



UNIVERSAL EDUCATION CENTRE

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Time 3 to 3 $\frac{1}{2}$ Hrs

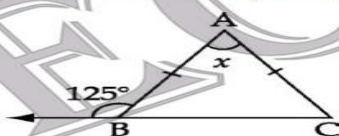
Maths 9TH (Term 1)

M.M. 90

SECTION – A

Question numbers 1 to 8 carry one mark each. For each questions, four alternative choices have been provided of which only one is correct. You have to select the correct choice.

1. $\frac{p}{q}$ form of the number $0.\bar{3}$ is :
(A) $\frac{3}{10}$ (B) $\frac{3}{100}$ (C) $\frac{1}{3}$ (D) $\frac{1}{2}$
2. Which of the following is a cubic polynomial ?
(A) $x^3 + 3x^2 - 4x + 3$ (B) $x^2 + 4x - 7$
(C) $3x^2 + 4$ (D) $3(x^2 + x + 1)$
3. If a polynomial $f(x)$ is divided by $x - a$, then remainder is
(A) $f(0)$ (B) $f(a)$ (C) $f(-a)$ (D) $f(a) - f(0)$
4. What is the remainder when $x^3 - 2x^2 + x + 1$ is divided by $(x - 1)$?
(A) 0 (B) -1 (C) 1 (D) 2
5. In the figure below if $AB = AC$, the value of x is :

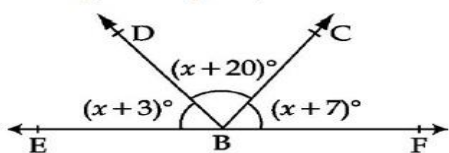


- (A) 55° (B) 110° (C) 50° (D) 70°
6. If $\triangle ABC$ is congruent to $\triangle DEF$ by SSS congruence rule, then :
(A) $\angle C < \angle F$ (B) $\angle B < \angle E$
(C) $\angle A < \angle D$ (D) $\angle A = \angle D, \angle B = \angle E, \angle C = \angle F$
7. The area of an equilateral triangle is $16\sqrt{3} \text{ m}^2$. Its perimeter (in metres) is :
(A) 12 (B) 48 (C) 24 (D) 306
8. The base of a right triangle is 15 cm and its hypotenuse is 25 cm. Then its area is :
(A) 187.5 cm^2 (B) 375 cm^2 (C) 150 cm^2 (D) 300 cm^2

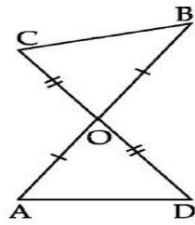
Section-B

Question numbers 9 to 14 carry two marks each.

9. Simplify $\left(\frac{64}{125}\right)^{-\frac{2}{3}}$
10. If $(x - 1)$ is a factor of the polynomial $p(x) = 3x^4 - 4x^3 - ax + 2$ then find the value of 'a' ?
11. Simplify : $(\sqrt{3} + 2)(\sqrt{3} - 2)$
12. In the given figure, find the value of x .



13. In the figure, $OA = OB$ and $OD = OC$. Show that
(i) $\triangle AOD \cong \triangle BOC$ (ii) $AD \parallel BC$



OR

An exterior angle of a triangle is 120° and one of the interior opposite angles is 40° . Find the other two angles of a triangle.

14. A point lies on x -axis at a distance of 9 units from y -axis. What are its coordinates? What will be the coordinates of a point if it lies on y axis at a distance of -9 units from x -axis?

Section-C

Question numbers 15 to 24 carry three marks each.

15. Find the value of $\left(\frac{64}{125}\right)^{-\frac{2}{3}} + \frac{1}{\left(\frac{256}{625}\right)^{\frac{1}{4}}} + \sqrt[3]{25}$.

OR

Represent $\sqrt{3}$ on number line.

16. Prove that $\frac{1}{2+\sqrt{3}} + \frac{2}{\sqrt{5}-\sqrt{3}} + \frac{1}{2-\sqrt{5}} = 0$.
17. Factorise : $x^2 + \frac{x}{4} - \frac{1}{8}$.

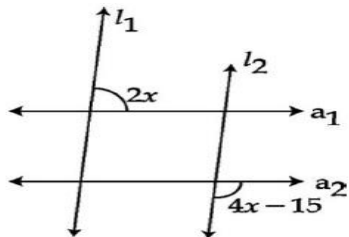
OR

What are the possible expressions for the dimensions of a cuboid whose volume is given below? Volume = $12ky^2 + 8ky - 20k$.

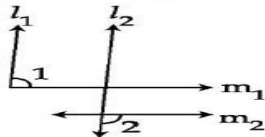
18. If $x = 2y + 6$ then find the value of $x^3 - 8y^3 - 36xy - 216$.
19. In ΔABC , $\angle B = 45^\circ$, $\angle C = 55^\circ$ and bisector of $\angle A$ meets BC at a point D . Find $\angle ADB$ and $\angle ADC$.

OR

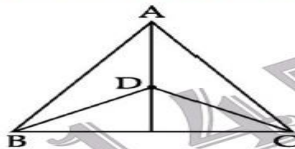
In the figure below, $l_1 \parallel l_2$ and $a_1 \parallel a_2$. Find the value of x .



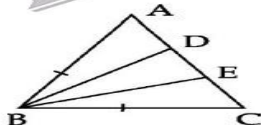
20. In the figure below, $l_1 \parallel l_2$ and $m_1 \parallel m_2$. Prove that $\angle 1 + \angle 2 = 180^\circ$.



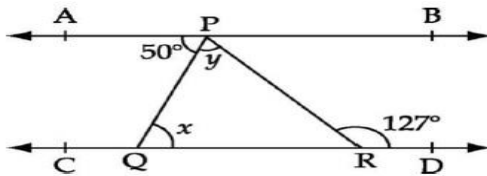
21. In the given figure, $AB = AC$, D is the point in the interior of ΔABC such that $\angle DBC = \angle DCB$. Prove that AD bisects $\angle BAC$ of ΔABC .



22. In the given figure, $AB = BC$ and $AD = EC$. Prove that $\Delta ABE \cong \Delta CBD$.



23. In the given figure, if $AB \parallel CD$, $\angle APQ = 50^\circ$ and $\angle PRD = 127^\circ$, find x and y .



24. The perimeter of a triangular field is 300 cm and its sides are in the ratio 5 : 12 : 13. Find the length of the perpendicular from the opposite vertex to the side whose length is 130 cm.

Section-D

Question numbers 25 to 34 carry four marks each.

25. Find the values of a and b if $\frac{7 + 3\sqrt{5}}{3 + \sqrt{5}} - \frac{7 - 3\sqrt{5}}{3 - \sqrt{5}} = a + \sqrt{5}b$

OR

Evaluate after rationalizing the denominator of $\left(\frac{25}{\sqrt{40} - \sqrt{80}}\right)$. It is being given that $\sqrt{5} = 2.236$ and $\sqrt{10} = 3.162$

26. Simplify : $\frac{1}{2 + \sqrt{5}} + \frac{1}{\sqrt{5} + \sqrt{6}} + \frac{1}{\sqrt{6} + \sqrt{7}} + \frac{1}{\sqrt{7} + \sqrt{8}}$.

27. Prove that : $(a^2 - b^2)^3 + (b^2 - c^2)^3 + (c^2 - a^2)^3 = 3(a + b)(b + c)(c + a)(a - b)(b - c)(c - a)$

28. If remainder is same when polynomial $p(x) = x^3 + 8x^2 + 17x + a$ is divided by $(x + 2)$ and $(x + 1)$, find the value of a .

29. Find α and β , if $(x + 1)$ and $(x + 2)$ are factors of $x^3 + 3x^2 - 2\alpha x + \beta$.

OR

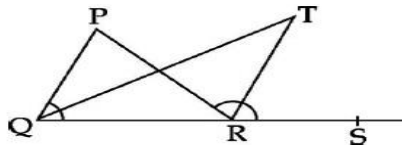
Factorize : $x^3 - 3x^2 - 9x - 5$.

30. Plot the points A (4, 0) and B (0, 4). Join AB to the origin O. Find the area of ΔAOB .

31. In the given figure, if $PQ \parallel ST$, $\angle PQR = 110^\circ$ and $\angle RST = 130^\circ$ find $\angle QRS$.



32. In the given figure, the side QR of ΔPQR is produced to a point S. If the bisectors of $\angle PQR$ and $\angle PRS$ meet at point T, then prove that $\angle QTR = \frac{1}{2} \angle QPR$.



33. ABCD is a parallelogram. If the two diagonals are equal. Find the measure of $\angle ABC$.

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

