Basic Mathematics Class X

Mock Paper 1 (2026)

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

General Instructions:

Read the following instructions carefully and follow them:

1. This question paper contains 38 questions.
2. This Question Paper is divided into 5 Sections A, B, C, D and E.
3. In Section A, Questions no. 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, Questions no. 21-25 are very short answer (VSA) type questions, carrying 02 marks each.
5. In Section C, Questions no. 26-31 are short answer (SA) type questions, carrying 03 marks each.
6. In Section D, Questions no. 32-35 are long answer (LA) type questions, carrying 05 marks each.
7. In Section E, Questions no. 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. All Questions are compulsory. 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.
10. Take $\pi = 22/7$ wherever required if not stated.
11. Use of calculators is not allowed.

Section A

1. If the HCF of 360 and 64 is 8, then their LCM is: **[1]**

   a) 2480 b) 2880

   c) 512 d) 2780

2. If the prime factorisation of 2520 is $2^3 \times 3^a \times b \times 7$, then the value of a + 2b is: **[1]**

   a) 9 b) 10

   c) 7 d) 12

3. Which of the following equations has 2 as a root? **[1]**

   a) $x^2 + 3x - 12 = 0$ b) $x^2 - 4x + 5 = 0$

   c) $2x^2 - 7x + 6 = 0$ d) $3x^2 - 6x - 2 = 0$

4. The value of k for which the equations $3x - y + 8 = 0$ and $6x + ky = -16$ represent coincident lines, is: **[1]**

a) $-\frac{1}{2}$ b) 2

c) $\frac{1}{2}$ d) -2

5. If the equation $x^2 + 4x + k = 0$ has real and distinct roots, then **[1]**

a) $k > 4$ b) $k < 4$

c) $k \leq 4$ d) $k \geq 4$

6. Points (6, 8), (3, 7), (-2, -2) and (1, -1) are joined to form a quadrilateral. What will be the structure of the quadrilateral? **[1]**

a) Rectangle b) Square

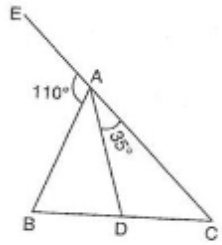
c) Parallelogram d) Rhombus

7. In a $\triangle$ ABC, perpendicular AD from A on BC meets BC at D. If BD = 8 cm, DC = 2 cm and AD = 4 cm, then: **[1]**

a) AC = 2 AB b) $\triangle$ABC is equilateral

c) $\triangle$ABC is right - angled at A. d) $\triangle$ABC is isosceles

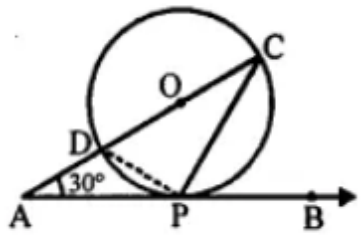
8. In the adjoining figure if exterior $\angle EAB = 110^0, \angle CAD = 35^0$, AB = 5cm, AC = 7cm and BC = 3cm, then CD is equal to **[1]**



a) 2 cm. b) 1.75 cm.

c) 1.9 cm. d) 2.25 cm.

9. In the given figure, O is the centre of the circle. AB is the tangent to the circle at the point P. If $\angle PAO = 30°$ then $\angle CPB + \angle ACP$ is equal to **[1]**



a) 150° b) 60°

c) 120° d) 90°

10. $\cos^2 30^\circ \cos^2 45^\circ + 4\sec^2 60^\circ + \frac{1}{2}\cos^2 90^\circ - 2\tan^2 60^\circ$ = ? **[1]**

a) $\frac{81}{8}$ b) $\frac{73}{8}$

c) $\frac{83}{8}$ d) $\frac{75}{8}$

11. The angle of elevation of the sun when the shadow of a pole 'h' metres high is $\frac{h}{\sqrt{3}}$ metres long is **[1]**

a) 15^o b) 30°

c) 45° d) 60°

12. If $\sin\theta = \frac{a}{b}$, then $\sec\theta$ is equal to $(0 \leq \theta \leq 90^o)$: **[1]**

a) $\frac{\sqrt{b^2-a^2}}{b}$ b) $\frac{\sqrt{b^2-a^2}}{a}$

c) $\frac{a}{\sqrt{b^2-a^2}}$ d) $\frac{b}{\sqrt{b^2-a^2}}$

13. The area of a sector of a circle with radius r, making an angle of x° at the centre is **[1]**

a) $\frac{x}{360} \times 2xr$ b) $\frac{x}{180} \times 2\pi$

c) $\frac{x}{360} \times \pi r^2$ d) $\frac{x}{100}\ xw^2$

14. Area of a quadrant of circle whose circumference is 22 cm is $(\pi = \frac{22}{7})$ **[1]**

a) 3.65 cm^2 b) 17.25 cm^2

c) 9.625 cm^2 d) 9.625 cm^3

15. A bag contains 50 balls of which 2x are red, 3x are white and 5x are blue. A ball is selected at random. The probability that it is not white is **[1]**

a) $\frac{7}{10}$ b) $\frac{7}{45}$

c) $\frac{3}{5}$ d) $\frac{2}{5}$

16. The mean and median of a statistical data are 21 and 23 respectively. The mode of the data is: **[1]**

a) 22 b) 17

c) 27 d) 23

17. A circus tent is cylindrical to a height of 3 metres and conical above it. If its diameter is 105 m and the slant height of the conical portion is 53 m, calculate the length of the canvas 5 m wide to make the required tent. **[1]**

a) 2096 m b) 1947 m

c) 1800 m d) 1996 m

18. The median of first 10 prime numbers is: **[1]**

a) 13 b) 11

c) 12.5 d) 12

19. **Assertion (A):** Distance of (–4, 3) from x-axis is 5 units. **[1]**

Reason (R): Distance of point (a, b) from x-axis is |b| (mod b) units.

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.

20. **Assertion (A):** H.C.F. of smallest prime and smallest composite is 2. **[1]**

Reason (R): Smallest prime is 2 and smallest composite is 4 so their H.C.F. is 2.

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

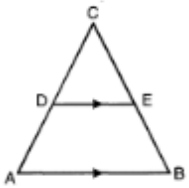
21. On comparing the ratios $\frac{a_1}{a_2}, \frac{b_1}{b_2}$ and $\frac{c_1}{c_2}$, find out whether the lines representing the pair of linear equations **[2]**

intersect at a point, are parallel or coincident: $9x + 3y + 12 = 0$; $18x + 6y + 24 = 0$

22. In a $\triangle ABC$, AD is the bisector of $\angle A$, meeting side BC at D. If AB = 10 cm, AC = 6 cm and BC = 12 cm, find BD and DC. **[2]**

OR

In the given figure, $\angle A = \angle B$ and AD = BE. Show that DE $\|$ AB.



23. The length of a tangent from a point A at distance 5 cm from the centre of the circle is 4 cm. Find the radius of the circle. **[2]**

24. If $a\cos\theta - b\sin\theta = c$, prove that $a\sin\theta + b\cos\theta = \pm\sqrt{a^2 + b^2 - c^2}$ **[2]**

25. A car has two wipers which do not overlap. Each wiper has a blade of length 25cm sweeping through an angle of 115°. Find the total area cleaned at each sweep of the blades. **[2]**

OR

A horse is tied to a peg at one corner of a square shaped grass field of side 15 m by means of a 5 m long rope. Find

i. the area of that part of the field in which the horse can graze.

ii. the increase in the grazing area if the rope were 10 m long instead of 5 m (Use $\pi = 3.14$)

Section C

26. Show that $5 - \sqrt{3}$ is irrational. **[3]**

27. Find a quadratic polynomial whose sum and product of the zeroes are $-2\sqrt{3}, -9$ respectively. Also find the zeroes of the polynomial by factorisation. **[3]**

28. Solve the pair of linear equations x + y = 14 and x – y = 4 by substitution method. **[3]**

OR

Aditya is walking along the line joining points (1,4) and (0,6). Aditi is walking along the line joining points (3,4) and (1,0). Represent the graph and find the point where both cross each other.

29. From an external point P,two tangents,PA and PB are drawn to a circle with centre O.At one point E on the circle tangent is drawn which intersects PA and PB at C and D respectively. If PA=10 cm,find the perimeter of the triangle PCD. **[3]**

30. Evaluate: $\frac{\sin 30^\circ + \tan 45^\circ - cosec 60^\circ}{\sec 30^\circ + \cos 60^\circ + \cot 45^\circ}$ **[3]**

OR

Prove that:

$\frac{\tan\theta + \sec\theta - 1}{\tan\theta - \sec\theta + 1} = \frac{1 + \sin\theta}{\cos\theta}$

31. Peter throws two different dice together and finds the product of the two numbers obtained. Rina throws a die and squares the number obtained. Who has the better chance to get the number 25? **[3]**

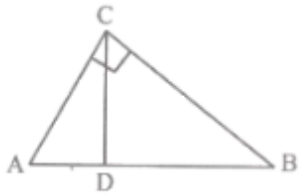
Section D

32. Find the value of m for which the quadratic equation $(m+1)y^2 - 6(m+1)y + 3(m+9) = 0$, $m \neq -1$ has equal roots. Hence find the roots of the equation. **[5]**

OR

Find all the values of k for which the quadratic equation $2x^2 + kx + 8 = 0$ has equal roots. Also, find the roots.

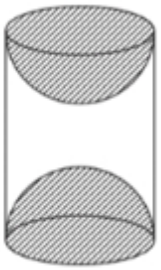
33. In the given figure, $\angle ACB = 90^o$ and $CD \perp AB$, Prove that $CD^2 = BD \times AD$. **[5]**



34. A building is in the form of a cylinder surmounted by a hemispherical dome. The base diameter of the dome is equal to $\frac{2}{3}$ of the total height of the building. Find the height of the building, if it contains $67\frac{1}{21}m^3$ of air. **[5]**

OR

A wooden article was made by scooping out a hemisphere from each end of a solid cylinder. If the height of the cylinder is 15 cm and its base is of radius 4.2 cm, then find the total surface area of the article.



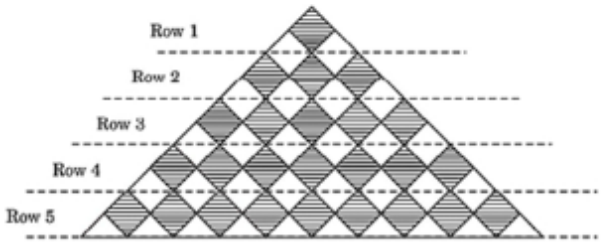
35. If the median of the distribution given below is 28.5, then find the values of x and y. **[5]**

Class Interval	**frequency**
0-10	5
10-20	x
20-30	20
30-40	15
40-50	y
50-60	5
Total	60

Section E

36. **Read the following text carefully and answer the questions that follow:** **[4]**

A fashion designer is designing a fabric pattern. In each row, there are some shaded squares and unshaded triangles.



i. Identify A.P. for the number of squares in each row. (1)

ii. Identify A.P. for the number of triangles in each row. (1)

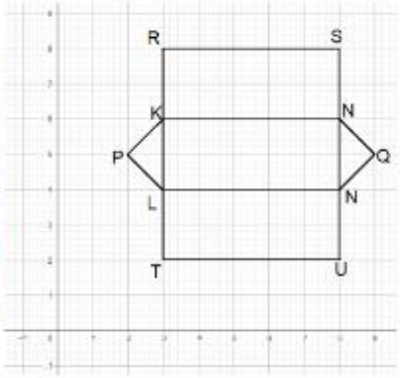
iii. If each shaded square is of side 2 cm, then find the shaded area when 15 rows have been designed. (2)

OR

Write a formula for finding total number of triangles in n number of rows. Hence, find S_{10}. (2)

37. **Read the following text carefully and answer the questions that follow:** **[4]**

The camping alpine tent is usually made using high-quality canvas and it is waterproof. These alpine tents are mostly used in hilly areas, as the snow will not settle on the tent and make it damp. It is easy to layout and one need not use a manual to set it up. One alpine tent is shown in the figure given below, which has two triangular faces and three rectangular faces. Also, the image of canvas on graph paper is shown in the adjacent figure.



i. What is the distance of point Q from y-axis? (1)

ii. What are the coordinates of U? (1)

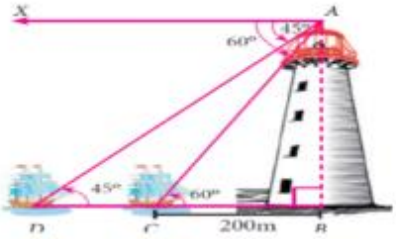
iii. What is the distance between the points P and Q? (2)

OR

What is the Perimeter of image of a rectangular face? (2)

38. **Read the following text carefully and answer the questions that follow:** **[4]**

A man is watching a boat speeding away from the top of a tower. The boat makes an angle of depression of 60^o with the man's eye when at a distance of 200 m from the tower. After 10 seconds, the angle of depression becomes 45^o.



i. What is the approximate speed of the boat (in km/hr), assuming that it is sailing in still water? (1)

ii. How far is the boat when the angle is 45^o? (1)

iii. What is the height of tower? (2)

OR

As the boat moves away from the tower, angle of depression will decrease/increase? (2)