Patterns

Objectives

- Students will learn to develop and extend patterns.
- Students will learn to discover how patterns arise in a variety of mathematical and everyday contexts, and to establish the rules which govern them.

Introduction

Patterns are

- repeated designs or recurring sequences.
- an ordered set of letters, words, numbers, shapes or other mathematical objects, arranged according to a particular rule.

Type I: To find the missing term or next term (number or letter)

- Identify the rule followed in rest of the given terms using mathematical operation: addition, subtraction, multiplication, division, skip counting and reverse counting.
- Identify the order of alphabetical series either from A to Z or Z to A.
- Skipping letters.

Type II: To find the missing part in the figure pattern.

- Complete the figure pattern by drawing its incomplete part in the pattern.

Example 1

In the number pattern below, what are the values of A and B respectively?

4	A	16	25	36	B

(a) 9, 49 (b) 49, 9 (c) 9, 64 (d) 81, 49

Ans. (a)

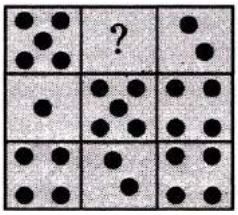
Explanation: Pattern followed in the above series is

$2\times 2=4,\quad 3\times 3=9,\quad 4\times 4=16,\quad 5\times 5=25,$

$6\times 6=36,\quad 7\times 7=49$

Example 2:

Which is the missing square?



(a)  (b)  (c)  (d) 

Ans. (b)

Explanation: Sum of circles in each row or column is 10.

\Which one will replace the question mark?

5	6	30
6	7	42
9	?	36

(a) 2 (b) 3 (c) 4 (d) 5

Ans. (c)

Explanation: As, $5 \times 6 = 30$

and $4 \times 7 = 42$

Similarly, $9 \times ? = 36$

$$? = \frac{36}{9}$$

$? = 4$

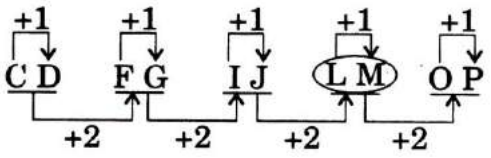
Example 4;

Find the missing pair of letters in the series.

(a) KL (b) LM (c) KM (d) MN

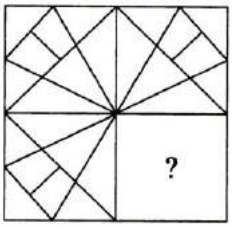
Ans. (b)

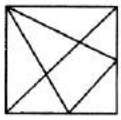
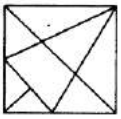
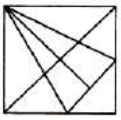
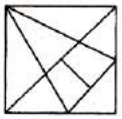
Explanation: The pattern is as follows:



Example 5:

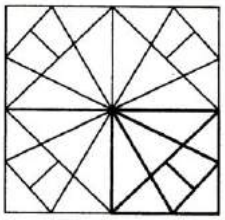
Which figure will replace the question mark in the figure pattern below?



(a)  (b)  (c)  (d) 

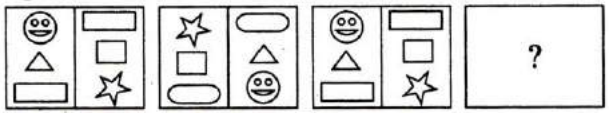
Ans. (d)

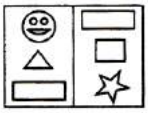
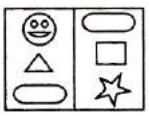
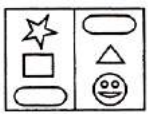
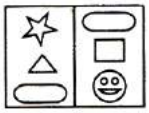
Explanation:



Example 6:

Which figure will replace the question mark in the series?



(a)  (b)  (c)  (d) 

Ans. (c)

Explanation: The figure repeats itself after two steps.