GRAND TEST – 2

INSTRUCTIONS : NUMBER SYSTEM, POLYNIMIALS, CO-ORDINATE GEOMETRY, LINEAR EQUATIONS IN TWO VARIABLES, INTRODUCTION TO EUCLID'S GEOMETRY, LINES AND ANGLES, TRIANGLES, HERON'S FORMULA.

- The question paper consists of **26 questions** divided into four sections A, B, C and D.
- Section - A: Q. No. 1 to 10 carries **1 mark** each.
- Section - B: Q. No. 11 to 13 carries **2 marks** each.
- Section - C: Q. No. 14 to 21 carries **3 marks** each.
- Section - D: Q. No. 22 to 26 carries **4 marks** each.
- Time allotted is **2 hours. The maximum marks are 60.**

SECTION – A (1 × 10 = 10)

1. $\sqrt{10} \times \sqrt{15}$ is equal to

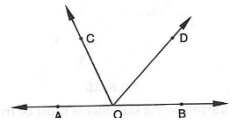
(a) $5\sqrt{6}$ (b) $6\sqrt{5}$ (c) $\sqrt{30}$ (d) $\sqrt{25}$

2. If x – 2 is a factor of $x^2 + 3ax - 2a$, then a =

(a) 2 (b) – 2 (c) 1 (d) – 1

3. In this figure, AOB is a straight line. If $\angle AOC + \angle BOD = 85^0$, then $\angle COD$ =

(a) 85^0 (b) 90^0 (c) 95^0 (d) 100^0



4. If two acute angles of a right triangle are equal, then each acute is equal to

(a) 30^0 (b) 45^0 (c) 60^0 (d) 90^0

5. The equation x – 2 = 0 on number line is represented by

(a) a line (b) a point (c) infinitely many lines (d) two lines

6. In a ΔABC, if AB = AC and BC is produced to D such that $\angle ACD = 100^0$, then $\angle A$ =

(a) 20^0 (b) 40^0 (c) 60^0 (d) 80^0

7. Points (- 4, 0) and (7, 0) lie

(a) on x-axis (b) y-axis (c) in first quadrant (d) In second quadrant

8. If $(2^3)^2 = 4^x$, then 3^x =

(a) 3 (b) 6 (c) 9 (d) 27

9. The length of each side of an equilateral triangle of area $4\sqrt{3}$ cm^2, is

(a) 4 cm (b) $\frac{4}{\sqrt{3}}$ cm (c) $\frac{\sqrt{3}}{4}$ cm (d) 3 cm

10. If $x + \frac{1}{x} = 5$, then $x^2 + \frac{1}{x^2}$ =

(a) 25 (b) 10 (c) 23 (d) 27

SECTION – B (2 × 3 = 6)

11. In fig 6.24 if PQ || RS, $\angle MXQ = 135^0$ and $\angle MYR = 40^0$, find $\angle XMY$.

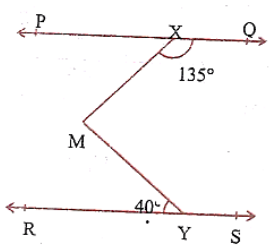


Fig. 6.24

12. (i) Rationalize the denominator of $\frac{1}{2+\sqrt{3}}$.

(ii) Rationalize the denominator of $\frac{5}{\sqrt{3-\sqrt{5}}}$

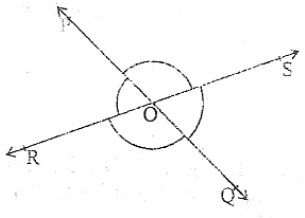
13. Find the value of k, if x = 2, y = 1 is a solution of the equation 2x + 3y = k.

SECTION – C (3 × 8 = 24)

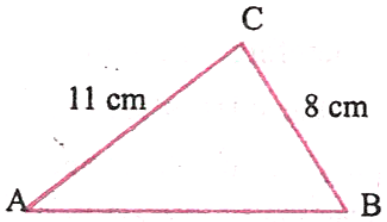
14. Factorise $8x^3 + 27y^3 + 36x^2Y + 54xy^2$

15. Does Euclid's fifth postulate imply the existence of parallel lines? Explain.

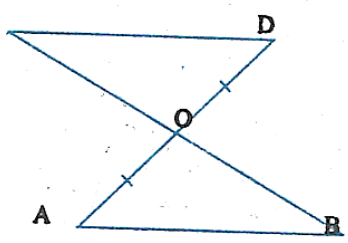
16. In fig., lines PQ and RS intersect each other at point O. If ∠POR: ∠ROQ = 5 : 7, find all the angels.



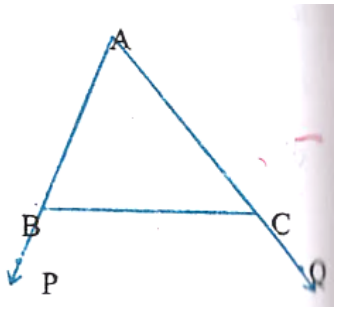
17. Find the area of a triangle, two sides of which are 8 cm and 11 cm and the perimeter is 32 cm (see fig).



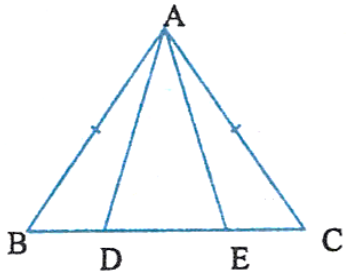
18. Line-segment AB is parallel to another line-segment CD. O is the mid-point of AD(see fig). Show that (i) ΔAOB ≅ ΔDOC (ii) O is also the mid-point of BC.



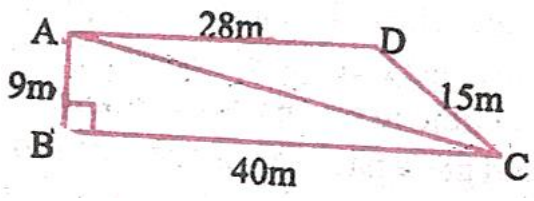
19. In fig., sides AB and AC of ΔABC are extended to points P and Q respectively. Also, ∠PBC < ∠QCB. Show that AC > AB.



20. In an isosceles triangle ABC with AB = AC, D and E are points on BC such that BE = CD (see Fig). Show that AD = AE.



21. Students of a school staged a rally for cleanliness campaign. They walked through the lanes in two groups. One group walked through the lanes AB, BC and CA; while the other through AC, CD and DA (see fig). Then they cleaned the area enclosed within their lanes. If AB = 9 m, BC = 40 m, CD = 15 m, DA = 28 m and $\angle B = 90^0$, which group cleaned more area and by how much? Find the total area cleaned by the students (neglecting the width of the lanes).



SECTION – D (4 × 5 = 20)

22. Factorise: $x^3 - 23x^3 + 142x - 120$.

23. Locate the points (5, 0), (0, 5), (2, 5), (5, 2), (-3, 5), (-3, -5), (5, -3) and (6, 1) in the Cartesian plane.

24. The taxi fare in a city is a s follows: For the first kilometer, the fare is Rs 8 and for the subsequent distance it is Rs 5 per km. taking the distance covered as x km and total fare as Rs y, write a linear equation for this information, and draw its graph.

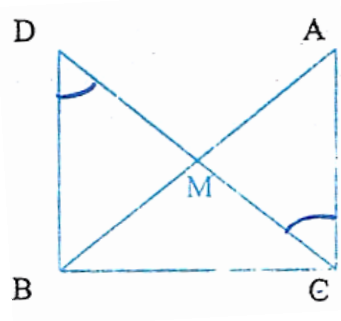
25. In right triangle ABC, right angled at C, M is the mid-point of hypotenuse AB. C is joined to M and produced to a point D such that DM = CM. Point D is joined to point B (see fig). Show that:

(i) $\Delta AMC \cong \Delta BMD$

(ii) $\angle DBC$ is a right angle.

(iii) $\Delta DBC \cong \Delta ACB$

(iv) $CM = \frac{1}{2} AB$



26. Verify that $x^3 + y^3 + z^3 - 3xyz = \frac{1}{2}(x + y + z)[(x - y)^2 + (y - z)^2 + (z - x)^2]$