has to go to the taxi stand or book it on a mobile app. Shaila wanted to hire a taxi. So, on enquiring the taxi charges from the prepaid taxi booking office, she got the following information. The taxi fare in Delhi is as follows: For the first kilometre, the fare is ₹20 and for the subsequent distance, it is ₹12 per km. Refer the given information and answer the following questions by taking the distance covered as x km and the total fare as y .

- (i) Write the linear equation for the above-mentioned information. $y = 20 + 12x$
- (ii) Express the linear equation obtained in the form $ax + by + c = 0$ and indicate the values of a, b and c . $12, -1, 8$
- (iii) If Shaila has hired the taxi for 26 km, then find the amount to be paid by her as taxi fare.

[OR]

Using the above formed linear equation, find the value of a if $(a, -a)$ is the solution of equation.

Look at petite pendant giving dainty dazzle, crafted in white gold. It is triangular in shape studded with three sparkling diamonds. The sketch originally drawn by the artist designer and its details are for your reference. Answer the following questions using given information: If $\triangle ABC$ and $\triangle DBC$ are isosceles triangles with $AB = AC$ and $BD = DC$ respectively. Answer the following questions



- (i) $\triangle ABD$ is congruent to which triangle? Justify. S S S
- (ii) $\triangle ABP$ is congruent to which triangle? Justify. SAS

(iii) AP is the bisector of both angles $\angle A$ and $\angle D$. Justify

OR

If $\angle BDC = 100^\circ$, then find $\angle DBC = 40^\circ$