

CBSE Class 10 Mathematics Basic 2026 Question Paper

Time Allowed :3 Hours	Maximum Marks :80	Total Questions :38
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General Instructions

Read the following instructions very carefully and strictly follow them:

- 1. This question paper has 38 questions. All questions are compulsory.*
- 2. This question paper contains five sections - Section A, B, C, D and E.*
- 3. Section A - Questions no. 1 to 18 are Multiple Choice Type Questions (MCQs) and questions number 19 and 20 are Assertion-Reason based questions of 1 mark each.*
- 4. Section B - Questions no. 21 to 25 are Very-Short Answer (VSA) Type Questions, carrying 2 marks each.*
- 5. Section C - Questions no. 26 to 31 are Short-Answer (SA) Type Questions, carrying 3 marks each.*
- 6. Section D - Questions no. 32 to 35 are Long-Answer (LA) Type Question, carrying 5 marks each.*
- 7. Section E - Questions no. 36 to 38 are case study based questions carrying 4 marks each. Internal choice is provided in 2 marks questions in each case study.*
- 8. There is no overall choice given in the question paper. However, an internal choice has been provided in 2 questions in Sections B, 2 questions in Section C, 2 questions in Section D and 3 questions in Section E.*
- 9. Use of calculator is not allowed.*
- 10. Please write down the serial number of the question in the answer-book at the given place before attempting it.*
- 11. 15 minute time has been allotted to read this question paper. The question paper will be distributed at 10:15 a.m. From 10:15 a.m. to 10:30 a.m., the candidates will read the question paper only and will not write any answer on the answer-book during this period.*

1. The HCF of $2^2 \cdot 3^3$ and $3^2 \cdot 2^3$ is :

- (a) 1
- (b) 2.3
- (c) $2^2 \cdot 3^2$
- (d) $2^3 \cdot 3^3$

2. A letter is selected from the letters of the word FEBRUARY. The probability that it is a vowel is :

- (a) $\frac{1}{10}$
 - (b) $\frac{2}{10}$
 - (c) $\frac{3}{10}$
 - (d) $\frac{4}{10}$
-

3. Which of the following numbers will not end with 0 for any natural number n ?

- (a) $4n$
 - (b) 4^n
 - (c) $3^n + 1$
 - (d) 10^{n+1}
-

4. The system of linear equations $px + qy = r$ and $p_1x + q_1y = r_1$ has a unique solution, if:

- (a) $pq \neq p_1q_1$
 - (b) $pp_1 \neq qq_1$
 - (c) $pq_1 \neq qp_1$
 - (d) $pqr \neq p_1q_1r_1$
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5. Which of the equations among the following is/are quadratic equation(s)?

$q_1 : x^2 + x = (x + 1)^2$, $q_2 : x - 1 = x^2 - 1$, $q_3 : x^4 = x^2$, $q_4 : \sqrt{x} = x^2\sqrt{x} + 1$

- (a) q_1 only
 - (b) q_1, q_2 and q_3 only
 - (c) q_2 only
 - (d) q_2 and q_4 only
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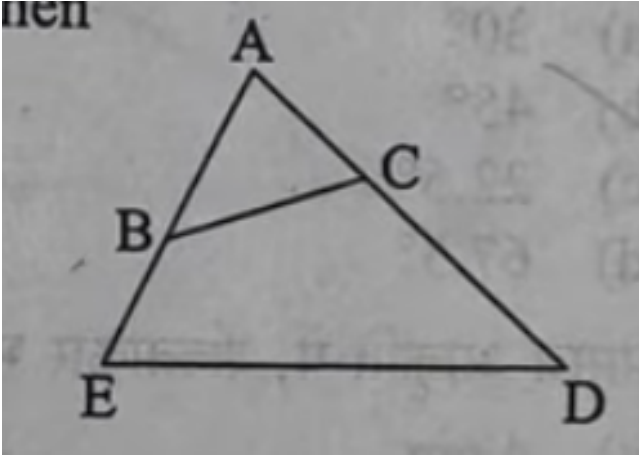
6. The discriminant of the quadratic equation $ax^2 + x + a = 0$ is :

- (a) $\sqrt{1 - 4a^2}$
 - (b) $1 - 4a^2$
 - (c) $4a^2 - 1$
 - (d) $\sqrt{4a^2 - 1}$
-

7. The distance between points (3, 0) and (0, -3) is :

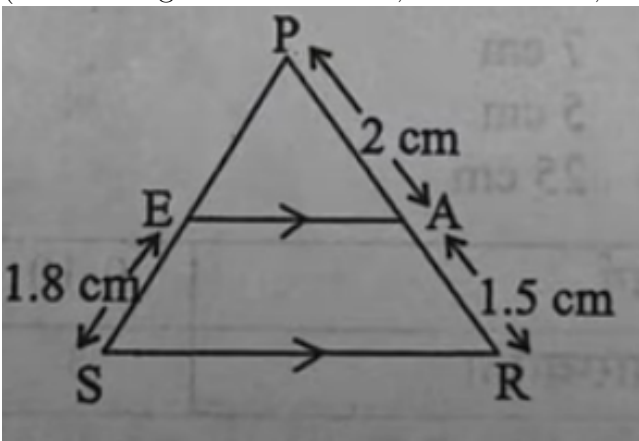
- (a) 3 units
 - (b) 6 units
 - (c) $\sqrt{6}$ units
 - (d) $\sqrt{18}$ units
-

8. If $\triangle ABC \sim \triangle ADE$ in the adjoining figure, then which of the following is true?



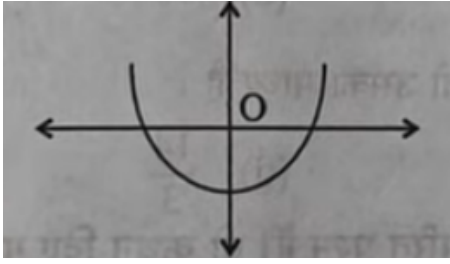
- (a) $\frac{AB}{BE} = \frac{AC}{CD}$
- (b) $\frac{AB}{AD} = \frac{AC}{AE}$
- (c) $\frac{AB}{BC} = \frac{AE}{DE}$
- (d) $\frac{AC}{AD} = \frac{AB}{AE}$

9. In the adjoining figure, if $EA \parallel SR$ and $PE = x$ cm, then the value of $5x$ is :
(Given in figure: $PA = 2$ cm, $ES = 1.8$ cm, $AR = 1.5$ cm)

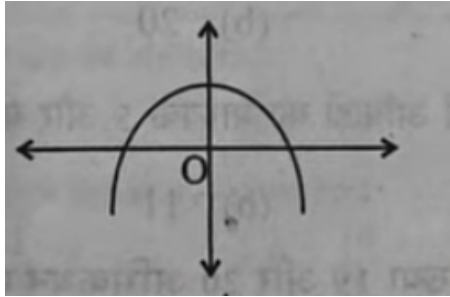


- (a) 2.4 cm
- (b) 12 cm
- (c) 1.35 cm
- (d) 6.75 cm

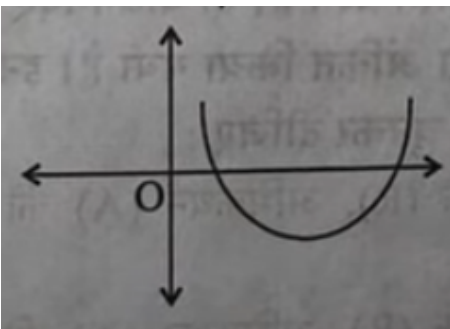
10. Which of the following graphs represents a polynomial with both zeroes being positive?



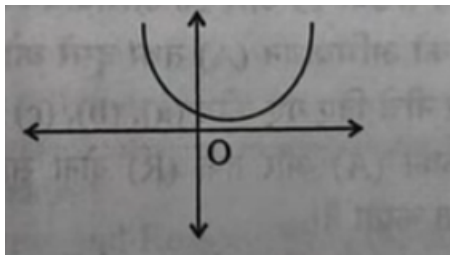
(a)



(b)



(c)



(d)

11. The system of equations $x = 2$ and $x = 3$ has :

- (a) unique solution (2, 3)
- (b) two solutions (2, 0) and (3, 0)
- (c) no solution
- (d) infinitely many solutions

12. The numbers x , $x + 4$ and $x + 8$ are in A.P. with common difference :

- (a) x
- (b) $4 + x$
- (c) 4
- (d) 0

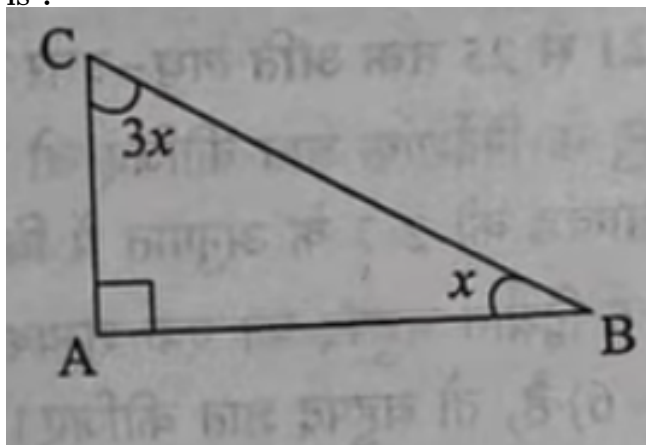
13. Which of the following statements is not true?

- (a) $\sin 0^\circ = \cos 0^\circ$
(b) $\tan 30^\circ = \cot 60^\circ$
(c) $\sin 30^\circ = \cos 60^\circ$
(d) $\sin 45^\circ = \frac{1}{\sec 45^\circ}$
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14. If $\sqrt{3} \sin A = \cos A$, then the measure of A is :

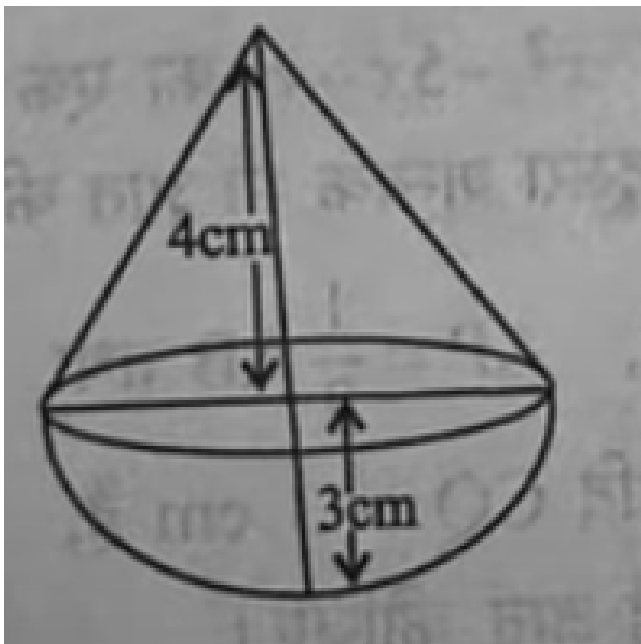
- (A) 90°
(B) 60°
(C) 45°
(D) 30°
-

15. In the adjoining figure, the angle of elevation of the point C from the point B, is :



- (A) 30°
(B) 45°
(C) 22.5°
(D) 67.5°
-

16. In the adjoining figure, the slant height of the conical part is :



- (A) 4 cm
 (B) 7 cm
 (C) 5 cm
 (D) 25 cm

17.

Class	0-10	10-20	20-30	30-40	40-50
Frequency	3	5	7	9	11

The upper limit of the median class of the above data is :

- (A) 10
 (B) 20
 (C) 30
 (D) 40

18. If for a data, median is 5 and mode is 4, then mean is equal to :

- (a) 7
 (b) 11
 (c) $\frac{11}{2}$
 (d) $\frac{14}{3}$

19. Assertion (A) : From a bag containing 5 red balls, 2 white balls and 3 green balls, the probability of drawing a non-white ball is $\frac{4}{5}$.

Reason (R) : For any event E, $P(E) + P(\text{not E}) = 1$.

- (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, but 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.
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20. Assertion (A) : $7 \times 2 + 3$ is a composite number.

Reason (R) : A composite number has more than two factors.

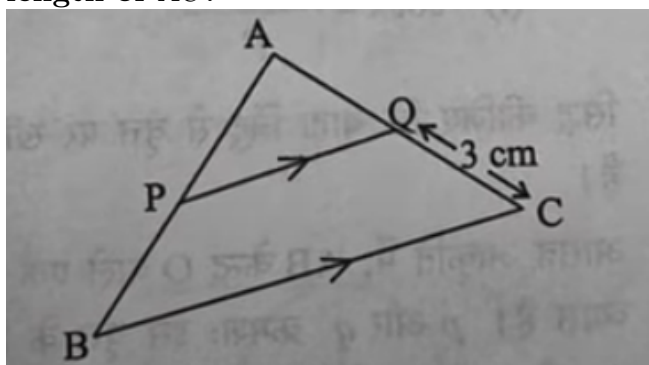
- (a) Both, Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
(b) Both, Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
(c) Assertion (A) is true, but Reason (R) is false.
(d) Assertion (A) is false, but Reason (R) is true.
-

21. Find the coordinates of the point which divides the line segment joining the points $A(-6, 10)$ and $B(3, -8)$ in the ratio $2 : 7$.

22(A). One zero of a quadratic polynomial is twice the other. If the sum of zeroes is (-6) , find the polynomial.

22(B). If one zero of the polynomial $x^2 - 5x - c$ is (-1) , find the value of c . Also, find the other zero.

23. In the adjoining figure, $AP = \frac{1}{2}AB$ and $PQ \parallel BC$. If $CQ = 3$ cm, then find the length of AC .



24(A). Evaluate : $\sin^2 30^\circ - \cos^2 45^\circ + \cot^2 60^\circ$

24(B). If $\sin(A + 2B) = 2 \cos 60^\circ$ and $A = 3B$, find the measures of A and B.

25. A box consists of 60 wall clocks, out of which 40 are good, 15 have minor defects and the remaining are broken. A trader will reject the box, if the clock taken out from the box is broken. The trader randomly takes out one clock from the box. What is the probability that :

- (i) the box will be rejected ?
 - (ii) the clock taken out of the box has minor defect ?
-

26. Given that $\sqrt{5}$ is an irrational number, prove that $3 + 2\sqrt{5}$ is also an irrational number.

27(A). Solve the following system of equations graphically :

$$x + 3y = 6 \text{ and } 2x - 3y = 12$$

Also, find the area of the triangle formed by the lines $x + 3y = 6$, $x = 0$ and $y = 0$.

27(B). One of the supplementary angles exceeds the other by 120° . Express the given information as a system of linear equations in two variables. Hence, find the measure of both the angles.

28. If the point $P(x, y)$ is equidistant from the points $(3, 6)$ and $(-3, 4)$, obtain the relation between x and y . Hence, find the coordinates of point P if it lies on x -axis.

29(A). Prove that : $\frac{\sin A - \tan A}{\sin A + \tan A} = \frac{1 - \sec A}{1 + \sec A}$

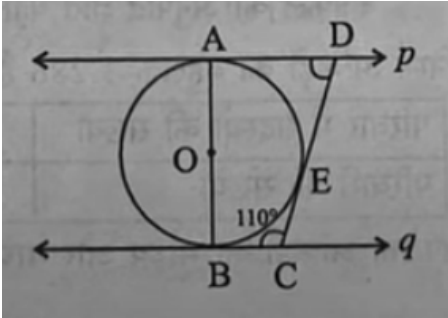
29(B). If $\sin x = p$, then prove that :

- (i) $\cot x = \frac{\sqrt{1-p^2}}{p}$
 - (ii) $\frac{1+\tan^2 x}{1+\cot^2 x} = \frac{p^2}{1-p^2}$
-

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

31. In the adjoining figure, AB is the diameter of the circle with centre O . Two tangents p and q are drawn to the circle at points A and B respectively. Prove

that $p \parallel q$. Further, a line CD touches the circle at E and $\angle BCD = 110^\circ$. Find the measure of $\angle ADC$.



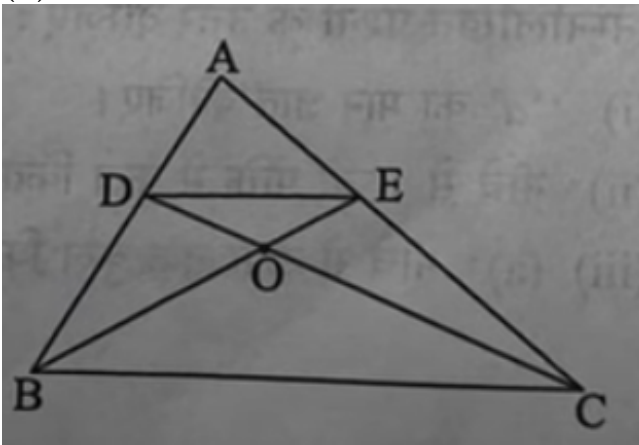
32(A). Express $\frac{24}{18-x} - \frac{24}{18+x} = 1$ as a quadratic equation in standard form and find the discriminant of the quadratic equation, so obtained. Also, find the roots of the equation.

32(B). The sum of squares of two positive numbers is 100. If one number exceeds the other by 2, find the numbers.

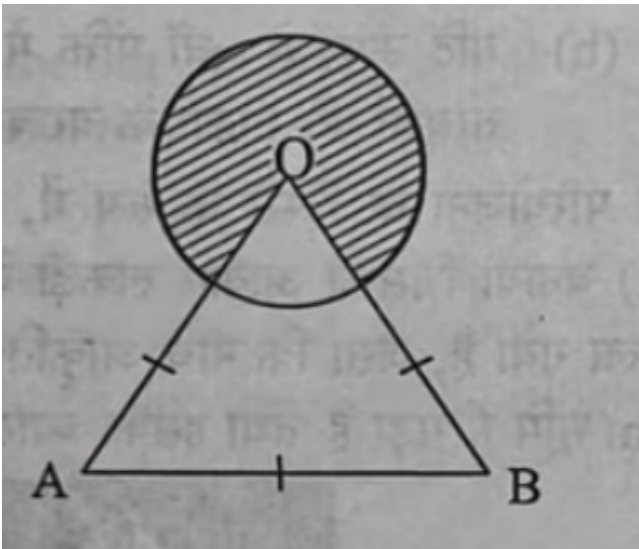
33. In the adjoining figure, $\triangle ABE \cong \triangle ACD$. Prove that :

(i) $\triangle ADE \sim \triangle ABC$

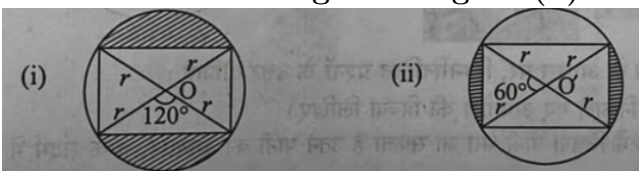
(ii) $\triangle BOD \sim \triangle COE$



34(A). In the adjoining figure, $\triangle OAB$ is an equilateral triangle and the area of the shaded region is $750\pi \text{ cm}^2$. Find the perimeter of the shaded region.



34(B). O and O' are the centres of the circles of radius r as shown in figures (i) and (ii) respectively. Find the ratio of area of shaded region in figure (i) to that of area of shaded region in figure (ii).



35. The mode of the following data is 3.286:

Family size	1-3	3-5	5-7	7-9	9-11
Number of families	7	8	2	2	1

Find the mean and median of the above data.

36. A watermelon vendor arranged the watermelons similar to shown in the adjoining picture :

The number of watermelons in subsequent rows differ by 'd'. The bottommost row has 101 watermelons and the topmost row has 1 watermelon. There are 21 rows from bottom to top.



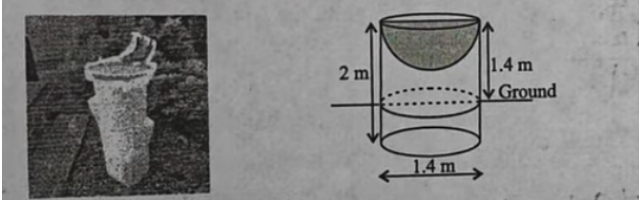
Based on the above information, answer the following questions :

- (i) Find the value of 'd'.
- (ii) How many watermelons will be there in the 15th row from the bottom ?
- (iii) (a) Find the total number of watermelons from bottom to top.

OR

- (iii) (b) If the number of watermelons in the n th row from top is equal to number of watermelons in the n th row from bottom, find the value of n .

37. As a part of school project, Mishika and Sahaj created a bird-bath from the cylindrical log of wood by scooping out the hemispherical depression from one end of the cylinder as shown in the figure given below. Cylinder has a length 2 m out of which 0.6 m is in earth and the diameter is 1.4 m.



On the basis of the above information, answer the following questions :

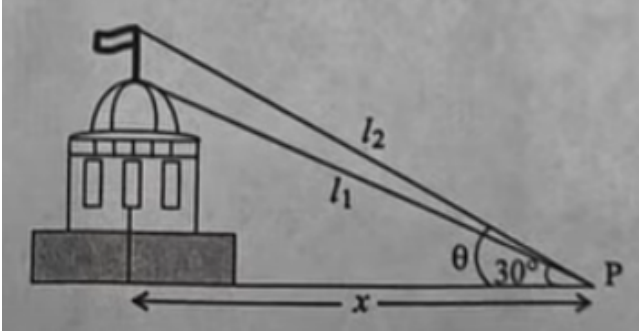
- (i) Write the radius of the hemispherical depression.
- (ii) Find the volume of water that can be filled in the hemispherical depression in terms of π .
- (iii) (a) Find the total surface area of log of wood above the ground after making the bird-bath.

OR

- (iii) (b) Compute the volume of log of wood above the ground after making the bird-bath.

38. A flagstaff, 7.32 m long is fitted at the top of 10 m tall building. The flagstaff is supported by the ropes which are tied to the point P on the ground which is x m away from the base of the building. It is given that l_1 is the length of rope from point P to the base of the flagstaff and l_2 is the length of rope from point P to the top of flagstaff. Rope l_1 makes an angle of 30° with the horizontal and θ be

the angle which rope l_2 makes with the horizontal as shown in the figure.



(Use $\sqrt{2} = 1.4$ and $\sqrt{3} = 1.732$)

Based on the above information, answer the following questions :

- (i) Find the value of x .
- (ii) Find the measure of angle θ .
- (iii) (a) Find the total length of ropes needed to support the flagstaff.

OR

- (iii) (b) Which rope is longer l_1 or l_2 and by how much ?
-