

Class: 6

Subject: Maths

Case study worksheet

CASE STUDY–1: Kaprekar's Constant

Rohan chooses the number 3524. He arranges its digits in descending and ascending order and subtracts the smaller number from the larger one. He repeats the process and notices that after a few steps, the same number keeps appearing.

1. Which famous number does Rohan finally reach?
a) 495 b) 6174 c) 1000 d) 9999
2. Which of the following numbers cannot be used to reach Kaprekar's Constant?
a) 3524 b) 9831 c) 2111 d) 4444
3. The number 6174 is known as:
a) Armstrong Number
b) Kaprekar's Constant
c) Prime Constant
d) Perfect Number
4. Which step is repeated in Kaprekar's routine?
a) Multiply the number by 2.
b) Arrange the digits in ascending and descending order and subtract
c) Reverse the digits and add.
d) Divide the number by 2.

CASE STUDY–2: Greatest and Smallest Numbers

Neha has the digits 0, 4, 6, 8 and 2. She wants to make the greatest and the smallest 5-digit numbers using each digit exactly once.

1. What is the greatest number that can be formed? a) 86420 b) 86240 c) 84620 d) 82640
2. What is the smallest number that can be formed? a) 20468 b) 20648 c) 24068 d) 24608
3. Why can't 0 be placed at the beginning while forming the smallest number?
a) It changes the place value.
b) A number cannot begin with 0.
c) It becomes an even number.
d) It becomes a palindrome.
4. What is the difference between the greatest and the smallest numbers?

a) 65,952 b) 65,842 c) 66,152 d) 64,952

CASE STUDY–3: Collatz Conjecture

Aryan starts with the number 12. He follows these rules:

If the number is even, divide it by 2.

If the number is odd, multiply it by 3 and add 1.

His sequence begins: $12 \rightarrow 6 \rightarrow 3 \rightarrow 10 \rightarrow 5 \rightarrow \dots$

1. What is the next number after 12?

a) 24 b) 6 c) 36 d) 13

2. What comes after 5?

a) 8 b) 16 c) 10 d) 15

3. Which rule is applied when the number is odd?

a) Divide by 2. b) Multiply by 3 and add 1. c) Add 2. d) Multiply by 2.

4. According to the Collatz Conjecture, every sequence is expected to eventually reach:

a) 0 b) 100 c) 1 d) 6174

CASE STUDY–4: Data Handling (Bar Graph)

The table below shows the number of books read by four students in a month.

Student	Books Read
Aman	8
Riya	12
Karan	10
Neha	6

1. Who read the maximum number of books?

a) Aman b) Neha c) Riya d) Karan

2. How many books did Karan read?

a) 8 b) 10 c) 12 d) 6

3. How many books were read by all four students together?

a) 34 b) 36 c) 38 d) 40

4. Which graphical representation is best suited to compare this data?

a) Bar Graph b) Number Line c) Clock d) Calendar

CASE STUDY–5: Pictograph

A teacher recorded the number of plants brought by students.

 = 2 plants

Student	Plants
Ravi	  
Siya	   
Mohit	 
Asha	    

1. How many plants did Asha bring?

a) 8 b) 10 c) 12 d) 14

2. How many plants did Mohit bring?

a) 2 b) 4 c) 6 d) 8

3. How many plants were brought by all the students together?

a) 24 b) 26 c) 28 d) 30

4. Which student brought 8 plants?

a) Ravi b) Mohit c) Siya d) Asha