Series MC-X-BSC

Roll No. | | | | | | | |

Candidates must write the Q.P. Code on the title page of the answer-book.

Q.P. Code
MC/X/B/01

MATHEMATICS (BASIC)

Class X • Sample Paper 01 • Session 2026–27

(As per the CBSE Sample Question Paper 2026–27 (Basic) design)

Time allowed : 3 hours **Maximum Marks : 80**

NOTE

(i) Please check that this question paper contains 5 printed pages.
(ii) Q.P. Code given on the right hand side of the question paper should be written on the title page of the answer-book by the candidate.
(iii) Please check that this question paper contains 38 questions.
(iv) Please write down the serial number of the question in the answer-book before attempting it.
(v) 15 minute time has been allotted to read this question paper. The students will read the question paper only and will not write any answer on the answer-book during this period.

General Instructions :

Read the following instructions carefully and follow them :

(i) This question paper contains **38** questions. All questions are compulsory.
(ii) This question paper is divided into **five** Sections – **A, B, C, D** and **E**.
(iii) In **Section A**, Questions no. **1** to **18** are multiple choice questions (MCQs) and questions no. **19** and **20** are Assertion-Reason based questions of **1** mark each.
(iv) In **Section B**, Questions no. **21** to **25** are very short answer (VSA) type questions, carrying **2** marks each.
(v) In **Section C**, Questions no. **26** to **31** are short answer (SA) type questions, carrying **3** marks each.
(vi) In **Section D**, Questions no. **32** to **35** are long answer (LA) type questions, carrying **5** marks each.
(vii) In **Section E**, Questions no. **36** to **38** are case study based questions carrying **4** marks each.
(viii) There is no overall choice. However, an internal choice has been provided in **2** questions in **Section B**, **2** questions in **Section C**, **2** questions in **Section D**, and in all the sub-parts of **2** marks in **Section E**.
(ix) Draw neat figures wherever required. Take $\pi = \frac{22}{7}$ wherever required, if not stated.
(x) Use of calculators is **NOT** allowed.

SECTION A

This section comprises 20 Multiple Choice Questions (MCQs) carrying 1 mark each.

1. The LCM of 26 and 91 is:

(A) 13 (B) 182 (C) 2366 (D) 91

2. The zeroes of the polynomial $x^2 - 3x - 10$ are:

(A) $5, -2$ (B) $-5, 2$ (C) $5, 2$ (D) $-5, -2$

3. For what value of k does the pair of linear equations $3x+4y=7$ and $6x+ky=9$ have no solution?

(A) 4 (B) 8 (C) -8 (D) 2

4. The sum of two numbers is 34 and their difference is 10. The larger number is:

(A) 12 (B) 22 (C) 24 (D) 20

5. The discriminant of the quadratic equation $2x^2 - 4x + 3 = 0$ is:

(A) 8 (B) -8 (C) 40 (D) -40

6. The 10^{th} term of the A.P. $5, 9, 13, \ldots$ is:

(A) 41 (B) 45 (C) 37 (D) 49

7. The n^{th} term of an A.P. is $(7 - 4n)$. Its common difference is:

(A) 4 (B) -4 (C) 3 (D) 7

8. The mid-point of the line segment joining the points $(2, -3)$ and $(-6, 7)$ is:

(A) $(-2, 2)$ (B) $(4, -5)$ (C) $(-2, 5)$ (D) $(2, -2)$

9. A die is thrown once. The probability of getting a number greater than 4 is:

(A) $\frac{1}{2}$ (B) $\frac{1}{3}$ (C) $\frac{2}{3}$ (D) $\frac{1}{6}$

10. For the following distribution, the median class is:

Class	0–10	10–20	20–30	30–40	40–50
Frequency	5	8	12	10	5

(A) 10–20 (B) 20–30 (C) 30–40 (D) 40–50

11. The length of the tangent drawn from a point 13 cm away from the centre of a circle of radius 5 cm is:

(A) 12 cm (B) 8 cm (C) 18 cm (D) 10 cm

12. If the mean and the median of a data are 27 and 33 respectively, then its mode is:

(A) 45 (B) 39 (C) 43 (D) 35

13. A kite is flying at a height of 60 m above the ground. The string attached to the kite makes an angle of 60° with the ground. Assuming the string to be straight, its length is:

(A) $40\sqrt{3}$ m (B) $60\sqrt{3}$ m (C) $30\sqrt{3}$ m (D) 120 m

14. The value of $\sin 60^\circ \cos 30^\circ + \cos 60^\circ \sin 30^\circ$ is:

(A) 0 (B) 1 (C) $\frac{1}{2}$ (D) $\frac{\sqrt{3}}{2}$

15. If $\triangle ABC \sim \triangle DEF$ such that $2AB = DE$ and $BC = 8$ cm, then EF is:

(A) 16 cm (B) 4 cm (C) 8 cm (D) 12 cm

16. If $\triangle ABC \sim \triangle QRP$, then which of the following is true?

(A) $\angle A = \angle Q$ (B) $\angle A = \angle P$ (C) $\angle B = \angle P$ (D) $\angle C = \angle Q$

17. PA and PB are tangents drawn from an external point P to a circle with centre O. If $\angle APB = 70^\circ$, then $\angle AOB$ is:

(A) 110° (B) 70° (C) 90° (D) 140°

18. The volume of a solid hemisphere of radius 21 cm is:

(A) 19404 cm^3 (B) 38808 cm^3 (C) 9702 cm^3 (D) 2772 cm^3

*Questions number **19** and **20** are Assertion and Reason based questions. Two statements are given, one is labelled as Assertion (A) and the other is labelled as Reason (R). Select the correct answer to these questions from the codes (A), (B), (C) and (D) as given below.*

(A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).

(B) Both Assertion (A) and Reason (R) are true, but Reason (R) is ***not*** the correct explanation of the 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 probability of an event cannot be 1.2.

Reason (R) : For any event E, $0 \leq P(E) \leq 1$.

20. *Assertion (A) :* In $\triangle ABC$, D and E are points on AB and AC such that $AD = 3$ cm, $DB = 4$ cm, $AE = 6$ cm and $EC = 8$ cm. Then $DE \parallel BC$.

Reason (R) : A line drawn parallel to one side of a triangle intersecting the other two sides in distinct points divides those sides in the same ratio.

SECTION B

This section comprises 5 Very Short Answer (VSA) type questions carrying 2 marks each.

21. (a) Express 3150 as a product of its prime factors.

OR

(b) Find the HCF and LCM of 96 and 404 by the prime factorisation method.

22. Evaluate: $\dfrac{5\cos^2 60^\circ + 4\sec^2 30^\circ - \tan^2 45^\circ}{\sin^2 30^\circ + \cos^2 30^\circ}$

23. Find the zeroes of the quadratic polynomial $6x^2 - 3 - 7x$ and verify the relationship between the zeroes and the coefficients.

24. Prove that the tangents drawn at the ends of a diameter of a circle are parallel.

25. (a) Show that the points $A(5, -2)$, $B(6, 4)$ and $C(7, -2)$ are the vertices of an isosceles triangle.

OR

(b) If the point $A(x, 2)$ is equidistant from the points $B(8, -2)$ and $C(2, -2)$, find the value of x.

SECTION C

This section comprises 6 Short Answer (SA) type questions carrying 3 marks each.

26. Given that $\sqrt{3}$ is irrational, prove that $5 - \sqrt{3}$ is an irrational number.

27. (a) Prove that the lengths of the tangents drawn from an external point to a circle are equal.

OR

(b) Prove that the tangents drawn at the ends of a chord of a circle make equal angles with the chord.

28. In what ratio does the point $P(-4, 6)$ divide the line segment joining the points $A(-6, 10)$ and $B(3, -8)$? Verify using the y-coordinate.

29. Prove that: $\dfrac{1 + \tan^2 A}{1 + \cot^2 A} = \left(\dfrac{1 - \tan A}{1 - \cot A}\right)^2 = \tan^2 A$

30. (a) Find the mean of the following distribution:

Class	0–10	10–20	20–30	30–40	40–50
Frequency	7	8	12	13	10

OR

(b) Find the mode of the following data:

Class	0–20	20–40	40–60	60–80	80–100	100–120	120–140
Frequency	6	8	10	12	6	5	3

31. The cost of 5 pencils and 7 pens is ₹ 50, whereas the cost of 7 pencils and 5 pens is ₹ 46. Find the cost of one pencil and that of one pen.

SECTION D

This section comprises 4 Long Answer (LA) type questions carrying 5 marks each.

32. State and prove the Basic Proportionality Theorem. Using it, find AE if in $\triangle ABC$, $DE \parallel BC$ with D on AB and E on AC, $\frac{AD}{DB} = \frac{3}{5}$ and $AC = 5.6$ cm.

33. (a) The difference of the squares of two numbers is 180. The square of the smaller number is 8 times the larger number. Find the two numbers.

OR

(b) The product of Ramu's age (in years) five years ago and his age ten years later is 16. Find his present age.

34. A solid iron pole consists of a cylinder of height 220 cm and base diameter 24 cm, which is surmounted by another cylinder of height 60 cm and radius 8 cm. Find the mass of the pole, given that 1 cm^3 of iron has approximately 8 g mass. (Use $\pi = 3.14$)

35. (a) The shadow of a tower standing on a level ground is found to be 40 m longer when the sun's altitude is 30° than when it is 60°. Find the height of the tower. (Use $\sqrt{3} = 1.732$)

OR

(b) A man on the deck of a ship, 10 m above the water level, observes that the angle of elevation of the top of a hill is 60° and the angle of depression of the base of the hill is 30°. Find the distance of the hill from the ship and the height of the hill.

SECTION E

This section comprises 3 case study based questions carrying 4 marks each.

36. Meera made a circular wall-hanging of radius 21 cm. She painted a sector OAB of the circle, with centre O and $\angle AOB = 60^\circ$, in golden colour and the rest of the circle in blue. Based on the above information, answer the following questions:

(i) Find the length of the arc AB. *1*

(ii) Find the area of the golden sector OAB. *1*

(iii) (a) Find the area of the minor segment cut off by the chord AB. (Use $\sqrt{3} = 1.73$) *2*

OR

(iii) (b) Find the area of the part painted blue. *2*

37. Ritu decides to save money every week. She saves ₹ 50 in the first week and increases her saving by ₹ 20 every week. Based on the above information, answer the following questions:

(i) How much will she save in the 10^{th} week? *1*

(ii) In which week will she save ₹ 410? *1*

(iii) (a) Find her total saving in the first 12 weeks. *2*

OR

(iii) (b) In how many weeks will her total saving be ₹ 1400? *2*

38. In a lucky-draw game at a school fair, a box contains 8 red, 5 blue and 7 green balls of the same size. A ball is drawn at random from the box. Based on the above information, answer the following questions:

(i) Find the probability that the ball drawn is blue. *1*

(ii) Find the probability that the ball drawn is not green. *1*

(iii) (a) If 4 more red balls are put into the box, find the probability of drawing a red ball. *2*

OR

(iii) (b) How many blue balls should be added to the box so that the probability of drawing a blue ball becomes $\frac{1}{2}$? *2*

• • • End of Question Paper • • •

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