

◆ Q1. What is the rule in Isha's skirt pattern?

✓ Answer:

- The pattern is: **One block up, one block down**, repeated again and again.
- So, the rule is: **Alternate up and down arrangement of the block**.


◆ Q2. What is the rule in Isha's brother's kurta?

✓ Answer:

- Rule: The block **turns clockwise** every time.
- So, if the block starts facing up, the next one turns **90°**, then **180°**, then **270°**, and then **back to original**.

◆ Q3. Turning Patterns – Block is turned in different ways:

Rule 1: One-fourth turn (90°)

- Pattern: Turns 90° every time → 
- Example: Up → Right → Down → Left → Up

Rule 2: Half turn (180°)

- Pattern: Up → Down → Up → Down

Rule 3: Three-fourth turn (270°)

- Pattern: Up → Left → Down → Right → Up

✓ Try to complete each pattern by continuing the rotation rule.

◆ Q4. Practice Time:

(a) What should come next in this pattern?

N → N → N → ?

✓ Answer: Rule seems to repeat **no turn**

- Next letter = **N**

(b) Pattern of "F" rotated

F → F (90°) → F (180°) → ?

✓ Answer: F (270°), then back to original.

- Next shape = **F rotated 270°**

◆ Q5. Magic Square Puzzle (using 21 to 29)

Fill the square such that every row, column, and diagonal adds to 75

Example grid (solution):

25 29 21

22 25 28

27 21 27

✓ Each row adds up to 75 (25+29+21 = 75)

Try adjusting numbers between 21 and 29 while checking totals.

◆ **Q6. Magic Square (46 to 54, total = 150)**

Use numbers: 46, 47, ..., 54

One correct solution:

49 52 49

50 50 50

51 48 51

✓ Each row, column, and diagonal = 150

◆ **Q7. Number Pattern:**

Look at these:

- $1 = 1 \times 1$
- $121 = 11 \times 11$
- $12321 = 111 \times 111$
- $1234321 = 1111 \times 1111$

✓ Pattern: **Numbers of the form: 1, 121, 12321, 1234321...**

These are **palindromes** and result of square of repeating 1's.

◆ **Q8. Odd Numbers Addition Pattern**

- $1 = 1$
- $1 + 3 = 4$
- $1 + 3 + 5 = 9$
- $1 + 3 + 5 + 7 = 16$
- $1 + 3 + 5 + 7 + 9 = 25$

✓ Rule: Adding first **n odd numbers** gives:

Sum = $n \times n$

For example:

- First 5 odd numbers = $1+3+5+7+9 = 25 \rightarrow 5 \times 5$
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◆ **Q9. Smart Adding / Secret Numbers Game**

Example clue:

- Add 5 to your age \rightarrow Multiply by 2 \rightarrow Subtract 10 \rightarrow Divide by 2
✓ Final result = **your age**

🧠 It works because:

$$((x+5) \times 2 - 10) \div 2 = x \quad ((x+5) \times 2 - 10) \div 2 = x$$

✂ Make your own puzzles using patterns like:

- Multiply, add, subtract, divide
 - Flip digits (e.g., $34 + 43 = 77 \rightarrow$ Palindrome)
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◆ Q10. Palindromes

- **Words/numbers same forward and backward**
 - Examples: 121, 1331, 12321, 77, 363

✚ To form palindromes:

- Pick a number (like 48)
- Reverse digits (84)
- Add $\rightarrow 48 + 84 = 132$
- Reverse again $\rightarrow 132 + 231 = \mathbf{363}$ (a palindrome)

Would you like to continue next with **Chapter 8 – Mapping Your Way** in the same step-by-step manner?