Students of Kashmir

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Srinagar, J&K

Guess Paper/ Important Questions

Based on updated Syllabus, session 2024-25

10th Class
Mathematics

By: Students of Kashmir

Number Systems

1. Prove that **√2, √3, and √5** are irrational numbers.
2. Use the **Fundamental Theorem of Arithmetic** to find the **LCM and HCF** of 72 and 120.
3. Show that 3.142857 is a **rational number**.
4. Find the **largest prime factor** of 660.

Algebra

5. Find the **zeros of the polynomial** $x^2 - 7x + 10$ and verify the relationship between zeros and coefficients.
6. Solve the system of equations graphically: $3x + 4y = 10$ and $x - 2y = 4$.
7. Solve the system of equations using substitution: $2x + 3y = 12$ and $x - 4y = -2$.
8. Solve using elimination: $5x - 2y = 9$ and $3x + 4y = 5$.
9. Find the nature of roots for the quadratic equation $2x^2 - 3x + 5 = 0$.
10. Solve the quadratic equation $x^2 - 6x + 9 = 0$ using the quadratic formula.
11. The sum of two numbers is 27, and their product is 182. Find the numbers using a quadratic equation.
12. The sum of the first n terms of an arithmetic progression is given by $S_n = 3n^2 + 5n$. Find the first term and common difference.
13. Find the sum of the first 20 terms of the A.P.: 5, 10, 15, 20, …
14. Find the nth term of the sequence 2, 4, 8, 16, …

Coordinate Geometry

15. Find the distance between the points (-3, 2) and (5, -4).
16. Find the coordinates of the midpoint of the line joining (7, -5) and (-1, 3).
17. Find the area of a triangle whose vertices are (2, 3), (4, 7), and (-1, -2).
18. Find the equation of the line passing through (2, -1) and having slope 3.

Geometry

19. Prove that a line parallel to one side of a triangle divides the other two sides in the same ratio.
20. In triangle ABC, D and E are midpoints of AB and AC. Prove that DE is parallel to BC and DE = ½ BC.
21. Prove that the angle subtended by a diameter of a circle is always 90°.
22. Two tangents are drawn from an external point to a circle. Prove that their lengths are equal.
23. The radius of a circle is 7 cm. Find the length of the tangent drawn from a point 25 cm away from the center.

Trigonometry

24. If sin A = 3/5, find cos A and tan A.

25. Prove that sin² A + cos² A = 1.
26. Prove that 1 + tan² A = sec² A.
27. The angle of elevation of the top of a tower from a point 30 m away is 60°. Find the height of the tower.
28. A 10 m ladder is leaning against a wall. The base of the ladder is 6 m from the wall. Find the angle of elevation.

Mensuration

29. Find the area of a sector of a circle with radius 10 cm and a central angle of 60°.
30. A cone has a radius of 3 cm and a height of 9 cm. Find its volume.
31. Find the surface area of a sphere with a radius of 7 cm.
32. A cylinder has a height of 10 cm and a base radius of 5 cm. Find its curved surface area.

Statistics and Probability

33. Find the mean, median, and mode of the following data:

Class Interval	Frequency
0 - 10	5
10 - 20	8
20 - 30	12
30 - 40	7

34. The following data represents marks of students in an exam. Find the median:
Marks: 10, 20, 30, 40, 50, 60, 70, 80, 90, 100
Frequency: 2, 5, 8, 11, 14, 17, 12, 9, 6, 4
35. A box contains 3 red balls, 4 blue balls, and 5 green balls. One ball is drawn at random. Find the probability of getting:

- A red ball
- A blue ball
- A green ball

36. Two dice are thrown together. Find the probability of getting:

- A sum of 7
- A sum less than 5
- An even number on both dice

37. A card is drawn from a deck of 52 playing cards. Find the probability of drawing:

- A king
- A red card
- A face card

38. The mean of five numbers is 20. If four of the numbers are 18, 21, 19, and 22, find the fifth number.
39. The median of 10, 20, 30, 40, 50, and 60 is **?**
40. A student got marks in five subjects: 75, 80, 85, 90, and 95. Find the average marks.