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CLASS 10

Mathematics Basic

Sample Paper 5 - 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 sector has central angle 90 degrees and radius 76 cm. Calculate its area as a coefficient of pi. **1**

(A) 1444 (B) 1445 (C) 1446 (D) 1443

2. Factorise $x^2 + 44x + 160$. State the positive integer c such that $(x + 40)(x + c)$ is the factorisation. **1**

(A) 5 (B) 6 (C) 3 (D) 4

3. Two similar triangles have corresponding-side ratio 2:43. If the smaller area is 20 square centimetres, find the larger area. **1**

(A) 9246 (B) 9247 (C) 9245 (D) 9244

4. A cylinder has radius 7 cm and height 41 cm. Calculate its volume using pi = 22/7. **1**

(A) 6314 (B) 6313 (C) 6315 (D) 6316

5. Calculate the HCF of 492 and 738. **1**

(A) 246 (B) 248 (C) 247 (D) 245

6. Tangents PA and PB are drawn from P to a circle. PA = 124 cm. Calculate PB. **1**

(A) 126 (B) 124 (C) 125 (D) 123

7. Calculate the smaller root of $x^2 - 79x + 1558 = 0$. **1**

(A) 40 (B) 37 (C) 38 (D) 39

8. For an acute angle theta, tan theta = 117/156. Calculate sin theta. **1**
(A) 8/5 (B) 3/5 (C) 13/5 (D) -2/5

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

10. Calculate the sum of the first 45 terms of the AP beginning 39, 42, 45. **1**
(A) 4725 (B) 4727 (C) 4726 (D) 4724

11. Solve x + y = 87 and 2x - y = 42. State the value of x. **1**
(A) 44 (B) 43 (C) 45 (D) 42

12. Calculate the distance between A(41, 43) and B(167, 211). **1**
(A) 210 (B) 212 (C) 211 (D) 209

13. Calculate the mean of 42, 44, 46, 48, 50. **1**
(A) 46 (B) 45 (C) 48 (D) 47

14. A sector has central angle 90 degrees and radius 70 cm. Calculate its area as a coefficient of pi. **1**
(A) 1226 (B) 1225 (C) 1227 (D) 1224

15. Calculate the HCF of 444 and 666. **1**
(A) 221 (B) 222 (C) 224 (D) 223

16. A cylinder has radius 7 cm and height 40 cm. Calculate its volume using pi = 22/7. **1**
(A) 6161 (B) 6162 (C) 6160 (D) 6159

17. Two similar triangles have corresponding-side ratio 2:44. If the smaller area is 20 square centimetres, find the larger area. **1**
(A) 9682 (B) 9681 (C) 9679 (D) 9680

18. For an acute angle theta, tan theta = 111/148. Calculate sin theta. **1**
(A) 8/5 (B) -2/5 (C) 3/5 (D) 13/5

19. A fair die is rolled. Calculate the probability that its result is at most 5. **1**
(A) 11/6 (B) -1/6 (C) 5/6 (D) 17/6

20. Tangents PA and PB are drawn from P to a circle. PA = 109 cm. Calculate PB. 1

(A) 110 (B) 109 (C) 108 (D) 111

Section B - Short responses

21. Calculate the sum of the first 46 terms of the AP beginning 40, 44, 48. 2

22. Calculate the smaller root of x^2 - 81x + 1638 = 0. 2

23. Factorise x^2 + 41x + 148. State the positive integer c such that (x + 37)(x + c) is the factorisation. 2

24. Solve x + y = 77 and 2x - y = 37. State the value of x. 2

25. Calculate the mean of 41, 43, 45, 47, 49. 2

Section C - Short responses

26. Calculate the distance between A(39, 41) and B(159, 201). Determine the midpoint of AB and explain how the coordinate differences are used. 3

27. A cylinder has radius 7 cm and height 38 cm. Calculate its volume using pi = 22/7. Calculate its curved and total surface areas as well. 3

28. Calculate the HCF and LCM of 432 and 648. Verify the product relationship between the two numbers and their HCF and LCM. 3

29. Tangents PA and PB are drawn from P to a circle. PA = 130 cm. Calculate PB. If the radius OA is 43 cm, calculate OP and justify the relation used. 3

30. A sector has central angle 90 degrees and radius 82 cm. Calculate its area as a coefficient of pi. Also find its arc length and perimeter in terms of pi. 3

31. Calculate the sum of the first 49 terms of the AP beginning 43, 47, 51. Show the governing rule, substitution and conclusion clearly. 3

Section D - Extended responses

32. 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**

33. Tangents PA and PB touch a circle at A and B. Prove PA = PB using the centre O. **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 20th term and the sum of the first 20 terms of the AP 5, 8, 11, ... **5**

Section E - Case and application questions

36. A rectangular garden has width x m, length (x+3) m and area 88 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 [7, 9, 11, 13, 15].

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

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

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

38. A bag holds 9 red and 10 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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