Class - IX
PA - II
(2025-26)
Mathematics

Date : 8 September 2025
Time: 3 hrs.

Roll No.: _____
M.M : 80

General Instructions:

- This question paper contains 38 questions. All questions are compulsory.
- The question paper is divided into Five sections – Sections A, B, C, D, and E.
- In section A, questions 1 to 18 are multiple-choice questions (MCQs) and questions 19 and 20 are Assertion – Reason-based questions of 1 mark each.
- In section B, questions 21 to 25 are very short answer (VSA) type questions of 2 marks each.
- In section C, questions 26 to 31 are short answer (SA) type questions carrying 3 marks each.
- In section D, questions 32 to 35 are long answer (LA) type questions carrying 5 marks each.
- In section E, questions 36 to 38 are case-based integrated units of assessment questions carrying 4 marks each.
- Draw neat figures wherever required.
- The use of a calculator is not allowed.

Section- A
(20x1=20)

1. _____ between two rational numbers. (1)

a) There is no rational number
b) There is exactly one rational number
c) There are infinitely many rational numbers
d) There are only rational numbers and no irrational numbers

2. The decimal representation of a rational number cannot be _____. (1)
   a) terminating
   b) non-terminating
   c) non-terminating and repeating
   d) non-terminating and non-repeating

3. Which of the following is irrational? (1)
   a) $\frac{\sqrt{4}}{\sqrt{9}}$ b) $\frac{\sqrt{12}}{\sqrt{3}}$ c) $\sqrt{7}$ d) $\sqrt{81}$

4. '2' is a polynomial of degree _____. (1)
   a) 2 b) 0 c) 1 d) $\frac{1}{2}$

5. For a polynomial p(x) of degree '2', p(2) = 0 and p(-3) = 0. Which of the following could be p(x)? (1)
   a) (x + 3) b) $2(x - 2)^2$
   c) 2(x - 2)(x + 3) d) (x - 2)(x + 3) + 5

6. Factorize: $12a^2b - 6ab^2$ (1)
   a) 6ab(2a – b) b) 2ab(6a – 3b)
   c) 3ab(4a – 2b) d) 6a(2ab – b)

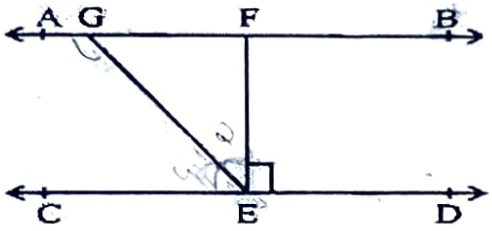
7. The basic facts which are taken for granted, without proof and which are specific to geometry are called _____. (1)
   a) axiom b) postulates
   c) theorem d) definition

8. If $x + y = 10$ then $x + y + z = 10 + z$. Then the Euclid's axiom that illustrates this statement is: (1)
   a) Things which are equal to the same thing are equal to one another
   b) If equals are added to equals, the wholes are equal.
   c) If equals are subtracted from equals, the remainders are equal.
   d) The whole is lesser than the part.

9. What is the minimum number of lines required to make a polygon? (1)
a) One b) Two c) Three d) Four

10. If two complementary angles are in the ratio 13 : 5, then the angles are _____ . (1)
a) 13° , 5° b) 18° , 81° c) 65° , 25° d) 65° , 35°

11. If AB || CD, EF ⊥ CD and ∠GED = 135° as per the figure given below. (1)



The value of ∠AGE is _____ .
a) 120° b) 140° c) 90° d) 135°

12. In triangles ABC and DEF, AB = FD and ∠A = ∠D. The two triangles will be congruent by SAS axiom if _____ . (1)
a) BC = EF b) AC = DE
c) AC = EF d) BC = DE

13. If Δ ABC ≅ Δ PQR, then which of the following is not true? (1)
a) AC = PR b) BC = PQ
c) QR = BC d) AB = PQ

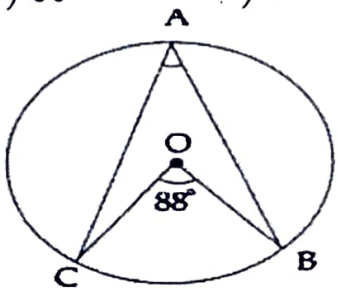
14. In triangles ABC and PQR, AB = AC, ∠C = ∠P and ∠B = ∠Q. The two triangles are _____ . (1)
a) Isosceles and congruent
b) Isosceles but not congruent
c) Congruent but not isosceles
d) Neither congruent nor isosceles

15. It is given that Δ ABC ≅ Δ FDE and AB = 5 cm, ∠B = 40° and ∠A = 80°. Then which of the following is true? (1)

a) DF = 5 cm, $\angle F = 60°$ b) DF = 5 cm, $\angle E = 60°$
c) DE = 5 cm, $\angle E = 60°$ d) DE = 5 cm, $\angle D = 40$

16. Diagonals of a rectangle _____. (1)
a) are not equal b) do not bisect each other
c) are perpendicular d) are equal and bisect each other

17. In the figure given below, what is the measure of $\angle BAC$? (1)
a) 44° b) 60° c) 88° d) 176°



18. What is the length of each side of an equilateral triangle having an area of $4\sqrt{3}$ cm^2 (1)
a) 4cm b) 5cm c) 3cm d) 6cm

Directions: In the following questions, a statement of Assertion (A) is followed by a statement of Reason (R). Mark the correct choice as:

a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
b) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
c) Assertion (A) is true, but Reason (R) is false.
d) Assertion (A) is false, but Reason (R) is true.

19. Assertion (A): The degree of the polynomial $4x^4 + 0x^3 + 0x^2 + 5x + 7$ is 4.
Reason (R): The highest power of the variable is 4, so the degree of polynomial is 4. (1)

20. Assertion (A): The pair of angles 120° and 60° is supplementary.

Reason (R): Two angles, whose sum is 90° are called supplementary angles. (1)

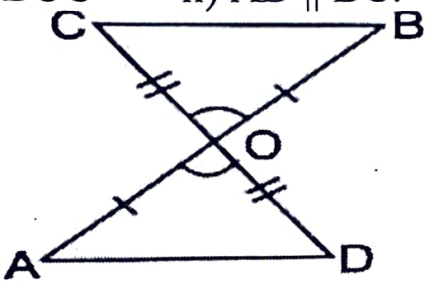
Section - B
(5x2=10)

21. Factorise: $5x^2 + 14x - 3$. (2)

22. Evaluate $(1003)^3$ using suitable identity. (2)

23. If the perimeter of an equilateral triangle is 60 m, find the area of this triangle. (2)

24. In the given figure, OA = OB and OD = OC. Show that
i) $\triangle AOD \cong \triangle BOC$ ii) AD || BC. (2)

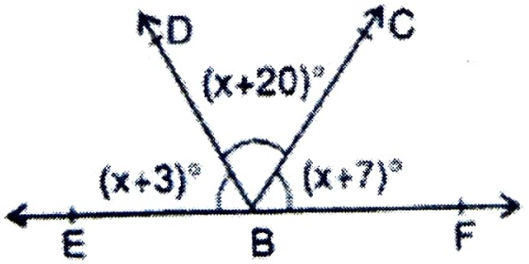


25. Express $2.333\ldots\ldots = 2.\overline{3}$ into $\frac{p}{q}$ form where p and q are integers and $q \neq 0$ (2)

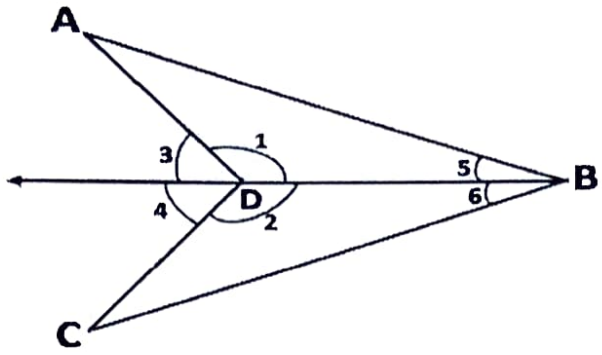
Section - C
(6x3=18)

26. Show that the diagonals of a square are equal. (3)

27. In the given figure, find the value of 'x' and then find all the angles: (3)



28. In the given figure, BD is a line segment. From point *D* two line segments *AD* and *DC* are drawn such that *AD* = *CD*, also ∠3 = ∠4. Prove that segment *BD* bisects ∠*ABC*. (3)



29. If a point R lies between two points P and Q such that PR = RQ, then prove that PR = $\frac{1}{2}$ PQ. Explain by drawing the figure and Euclid's axiom. (3)

30. ABCD is a cyclic quadrilateral in which AC and BD are its diagonals. If $\angle DBC = 55°$ and $\angle BAC = 45°$, find $\angle BCD$. (3)

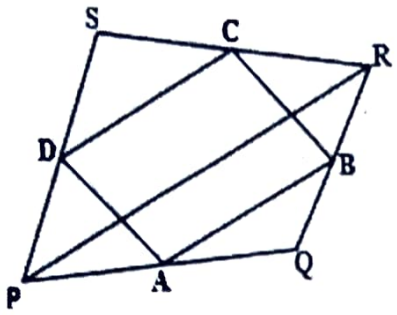
31. An umbrella is made by stitching ten triangular pieces of cloth, each piece measuring 60 cm, 60 cm, and 20 cm. Find the area of the cloth required for the umbrella. (3)

Section - D
(4x5=20)

32. a) Factorize: $16a^4 - b^4$ (3)
    b) Find the value of: $(-9)^3 + (15)^3 + (-6)^3$ using the suitable identity. (2)

33. A triangular park has sides 60 m, 56 m and 52 m. A gardener has to put a fence all around its boundary and also plant grass inside. Find the area in which grass will be planted. Also calculate the cost of fencing it with barbed wire at the rate of ₹ 40 per meter, leaving a spare 2 m wide gate on one side. (5)

34. In the given figure, PQRS is a quadrilateral in which A, B, C and D are mid-points of PQ, QR, SR and SP respectively. PR is its diagonal.



Show that

i) CD || PR and CD = $\frac{1}{2}$ PR (2)

ii) AB = CD (2)

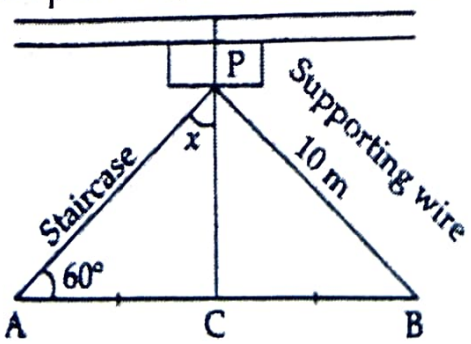
iii) ABCD is a parallelogram. (1)

35. If two intersecting chords of a circle make equal angles with the diameter passing through their point of intersection, prove that the chords are equal. (5)

Section - E
(3x4=12)

36. Read the following passage and answer the following questions:

In a village, there was a big pole PC. This pole was tied with a strong wire of 10 m in length. Once there was a big spark on this pole, the wires got damaged very badly. Any small fault was usually repaired with the help of a rope that normal board electricians were carrying on bicycles. This time electricians need a staircase of 10 m so that it can reach at point P on the pole and this should make 60° with line AC.



i) In the figure, prove that ΔPAC and ΔPBC are congruent. (2)

ii) Find the value of $\angle x$. (1)

iii) Find the measure of $\angle PBA$. (1)

37. In a classroom activity on real numbers, the students have to give answers to some questions framed by their teacher based on number cards picked up by the first 3 roll numbers. What correct answer should be given by the students in each of the following questions:

i) Reena picked up $\sqrt{7}$ and the question asked by the teacher was, whether $\sqrt{7}$ is a rational or irrational number. (1)

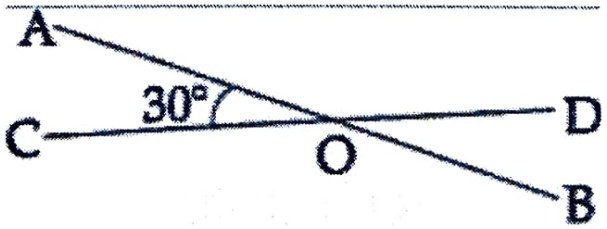
ii) Rajiv picked up a card on which it is written $\sqrt{15} - \sqrt{10}$ and again teacher asked whether it is rational or irrational. (1)

iii) Saumya picked the third card on which divide $9\sqrt{15}$ by $3\sqrt{3}$ was written. Now teacher asked the students to solve this. (1)

iv) Reena again picked up the card showing: (1)

$(\sqrt{15} - \sqrt{10})(\sqrt{15} + \sqrt{10})$. The teacher asked her to solve this.

38. Harry was going on a road trip with his father. They were travelling on a straight road. After riding for some distance, they reached a crossroad where one straight road cuts the other at 30°.



Now using the given information, answer the following questions.

i) Find the measure of $\angle BOD$. (1)

ii) Find the measure of $\angle AOD$. Give a reason to support your answer. (2)

iii) Find the reflex $\angle BOC$. (1)