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CLASS 10

Mathematics Basic

Sample Paper 3 - Questions

38 questions | 80 marks | 2026-27

Time: 3 hours. Answer all questions and subparts unless a choice is stated. Marks are shown on the right. Write answers on separate sheets. Independently prepared practice paper.

Section A - Objective questions

1. A cylinder has radius 7 cm and height 27 cm. Calculate its volume using pi = 22/7. **1**

(A) 4158 (B) 4157 (C) 4159 (D) 4160

2. Calculate the HCF of 252 and 378. **1**

(A) 126 (B) 128 (C) 125 (D) 127

3. Solve x + y = 41 and 2x - y = 19. State the value of x. **1**

(A) 21 (B) 20 (C) 22 (D) 19

4. An AP has first term 26 and common difference 2. Calculate its 32th term. **1**

(A) 90 (B) 89 (C) 87 (D) 88

5. Calculate the distance between A(22, 24) and B(91, 116). **1**

(A) 115 (B) 114 (C) 116 (D) 117

6. For an acute angle theta, tan theta = 75/100. Calculate sin theta. **1**

(A) 13/5 (B) 3/5 (C) -2/5 (D) 8/5

7. Factorise x^2 + 27x + 72. State the positive integer c such that (x + 24)(x + c) is the factorisation. **1**

(A) 5 (B) 4 (C) 2 (D) 3

8. A sector has central angle 90 degrees and radius 42 cm. Calculate its area as a coefficient of pi. **1**
(A) 440 (B) 442 (C) 441 (D) 443

9. Calculate the mean of 20, 22, 24, 26, 28. **1**
(A) 25 (B) 24 (C) 23 (D) 26

10. Tangents PA and PB are drawn from P to a circle. PA = 82 cm. Calculate PB. **1**
(A) 82 (B) 81 (C) 84 (D) 83

11. A fair die is rolled. Calculate the probability that its result is at most 1. **1**
(A) -5/6 (B) 13/6 (C) 1/6 (D) 7/6

12. Two similar triangles have corresponding-side ratio 2:23. If the smaller area is 20 square centimetres, find the larger area. **1**
(A) 2647 (B) 2644 (C) 2646 (D) 2645

13. Calculate the smaller root of $x^2 - 51x + 648 = 0$. **1**
(A) 26 (B) 23 (C) 25 (D) 24

14. Calculate the HCF of 312 and 468. **1**
(A) 155 (B) 157 (C) 156 (D) 158

15. Calculate the sum of the first 30 terms of the AP beginning 24, 27, 30. **1**
(A) 2025 (B) 2026 (C) 2027 (D) 2024

16. A cylinder has radius 7 cm and height 23 cm. Calculate its volume using pi = 22/7. **1**
(A) 3543 (B) 3544 (C) 3542 (D) 3541

17. Calculate the mean of 21, 23, 25, 27, 29. **1**
(A) 27 (B) 24 (C) 26 (D) 25

18. Solve x + y = 55 and 2x - y = 26. State the value of x. **1**
(A) 27 (B) 26 (C) 28 (D) 29

19. For an acute angle theta, tan theta = 66/88. Calculate sin theta. **1**
(A) -2/5 (B) 3/5 (C) 13/5 (D) 8/5

20. Factorise $x^2 + 26x + 88$. State the positive integer c such that $(x + 22)(x + c)$ is the factorisation. 1
(A) 4 (B) 3 (C) 6 (D) 5

Section B - Short responses

21. A sector has central angle 90 degrees and radius 52 cm. Calculate its area as a coefficient of pi. 2

22. Calculate the distance between A(19, 21) and B(79, 101). 2

23. A fair die is rolled. Calculate the probability that its result is at most 4. 2

24. Tangents PA and PB are drawn from P to a circle. PA = 76 cm. Calculate PB. 2

25. Calculate the smaller root of $x^2 - 53x + 700 = 0$. 2

Section C - Short responses

26. Two similar triangles have corresponding-side ratio 2:27. If the smaller area is 20 square centimetres, find the larger area. Show the governing rule, substitution and conclusion clearly. 3

27. Calculate the HCF and LCM of 300 and 450. Verify the product relationship between the two numbers and their HCF and LCM. 3

28. A cylinder has radius 7 cm and height 22 cm. Calculate its volume using pi = 22/7. Calculate its curved and total surface areas as well. 3

29. Calculate the mean of 23, 25, 27, 29, 31. State the median and range, explaining how you identify each. 3

30. A sector has central angle 90 degrees and radius 40 cm. Calculate its area as a coefficient of pi. Also find its arc length and perimeter in terms of pi. 3

31. Solve x + y = 47 and 2x - y = 22. Calculate both x and y and check your answer in each equation. **3**

Section D - Extended responses

32. Tangents PA and PB touch a circle at A and B. Prove PA = PB using the centre O. **5**

33. Calculate the 20th term and the sum of the first 20 terms of the AP 5, 8, 11, ... **5**

34. From a point 20 m from the base of a vertical tower on level ground, its top has angle of elevation 60 degrees. Calculate the tower's height. Then find the angle from a point 20sqrt(3) m from its base. **5**

35. Calculate the point dividing the segment from A(2, 3) to B(8, 11) internally in the ratio AP:PB = 1:3. Also find AB. **5**

Section E - Case and application questions

36. A rectangular garden has width x m, length (x+3) m and area 54 m^2.

(a) Form its quadratic equation. **1**

(b) Find the positive root. **1**

(c) State the dimensions and perimeter. **2**

37. Five observations are [5, 7, 9, 11, 13].

(a) Find their sum. **1**

(b) Find their mean. **1**

(c) Find their median and range, explaining each. **2**

38. A bag holds 7 red and 8 blue counters. One is drawn at random.

(a) State the total number. **1**

(b) Find the probability of red. **1**

(c) Find the probability of not red and explain your method. **2**

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