# CBSE Class 8 Mathematics

## Sample Question Paper 2026-27 (Set 1)

**Subject:** Mathematics | **Class:** VIII | **Textbook:** Ganita Prakash (Part I and Part II) **Time Allowed:** 3 Hours | **Maximum Marks:** 80

*Prepared by Sunbeam World School for practice. Based on the Class VIII NCERT textbooks for 2026-27. CBSE does not prescribe a Class 8 paper pattern, so this paper follows the format most CBSE schools use for the annual exam.*

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## General Instructions

1. This question paper contains **38 questions**. All questions are compulsory.
2. The paper is divided into **five Sections: A, B, C, D and E**.
3. **Section A** has 20 questions of 1 mark each, including two Assertion and Reason questions.
4. **Section B** has 5 questions of 2 marks each.
5. **Section C** has 6 questions of 3 marks each.
6. **Section D** has 4 questions of 5 marks each.
7. **Section E** has 3 case-based questions of 4 marks each.
8. Internal choice is given in some questions.
9. Show all steps of your working. Draw neat figures wherever required.
10. Use of a calculator is **not** permitted.

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## Blueprint: Area-Wise Distribution

| Area | Chapters | Marks |
|---|---|---|
| Numbers | A Square and A Cube, Power Play, A Story of Numbers, Number Play | 24 |
| Algebra | We Distribute, Yet Things Multiply; Algebra Play | 12 |
| Geometry | Quadrilaterals, The Baudhayana-Pythagoras Theorem | 14 |
| Proportion and Percentages | Proportional Reasoning 1 and 2, Fractions in Disguise | 17 |
| Data | Tales by Dots and Lines | 8 |
| Mensuration | Area | 5 |
| | **Total** | **80** |

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# SECTION A

*20 questions of 1 mark each*

**1.** Which of the following is a perfect square? (a) 1050 (b) 1225 (c) 1500 (d) 2000

**2.** The cube root of 2744 is (a) 12 (b) 14 (c) 16 (d) 18

**3.** The units digit of $47^2$ is (a) 7 (b) 9 (c) 1 (d) 4

**4.** $(2^3)^2$ is equal to (a) $2^5$ (b) $2^6$ (c) $2^8$ (d) $2^9$

**5.** The value of $3^{-2}$ is (a) −9 (b) −6 (c) 1/9 (d) 1/6

**6.** 0.000045 written in scientific notation is (a) $4.5 \times 10^{-5}$ (b) $4.5 \times 10^{-4}$ (c) $45 \times 10^{-6}$ (d) $4.5 \times 10^5$

**7.** The Roman numeral XCIV stands for (a) 94 (b) 96 (c) 104 (d) 114

**8.** The sum of the interior angles of a quadrilateral is (a) 180° (b) 270° (c) 360° (d) 540°

**9.** A quadrilateral with all four sides equal, whose diagonals are perpendicular but not necessarily equal, is a (a) rectangle (b) rhombus (c) trapezium (d) kite

**10.** One angle of a parallelogram is 65°. The angle adjacent to it is (a) 65° (b) 115° (c) 125° (d) 25°

**11.** Which of these numbers is divisible by 9? (a) 4583 (b) 7236 (c) 5102 (d) 3331

**12.** The sum of two odd numbers is always (a) odd (b) even (c) prime (d) a multiple of 4

**13.** $(a + b)^2 - (a - b)^2$ is equal to (a) 2ab (b) $2a^2 + 2b^2$ (c) 4ab (d) 0

**14.** Using an identity, 102 × 98 is equal to (a) 9996 (b) 10004 (c) 9984 (d) 10196

**15.** If 5 pens cost ₹60, the cost of 8 such pens is (a) ₹80 (b) ₹96 (c) ₹100 (d) ₹108

**16.** 6 workers can finish a job in 10 days. Working at the same rate, 15 workers will finish it in (a) 25 days (b) 6 days (c) 4 days (d) 5 days

**17.** 3/8 expressed as a percentage is (a) 30% (b) 37.5% (c) 38% (d) 3.8%

**18.** Which of the following is a Baudhayana (Pythagorean) triple? (a) 5, 12, 13 (b) 4, 5, 6 (c) 6, 7, 8 (d) 2, 3, 4

**19. Assertion and Reason. Assertion (A):** The mean of 4, 6, 8, 10 and 12 is 8. **Reason (R):** Mean = sum of all observations ÷ number of observations. (a) Both A and R are true and R is the correct explanation of A (b) Both A and R are true but R is not the correct explanation of A (c) A is true but R is false (d) A is false but R is true

**20. Assertion and Reason. Assertion (A):** 64 is both a perfect square and a perfect cube. **Reason (R):** Every perfect square is also a perfect cube. (a) Both A and R are true and R is the correct explanation of A (b) Both A and R are true but R is not the correct explanation of A (c) A is true but R is false (d) A is false but R is true

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# SECTION B

*5 questions of 2 marks each*

**21.** Find the square root of 1764 by prime factorisation. **OR** Find the smallest number by which 392 must be multiplied to make it a perfect cube.

**22.** Simplify and write the answer as a number: $(3^4 \times 3^{-2}) \div 3^{-1}$

**23.** Two angles of a quadrilateral are 80° and 110°. The other two angles are equal. Find them. **OR** The diagonals of a rhombus are 16 cm and 12 cm. Find the length of each side.

**24.** Expand $(2x + 3)^2$ using a suitable identity.

**25.** A shirt marked at ₹800 is sold at a discount of 15%. Find its selling price.

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# SECTION C

*6 questions of 3 marks each*

**26.** Is 1188 a perfect square? If not, find the smallest number by which it must be divided to get a perfect square, and find the square root of the number obtained.

**27.** The mass of the Earth is about 5,970,000,000,000,000,000,000,000 kg and the mass of the Moon is about 73,500,000,000,000,000,000,000 kg. Write both masses in scientific notation and find roughly how many times heavier the Earth is than the Moon. **OR** Simplify: $(25 \times t^{-4}) \div (5^{-3} \times 10 \times t^{-8})$, where $t \neq 0$.

**28.** Using suitable identities, find: (i) $103^2$ (ii) $297 \times 303$ (iii) $52^2 - 48^2$

**29.** The ratio of boys to girls in a class of 45 students is 5 : 4. How many girls are in the class? If 5 more girls join, what is the new ratio of boys to girls? **OR** A car travels 216 km in 4 hours at a uniform speed. How far will it travel in 7 hours, and how long will it take to cover 270 km?

**30.** A ladder 13 m long is placed against a vertical wall so that its foot is 5 m away from the wall. How high up the wall does the ladder reach? Draw a figure.

**31.** Find the mean, median and range of the data: 12, 7, 15, 9, 10, 18, 13

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# SECTION D

*4 questions of 5 marks each*

**32.** Solve: $(3x - 2)/4 - (2x + 3)/3 = 2/3 - x$, and check your answer. **OR** The sum of three consecutive multiples of 7 is 357. Form an equation and find the numbers.

**33.** A field is in the shape of an isosceles trapezium whose parallel sides are 25 m and 15 m, and the distance between them is 12 m. (i) Find the area of the field. **(2)** (ii) Find the cost of levelling it at ₹15 per m². **(1)** (iii) Find the length of each non-parallel side and the perimeter of the field. **(2)**

**34.** (i) ABCD is a rectangle whose diagonals meet at O. If OA = 2x + 4 and OD = 3x + 1, find x and the length of each diagonal. Give a reason for each step. **(2)** (ii) In parallelogram PQRS, ∠P = (3y + 10)° and ∠Q = (2y + 20)°. Find y and all four angles. **(3) OR** The diagonals of a rhombus are 24 cm and 10 cm. Find (i) the length of each side, (ii) its perimeter, and (iii) its area.

**35.** A shopkeeper buys a television for ₹20,000 and spends ₹1,000 on transport. He marks it 20% above his total cost and then gives a discount of 5% on the marked price. Find the selling price and his profit percentage. **OR** The population of a town is 50,000. It increases by 10% in the first year and decreases by 10% in the second year. Find the population after two years. Is it the same as the original population? Explain.

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# SECTION E

*3 case-based questions of 4 marks each*

**36. Case Study: The Square Garden**

A housing society has a square garden with an area of 1296 m². The society wants to fence it and lay a tiled path along one side.

(i) Find the length of one side of the garden. **(1)** (ii) Find the length of fencing needed to go around the garden once. **(1)** (iii) Find the cost of fencing at ₹50 per metre. **(2) OR** (iii) Square tiles of side 25 cm are laid in a single row along one full side of the garden. How many tiles are needed? **(2)**

**37. Case Study: Canteen Sales**

The number of sandwiches sold in a school canteen on six days was recorded:

| Day | Mon | Tue | Wed | Thu | Fri | Sat |
|---|---|---|---|---|---|---|
| Sandwiches sold | 120 | 150 | 90 | 180 | 150 | 210 |

(i) Find the mean number of sandwiches sold per day. **(1)** (ii) Find the mode of the data. **(1)** (iii) Find the median and the range of the data. **(2) OR** (iii) Find the percentage increase in sales from Wednesday to Saturday. **(2)**

**38. Case Study: Reading a Map**

A road map is drawn to the scale 1 cm : 25 km. A bus travels between towns shown on the map at a uniform speed.

(i) Two towns are 6 cm apart on the map. What is the actual distance between them? **(1)** (ii) Two cities are 400 km apart. What is the distance between them on the map? **(1)** (iii) The bus covers 150 km in 3 hours. At the same speed, how long will it take to cover 400 km? **(2) OR** (iii) A 300 km journey takes 6 hours at 50 km/h. How long will it take at 60 km/h? Name the type of proportion involved. **(2)**

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# MARKING SCHEME

# CBSE Class 8 Mathematics Sample Paper 2026-27 (Set 1)

*Marks are shown in brackets. Award full marks for any other correct method.*

## SECTION A (20 × 1 = 20)

| Q | Answer | Q | Answer |
|---|---|---|---|
| 1 | (b) 1225 | 11 | (b) 7236 |
| 2 | (b) 14 | 12 | (b) even |
| 3 | (b) 9 | 13 | (c) 4ab |
| 4 | (b) $2^6$ | 14 | (a) 9996 |
| 5 | (c) 1/9 | 15 | (b) ₹96 |
| 6 | (a) $4.5 \times 10^{-5}$ | 16 | (c) 4 days |
| 7 | (a) 94 | 17 | (b) 37.5% |
| 8 | (c) 360° | 18 | (a) 5, 12, 13 |
| 9 | (b) rhombus | 19 | (a) |
| 10 | (b) 115° | 20 | (c) |

**Working notes for Section A**

- Q1: $1225 = 35^2$.
- Q2: $14^3 = 14 \times 14 \times 14 = 2744$.
- Q3: $47^2 = 2209$, units digit 9 ($7 \times 7 = 49$).
- Q7: XC = 90, IV = 4, so XCIV = 94.
- Q10: Adjacent angles of a parallelogram add to 180°, so 180° − 65° = 115°.
- Q11: Digit sum of 7236 is 18, which is divisible by 9.
- Q14: $102 \times 98 = (100 + 2)(100 - 2) = 10000 - 4 = 9996$.
- Q16: Total work = 6 × 10 = 60 worker-days; 60 ÷ 15 = 4 days (inverse proportion).
- Q17: 3/8 × 100 = 37.5%.
- Q18: $5^2 + 12^2 = 25 + 144 = 169 = 13^2$.
- Q20: $64 = 8^2 = 4^3$, so A is true. R is false: 4 is a perfect square but not a perfect cube.

## SECTION B (5 × 2 = 10)

**21.** 1764 = 2 × 2 × 3 × 3 × 7 × 7 **(1)**; $\sqrt{1764} = 2 \times 3 \times 7 = 42$ **(1) OR** 392 = 2 × 2 × 2 × 7 × 7 = $2^3 \times 7^2$ **(1)**; 7 is not in a group of three, so multiply by 7, giving 2744 = $14^3$ **(1)**

**22.** $3^4 \times 3^{-2} = 3^2$ **(1)**; $3^2 \div 3^{-1} = 3^3 = 27$ **(1)**

**23.** Sum of angles = 360°; 80° + 110° = 190°, remaining 170° **(1)**; each equal angle = 85° **(1) OR** Diagonals of a rhombus bisect each other at right angles, so half-diagonals are 8 cm and 6 cm **(1)**; side = $\sqrt{(8^2 + 6^2)} = \sqrt{100} = 10$ cm **(1)**

**24.** $(a + b)^2 = a^2 + 2ab + b^2$ **(½)**; $(2x + 3)^2 = 4x^2 + 12x + 9$ **(1½)**

**25.** Discount = 15% of ₹800 = ₹120 **(1)**; selling price = ₹800 − ₹120 = ₹680 **(1)**

# SECTION C (6 × 3 = 18)

**26.** 1188 = 2 × 2 × 3 × 3 × 3 × 11 = $2^2 \times 3^3 \times 11$ **(1)** 3 and 11 are left unpaired, so 1188 is not a perfect square; divide by 3 × 11 = 33 **(1)** 1188 ÷ 33 = 36, and $\sqrt{36} = 6$ **(1)**

**27.** Earth: $5.97 \times 10^{24}$ kg **(1)**; Moon: $7.35 \times 10^{22}$ kg **(1)** $(5.97 \times 10^{24}) \div (7.35 \times 10^{22}) \approx 0.81 \times 10^2 \approx 81$, so the Earth is about 81 times heavier **(1) OR** = $(5^2 \times t^{-4}) \div (5^{-3} \times 2 \times 5 \times t^{-8})$ **(1)** = 5^(2 + 3 − 1) × t^(−4 + 8) ÷ 2 **(1)** = $5^4t^4 / 2 = 625t^4 / 2$ **(1)**

**28.** (i) $(100 + 3)^2 = 10000 + 600 + 9 = 10609$ **(1)** (ii) $(300 − 3)(300 + 3) = 90000 − 9 = 89991$ **(1)** (iii) $(52 + 48)(52 − 48) = 100 \times 4 = 400$ **(1)**

**29.** Girls = 4/9 × 45 = 20, so boys = 25 **(1)** After 5 girls join, girls = 25 **(1)** New ratio = 25 : 25 = 1 : 1 **(1) OR** Speed = 216 ÷ 4 = 54 km/h **(1)**; distance in 7 hours = 54 × 7 = 378 km **(1)**; time for 270 km = 270 ÷ 54 = 5 hours **(1)**

**30.** Correct figure: right triangle with ladder as hypotenuse **(1)** $\text{Height}^2 = 13^2 − 5^2 = 169 − 25 = 144$ **(1)** Height = 12 m **(1)**

**31.** Sum = 84, n = 7, mean = 84 ÷ 7 = 12 **(1)** Arranged: 7, 9, 10, 12, 13, 15, 18; median = 4th value = 12 **(1)** Range = 18 − 7 = 11 **(1)**

# SECTION D (4 × 5 = 20)

**32.** Multiply both sides by 12: $3(3x − 2) − 4(2x + 3) = 8 − 12x$ **(1)** $9x − 6 − 8x − 12 = 8 − 12x$, so $x − 18 = 8 − 12x$ **(1)** $13x = 26$ **(1)**, $x = 2$ **(1)** Check: LHS = 4/4 − 7/3 = −4/3; RHS = 2/3 − 2 = −4/3 **(1) OR** Let the multiples be 7n, 7(n + 1), 7(n + 2) **(1)** 7n + 7n + 7 + 7n + 14 = 357 **(1)**, so 21n + 21 = 357 **(1)**, n = 16 **(1)** The numbers are 112, 119 and 126 **(1)**

**33.** (i) Area = ½ × (25 + 15) × 12 **(1)** = 240 m² **(1)** (ii) Cost = 240 × 15 = ₹3,600 **(1)** (iii) Each overhang = (25 − 15) ÷ 2 = 5 m; slant side = $\sqrt{(5^2 + 12^2)} = 13$ m **(1)** Perimeter = 25 + 15 + 13 + 13 = 66 m **(1)**

**34.** (i) Diagonals of a rectangle are equal and bisect each other, so OA = OD **(½)** $2x + 4 = 3x + 1$, $x = 3$ **(½)**; OA = 10, so each diagonal = 20 units **(1)** (ii) Adjacent angles of a parallelogram are supplementary: $3y + 10 + 2y + 20 = 180$ **(1)** $5y = 150$, $y = 30$ **(1)** ∠P = 100°, ∠Q = 80°, ∠R = 100°, ∠S = 80° (opposite angles equal) **(1) OR** Half-diagonals are 12 cm and 5 cm, meeting at right angles **(1)** Side = $\sqrt{(12^2 + 5^2)} = \sqrt{169} = 13$ cm **(1)** Perimeter = 4 × 13 = 52 cm **(1)** Area = ½ × 24 × 10 **(1)** = 120 cm² **(1)**

**35.** Total cost = ₹20,000 + ₹1,000 = ₹21,000 **(1)** Marked price = ₹21,000 + 20% of ₹21,000 = ₹25,200 **(1)** Discount = 5% of ₹25,200 = ₹1,260, so selling price = ₹23,940 **(1)** Profit = ₹23,940 − ₹21,000 = ₹2,940 **(1)** Profit % = 2940 ÷ 21000 × 100 = 14% **(1) OR** After year 1: 50,000 + 10% = 55,000 **(2)** After year 2: 55,000 − 10% of 55,000 = 49,500 **(2)** Not the same: the 10% decrease is taken on a larger number (55,000), so the population falls by 500, that is 1% **(1)**

# SECTION E (3 × 4 = 12)

**36.** (i) Side = √1296 = 36 m **(1)** (ii) Perimeter = 4 × 36 = 144 m **(1)** (iii) Cost = 144 × 50 **(1)** = ₹7,200 **(1) OR** (iii) 36 m = 3600 cm **(1)**; tiles = 3600 ÷ 25 = 144 **(1)**

**37.** (i) Total = 900; mean = 900 ÷ 6 = 150 **(1)** (ii) Mode = 150 (occurs twice) **(1)** (iii) Arranged: 90, 120, 150, 150, 180, 210; median = (150 + 150) ÷ 2 = 150 **(1)**; range = 210 − 90 = 120 **(1) OR** (iii) Increase = 210 − 90 = 120 **(1)**; percentage increase = 120 ÷ 90 × 100 ≈ 133.33% **(1)**

**38.** (i) 6 × 25 = 150 km **(1)** (ii) 400 ÷ 25 = 16 cm **(1)** (iii) Speed = 150 ÷ 3 = 50 km/h **(1)**; time = 400 ÷ 50 = 8 hours **(1) OR** (iii) Time = 300 ÷ 60 = 5 hours **(1)**; speed and time are in inverse proportion **(1)**

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*End of marking scheme.*