

Mathematics

Sample Question Paper - 1

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) Which of the following is a perfect square?

- (a) 1728 (b) 1764
(c) 1800 (d) 1940

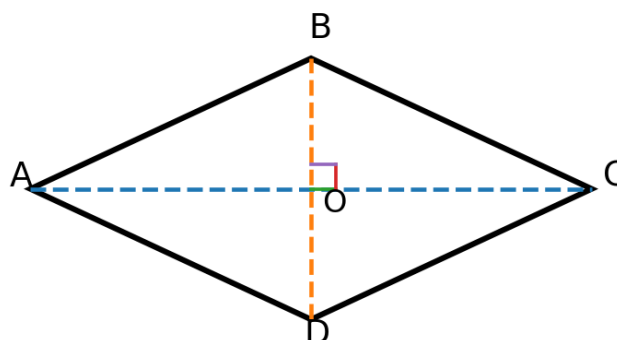
1 (ii) The value of $2^5 \times 2^3$ is:

- (a) 2^8 (b) 2^{15}
(c) 4^8 (d) 2^2

1 (iii) Which list shows the first four landmark numbers of a base-5 number system?

- (a) 1, 5, 10, 15 (b) 1, 5, 25, 125
(c) 0, 5, 10, 25 (d) 1, 10, 100, 1000

1 (iv) The quadrilateral shown has four equal sides and its diagonals bisect each other at right angles. It is a:



- (a) rhombus (b) trapezium
(c) rectangle (d) kite

1 (v) If the sum of the digits of a number is 27, the number is certainly divisible by:

- (a) 2 (b) 5
(c) 9 (d) 11

1 (vi) Which identity is correct?

(a) $(a + b)(a - b) = a^2 - b^2$

(b) $(a + b)(a - b) = a^2 + b^2$

(c) $(a + b)^2 = a^2 + b^2$

(d) $(a - b)^2 = a^2 - b^2$

1 (vii) The ratio 60 : 90 in its simplest form is:

(a) 6 : 9

(b) 3 : 2

(c) 2 : 3

(d) 20 : 30

1 (viii) The positive square root of 2025 is:

(a) 35

(b) 40

(c) 45

(d) 55

1 (ix) Which is the scientific notation of 65,90,000?

(a) 6.59×10^4

(b) 6.59×10^5

(c) 6.59×10^6

(d) 65.9×10^6

1 (x) If $31z5$ is a multiple of 9, where z is a digit, the possible value(s) of z are:

(a) 0 only

(b) 9 only

(c) 0 or 9

(d) 1 or 8

1 (xi) The sum of the interior angles of a quadrilateral is:

(a) 180°

(b) 270°

(c) 360°

(d) 540°

1 (xii) Three full buses carry 162 students and teachers. If each bus has the same capacity, the minimum number of such buses needed for 204 people is:

(a) 3

(b) 4

(c) 5

(d) 6

SECTION - B

Questions 2 to 7 : 2 marks each.

(6 × 2 = 12)

2. Find the positive square root of 1764 using prime factorisation.

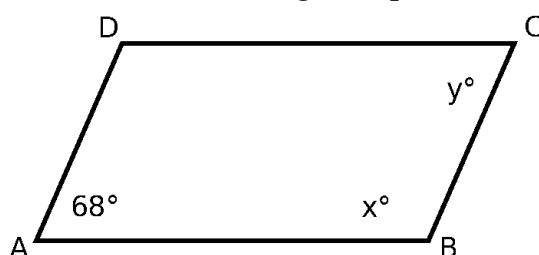
3. (a) Simplify and write the answer in exponential form: $5^7 \times 5^{-2} \div 5^4$.

OR

3. (b) Express 0.000072 in scientific notation and state the exponent of 10.

4. Write the base-10 number 25 in (i) base-5 and (ii) base-2 notation.

5. In parallelogram ABCD, $\angle A = 68^\circ$. Find the angles represented by x and y in the figure.



6. Without dividing, determine whether 81,675 is divisible by 9 and by 3. Give a reason.

7. Divide ₹840 in the ratio 3 : 4.

SECTION - C

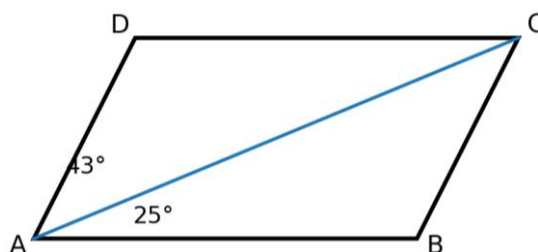
Questions 8 to 10 : 3 marks each.

(3 × 3 = 9)

8. Using the identity $(a + b)(a - b) = a^2 - b^2$, evaluate 997×1003 without using long multiplication.

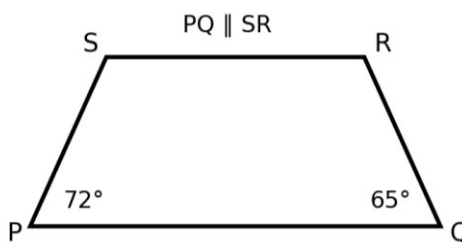
9. Orange juice and apple juice are mixed in the ratio 2 : 3. If the total drink is 2.5 litres, find the quantity of each juice.

10. (a) In parallelogram ABCD, $\angle DAC = 43^\circ$ and $\angle BAC = 25^\circ$. Find $\angle ABC$, $\angle BCD$ and $\angle ACD$, giving reasons.



OR

10. (b) In trapezium PQRS, $PQ \parallel SR$, $\angle P = 72^\circ$ and $\angle Q = 65^\circ$. Find $\angle S$ and $\angle R$. Also verify that the sum of all four angles is 360° .



SECTION - D

Questions 11 to 13: 5 marks each.

(3 × 5 = 15)

11. (a) A square floor has an area of 2304 m^2 and a cube-shaped tank has a volume of $13,824 \text{ m}^3$.

(i) Find the side of the square floor.

[2]

(ii) Find the edge length of the cube-shaped tank.

[3]

OR

11. (b) Answer the following:

(i) Simplify: $(2^5 \times 2^{-3}) \div 2^{-1}$.

[2]

(ii) Write 7,004,000,000 and 0.0000605 in scientific notation.

[3]

12. The six-digit number $48a23b$ is divisible by 18, where a and b are digits. List all possible ordered pairs (a, b) . Explain the divisibility conditions used.

13. (a) Using diagonal properties, construct a parallelogram whose diagonals are 7 cm and 5 cm long and intersect at an angle of 140° . Write the construction steps clearly.

OR

13. (b) Using diagonal properties, construct a rhombus whose diagonals are 4 cm and 5 cm long. Write the construction steps clearly.

SECTION - E

Questions 14 to 16 :Source-Based / Case-Study Questions.

(3 × 4 = 12)

14. Base-5 Display at a Mathematics Museum

A museum display uses a base-5 place-value system. Only the digits 0, 1, 2, 3 and 4 are used. The place values from right to left are 1, 5, 25, 125, The display currently shows 314₅.

$5^3 = 125$	$5^2 = 25$	$5^1 = 5$	$5^0 = 1$
0	3	1	4

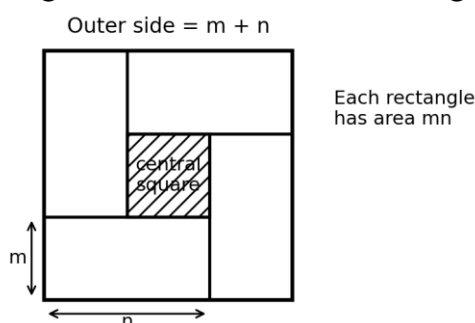
- (i) What is the place value of the digit 1 in 314₅? [1]
 (ii) Find the value of 314₅ in the base-10 system. [1]
 (iii) (a) Write the base-10 number 49 in base-5 notation. [2]

OR

- (iii) (b) Write the base-10 number 75 in base-5 notation. [2]

15. Tiled Region in a Square Park

A square park has outer side $(m + n)$ units. Four identical rectangles, each of dimensions m units by n units, surround a central square region as shown. The central region is to be tiled.



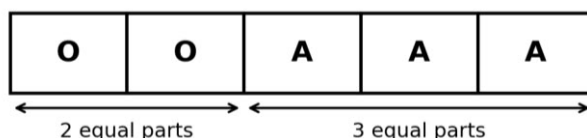
- (i) Write the area of the outer square. [1]
 (ii) Write the total area of the four rectangles. [1]
 (iii) (a) Using algebra, show that the area of the central region is $(n - m)^2$. [2]

OR

- (iii) (b) If $m = 3$ and $n = 8$, find the area of the central region. [2]

16. Fruit Drink for a School Event

For a school event, Anagh mixes 600 mL of orange juice with 900 mL of apple juice. The diagram represents the mixture in equal parts.



- (i) Write the ratio of orange juice to apple juice in its simplest form. [1]
 (ii) Find the total volume of the drink in millilitres. [1]
 (iii) (a) If 5 litres of the same drink is to be prepared in the same ratio, how much orange juice is required? [2]

OR

- (iii) (b) If 1.2 litres of orange juice is used, how much apple juice is required to keep the same ratio? [2]