

Mathematics
Sample Question Paper - 3
Class 6 (Ganita Prakash)
(Chapters 1 to 5)

Time Allowed: 2 Hours 30 Minutes

Maximum Marks: 60

GENERAL INSTRUCTIONS

1. All 16 questions are compulsory, subject to the internal choices given.
2. Section A has 12 multiple-choice parts of 1 mark each. Choose one correct option.
3. Sections B, C and D carry 2, 3 and 5 marks per question respectively.
4. Each case in Section E carries 4 marks, divided as 1 + 1 + 2.
5. Attempt only one alternative wherever OR is given.
6. Show working clearly. Use a ruler and protractor for constructions.
7. Draw graphs and figures neatly in your answer sheet. Calculators are not allowed.

SECTION A

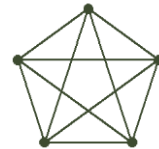
Multiple Choice Questions | $12 \times 1 = 12$ marks

1. (i) What comes next in 1, 3, 9, 27, 81, 243, 729, ...?

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|----------|----------|
| (a) 972 | (b) 1458 |
| (c) 2187 | (d) 6561 |

(ii) Each pair of vertices is joined exactly once. How many connecting segments does this complete graph have?

- | | |
|--------|--------|
| (a) 5 | (b) 8 |
| (c) 10 | (d) 15 |



(iii) Which decade contains the fewest primes?

- | | |
|-----------|------------|
| (a) 1–10 | (b) 11–20 |
| (c) 31–40 | (d) 91–100 |

(iv) What is the difference between the largest and smallest five-digit palindromes?

- | | |
|-----------|------------|
| (a) 89998 | (b) 90000 |
| (c) 99998 | (d) 110000 |

(v) A number is less than 40, has 7 as a factor and has digit sum 8. Which is it?

- | | |
|--------|--------|
| (a) 14 | (b) 21 |
| (c) 28 | (d) 35 |

(vi) The angles shown have their measures labelled. Which one is reflex?

Angle A



35°

Angle B



90°

Angle C



140°

Angle D



225°

- | | |
|-------------|-------------|
| (a) Angle A | (b) Angle B |
| (c) Angle C | (d) Angle D |

(vii) In the worked example $36 = 2 \times 2 \times 3 \times 3$, how many prime factors are written, counting repetitions?

- (a) 2 (b) 3
(c) 4 (d) 6

(viii) For the attendance data, Sangita uses one symbol for 10 students. How many symbols represent 35 students?

- (a) $2\frac{1}{2}$ (b) 3
(c) $3\frac{1}{2}$ (d) 5

(ix) Which sum is equal to 3400 in the mental-maths example?

- (a) $1500 + 1500 + 400$ (b) $1500 + 400 + 400$
(c) $1300 + 1500 + 400$ (d) $2500 + 1500 + 400$

(x) The two angles overlap exactly when their vertices and arms are superimposed. Which statement is correct?



- (a) The longer arms make the first angle larger
(b) The two angles are equal
(c) The shorter arms make the second angle larger
(d) Their sizes cannot be compared

(xi) Which is the smallest five-digit number that reads the same forwards and backwards and uses only the digits 2 and 5?

- (a) 22222 (b) 22522
(c) 25252 (d) 52225

(xii) A chart uses one symbol for 8 plants. How many plants do three full symbols represent?

- (a) 11 (b) 16
(c) 24 (d) 32

SECTION B

Very Short Answer Questions | $6 \times 2 = 12$ marks

2. Find all multiples of 40 that lie between 310 and 410. [2]

3. Draw an angle of 82° and state whether it is acute or obtuse. [2]

OR

Draw an angle of 140° and state whether it is acute or obtuse. [2]

4. Fill the five cells with different numbers between 100 and 1000 so that the row has as many supercells as possible. State how many you made. A supercell is greater than each of its immediate neighbours. [2]

?	?	?	?	?
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5. Use the prime factors in the worked example $72 = 12 \times 6$ to find the prime factorisation of 72. State how many times 2 and 3 occur. [2]

6. At the start of a construction of angle TIN, Vidya draws ray IN. On which point must she place the centre of the protractor, and with what must she align the 0° line? [2]

7. The grid below is a supercell puzzle. Compare only up, down, left and right neighbours. Identify all supercells and explain why the middle number is not one. [2]

42	18	51
25	45	32
60	73	21

SECTION C

Short Answer Questions | $3 \times 3 = 9$ marks

8. Investigate consecutive triangular numbers.

(i) Calculate $15 + 21$. [1]

(ii) Calculate $21 + 28$ and $28 + 36$. Identify the sequence formed by your three answers. [2]

9. Nand Kishor recorded how often children slept at least 9 hours a night. Read the pictograph.

Always 

Sometimes 

Never 

1 Full Circle = 10 Children

(i) How many children answered "Never"? [1]

(ii) Find the total number of children surveyed. Show how you interpret the half-symbol. [2]

10. The three factors of 105 in the diagram must all be distinct primes.



(i) Fill the missing prime factor. [1]

(ii) Verify the product and explain why 105 is a product of exactly three distinct primes. [2]

OR

(i) Find the smallest number with four different prime factors. [1]

(ii) Write the four prime factors and explain why choosing them gives the smallest possible number. [2]

SECTION D

Long Answer Questions | $3 \times 5 = 15$ marks

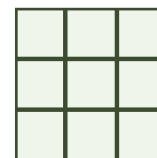
11. Study the stacked-square patterns.



Stage 1



Stage 2



Stage 3

(i) Count the small squares in each pattern and write the next two totals. [2]

(ii) Draw the fourth pattern and explain how its arrangement gives its total. [2]

(iii) Name the number sequence. [1]

OR

Explore sums of counting numbers instead.

(i) Write the first five totals obtained by adding counting numbers successively: 1; 1+2; and so on. [2]

(ii) Draw dots to show the total $1+2+3+4+5$. Explain the name of this sequence. [2]

(iii) What number comes after 15 in that sequence? [1]

12. Use Pooja's railway-ticket data shown below.

City	Tickets
Vidisha	24
Jabalpur	20
Seoni	16
Indore	28
Sagar	16

(i) The bar for 24 tickets is 6 unit lengths high. Find the scale and the correct height for 16 tickets. [2]

(ii) Draw a correct bar graph for all five cities using that scale. Label both axes and give it a title. [3]

13. Reason with prime factors.

(i) The worked example gives $225 = 3 \times 3 \times 5 \times 5$. Is 225 divisible by 15? Show how its factors can be grouped. [2]

(ii) Find the smallest four-digit palindrome divisible by 4. Show that it is a palindrome and use the divisibility test to check it. [3]

OR

(i) The worked example gives $30 = 2 \times 3 \times 5$. Is 30 divisible by 6? Show how its factors can be grouped. [2]

(ii) Find the largest four-digit palindrome divisible by 4. Show that it is a palindrome and use the divisibility test to check it. [3]

SECTION E

Case Study Questions | $3 \times 4 = 12$ marks

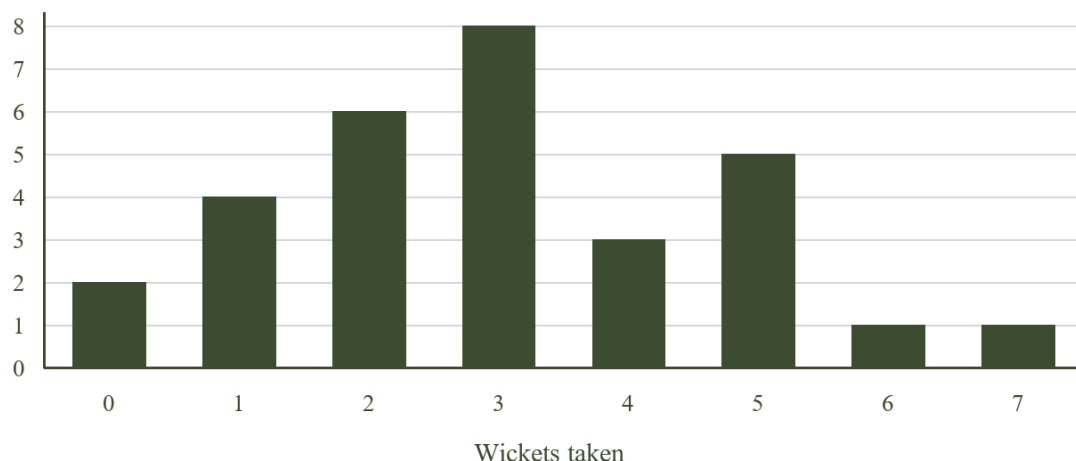
14. Case Study 1 Wicket records

The chart summarises the wickets taken in 30 matches. A bar height gives the number of matches, not the total wickets.

(i) In how many matches were 4 wickets taken? [1]

(ii) Suggest a suitable title that tells readers what the chart records. [1]

Wickets taken across 30 matches



(iii) A club awards 2 points per match with 5 or more wickets. How many points are awarded? [2]

OR

(iii) How many matches had fewer than 2 wickets? How many had 2 or more? [2]

15. Case Study 2 Prime-pair display

A maths display shows four pairs. Twin primes are primes whose difference is 2.

(i) Which displayed pair is a pair of twin primes? [1]

41 and 43	17 and 71	21 and 23	33 and 35
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(ii) Which displayed pair consists of primes with their digits reversed? [1]

(iii) Using the worked pair 4 and 9, list their factors and explain whether two composite numbers can be co-prime. [2]

OR

(iii) Using the worked pair 15 and 39, identify a shared factor other than 1 and explain whether the pair is co-prime. [2]

16. Case Study 3 Palindromic time

A digital clock displays 10:01. Ignore the colon when checking whether a time is palindromic, and use the usual 12-hour display.

10:01

(i) How many minutes pass before the next palindromic time? [1]

(ii) A lesson begins at 10:01 and lasts 45 minutes. What time does it end? [1]

(iii) A timer rings at 10:31. How many minutes after the displayed time is this, and is 10:31 palindromic? [2]

OR

(iii) A timer rings at 11:01. How many minutes after the displayed time is this, and is 11:01 palindromic? [2]