

Mathematics

Sample Question Paper - 1

Class 6 (Ganita Prakash)
(Chapters 1 to 5)

Time Allowed: 2 Hours 30 Minutes

Maximum Marks: 60

GENERAL INSTRUCTIONS

1. This question paper has 16 questions. All questions are compulsory, subject to the internal choices.
2. The question paper is divided into FIVE sections - A, B, C, D and E.
3. In Section A, Question 1 contains twelve Multiple Choice Questions of 1 mark each.
4. In Section B, Questions 2 to 7 are Very Short Answer questions of 2 marks each.
5. In Section C, Questions 8 to 10 are Short Answer questions of 3 marks each.
6. In Section D, Questions 11 to 13 are Long Answer questions of 5 marks each.
7. In Section E, Questions 14 to 16 are source-based/case-study questions of 4 marks each.
8. There is no overall choice. Internal choice is provided in Q3, Q10, Q11, Q13 and the 2-mark part of each question in Section E. Attempt only one alternative in each choice.
9. Show necessary working. Draw neat figures using a ruler and protractor wherever required. Use graph paper for the bar graph.
10. Use of a calculator is not allowed.

SECTION - A

Multiple Choice Questions - 1 mark each. Choose the correct option.

(12 × 1 = 12)

1 (i) What is the next term in the Virahanka sequence 1, 2, 3, 5, 8, 13, 21, ...?

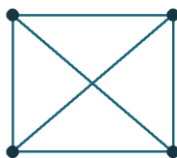
- (a) 29 (b) 32
(c) 34 (d) 42

1 (ii) The pictures show the hexagonal number sequence. What is the next number after 37?



- (a) 49 (b) 55
(c) 61 (d) 73

1 (iii) In this complete graph, each pair of the four marked points is joined once. How many connecting line segments are drawn?



- (a) 4 (b) 5
(c) 6 (d) 8

1 (iv) What is the smallest number whose digit sum is 14?

- (a) 59 (b) 68
(c) 77 (d) 95

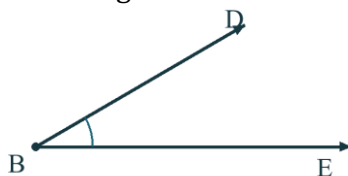
1 (v) Which of the following is a prime number?

- (a) 51 (b) 23
(c) 26 (d) 49

1 (vi) Which number is divisible by all of 2, 4, 5, 8 and 10?

- (a) 572 (b) 2352
(c) 5600 (d) 1210

1 (vii) Which letter names the vertex of the angle shown?



- (a) D (b) B
(c) E (d) DB

1 (viii) In a pictograph, one complete picture represents 10 children. How many children does half a picture represent?

- (a) 2 (b) 5
(c) 10 (d) 20

1 (ix) Which pair lists all the distinct prime factors of 56?

- (a) 2 and 7 (b) 4 and 14
(c) 7 and 8 (d) 2 and 28

1 (x) Which number repeats in the four-digit Kaprekar process starting from 6382?

- (a) 1467 (b) 4176
(c) 6174 (d) 7641

1 (xi) What is the largest possible sum of a four-digit number and a two-digit number?

- (a) 10089 (b) 10098
(c) 10998 (d) 99999

1 (xii) A pointer makes a quarter turn and then a half turn in the same direction. What is its total turn?

- (a) 90° (b) 180°
(c) 270° (d) 360°

SECTION - B

Questions 2 to 7 are Very Short Answer questions of 2 marks each.

(6 × 2 = 12)

2. Write all the supercells in this row. Explain why the first cell is or is not a supercell. A supercell is greater than each of its immediate neighbours. [2]

6828	670	9435	3780	3708	7308	8000	5583	52
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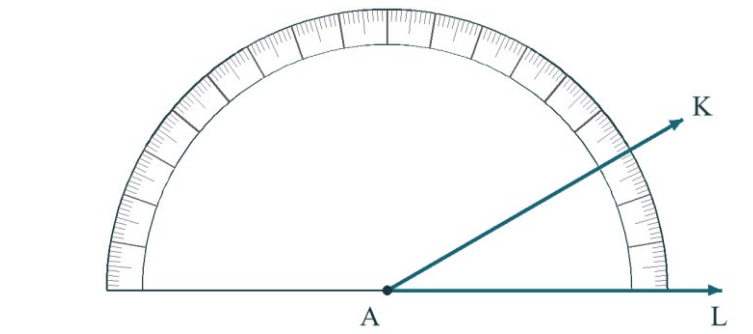
3. (a) Use a protractor to draw angles of 110° and 40° . Label each angle. [2]

OR

3. (b) Use a protractor to draw angles of 75° and 134° . Label each angle. [2]

4. Find all the common factors of 20 and 28. Show the factors of each number. [2]

5. Read the unlabelled protractor to find $\angle KAL$. Each long division represents 10° . Explain how you counted from arm AL. [2]



6. Use prime factorisation to determine whether 168 is divisible by 12. Show your reasoning. [2]

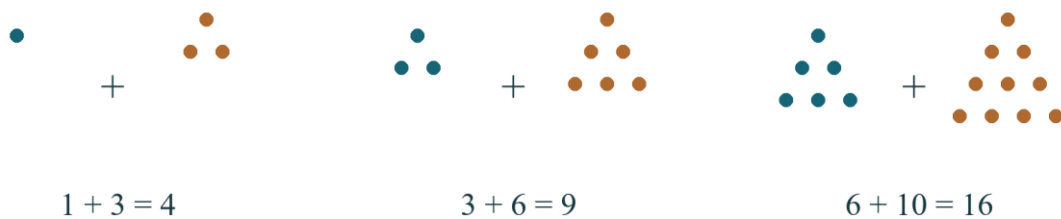
7. A library code must be a five-digit palindrome using the digits 2, 2, 4, 4 and 7 exactly once. Find the largest possible code. Explain your choice of the first and middle digits. [2]

SECTION - C

Questions 8 to 10 are Short Answer questions of 3 marks each.

(3 × 3 = 9)

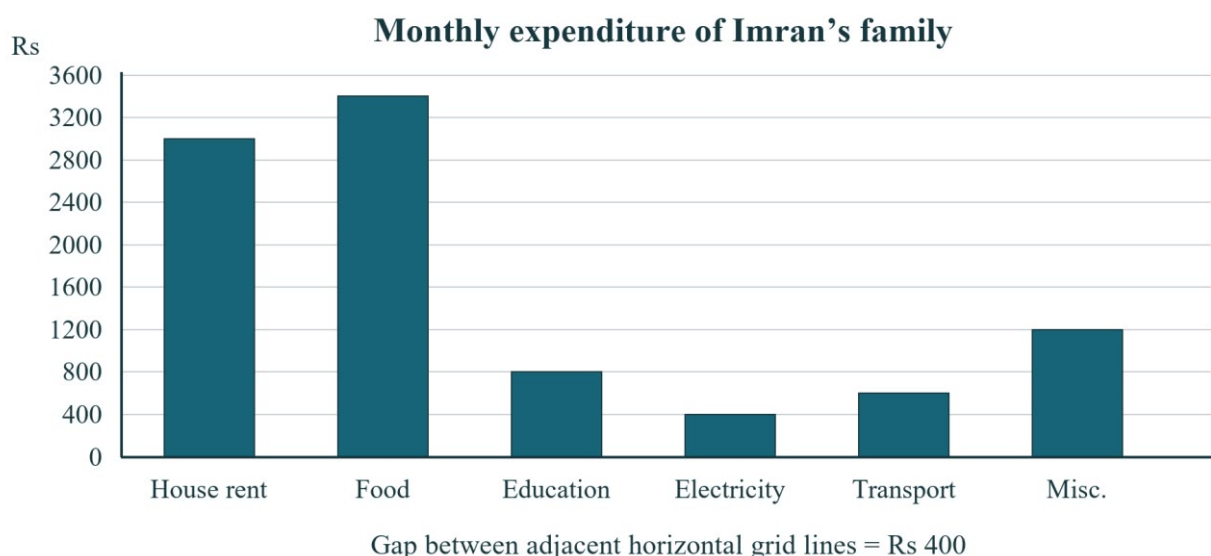
8. Observe these sums of consecutive triangular numbers.



(i) Write the next sum, $10 + 15$, and its value. [1]

(ii) Draw a dot picture to explain why $10 + 15$ is a square number. [2]

9. Use the bar graph to answer the questions.



(i) On which item does the family spend the most? [1]

(ii) How much more does the family spend on food than on education? Show your calculation. [2]

10. (a)

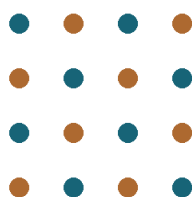
- (i) Write the prime factorisation of 104. [1]
- (ii) Find the prime factorisation of 56×25 without multiplying 56 and 25 first. Show your steps. [2]

OR**10. (b)**

- (i) Write the prime factorisation of 243. [1]
- (ii) Find the prime factorisation of 108×75 without multiplying 108 and 75 first. Show your steps. [2]

SECTION - D

Questions 11 to 13 are Long Answer questions of 5 marks each.

(3 × 5 = 15)**11. (a) Adding up and down**

A square array of dots

- (i) Find $1 + 2 + 3 + 4 + 3 + 2 + 1$. Explain how the diagonals of the dot square support your answer. [2]
- (ii) Use the same pattern to find $1 + 2 + 3 + \dots + 99 + 100 + 99 + \dots + 3 + 2 + 1$. [2]
- (iii) Name the number sequence formed by $1, 1 + 1 + 1, 1 + 1 + 1 + 1 + 1, \dots$. [1]

OR**11. (b) Doubling patterns****1****2****4****8**

- (i) Find $1 + 2 + 4 + 8 + 16 + 32$, and then add 1. How is the result related to the next power of 2 after 32? [2]
- (ii) Use the same pattern to find $1 + 2 + 4 + 8 + 16 + 32 + 64 + 128$. Explain your shortcut. [2]
- (iii) Write the next term in the powers of 3 sequence: $1, 3, 9, 27, 81, 243, \dots$. [1]

12. Samantha counted these insects and other small creatures in a tea garden.

Creature	Mites	Caterpillars	Beetles	Butterflies	Grasshoppers
Number	6	10	5	3	2

- (i) Prepare a frequency table with tally marks for these observations. [2]
- (ii) Draw a bar graph using the scale 1 unit length = 1 creature. Give it a title, label both axes, and use equal bar widths and equal gaps. [3]

13. (a)

- (i) Are 80 and 63 co-prime? Justify your answer using their prime factorisations. [2]
- (ii) Find the prime factorisation of 1728. Show the successive steps and check your answer by multiplication. [3]

OR**13. (b)**

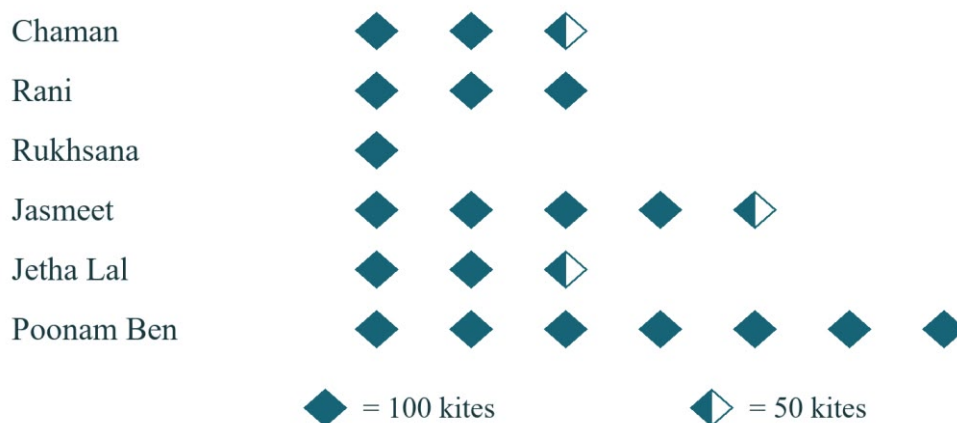
- (i) Are 242 and 195 co-prime? Justify your answer using their prime factorisations. [2]
- (ii) Find the prime factorisations of 1000 and 1331. Show the successive steps. [3]

SECTION - E

Questions 14 to 16 are Case-Study questions of 4 marks each.

(3 × 4 = 12)**14. Kites for the Village Fair**

Magan Bhai sold kites to six shopkeepers. The pictograph shows their purchases. Use its key carefully.



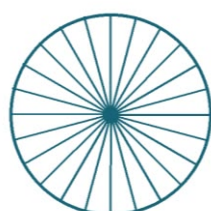
- (i) How many complete symbols represent Rani's purchase? [1]
- (ii) Who purchased the maximum number of kites? [1]
- (iii) (a) Chaman and Jetha Lal pack all their kites into bundles of 50. How many bundles can they make altogether? [2]

OR

- (iii) (b) Jasmeet packs all her kites into packets of 25. How many packets can she make? [2]

15. The School's Angle Exhibition

A class displays a model of the Ashoka Chakra with 24 equally spaced spokes. It also displays models of half turns and full turns.

**24 equally spaced spokes**One full turn = 360°

- (i) Find the angle between two neighbouring spokes. [1]
(ii) What is the largest acute angle formed between two spokes? [1]
(iii) (a) A straight angle on a second display is divided into two equal angles. Find the measure of each angle and name its type. [2]

OR

- (iii) (b) A full turn on a second display is divided into four equal angles. Find the measure of each angle and name its type. [2]

16. The Number-Card Challenge

The maths club displays the five cards below. In this challenge, a palindrome reads the same from left to right and from right to left.

12321

41514

76067

54322

23456

- (i) Find the sum of the smallest and largest five-digit palindromes, considering all five-digit numbers. [1]
(ii) Which displayed card is a palindrome with a digit sum of 15? [1]
(iii) (a) Find the difference between the largest and smallest palindromes displayed on the cards. Show your working. [2]

OR

- (iii) (b) Add 100 to the smallest palindrome displayed. Is the result still a palindrome? Show the addition and explain. [2]