

Chapter 3 Class 6 Ganita Prakash - Number Play - Case Based Question Worksheet 2 by *teachoo*

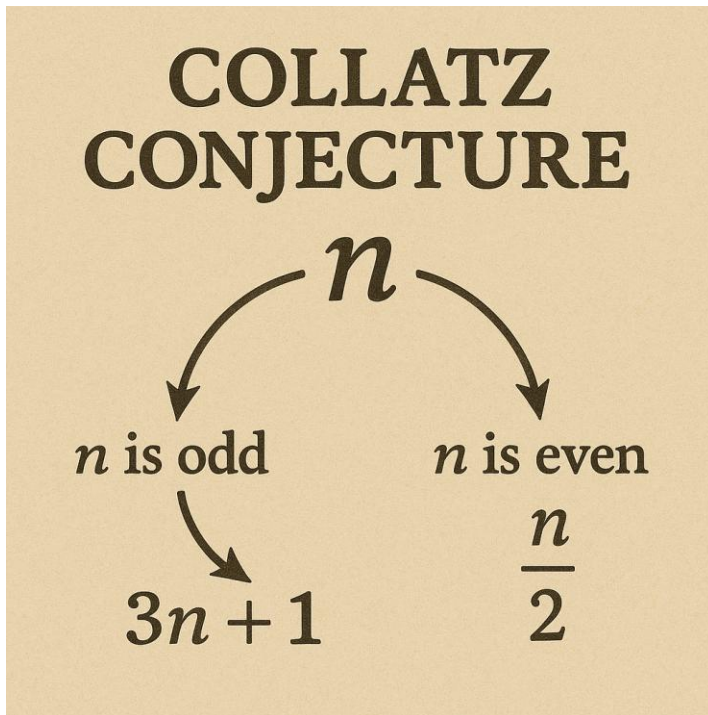
Chapter: [Chapter 3 Class 6 Ganita Prakash - Number Play](#)

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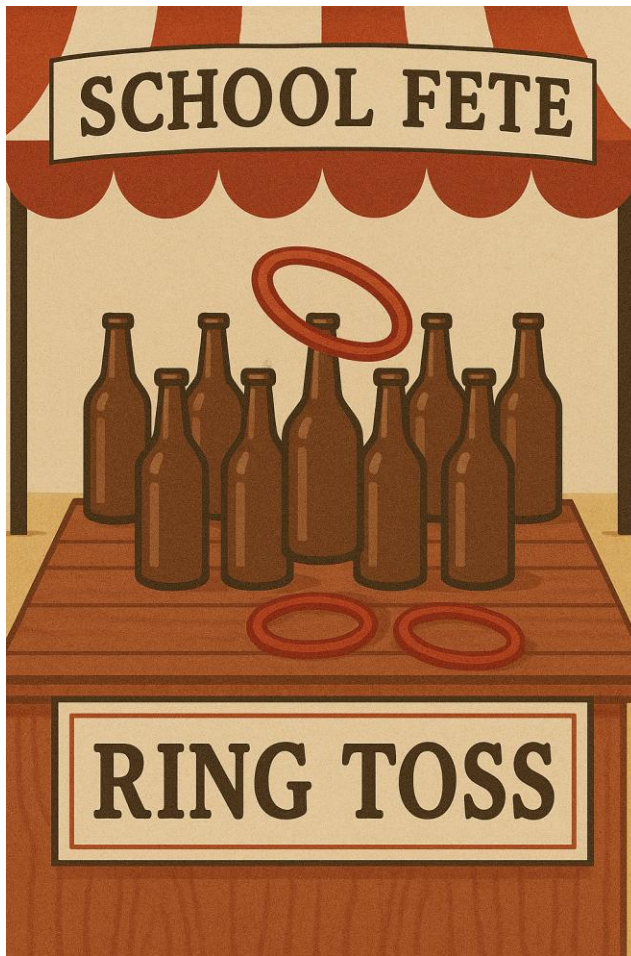
Case 1: The Collatz Conjecture Experiment



A biologist is modeling a cell colony that follows the Collatz rules. If the colony size (n) is even, it becomes $n/2$. If odd, it becomes $3n + 1$. The model is stable if the size reaches 1. The experiment starts with a colony of 12 cells.

- 1 (1 mark) The colony size is 12 (even). What is the size after the first step?
- 2 (1 mark) The new size is 6 (even). What is the size after the second step?
- 3 (1 mark) The next size is 3 (odd). What is the size after the third step?
- 4 (2 marks) Starting from the result of the third step (10), write down the rest of the sequence of colony sizes until it reaches 1.

Case 2: The School Fete Game



A game at a school fete is called "Reach 50 ". Two players take turns adding any number from 1 to 6 to a running total, which starts at 0 . The player whose move makes the total exactly 50 wins.

- 1 (1 mark) The winning strategy depends on a "step value" determined by the range of numbers that can be added (1 to 6). What is this step value?
- 2 (1 mark) To guarantee a win, what is the first key number a player should aim to land on?
- 3 (1 mark) Working backwards from 50 , what is the key number just below 50 that you must land on?
- 4 (2 marks) You have successfully landed on the key number 8. List the next three key numbers you must land on to continue your winning strategy.

Case 3: The Library Seating Arrangement



A librarian arranges 6 students in a row, assigning each a "Taller Neighbour" score. The final arrangement has the score sequence: 0,1,1, 2,1,0.

- 1 (1 mark) What does a "Taller Neighbour" score of ' 2 ' tell you about a student's immediate neighbours?
- 2 (1 mark) What score will the tallest student in any arrangement always receive?
- 3 (1 mark) Can the shortest student in a line of people ever receive a score of 0 ?
Explain your reasoning.

- 4 (2 marks) Draw a simple bar chart or use stick figures to illustrate a possible relative height arrangement of the 6 students that produces the score sequence 0,1,1,2,1,0.

Important links

- Answer of this worksheet - <https://www.teachoo.com/25643/5400/Case-Based-Questions---Worksheet-2/category/Teachoo-Questions---Case-Based/>
- Full Chapter with Explanation, Activity, Worksheets and more – <https://www.teachoo.com/subjects/cbse-maths/class-6/chapter-3-ganit-prakash/>
- Curiosity Class 6 (Science) - <https://www.teachoo.com/subjects/science/class-6/>
- Ganita Prakash Class 6 (Maths) - <https://www.teachoo.com/subjects/cbse-maths/class-11th/>

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