Baselios Public School

Undera, Vadodara

Pre-Board Examination, A.Y: 2025-26

Standard : Class 10
Date : 01/01/2026

Subject : Mathematics - Basic
Marks : 80
Time : 180 minutes

General Instructions:

Read the following instructions very carefully and strictly 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, 18 questions are multiple choice questions (MCQs) and 2 questions are Assertion-Reason based questions of 1 mark each.

(iv) In Section B, 5 questions are very short answer (VSA) type questions, carrying 2 marks each.

(v) In Section C, 6 questions are short answer (SA) type questions, carrying 3 marks each.

(vi) In Section D, 4 questions are long answer (LA) type questions carrying 5 marks each.

(vii) In Section E, 3 questions are case study based questions carrying 4 marks each. Internal choice is provided in 2 marks questions in each case study.

(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 2 questions in Section E.

(ix) Draw neat diagrams wherever required. Take $\pi = 22/7$ wherever required, if not stated.

(x) Use of calculator is not allowed.

Section A

1. HCF of 72,120:

A) 6 B) 12 C) 24 D) 36

2. If a graph cuts x-axis at two points, polynomial degree is likely:

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

3. Coincident lines have:

A) unique solution B) infinite solutions C) no solution D) inconsistent

4. AP 3,6,9... sequence type

A) GP B) AP C) HP D) none

5. The discriminant for $2x^2+5x+3=0$:

A) 25-24 B) 25+24 C) 24-25 D) 0

6. Equation $2x + y = 4$ and $x - y = 1$ solved gives:

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

7. Which point lies on the negative y-axis?

A) (0, 5) B) (−5, 0) C) (0, −6) D) (−4, −3)

8. The tangent drawn at any point on a circle makes an angle with the chord equal to:

A) Angle in opposite arc B) 90°
C) 45° D) 0°

9. If a line intersects a circle at exactly two points, it is a:

A) Tangent B) Chord C) Secant D) Radius

10. Which triangles have equal shape and size?

A) Similar B) Congruent C) Right D) Scalene

11. A tangent is a special case of:

A) Chord B) Radius C) Diameter D) Secant

12. The angle of elevation of a tower is 60°. Which ratio gives the height?

A) sin 60° B) cos 60° C) tan 60° D) sec 60°

13. Which of the following ratios has the maximum value?

A) sin 60° B) cos 30° C) tan 45° D) sec 60°

14. Which ratio has value $\sqrt{3}$ at $\theta = 60°$?

A) sin B) cos C) tan D) cosec

15. The total surface area of a cylinder includes:

A) curved surface only B) bases only
C) curved surface and bases D) none

16. If the edge of a cube is halved, its volume becomes:

A) half B) one-fourth C) one-eighth D) double

17. Cumulative frequency is obtained by:

A) subtracting frequencies B) multiplying frequencies
C) adding frequencies D) dividing frequencies

18. Which measure is best for open-end classes?

A) mean B) median C) mode D) range

Questions number 19 and 20 are Assertion and Reason based questions. Two statements are given, one 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 slant height of a cone can be equal to its height.

    Reason (R): Slant height is always greater than height in a cone.

20. Assertion (A): If two triangles have equal areas, they must be similar.

    Reason (R): Equal areas imply proportional sides.

Section B

1. AP has difference -3. Is it increasing or decreasing?
2. Using substitution, solve $x = 5 - y$ and $2x + y = 7$.

OR

Find decimal type of 5/6.

3. How many zeroes can a quadratic polynomial have?
4. Find decimal type of 5/6.

OR

Solve $x-2y = 1$ and $2x + 3y = 12$.

5. Prove that similar triangles have proportional corresponding sides.
6. Why is tan 90° not defined?
7. What is the probability of getting a number less than 7 on a die?

Section C

1. Solve $2x^2 + x - 6 = 0$.

2. A sequence has constant difference. Is it AP?
3. Solve $x^2 - 4x - 21 = 0$.

OR

Check decimals of 7/25.

4. Why is a tangent always a straight line?
5. Check decimals of 7/25.

OR

Find t50 of AP 2,6,10,...

6. Prove that the distance between the centre of a circle and a tangent is equal to the radius.
7. Prove that tan 45° = 1.
8. What is experimental probability?

Section D

1. Prove that two right triangles with equal acute angles are similar.
2. Find the mode of the following data. Class intervals: 0–10, 10–20, 20–30, 30–40 Frequencies: 3, 7, 15, 5

OR

From the top of a building, the angles of depression of the top and bottom of a tower are observed to be 30° and 45° respectively. If the tower is 10 m high, find the height of the building.

3. Explain why two tangents drawn from an external point are symmetric.
4. From the top of a building, the angles of depression of the top and bottom of a tower are observed to be 30° and 45° respectively. If the tower is 10 m high, find the height of the building.

OR

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

5. Prove that sin 45° = cos 45°.
6. Find the probability of drawing a face card from a deck of 52 cards.

Section E

1. Revenue model R=x(20-x) for selling x products.

    (a) Find max revenue using quadratic.

    (b) When max occurs?

2. AP model for parking slots increases by 3 per level starting 50.

    (a) Find slots in 20th level.

    (b) Total slots in first 20 floors.

3. A boy collects coins increasing pattern: 2, 5, 8, 11, ...

    (a) Coins collected on 25th day?

    (b) Total collected in 25 days?