MATH LOVE INSTITUTE

CBSE Class 8 Mathematics

Home Exam 2025-26 - Sample Paper Set 1

Based on Latest NCERT Syllabus & Blueprint

Maximum Marks	80
Time Allowed	3 Hours
Class	VIII (Eight)
Subject	Mathematics

📋 GENERAL INSTRUCTIONS:

1. This question paper contains **38 questions** divided into **Five Sections A, B, C, D and E**.
2. **Section A** comprises of 20 MCQs of 1 mark each.
3. **Section B** comprises of 6 questions of 2 marks each.
4. **Section C** comprises of 6 questions of 3 marks each.
5. **Section D** comprises of 3 questions of 5 marks each.
6. **Section E** comprises of 3 case study based questions of 4 marks each (with sub-parts).
7. All questions are **compulsory**. However, internal choices have been provided in some questions.
8. Use of calculator is **NOT** permitted.
9. Draw neat and clean diagrams wherever required.
10. Write all working and steps clearly for better understanding and full marks.

SECTION A - MULTIPLE CHOICE QUESTIONS (1 × 20 = 20 Marks)

Q1. Which of the following is an identity? **[1]**

(a) $(x + 2)(x - 2) = x^2 + 4$

(b) $(x + y)^2 = x^2 + 2xy + y^2$

(c) $(x - y)(x + y) = x^2 - 2xy + y^2$

(d) $x^2 + y^2 = (x + y)^2$

Q2. The factors of $x^2 + 5x + 6$ are: **[1]**

(a) $(x + 2)(x + 3)$

(b) $(x - 2)(x - 3)$

(c) $(x + 1)(x + 6)$

(d) $(x - 1)(x - 6)$

Q3. If $3x + 7 = 22$, then the value of x is: **[1]**

(a) 3

(b) 4

(c) 5

(d) 6

Q4. The cost price of an article is ₹500. If it is sold at a profit of 20%, the selling price is: **[1]**

(a) ₹520

(b) ₹600

(c) ₹100

(d) ₹580

Q5. The compound interest on ₹10,000 at 10% per annum for 2 years is: **[1]**

(a) ₹2,000

(b) ₹2,100

(c) ₹2,200

(d) ₹2,500

Q6. The area of a trapezium with parallel sides 8 cm and 6 cm and height 4 cm is: **[1]**

(a) 28 cm^2

(b) 32 cm^2

(c) 24 cm^2

(d) 56 cm^2

Q7. The volume of a cube with side 5 cm is: **[1]**

(a) 25 cm^3

(b) 75 cm^3

(c) 125 cm^3

(d) 100 cm^3

Q8. In a pie chart, the total angle at the centre is: **[1]**

(a) 180°

(b) 270°

(c) 360°

(d) 90°

Q9. The sum of all angles of a quadrilateral is: **[1]**

(a) 180°

(b) 270°

(c) 360°

(d) 540°

Q10. Which of the following is a parallelogram? **[1]**

(a) Rectangle

(b) Triangle

(c) Pentagon

(d) Circle

Q11. The value of $(a + b)^2 - (a - b)^2$ is: **[1]**

(a) 2ab

(b) 4ab

(c) $2a^2$

(d) $2b^2$

Q12. If $x/3 + 2 = 5$, then x equals: **[1]**

(a) 6

(b) 9

(c) 12

(d) 15

Q13. A shopkeeper marks an article at ₹800 and gives 15% discount. The selling price is: **[1]**

(a) ₹680

(b) ₹700

(c) ₹720

(d) ₹650

Q14. The area of a rhombus with diagonals 10 cm and 8 cm is: **[1]**

(a) 80 cm^2

(b) 40 cm^2

(c) 20 cm^2

(d) 160 cm^2

Q15. The curved surface area of a cylinder with radius 7 cm and height 10 cm is: **[1]**

(a) 220 cm^2

(b) 440 cm^2

(c) 154 cm^2

(d) 308 cm^2

Q16. In a frequency distribution table, the class interval 20-30 has upper limit: **[1]**

(a) 20

(b) 30

(c) 25

(d) 50

Q17. Each angle of a rectangle is: **[1]**

(a) 60°

(b) 90°

(c) 120°

(d) 180°

Q18. The probability of getting a head when a coin is tossed is: **[1]**

(a) 0

(b) 1/2

(c) 1

(d) 1/4

Q19. If the cost price is ₹800 and selling price is ₹700, then there is: **[1]**

(a) Profit of ₹100

(b) Loss of ₹100

(c) No profit no loss

(d) Profit of 12.5%

Q20. The factorization of $a^2 - b^2$ is: **[1]**

(a) $(a + b)(a + b)$

(b) $(a - b)(a - b)$

(c) $(a + b)(a - b)$

(d) $a(a - b)$

SECTION B - SHORT ANSWER QUESTIONS I (2 × 6 = 12 Marks)

Q21. Factorize: $4x^2 - 12x + 9$ **[2]**

Q22. Solve: $5(2x - 3) = 3(3x - 1)$ **[2]**

Q23. Find the simple interest on ₹5,000 at 8% per annum for 3 years. **[2]**

Q24. Find the area of a parallelogram whose base is 12 cm and height is 8 cm. **[2]**

Q25. The angles of a quadrilateral are in the ratio 2:3:4:6. Find all the angles. **[2]**

Q26. A die is thrown once. Find the probability of getting: **[2]**

(i) a prime number

(ii) a number greater than 4

SECTION C - SHORT ANSWER QUESTIONS II (3 × 6 = 18 Marks)

Q27. Using appropriate identity, find the value of: $(103)^2 - (97)^2$ **[3]**

Q28. The length of a rectangle is three times its breadth. If the perimeter is 96 cm, find the dimensions of the rectangle. **[3]**

Q29. A shopkeeper bought a watch for ₹1,200 and sold it for ₹1,500. Find the profit percentage. **[3]**

OR

An article marked at ₹2,500 is sold at ₹2,000 after giving a discount. Find the discount percentage.

Q30. Find the volume of a cuboid whose length is 10 cm, breadth is 8 cm and height is 6 cm. **[3]**

Q31. Draw a histogram for the following data showing the marks obtained by 30 students: **[3]**

Marks	0-10	10-20	20-30	30-40
Frequency	5	10	12	3

Q32. In a parallelogram ABCD, if $\angle A = 70°$, find all other angles. **[3]**

SECTION D - LONG ANSWER QUESTIONS (5 × 3 = 15 Marks)

Q33. (a) Factorize: $x^3 + 8$ **[5]**

(b) Expand using identity: $(2x + 3y)^3$

OR

Factorize: $27a^3 - 64b^3$

Q34. The sum of three consecutive multiples of 7 is 777. Find the three numbers. **[5]**

Q35. Find the compound interest on ₹16,000 for 2 years at 10% per annum compounded annually. Also find the amount. **[5]**

OR

Kamla borrowed ₹25,000 from a bank at 12% per annum compounded annually. What amount will she pay after 2 years to clear the loan?

SECTION E - CASE STUDY BASED QUESTIONS (4 × 3 = 12 Marks + 3 Internal Choice = 15 Marks)

Q36. **[4]**

CASE STUDY 1: Garden Design

Rahul wants to design a garden in the shape of a trapezium. The parallel sides of the trapezium are 15 m and 25 m, and the distance between them is 10 m. He plans to plant grass in the entire garden and build a rectangular flower bed inside it with dimensions 8 m × 5 m.

Based on the above information, answer the following questions:

(i) Find the area of the trapezoidal garden. **[1 mark]**

(ii) Find the area of the rectangular flower bed. **[1 mark]**

OR

If the cost of planting grass is ₹50 per m^2, find the total cost for the entire garden.

(iii) Find the area available for planting grass (excluding the flower bed). **[2 marks]**

Q37. **[4]**

CASE STUDY 2: Shopping Discount

During a festival sale, a shop offers the following discounts on different items:

- Shirts: Marked Price ₹1,200 with 20% discount
- Jeans: Marked Price ₹2,000 with 25% discount
- Shoes: Marked Price ₹1,500 with 15% discount

Priya wants to buy one item from each category.

Based on the above information, answer the following questions:

(i) Find the selling price of the shirt after discount. **[1 mark]**

(ii) Find the selling price of the jeans after discount. **[1 mark]**

OR

If Priya has ₹4,000, will she be able to buy all three items? Justify your answer.

(iii) Find the total amount Priya needs to pay for all three items after discount. **[2 marks]**

Q38. **[4]**

CASE STUDY 3: Data Analysis of Students' Performance

The following data shows the marks obtained by 40 students in a Mathematics test:

Marks	10-20	20-30	30-40	40-50
No. of Students	8	12	15	5

Based on the above information, answer the following questions:

(i) Which class interval has the maximum frequency? **[1 mark]**

(ii) How many students scored 30 marks or more? **[1 mark]**
OR
What is the class size of the given data?

(iii) If a student is selected at random, what is the probability that the student scored between 20-30 marks? **[2 marks]**

📚 END OF QUESTION PAPER 📚

Total Marks: 80

Section A: 20 marks | Section B: 12 marks | Section C: 18 marks

Section D: 15 marks | Section E: 12 marks | Internal Choice: 3 marks

This paper is based on latest NCERT syllabus and comprehensive question patterns from CBSE sample papers for home exams.

🎯 DETAILED ANSWER KEY WITH SOLUTIONS

SECTION A - ANSWERS (1 × 20 = 20 Marks)

Q1. Answer: (b) $(x + y)^2 = x^2 + 2xy + y^2$

Explanation: This is a standard algebraic identity.

Q2. Answer: (a) (x + 2)(x + 3)

Solution: $x^2 + 5x + 6 = x^2 + 2x + 3x + 6 = x(x + 2) + 3(x + 2) = (x + 2)(x + 3)$

Q3. Answer: (c) 5

Solution: $3x + 7 = 22 \rightarrow 3x = 15 \rightarrow x = 5$

Q4. Answer: (b) ₹600

Solution: S.P. = C.P. + Profit = 500 + (20% of 500) = 500 + 100 = ₹600

Q5. Answer: (b) ₹2,100

Solution: $A = P(1 + R/100)^n = 10000(1 + 10/100)^2 = 10000(1.1)^2 = 12,100$
C.I. = 12,100 - 10,000 = ₹2,100

Q6. Answer: (a) 28 cm²

Solution: Area = ½ × (a + b) × h = ½ × (8 + 6) × 4 = ½ × 14 × 4 = 28 cm²

Q7. Answer: (c) 125 cm³

Solution: Volume = side³ = 5³ = 125 cm³

Q8. Answer: (c) 360°

Explanation: Total angle at the centre of a circle is 360°.

Q9. Answer: (c) 360°

Explanation: Sum of all angles of a quadrilateral = 360°

Q10. Answer: (a) Rectangle

Explanation: Rectangle is a type of parallelogram.

Q11. Answer: (b) 4ab

Solution: $(a + b)^2 - (a - b)^2 = (a^2 + 2ab + b^2) - (a^2 - 2ab + b^2) = 4ab$

Q12. Answer: (b) 9

Solution: $x/3 + 2 = 5 \rightarrow x/3 = 3 \rightarrow x = 9$

Q13. Answer: (a) ₹680

Solution: Discount = 15% of 800 = ₹120

S.P. = 800 - 120 = ₹680

Q14. Answer: (b) 40 cm²

Solution: Area = ½ × d_1 × d_2 = ½ × 10 × 8 = 40 cm²

Q15. Answer: (b) 440 cm²

Solution: C.S.A. = 2πrh = 2 × (22/7) × 7 × 10 = 440 cm²

Q16. Answer: (b) 30

Explanation: Upper limit of class interval 20-30 is 30.

Q17. Answer: (b) 90°

Explanation: Each angle of a rectangle is 90°.

Q18. Answer: (b) 1/2

Explanation: P(Head) = 1/2 (equally likely outcomes)

Q19. Answer: (b) Loss of ₹100

Solution: C.P. > S.P., so Loss = 800 - 700 = ₹100

Q20. Answer: (c) (a + b)(a - b)

Explanation: This is the standard identity for difference of squares.

SECTION B - ANSWERS (2 × 6 = 12 Marks)

Q21. Solution:

Marking Scheme: 1 mark for correct method + 1 mark for final answer

$4x^2 - 12x + 9$

$= (2x)^2 - 2(2x)(3) + (3)^2$

$= (2x - 3)^2$

Answer: $(2x - 3)^2$

Q22. Solution:

Marking Scheme: 1 mark for expanding + 1 mark for solving

$5(2x - 3) = 3(3x - 1)$

$10x - 15 = 9x - 3$

$10x - 9x = -3 + 15$

$x = 12$

Answer: x = 12

Q23. Solution:

Marking Scheme: 1 mark for formula + 1 mark for calculation

Given: P = ₹5,000, R = 8%, T = 3 years

S.I. = (P × R × T)/100

S.I. = (5000 × 8 × 3)/100

S.I. = 120,000/100

S.I. = ₹1,200

Q24. Solution:

> **Marking Scheme:** 1 mark for formula + 1 mark for calculation

Area of parallelogram = Base × Height

= 12 × 8

= 96 cm²

Q25. Solution:

> **Marking Scheme:** 1 mark for finding value of x + 1 mark for all angles

Let the angles be 2x, 3x, 4x, 6x

Sum of angles = 360°

2x + 3x + 4x + 6x = 360°

15x = 360°

x = 24°

Angles are:

2x = 48°

3x = 72°

4x = 96°

6x = 144°

Q26. Solution:

> **Marking Scheme:** 1 mark for each part

Total outcomes when a die is thrown = 6

(i) Prime numbers on a die: 2, 3, 5 (3 outcomes)

P(prime number) = 3/6 = **1/2**

(ii) Numbers greater than 4: 5, 6 (2 outcomes)
P(number > 4) = 2/6 = **1/3**

SECTION C - ANSWERS (3 × 6 = 18 Marks)

Q27. Solution:

> **Marking Scheme:** 1 mark for identifying identity + 1 mark for substitution + 1 mark for answer

Using identity: $a^2 - b^2 = (a + b)(a - b)$
$(103)^2 - (97)^2 = (103 + 97)(103 - 97)$
$= 200 \times 6$
= 1,200

Q28. Solution:

> **Marking Scheme:** 1 mark for equation + 1 mark for solving + 1 mark for dimensions

Let breadth = x cm
Then length = 3x cm
Perimeter = 2(l + b)
96 = 2(3x + x)
96 = 2(4x)
96 = 8x
x = 12

Breadth = 12 cm
Length = 3 × 12 = 36 cm

Q29. Solution:

> **Marking Scheme:** 1 mark for finding profit + 1 mark for formula + 1 mark for percentage

C.P. = ₹1,200

S.P. = ₹1,500

Profit = S.P. - C.P. = 1,500 - 1,200 = ₹300

Profit% = (Profit/C.P.) × 100

= (300/1200) × 100

= 25%

OR

M.P. = ₹2,500

S.P. = ₹2,000

Discount = M.P. - S.P. = 2,500 - 2,000 = ₹500

Discount% = (Discount/M.P.) × 100

= (500/2500) × 100

= 20%

Q30. Solution:

> **Marking Scheme:** 1 mark for formula + 2 marks for calculation

Volume of cuboid = l × b × h

= 10 × 8 × 6

= 80 × 6

= 480 cm^3

Q31. Solution:

> **Marking Scheme:** 1 mark for axes + 1 mark for scale + 1 mark for bars

Steps to draw histogram:

1. Draw horizontal axis (X-axis) for marks

2. Draw vertical axis (Y-axis) for frequency

3. Choose scale: 1 cm = 2 students on Y-axis

4. Draw bars for each class interval:

   • 0-10: Height = 5

   • 10-20: Height = 10

   • 20-30: Height = 12

   • 30-40: Height = 3

5. Label axes and give title

[Student should draw actual histogram on answer sheet]

Q32. Solution:

> **Marking Scheme:** 1 mark for each angle

In parallelogram ABCD:

Given: $\angle A = 70°$

Property 1: Opposite angles are equal

$\therefore \angle C = \angle A = \mathbf{70°}$

Property 2: Adjacent angles are supplementary

$\angle A + \angle B = 180°$

$70° + \angle B = 180°$

$\angle B = 110°$

$\angle D = \angle B = \mathbf{110°}$

Answer: $\angle A = 70°, \angle B = 110°, \angle C = 70°, \angle D = 110°$

SECTION D - ANSWERS (5 × 3 = 15 Marks)

Q33. Solution:

> **Marking Scheme:** 2.5 marks for each part

(a) Factorize: $x^3 + 8$

$x^3 + 8 = x^3 + 2^3$

Using identity: $a^3 + b^3 = (a + b)(a^2 - ab + b^2)$

$= (x + 2)(x^2 - 2x + 4)$

Answer: $(x + 2)(x^2 - 2x + 4)$

(b) Expand: $(2x + 3y)^3$

Using identity: $(a + b)^3 = a^3 + b^3 + 3a^2b + 3ab^2$

$= (2x)^3 + (3y)^3 + 3(2x)^2(3y) + 3(2x)(3y)^2$

$= 8x^3 + 27y^3 + 3(4x^2)(3y) + 3(2x)(9y^2)$

$= 8x^3 + 27y^3 + 36x^2y + 54xy^2$

Answer: $8x^3 + 27y^3 + 36x^2y + 54xy^2$

OR

Factorize: $27a^3 - 64b^3$

$= (3a)^3 - (4b)^3$

Using identity: $a^3 - b^3 = (a - b)(a^2 + ab + b^2)$

$= (3a - 4b)[(3a)^2 + (3a)(4b) + (4b)^2]$

$= (3a - 4b)(9a^2 + 12ab + 16b^2)$

Answer: $(3a - 4b)(9a^2 + 12ab + 16b^2)$

Q34. Solution:

> **Marking Scheme:** 1 mark for equation + 2 marks for solving + 2 marks for finding numbers

Let the three consecutive multiples of 7 be:

$7x, 7(x + 1), 7(x + 2)$

According to question:

$7x + 7(x + 1) + 7(x + 2) = 777$

$7x + 7x + 7 + 7x + 14 = 777$

$21x + 21 = 777$

$21x = 756$

$x = 36$

First number = $7x = 7 \times 36 = 252$

Second number = $7(x + 1) = 7 \times 37 = 259$

Third number = $7(x + 2) = 7 \times 38 = 266$

Answer: 252, 259, 266

Q35. Solution:

> **Marking Scheme:** 1 mark for formula + 2 marks for amount + 2 marks for C.I.

Given: P = ₹16,000, R = 10%, n = 2 years

Formula: $A = P(1 + R/100)^n$

$A = 16000(1 + 10/100)^2$

$A = 16000(1.1)^2$

$A = 16000 \times 1.21$

A = ₹19,360

Compound Interest = A - P

= 19,360 - 16,000

C.I. = ₹3,360

OR

Given: P = ₹25,000, R = 12%, n = 2 years

$A = P(1 + R/100)^n$

$A = 25000(1 + 12/100)^2$

$A = 25000(1.12)^2$

$A = 25000 \times 1.2544$

A = ₹31,360

Kamla will pay ₹31,360 after 2 years

SECTION E - ANSWERS (3 × 4 = 12 Marks)

Q36. CASE STUDY 1 - ANSWERS:

Total Marks: 4

(i) Find the area of the trapezoidal garden. [1 mark]

Solution:

Area of trapezium = ½ × (sum of parallel sides) × height

= ½ × (15 + 25) × 10

= ½ × 40 × 10

= 200 m²

(ii) Find the area of the rectangular flower bed. [1 mark]

Solution:

Area of rectangle = length × breadth

= 8 × 5

= 40 m²

OR: Find the total cost for planting grass in the entire garden. [1 mark]

Solution:

Total area = 200 m²

Cost per m² = ₹50

Total cost = 200 × 50

= ₹10,000

(iii) Find the area available for planting grass (excluding the flower bed). [2 marks]

Marking Scheme: 1 mark for concept + 1 mark for calculation

Solution:

Area available for grass = Area of garden - Area of flower bed

= 200 - 40

= 160 m²

Q37. CASE STUDY 2 - ANSWERS:

Total Marks: 4

(i) Find the selling price of the shirt after discount. [1 mark]

Solution:

M.P. = ₹1,200

Discount = 20% of 1,200 = ₹240

S.P. = 1,200 - 240

= ₹960

(ii) Find the selling price of the jeans after discount. [1 mark]

Solution:

M.P. = ₹2,000

Discount = 25% of 2,000 = ₹500

S.P. = 2,000 - 500

= ₹1,500

OR: If Priya has ₹4,000, will she be able to buy all three items? [1 mark]

Solution:

Total required (from part iii) = ₹3,735

Amount Priya has = ₹4,000

Since ₹4,000 > ₹3,735

Yes, Priya can buy all three items.

(iii) Find the total amount Priya needs to pay for all three items. [2 marks]

Marking Scheme: ½ mark for shoes S.P. + 1½ marks for total

Solution:

Shirt S.P. = ₹960 (from part i)

Jeans S.P. = ₹1,500 (from part ii)

Shoes S.P.:

M.P. = ₹1,500

Discount = 15% of 1,500 = ₹225

S.P. = 1,500 - 225 = ₹1,275

Total amount = 960 + 1,500 + 1,275

= ₹3,735

Q38. CASE STUDY 3 - ANSWERS:

Total Marks: 4

(i) Which class interval has the maximum frequency? [1 mark]

Solution:

From the table, the class interval **30-40** has the maximum frequency of **15 students**.

(ii) How many students scored 30 marks or more? [1 mark]

Solution:

Students in 30-40 = 15

Students in 40-50 = 5

Total = 15 + 5

= 20 students

OR: What is the class size of the given data? [1 mark]

Solution:

Class size = Upper limit - Lower limit

= 20 - 10 (or any class interval)

= 10

(iii) Probability that the student scored between 20-30 marks. [2 marks]

Marking Scheme: 1 mark for formula + 1 mark for calculation

Solution:

Total number of students = 8 + 12 + 15 + 5 = 40

Students scoring 20-30 marks = 12

Probability = Number of favorable outcomes / Total outcomes

= 12/40

= 3/10

= 0.3 or 30%

📚 END OF ANSWER KEY 📚

Total Marks: 80

Section A: 20 marks | Section B: 12 marks | Section C: 18 marks

Section D: 15 marks | Section E: 12 marks | Internal Choice: 3 marks

This comprehensive answer key follows strict CBSE marking schemes and includes detailed step-by-step solutions for better understanding and scoring.

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