

PERIODIC TEST 2 - (2026-27)
SUBJECT – MATHEMATICS (SET - 1)

TIME – 1½ Hours

Class- IX

M.M. – 40

General Instructions: All questions are compulsory. This question paper contains 21 questions divided into Sections A, B, C, and D.

SECTION – A (10 x 1 = 10M)

Q1. Which of the following is an irrational number?

- (A) $\sqrt{4}$ (B) $\sqrt{9}$ (C) $\sqrt{7}$ (D) $\sqrt{16}$

Q2. The decimal representation of $\frac{3}{11}$ is:

- (A) Terminating (B) Non-terminating repeating (C) Non-terminating non-repeating (D) None of these

Q3. The degree of the polynomial $5x^3 - 4x^2 + 7x$ is:

- (A) 1 (B) 2 (C) 3 (D) 0

Q4. If $x + 1$ is a factor of polynomial $p(x) = x^3 + x^2 + x + 1$, then $p(-1)$ is:

- (A) 1 (B) -1 (C) 0 (D) 2

Q5. Heron's formula for the area of a triangle with sides a, b, c and semi-perimeter s is:

- (A) $\sqrt{s(s-a)(s-b)(s-c)}$ (B) $s(s-a)(s-b)(s-c)$ (C) $\sqrt{s(s+a)(s+b)(s+c)}$ (D) $\frac{1}{2} \times \text{base} \times \text{height}$

Q6. The angle subtended by the diameter of a circle at any point on the circle is:

- (A) 45° (B) 60° (C) 90° (D) 180°

Q7. If the diameter of a circle is 14 cm, its area is:

- (A) 154 cm^2 (B) 308 cm^2 (C) 44 cm^2 (D) 616 cm^2

Q8. The ratio of the areas of two circles with radii r_1 and r_2 is:

- (A) $r_1 : r_2$ (B) $r_1^2 : r_2^2$ (C) $2r_1 : 2r_2$ (D) $r_2 : r_1$

Q9. Assertion (A): Every integer is a rational number.

Reason (R): Every integer can be expressed in the form $\frac{p}{q}$ where $q = 1$.

- (A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) Assertion A is true but Reason R is false.
(D) Assertion A is false but Reason R is true.

Q10. Assertion (A): Equal chords of a circle subtend equal angles at the centre.

Reason (R): Angles subtended by equal chords at the circumference are equal.

- (A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.

- (C) Assertion A is true but Reason R is false.
(D) Assertion A is false but Reason R is true.

SECTION – B (5 x 2 = 10M)

- Q11. Express $0.\overline{6}$ in the form p/q , where p and q are integers and $q \neq 0$.
- Q12. Find the value of 105×106 without direct multiplication, using suitable algebraic identity.
- Q13. Expand: $(x + 2y + 4z)^2$ using appropriate identity.
- Q14. Find the length of a chord of a circle of radius 10 cm, if the perpendicular distance of the chord from the centre is 6 cm.
- Q15. Find the area of a sector of a circle with radius 21 cm and central angle 60° .

SECTION – C (4 x 3 = 12M)

Q16. [Figure / Field Problem] A triangular park has sides 26 m, 28 m, and 30 m. Find the cost of leveling the park at ₹20 per m^2 .

(OR)

Find the area of a quadrilateral ABCD in which $AB = 3$ cm, $BC = 4$ cm, $CD = 4$ cm, $DA = 5$ cm and $AC = 5$ cm.

Q17. Prove that equal chords of a circle subtend equal angles at the centre.

Q18. Factorise using factor theorem: $x^3 - 23x^2 + 142x - 120$.

(OR)

Evaluate $(104)^3$ using suitable algebraic identity.

Q19. In a circle with centre O, ABCD is a cyclic quadrilateral. If $\angle ABC = 70^\circ$, find $\angle ADC$. Also find the reflex angle $\angle AOC$ if O is the centre.

SECTION – D (2 x 4 = 8M)

Q20. [Case Study 1: Circular Grounds & Parallel Chords]

A circular ground has a radius of 17 m. Two parallel chords of lengths 16 m and 30 m are drawn on opposite sides of the centre.

(i) Find the perpendicular distance of the 30 m chord from the centre. (1M)

(ii) Find the perpendicular distance of the 16 m chord from the centre. (1M)

(iii) Calculate the total distance between the two parallel chords. (2M)

(OR)

(iii) If an arc subtends an angle of 140° at the centre, find the angle subtended by the same arc at any point on the remaining part of the circumference. (2M)

Q21. [Case Study 2: Triangular Landscaping & Flower Bed]

A floral garden is shaped like a triangle with side dimensions 50 m, 120 m, and 130 m.

(i) Calculate the semi-perimeter of the triangular garden. (1M)

(ii) Calculate the total area of the garden using Heron's formula. (1M)

(iii) If a rectangular water fountain of dimensions $10\text{ m} \times 5\text{ m}$ is installed inside this garden, find the area of the remaining lawn. (2M)

(OR)

(iii) Find the cost of fencing the triangular garden with 4 rounds of wire at ₹12 per metre, leaving a 2 m entrance gap. (2M)