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CLASS 11

Mathematics

Sample Paper 1 - 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. An AP has first term 12 and common difference 3. Calculate its 18th term. **1**
(A) 63 (B) 65 (C) 64 (D) 62

2. A GP has first term 12 and common ratio 2. Calculate term number 5. **1**
(A) 191 (B) 193 (C) 192 (D) 194

3. In a group, n(A) = 30, n(B) = 28 and n(A intersection B) = 15. Calculate n(A union B). **1**
(A) 43 (B) 45 (C) 44 (D) 42

4. How many ordered arrangements of 3 distinct objects can be selected from 14 distinct objects? **1**
(A) 2183 (B) 2184 (C) 2185 (D) 2186

5. How many two-member committees can be chosen from 15 distinct people? **1**
(A) 105 (B) 104 (C) 107 (D) 106

6. Calculate the coefficient of x^2 in $(1 + x)^{14}$. **1**
(A) 92 (B) 91 (C) 90 (D) 93

7. Calculate the slope of the line through (10, 12) and (13, 18). **1**
(A) 2 (B) 4 (C) 1 (D) 3

8. For the parabola $y^2 = 44x$, find the distance of its focus from the origin. **1**
(A) 12 (B) 11 (C) 10 (D) 13

9. Calculate the distance between (0,0,0) and (20,30,60). **1**
(A) 70 (B) 69 (C) 71 (D) 72

10. Determine the value of lim as x tends to 10 of $(x^2 - 100)/(x - 10)$. **1**
(A) 20 (B) 22 (C) 19 (D) 21

11. For $f(x) = 11x^2$, find f'(3). **1**
(A) 66 (B) 65 (C) 68 (D) 67

12. Calculate the real part of $(10 + 2i)(2 - i)$. **1**
(A) 23 (B) 24 (C) 22 (D) 21

13. A fair die is rolled. Calculate the probability of obtaining an even number. **1**
(A) -1/2 (B) 3/2 (C) 1/2 (D) 5/2

14. Calculate the greatest integer satisfying $2x + 10 <= 28$. **1**
(A) 8 (B) 10 (C) 9 (D) 11

15. Calculate the population variance of 10, 12, 14. **1**
(A) 8/3 (B) 5/3 (C) 11/3 (D) 14/3

16. Calculate the sum of the first 18 terms of the AP beginning 12, 15, 18. **1**
(A) 675 (B) 674 (C) 676 (D) 677

17. A GP has first term 13 and common ratio 3. Calculate term number 6. **1**
(A) 3159 (B) 3161 (C) 3160 (D) 3158

18. In a group, n(A) = 31, n(B) = 29 and n(A intersection B) = 16. Calculate n(A union B). **1**
(A) 44 (B) 43 (C) 45 (D) 46

19. How many ordered arrangements of 3 distinct objects can be selected from 15 distinct objects? **1**
(A) 2732 (B) 2729 (C) 2730 (D) 2731

20. How many two-member committees can be chosen from 16 distinct people? **1**
(A) 121 (B) 119 (C) 120 (D) 122

Section B - Short responses

21. Calculate the coefficient of x^2 in $(1 + x)^{15}$. **2**

22. Calculate the slope of the line through (11, 13) and (14, 19). **2**

23. For the parabola $y^2 = 48x$, find the distance of its focus from the origin. **2**

24. Calculate the distance between (0,0,0) and (22,33,66). **2**

25. Determine the value of lim as x tends to 11 of $(x^2 - 121)/(x - 11)$. **2**

Section C - Short responses

26. For $f(x) = 12x^2$, find f'(3). **3**

27. Calculate the real part of $(11 + 2i)(2 - i)$. **3**

28. Calculate the greatest integer satisfying $2x + 11 <= 29$. **3**

29. Calculate the population variance of 11, 13, 15. **3**

30. An AP has first term 13 and common difference 4. Calculate its 19th term. **3**

31. A GP has first term 14 and common ratio 2. Calculate term number 4. **3**

Section D - Extended responses

32. In the expansion of $(1+2x)^6$, find the coefficients of x^2 and x^3. State the general term used. **5**

33. Using the digits 0,1,2,3,4,5 without repetition, count all three-digit numbers and then count the even three-digit numbers. Account explicitly for a possible zero. **5**

34. Calculate the equation of the circle with centre (3,-2) and radius 5. Give its expanded form and determine whether (6,2) lies on it. **5**

35. Using first principles, find the derivative of $f(x)=x^2+3x$. Then find $f'(2)$, explaining the limiting step. **5**

Section E - Case and application questions

36. Among60 learners,32 join A,25 join B and10 join both.

(a) Find the union count. **1**

(b) Find the neither count. **1**

(c) Find the probability of belonging to exactly one of the clubs. **2**

37. A circle is represented by $x^2+y^2-6x+4y-12=0$.

(a) State its centre. **1**

(b) State its radius. **1**

(c) Check whether (6,2) lies on it. **2**

38. Two learners are chosen from six distinct volunteers.

(a) Count unordered pairs. **1**

(b) Count arrangements for two different named roles. **1**

(c) Count two-member committees containing one specified volunteer, explaining why order does not matter. **2**

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