

26/Sept./2017

Set - A

FIRST TERM EXAMINATION (26 SEPT 2017)
MATHEMATICS

Class - IX

Time Allowed: 3 hours

Maximum Marks: 80

1.

SECTION-A

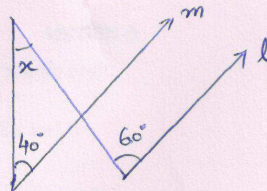
Question numbers 1 to 6 carry one mark each

- | | | |
|---|---|---|
| 1 | How many zeroes does cubic polynomial has? | 1 |
| 2 | Find the point whose ordinate is -3 and which lies on y -axis | 1 |
| 3 | It is known that if $a = 2b, c = 2b$ then $a = c$. Which Euclid's axiom illustrates this statement. Write the statement of axiom used. | 1 |
| 4 | What are the shapes of boundaries of surfaces? | 1 |
| 5 | Can a triangle have two obtuse angles? Give reason. | 1 |
| 6 | It is given that $\triangle ABC \cong \triangle DEF$. Is it true to say $AB = EF$? Justify your answer. | 1 |

SECTION-B

Question numbers 7 to 12 carry two marks each.

- | | | |
|-----|---|---|
| 7. | Express $0.3\overline{57}$ in p/q form where p & q are integers and $q \neq 0$. | 2 |
| 8. | Find the value of k for which $(x-1)$ is a factor of polynomial $p(x) = x^3 + kx^2 + 142x - 120$ | 2 |
| 9. | If $a = 2 + \sqrt{3}$ find $a - \frac{1}{a}$ | 2 |
| 10. | Plot the points A (5, 5) and B (-5, 5) in cartesian plane. Join AB, OA and OB. Name the type of triangle so obtained. | 2 |
| 11. | In given figure $l \parallel m$, find x | 2 |

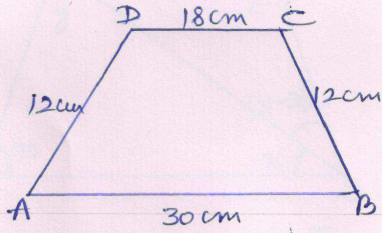
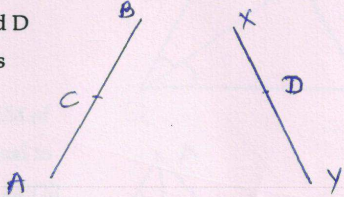


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|-----|---|---|
| 12. | If area of an equilateral triangle is $36\sqrt{3}cm^2$. Find its height. | 2 |
|-----|---|---|

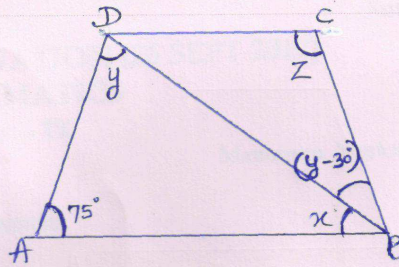
SECTION-C

Question numbers 13 to 21 carry three marks each.

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| 13. | Represent $\sqrt{8.5}$ geometrically | 3 |
| 14. | Simplify $\frac{8^{1/3} \times 16^{1/3}}{(32)^{-1/3}}$ | 3 |

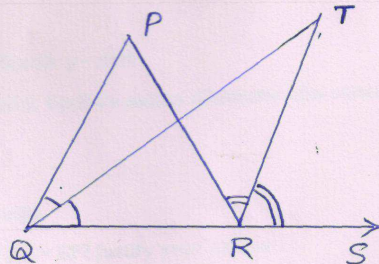
15.	The given figure represents a metal plate in the form of a trapezium. Calculate the area of the plate in square centimeters correct to one place of decimal.	3
		
16.	If $x - y = 5$, $xy = 84$. Find the value of $x^3 - y^3$	3
17.	A(3, 6), B(3, 2) and C(8, 2) are the vertices of a rectangle. Plot these points on a graph paper and then find the coordinates of vertex D.	3
18.	AC = XD, C is the midpoint of AB and D is the midpoint of XY. Using Euclid's axiom show $AB = XY$.	3
		
19.	Prove that vertically opposite angle are equal, if two lines intersect each other.	3
20.	AB is a line segment. P and Q are points on opposite sides of AB such that each of them is equidistant from the points A and B. Show that the line PQ is perpendicular bisector of AB.	3
21.	Solve the equation $2x + 1 = x - 3$ and represent the solution on i) the number line (ii) the Cartesian plane	3
SECTION-D		
Question numbers 22 to 30 carry four marks each.		
22.	If $\frac{\sqrt{7}-1}{\sqrt{7}+1} - \frac{\sqrt{7}+1}{\sqrt{7}-1} = a + b\sqrt{7}$ then find a and b.	4
23.	a) Verify that $x^3 + y^3 + z^3 - 3xyz = \frac{1}{2}(x+y+z)[(x-y)^2 + (y-z)^2 + (z-x)^2]$ b) Factorise $(x-y)^3 + (y-z)^3 + (z-x)^3$	2+2
24.	Factorise $2x^3 - 3x^2 - 17x + 30$	4

25. $AB \parallel CD$, $\angle BDC = 40^\circ$ and $\angle BAD = 75^\circ$
Find x, y, z



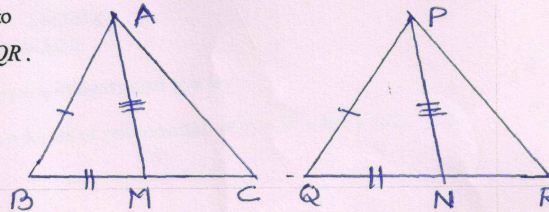
4

26. The sides QR of $\triangle PQR$ is produced to point S.
If bisectors of $\angle PQR$ and $\angle PRS$ meet at point T.
Then prove that $\angle QTR = \frac{1}{2} \angle QPR$



4

27. Two sides AB and BC and median AM of one triangle ABC are respectively equal to sides PQ and QR and median PN of $\triangle PQR$.
Show that
i) $\triangle ABM \cong \triangle PQN$
ii) $\triangle ABC \cong \triangle PQR$



4

28. Find the area of a triangular field, the length of whose sides are 90m, 120m and 150m. Also calculate the cost of levelling the field at the rate of Rs. 12.50 per sq. m.

4

29. The taxi fare in a city is as follows: For the first kilometer, the fare is Rs. 20 and for the subsequent distance it is Rs. 6 per km. Taking x km as the distance covered and Rs. y as the total fare, write an linear equation and draw its graph.

4

30. Factorise i) $x^4 - 625$ ii) $x - 8xy^3$

2+2