

Mathematics

Sample Question Paper – 4

Class 8 (Ganita Prakash Part - I)

Time Allowed: 2 Hours 30 Minutes

Maximum Marks: 60

GENERAL INSTRUCTIONS

1. This question paper has 16 questions. All questions are compulsory.
2. The question paper is divided into FIVE sections - Section A, B, C, D and E.
3. In Section A, Question 1 contains twelve Multiple Choice Questions (MCQs) of 1 mark each.
4. In Section B, Questions 2 to 7 are Very Short Answer (VSA) type questions of 2 marks each.
5. In Section C, Questions 8 to 10 are Short Answer (SA) type questions carrying 3 marks each.
6. In Section D, Questions 11 to 13 are Long Answer (LA) type questions carrying 5 marks each.
7. In Section E, Questions 14 to 16 are source-based/case-study questions carrying 4 marks each.
8. There is no overall choice. Internal choice is provided in one question in Section B, one question in Section C, two questions in Section D, and in the 2-mark part of each question in Section E.
9. Draw neat figures wherever required. Use ruler, compass and set-square wherever appropriate.
10. Use of calculator is not allowed.

SECTION – A

(Multiple-Choice Questions - 1 mark each)

(12 × 1 = 12)

1 (i) The units digit of a perfect square cannot be:

- | | |
|-------|-------|
| (a) 1 | (b) 4 |
| (c) 7 | (d) 9 |

1 (ii) Which is equal to 4^{-2} ?

- | | |
|------------|-----------|
| (a) 16 | (b) -16 |
| (c) $1/16$ | (d) $1/8$ |

1 (iii) In base 2, the digits used are:

- | | |
|---------|-----------|
| (a) 0,1 | (b) 0,1,2 |
| (c) 1,2 | (d) 0–9 |

1 (iv) A square is always a:

- | | |
|--------------------|---------------------------|
| (a) trapezium only | (b) rectangle and rhombus |
| (c) kite only | (d) none |

1 (v) Which number is divisible by 3?

- | | |
|----------|----------|
| (a) 4312 | (b) 7104 |
| (c) 5002 | (d) 8215 |

1 (vi) $a(a+b)$ equals:

- | | |
|-------------|--------------|
| (a) a^2+b | (b) a^2+ab |
| (c) $2a+b$ | (d) ab |

1 (vii) Simplest form of 56:98 is:

(a) 4:7

(b) 7:4

(c) 8:14

(d) 28:49

1 (viii) Cube root of 10648 is:

(a) 20

(b) 21

(c) 22

(d) 24

1 (ix) $3^5 \div 3^7$ equals:

(a) 3^2

(b) 3^{-2}

(c) 9

(d) -9

1 (x) If 31z5 is a multiple of 9, z can be:

(a) 0 or 9

(b) 1 only

(c) 5 only

(d) 2 or 8

1 (xi) A trapezium has:

(a) at least one pair of parallel opposite sides

(b) four equal sides

(c) no parallel sides

(d) all angles 90°

1 (xii) If 3 m cloth costs ₹420, 5 m costs:

(a) ₹600

(b) ₹650

(c) ₹700

(d) ₹750

SECTION – B

(Questions 2 to 7: 2 marks each)

(6 × 2 = 12)

2. Find how many natural numbers lie between 25^2 and 26^2 .

3. (a) Write 0.00000091 in scientific notation.

OR

3. (b) Simplify: $10^5 \times 10^{-3} \times 10^2$.

4. Convert decimal 25 to base-2 notation by repeated division.

5. A rhombus has one angle 124° . Find the other three angles.

6. Find the digit b so that 48,23b is divisible by 3 and by 2.

7. The ratio of boys to girls is 7:5. If there are 35 boys, find the number of girls.

SECTION – C

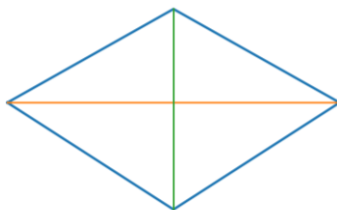
(Questions 8 to 10: 3 marks each)

(3 × 3 = 9)

8. Use $(a-b)^2$ to calculate 97^2 .

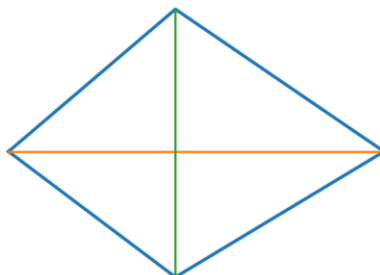
9. A farmer mixes seed varieties A and B in the ratio 3:2. For a 75 kg mixture, find the mass of each variety.

10. (a) From the diagram of a rhombus with diagonals drawn, state and use diagonal properties to find the marked right angle and equal segments.



OR

10. (b) In the given kite, two pairs of adjacent sides are equal. Explain which diagonal is an axis of symmetry and what it does to the other diagonal.



SECTION – D

(Questions 11 to 13: 5 marks each)

(3 × 5 = 15)

11. (a) The area of a square field is 9409 m^2 . Find its side length by estimating between consecutive squares and verify.

OR

11. (b) Find the least number by which 2800 must be multiplied to make a perfect square; also find the square root of the resulting number.

12. A number leaves remainder 2 when divided by 4 and another leaves remainder 2 when divided by 4. Use algebra to show their sum is divisible by 4. Give two examples and one general statement.

13. (a) Construct a parallelogram with adjacent sides 5 cm and 7 cm and included angle 65° . Measure/derive the remaining angles.

OR

13. (b) Construct a kite with adjacent equal sides 5 cm, 5 cm and 3 cm, 3 cm, with one diagonal 6 cm. State your steps.

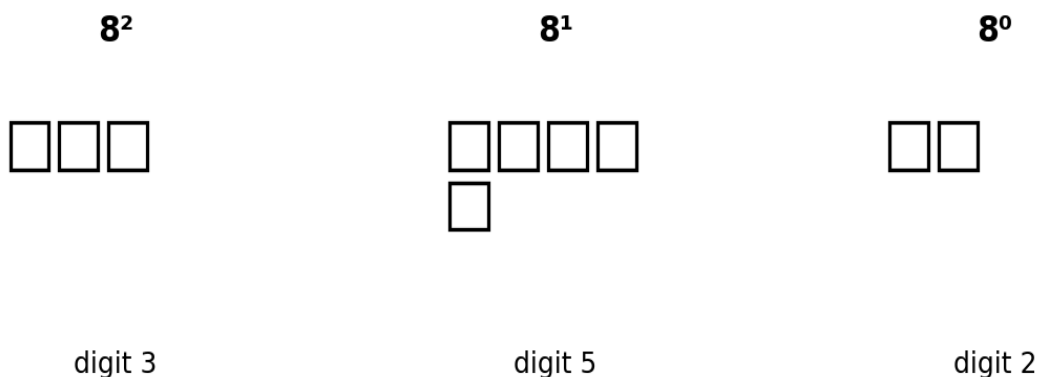
SECTION – E

(Questions 14 to 16: 4 marks each)

(3 × 4 = 12)

14. Ancient Base-8 Counter

Suppose a civilisation uses a base-8 place-value system. A number has digits 3, 5, 2 in the 8^2 , 8^1 and 8^0 places.



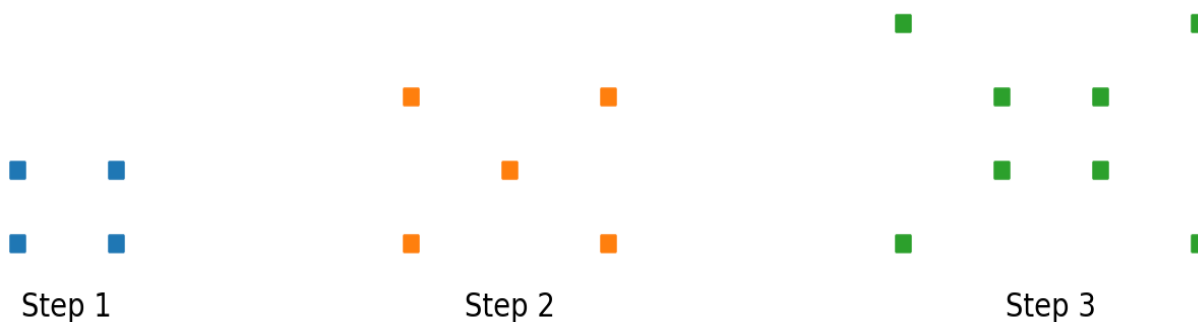
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|---|-----|
| (i) Write the numeral in base-8 notation. | [1] |
| (ii) Find its decimal value. | [1] |
| (iii) (a) Write decimal 100 in base-8. | [2] |

OR

- | | |
|--|-----|
| (iii) (b) Explain why digit 9 cannot appear in base-8. | [2] |
|--|-----|

15. Pattern Tiles

A growing square-tile pattern is shown for Steps 1, 2 and 3.



- | | |
|--|-----|
| (i) Count the tiles in Step 3. | [1] |
| (ii) Predict the number in Step 4. | [1] |
| (iii) (a) Write an algebraic expression for Step n if the pattern grows by adding consecutive odd numbers. | [2] |

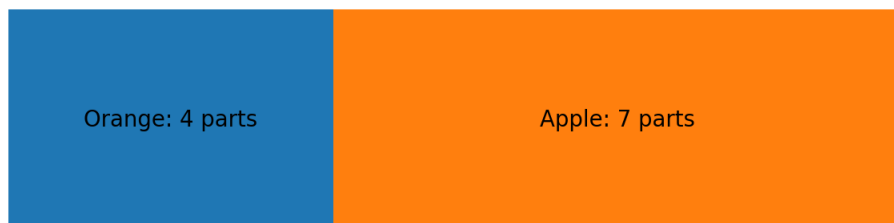
OR

- | | |
|--|-----|
| (iii) (b) Explain the link between this pattern and perfect squares. | [2] |
|--|-----|

16. Fruit Juice Stall

Orange juice and apple juice are mixed in the ratio 4:7.

Ratio Orange:Apple = 4:7



- (i) Find the total number of parts. [1]
- (ii) In 33 L mixture, how much is orange juice? [1]
- (iii) (a) How much apple juice is in 55 L mixture? [2]

OR

- (iii) (b) If 12 L orange juice is used, how much apple juice is needed? [2]