

SAMPLE QUESTION PAPER

CBSE 2025-26

MATHEMATICS STANDARD

General Instructions :

Read the following instructions very carefully and strictly follow them:

1. This question paper contains 38 questions. All Questions are compulsory.
2. This Question Paper is divided into 5 Sections A, B, C, D and E.
3. In Section A, Question numbers 1-18 are multiple choice questions (MCQs) and questions no. 19 and 20 are Assertion- Reason based questions of 1 mark each.
4. In Section B, Question numbers 21-25 are very short answer (VSA) type questions, carrying 02 marks each.
5. In Section C, Question numbers 26-31 are short answer (SA) type questions, carrying 03 marks each.
6. In Section D, Question numbers 32-35 are long answer (LA) type questions, carrying 05 marks each.
7. In Section E, Question numbers 36-38 are case study-based questions carrying 4 marks each with sub parts of the values of 1, 1 and 2 marks each respectively.
8. There is no overall choice. However, an internal choice in 2 questions of Section B, 2 questions of Section C and 2 questions of Section D has been provided. An internal choice has been provided in all the 2 marks questions of Section E.
9. Draw neat and clean figures wherever required. Take $\pi = 22/7$ wherever required if not stated.
10. Use of calculators is not allowed.

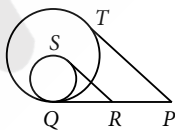
Time Allowed : 3 hours

Maximum Marks : 70

SECTION A

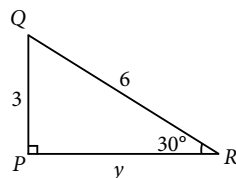
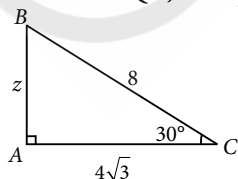
Section A consists of 20 questions of 1 mark each.

1. In the following figure, PQ is the common tangent to both the circles. SR and PT are tangents. If $SR = 4$ cm, $PT = 7$ cm, then find RP .



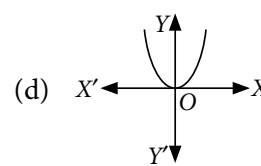
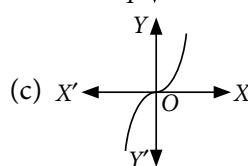
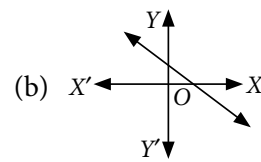
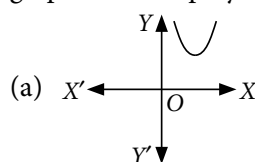
- (a) 4 cm (b) 3 cm
(c) 11 cm (d) 6 cm

2. If $\triangle ABC \sim \triangle PQR$, then $y + z$ equals



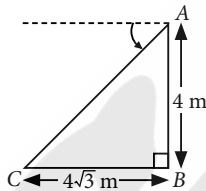
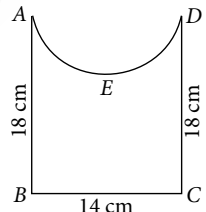
- (a) $2 + \sqrt{3}$ (b) $4 + 3\sqrt{3}$
(c) $4 + \sqrt{3}$ (d) $3 + 4\sqrt{3}$

3. Which of the following figure represents the graph of linear polynomial?



4. If $A(4, 2)$, $B(6, 5)$ and $C(1, 4)$ be the vertices of $\triangle ABC$ and AD is the median, then the coordinates of D are

- (a) $\left(\frac{5}{2}, 3\right)$ (b) $\left(5, \frac{7}{2}\right)$
(c) $\left(\frac{7}{2}, \frac{9}{2}\right)$ (d) None of these

5. The roots of the equation $x^2 + 5x + 5 = 0$ are
 (a) $\frac{-5+\sqrt{5}}{2}, \frac{-5-\sqrt{5}}{2}$ (b) $\frac{5-\sqrt{5}}{2}, \frac{5+\sqrt{5}}{2}$
 (c) $\frac{-3+\sqrt{5}}{2}, \frac{-3-\sqrt{5}}{2}$ (d) $\frac{3-\sqrt{5}}{2}, \frac{3+\sqrt{5}}{2}$
6. A ladder makes an angle of 60° with the ground when placed against a wall. If the foot of the ladder is 2 m away from the wall, then the length of the ladder (in meters) is
 (a) $\frac{4}{\sqrt{3}}$ (b) $4\sqrt{3}$
 (c) $2\sqrt{2}$ (d) 4
7. The value of $\frac{\tan^2 60^\circ + 4 \cos^2 45^\circ + 3 \sec^2 30^\circ + 5}{\operatorname{cosec} 30^\circ + \sec 60^\circ - \cot^2 30^\circ}$ is
 (a) 14 (b) $\frac{1}{9}$
 (c) 3 (d) $\frac{1}{3}$
8. A sector of a circle of diameter 8 cm contains an angle of 90° . The area of sector is
 (a) $4\pi \text{ cm}^2$ (b) 4 cm^2
 (c) $12\pi \text{ cm}^2$ (d) 20 cm^2
9. In a single throw of a die, the probability of getting a multiple of 2 is
 (a) $\frac{1}{2}$ (b) $\frac{1}{3}$
 (c) $\frac{1}{6}$ (d) $\frac{2}{3}$
10. If $x = k$ be a solution of the quadratic equation $x^2 + 4x + 3 = 0$, then $k = -1$ and
 (a) 2 (b) -3
 (c) 3 (d) -2
11. AB and CD are two common tangents to circles which touch each other at a point C. If D lies on AB such that $CD = 4$ cm then AB is equal to
 (a) 4 cm (b) 6 cm
 (c) 8 cm (d) 12 cm
12. If two solid hemispheres of same base radius r cm are joined together along their bases, then curved surface area of this new solid is
 (a) $2\pi r^2 \text{ cm}^2$ (b) $4\pi r^2 \text{ cm}^2$
 (c) $3\pi r^2 \text{ cm}^2$ (d) $6\pi r^2 \text{ cm}^2$
13. If the median of the data: 6, 7, $x - 2$, x , 17, 20 written in ascending order, is 16. Then x is equal to
 (a) 15 (b) 16 (c) 17 (d) 18
14. A man starts repaying a loan with first monthly installment of ₹ 1000. If he increases the installment by ₹ 50 every month, what amount will he pay in the 30th installment?
 (a) ₹ 1450 (b) ₹ 2450
 (c) ₹ 2050 (d) ₹ 2040
15. The figure shows the observation of point C from point A. The angle of depression from A is

 (a) 30° (b) 45° (c) 50° (d) 75°
16. In $\triangle ABC$, it is given that $AB = 9$ cm, $BC = 6$ cm and $CA = 7.5$ cm. Also, $\triangle DEF$ is given such that $EF = 8$ cm and $\triangle DEF \sim \triangle ABC$. Then, perimeter of $\triangle DEF$ is
 (a) 22.5 cm (b) 25 cm
 (c) 27 cm (d) 30 cm
17. In the given figure, find the perimeter of the figure where $\widehat{AED}$ is a semicircle and ABCD is a rectangle.

 (a) 152 cm (b) 36 cm
 (c) 72 cm (d) 102 cm
18. A number is selected at random from the numbers 2, 4, 4, 6, 6, 6, 8, 8, 8. The probability that the selected number is their average is
 (a) $\frac{1}{10}$ (b) $\frac{3}{10}$ (c) $\frac{7}{10}$ (d) $\frac{9}{10}$

DIRECTIONS : In the question number 19 and 20, a statement of **Assertion (A)** is followed by a statement of **Reason (R)**.

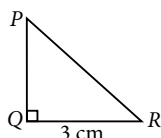
Choose the correct option :

- (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 and 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 volume of a hall, which is 5 times as high as it is broad and 8 times as long as it is high, is 12.8 m^3 . The breadth of the hall is 25 cm.

Reason (R) : The total surface area of a cuboid of length (l), breadth (b) and height (h) is $2[lb + bh + lh]$.

20. **Assertion (A)** : In $\triangle PQR$, right angled at Q , $QR = 3 \text{ cm}$, $PQ = 4 \text{ cm}$, $PR = 5 \text{ cm}$. The value of $\sin^2 R + \operatorname{cosec} R$ is $\frac{189}{100}$.



Reason (R) : $\sin^2 A = (\sin A)^2$ and $\operatorname{cosec} A = (\sec A)^{-1}$.

SECTION B

Section B consists of 5 questions of 2 marks each.

21. If α and β are zeroes of the polynomial $x^2 - p(x + 1) + c$ such that $(\alpha + 1)(\beta + 1) = 0$, then find the value of c .
22. (a) Solve the quadratic equation $16x^2 - 24x - 1 = 0$ by using the quadratic formula.

OR

- (b) For what value of k does the quadratic equation $(k - 5)x^2 + 2(k - 5)x + 2 = 0$ have equal roots?
23. Show that the points $(-2, 5)$, $(7, 10)$ and $(3, -4)$ are the vertices of a right angled isosceles triangle.
24. The HCF of 2472, 1284 and a third number N is 12. If their LCM is $2^3 \times 3^2 \times 5 \times 103 \times 107$, then find the number N .
25. (a) If the total surface area of a solid hemisphere is 462 cm^2 , then find its volume. [Take $\pi = \frac{22}{7}$]

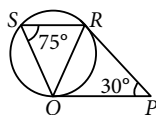
OR

- (b) A cubical ice-cream brick of edge 22 cm is to be distributed among some children by filling ice-cream cones of radius 2 cm and height 7 cm upto its brim. How many children will get the ice-cream cones?

SECTION C

Section C consists of 6 questions of 3 marks each.

26. In the given figure, tangents PQ and PR are drawn to a circle such that $\angle RPQ = 30^\circ$. A chord RS is drawn parallel to the tangent PQ . Find $\angle RQS$.



27. (a) The angles of depression of the top and bottom of a 50 m high building from the top of a tower are 45° and 60° respectively. Find the height of the tower and the horizontal distance between the tower and the building. (Use $\sqrt{3} = 1.73$)

OR

- (b) An aeroplane, when flying at a height of 4000 m from the ground passes vertically above another aeroplane at an instant when the angles of elevation of the two planes from the same point on the ground are 60° and 45° respectively. Find the vertical distance between the aeroplanes at that instant. (Take $\sqrt{3} = 1.73$)
28. If the points $P(2, 2)$ is equidistant from the points $A(-2, k)$ and $B(-2k, -3)$, then find k . Also, find the length of AP .

29. (a) A number consists of two digits. When the number is divided by the sum of its digits, the quotient is 7. If 27 is subtracted from the number, the digits interchange their places. Find the number.

OR

- (b) A vessel contains mixture of 24 l milk and 6 l water and a second vessel contains a mixture of 15 l milk and 10 l water. How much mixture of milk and water should be taken from the first and the second vessel separately and kept in a third vessel so that the third vessel may contain a mixture of 25 l milk and 10 l water?
30. On throwing two dice together, what is the probability of getting numbers on the dice whose sum is greater than 5 but not more than 10?
31. On a morning walk, three persons steps off together and their steps measure 40 cm, 42 cm, and 45 cm respectively. What is the minimum distance each should walk so that each can cover same distance in complete steps?

SECTION D

Section D consists of 4 questions of 5 marks each.

32. The angles of depression of the top and bottom of a 12 m tall building, from the top of a multi-storeyed building are 30° and 60° respectively. Find the height of the multi-storeyed building and distance between both buildings.

33. (a) Find the mean age (in years) from the frequency distribution given below :

Class (age in years)	Frequency
25-29	4
30-34	14
35-39	22
40-44	16
45-49	6
50-54	5
55-59	3

OR

- (b) Find the median of the following frequency distribution:

Weekly wages (in ₹)	Number of worker
60-69	5
70-79	15
80-89	20
90-99	30
100-109	20
110-119	8

34. (a) If the sum of a certain number of terms of an A.P. 25, 22, 19, is 116, find the last term.

OR

- (b) The sum of 4th and 8th terms of an A.P. is 24 and sum of its 6th and 10th terms is 44. Find the sum of first ten terms of the A.P.
35. Two poles of height a metres and b metres are p metres apart. Prove that the height of the point of intersection of the lines joining the top of each pole to the foot of the opposite pole is given by $\frac{ab}{a+b}$ metres.

SECTION E

Section E consists of 3 case study-based questions of 4 marks each.

36. Quadratic polynomial can be used to model the shape of many architectural structures in the world. Pershing field of Jersey city in US is one such structure



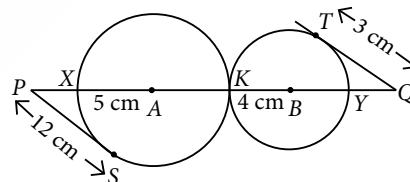
Use the above information to answer the questions that follow:

- (i) Find the product of zeroes of the polynomial $\sqrt{3}x^2 - 14x + 8\sqrt{3}$.
- (ii) The zeroes of the polynomial are the points where its graph. Find the sum of zeroes of the polynomial $\sqrt{3}x^2 - 14x + 8\sqrt{3}$.
- (iii) (a) If the Arch is represented by $10x^2 - x - 3$, then find its zeroes.

OR

- (b) Find the quadratic polynomial whose sum of zeroes is 0 and product of zeroes is 1.

37. In a maths class, the teacher draws two circles that touch each other externally at point K with centres A and B and radii 5 cm and 4 cm respectively as shown in the figure.



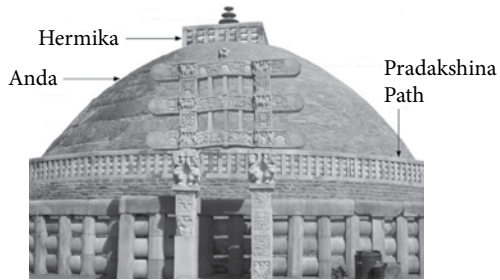
Use the above information to answer the questions that follow:

- (i) Find the value of PA .
- (ii) What is the value of PK ?
- (iii) (a) Find the value of BQ .

OR

- (b) What is the value of QY ?

38. Ajay is a Class X student. His class teacher Mrs. Kiran arranged a historical trip to great Stupa of Sanchi. She explained that Stupa of Sanchi is great example of architecture in India. Its base part is cylindrical in shape. The dome of this stupa is hemispherical in shape, known as *Anda*. It also contains a cubical shape part called *Hermika* at the top. Path around *Anda* is known as *Pradakshina Path*.



Use the above information to answer the questions that follow :

- (i) Find the lateral surface area of the *Hermika*, if the side of cubical part is 8 m.

- (ii) The radius of the *Pradakshina path* is 25 m. If Buddhist priest walks 14 rounds on this *path*, then find the distance covered by the priest.

- (iii) (a) The diameter and height of the cylindrical base part are respectively 42 m and 12 m. If the volume of each brick used is 0.01 m^3 , then find the number of bricks used to make the cylindrical base.

OR

- (b) If the diameter of the *Anda* is 42 m, then find the volume of the *Anda*.