



THE VOLUME DEFENCE AND EDUCATION ACADEMY

"Your Success, Our Commitment"

CENTRAL BOARD OF SECONDARY EDUCATION MODEL QUESTION PAPER - 1 (2026–27)

CLASS X — MATHEMATICS (STANDARD)

Subject Code: 041

Time Allowed: 3 Hours

Maximum Marks: 80

GENERAL INSTRUCTIONS:

1. This Question Paper has 5 Sections A, B, C, D and E.
2. Section A has 20 MCQs carrying 1 mark each.
3. Section B has 5 questions carrying 2 marks each.
4. Section C has 6 questions carrying 3 marks each.
5. Section D has 4 questions carrying 5 marks each.
6. Section E has 3 Case-Based questions carrying 4 marks each.
7. All Questions are compulsory. However, internal choice is provided in some questions.
8. Draw neat diagrams wherever required. Diagrams not drawn will not fetch marks.
9. Use of calculator is NOT allowed.

MATHEMATICS QUESTION PAPER

SECTION – A

(Multiple Choice Questions — Each question carries 1 mark)

1. The HCF and LCM of two numbers are 9 and 360 respectively. If one number is 45, the other number is:
(A) 36
(B) 72
(C) 54
(D) 90
2. If the zeroes of the polynomial $p(x) = x^2 + (a+1)x + b$ are 2 and -3 , then:
(A) $a = -7, b = -1$
(B) $a = 5, b = -1$
(C) $a = 2, b = -6$
(D) $a = 0, b = -6$
3. The pair of linear equations $2x + 3y = 5$ and $4x + 6y = 10$ has:
(A) A unique solution
(B) Exactly two solutions
(C) Infinitely many solutions
(D) No solution



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4. Which of the following is **NOT** a quadratic equation?
(A) $(x - 2)^2 + 1 = 2x - 3$
(B) $x(x + 1) + 8 = (x + 2)(x - 2)$
(C) $x(2x + 3) = x^2 + 1$
(D) $(x + 2)^3 = x^3 - 4$
5. The common difference of an AP whose n th term is $7 - 4n$ is:
(A) 4
(B) -4
(C) 7
(D) -7
6. If the distance between the points A(2, -2) and B(-1, x) is 5, one value of x is:
(A) 2
(B) -2
(C) -6
(D) 6
7. The mid-point of segment joining A(2a, 4) and B(-2, 3b) is M(1, 2a + 1). The values of a and b are:
(A) $a = 1, b = 2$
(B) $a = 2, b = 1$
(C) $a = 1, b = 1$
(D) $a = 2, b = 2$
8. If $\tan \theta = \frac{12}{5}$, then $(\sin \theta + \cos \theta)$ equals:
(A) $\frac{17}{13}$
(B) $\frac{7}{13}$
(C) $\frac{13}{17}$
(D) 1
9. The value of $(\sin^2 30^\circ + \cos^2 60^\circ) - (\tan^2 45^\circ - \sin^2 90^\circ)$ is:
(A) -1/2
(B) 1/2
(C) 3/2
(D) 1
10. The length of the tangent drawn from a point 5 cm away from the centre of a circle of radius 3 cm is:
(A) 4 cm
(B) 6 cm
(C) 8 cm
(D) 3.5 cm
11. In the figure, PA and PB are tangents from external point P. If $\angle APB = 50^\circ$, then $\angle OAB$ is:
(A) 25°
(B) 40°
(C) 65°
(D) 50°
12. A pole 6 m high casts a shadow $2\sqrt{3}$ m long. The angle of elevation of the sun is:
(A) 30°
(B) 45°



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- (C) 60°
(D) 90°
13. The area of a sector of a circle with radius 6 cm and angle 60° is:
(A) $6\pi \text{ cm}^2$
(B) $12\pi \text{ cm}^2$
(C) $3\pi \text{ cm}^2$
(D) $9\pi \text{ cm}^2$
14. The volume of a solid hemisphere of radius r is:
(A) $\frac{4}{3}\pi r^3$
(B) $\frac{2}{3}\pi r^3$
(C) $2\pi r^3$
(D) $\frac{1}{3}\pi r^3$
15. The mean of 20 observations is 15. If 2 is added to each observation, the new mean is:
(A) 15
(B) 17
(C) 30
(D) 13
16. For a frequency distribution, mean = 10 and median = 12. The mode is:
(A) 14
(B) 16
(C) 8
(D) 11
17. A card is drawn at random from a well-shuffled deck of 52 cards. The probability of getting a face card is:
(A) $1/13$
(B) $3/13$
(C) $4/13$
(D) $2/13$
18. Two dice are thrown simultaneously. The probability of getting a sum of 8 is:
(A) $5/36$
(B) $1/6$
(C) $7/36$
(D) $1/4$

Assertion–Reason Questions (Q19–Q20)

19.

Assertion (A): $\sqrt{3}$ is an irrational number.

Reason (R): Square root of any prime number is irrational.

- (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) A is true but R is false.
(D) A is false but R is true.



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20.

Assertion (A): The equation $x^2 + x + 1 = 0$ has no real roots.

Reason (R): A quadratic equation has no real roots if discriminant < 0 .

- (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) A is true but R is false.
(D) A is false but R is true.

SECTION – B

(Each question carries 2 marks)

21. Find the HCF and LCM of 306 and 657. Verify that $\text{HCF} \times \text{LCM} = \text{Product of the two numbers}$.
22. Find the zeroes of the polynomial $p(x) = x^2 - 3$ and verify the relationship between zeroes and coefficients.
23. In $\triangle ABC$, right-angled at B, $AB = 24$ cm and $BC = 7$ cm. Find $\sin A$ and $\cos C$.
OR
If $\sin(A + B) = 1$ and $\cos(A - B) = \frac{\sqrt{3}}{2}$, find A and B.
24. Prove that the tangents drawn from an external point to a circle are equal in length.
25. Find the area of a quadrant of a circle of radius 14 cm.

SECTION – C

(Each question carries 3 marks)

26. Prove that $\sqrt{5}$ is irrational.
27. Find the roots of the equation:
 $3x^2 - 5x + 2 = 0$ using quadratic formula.
OR
The sum of a number and its reciprocal is $\frac{10}{3}$. Find the number.
28. In an AP, the sum of first n terms is
 $S = \frac{3n^2}{2} + \frac{5n}{2}$.
Find the AP and its 25th term.
29. Prove that:
$$(\sin \theta - \csc \theta)(\cos \theta - \sec \theta) = \frac{1}{\tan \theta + \cot \theta}$$
30. From a point on the ground, the angle of elevation of the top of a tower is 30° . On walking 20 m towards the tower, the angle becomes 60° . Find the height.
OR
Two poles of heights 6 m and 11 m stand 12 m apart. Find the distance between their tops.



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31. A bag contains 6 red, 5 blue, and 4 green balls. One ball is drawn. Find probability of:

- (i) Red
- (ii) Not green
- (iii) Blue or green

SECTION – D

(Each question carries 5 marks)

32. Solve graphically:

$$2x + y = 6 \text{ and } 2x - y + 2 = 0.$$

Find vertices of triangle formed with y-axis.

OR

Boat problem (speed of stream and still water).

33. State and prove Basic Proportionality Theorem.

$$\text{If } \frac{PD}{DQ} = \frac{3}{5}, \text{ find } \frac{PE}{ER}.$$

34. A sphere of radius 4.2 cm is melted into a cylinder of radius 6 cm. Find height.

OR

Tent surface area problem.

35. Find mean, median, and mode:

Yield (kg/ha)	50–55	55–60	60–65	65–70	70–75	75–80
No. of farms	2	8	12	24	38	16

SECTION – E

(Case Study — Each question carries 4 marks)

36. Saving Plan

Riya saves ₹2, ₹4, ₹6, ₹8...

- (i) Type of sequence and first four terms
- (ii) Amount on 15th day
- (iii) Total in 30 days

37. Garden Design

Diagonal of square = 14 m

- (i) Radius of circle
 - (ii) Area of square
 - (iii) Area outside square
-



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38. Survey (200 people)

Car: 80, Bus: 60, Cycle: 40, Walking: 20

- (i) Probability (Car)
- (ii) Probability (Not Bus)
- (iii) Probability (Cycle or Walking) and (Not Walking)

*** END OF QUESTION PAPER ***

All the best!

