

L-15 PATTERNS

In Mathematics, a pattern is a repeated arrangement of numbers, shapes, and colours and so on. The Pattern can be related to any type of event or object. The shape can increase or decrease in size or can change direction. A pattern has a rule that tells us which objects belong to the pattern and which objects do not belong to the pattern.

Types of Patterns

1. Number Patterns

A list of numbers that follow a certain sequence is known as patterns or number patterns. The different types of number patterns are algebraic or arithmetic pattern, geometric pattern, Fibonacci pattern and so on.

Few examples of numerical patterns are:

Even numbers pattern -: 2, 4, 6, 8, 10, 12, 14, 16, 18, ...

Odd numbers pattern -: 3, 5, 7, 9, 11, 13, 15, 17, 19, ...

Fibonacci numbers pattern -: 1, 1, 2, 3, 5, 8, 13, 21, ... and so on.

2. Repeating Pattern

The type of pattern in which the rule keeps repeating over and over is called a repeating pattern. It is generally common in letter and shape.

3. Square Number Pattern

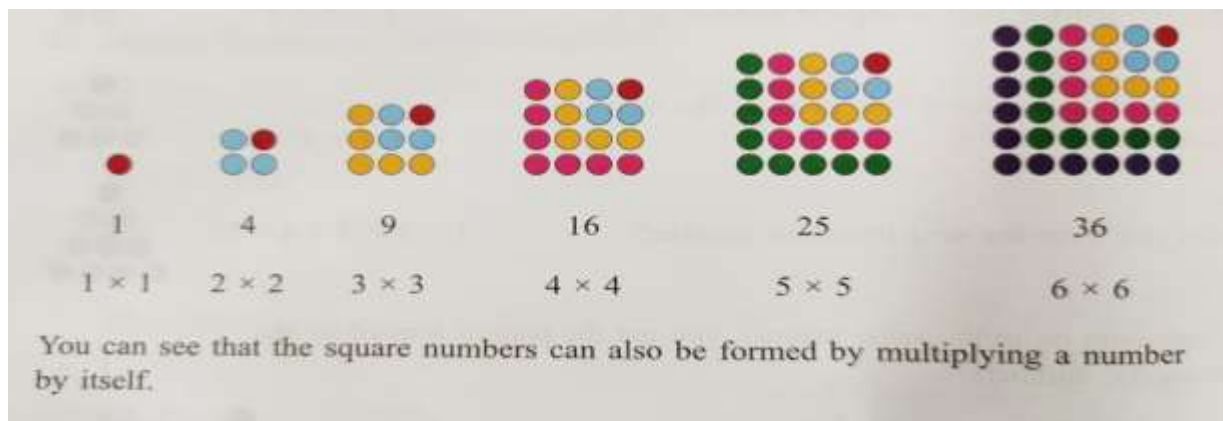
In the square number pattern, each consecutive square number is the result of adding the next consecutive odd number.

Example: 1, 4, 9, 16, 25, ... 1, 4, 9, 16, 25, ...

11 is the square of the number 11.

1+3, 1+3, here, the square number is 4.

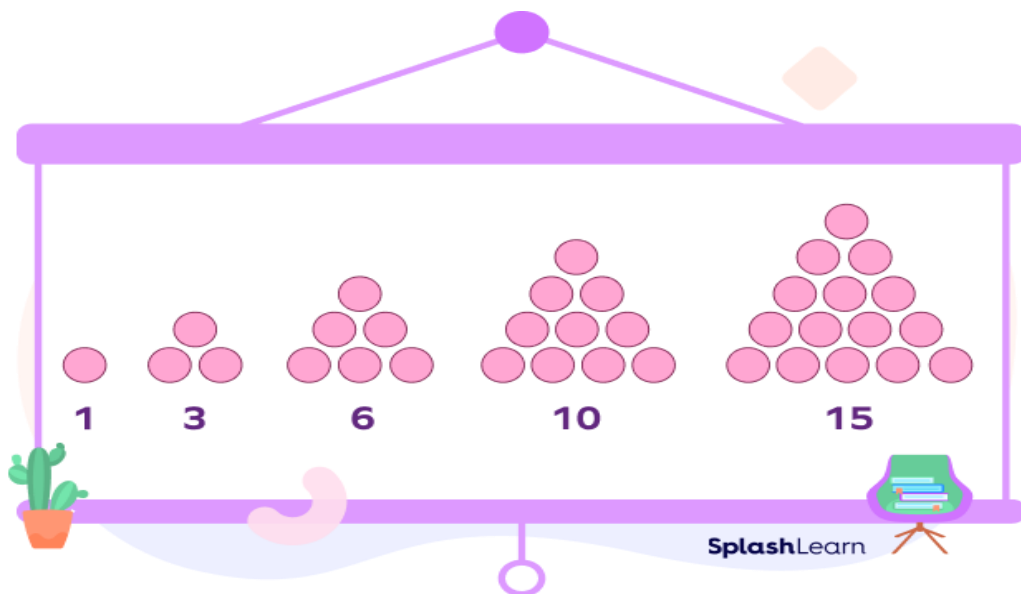
1+3+5, 1+3+5, the next square number is 9 and so on.



4. Triangular Number Pattern

The representation of the numbers in the form of an equilateral triangle arranged in a series or sequence is known as a triangular number pattern. The numbers in the triangular pattern are in a sequence of 1, 3, 6, 10, 15, 21, 28, 36, 45 and so on. The numbers in the triangular pattern are represented by dots.

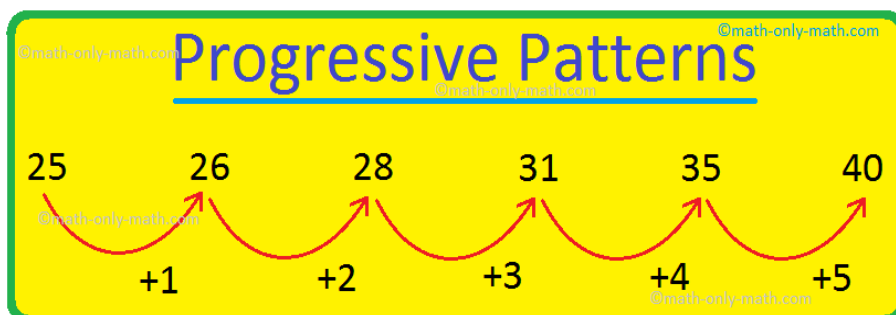
Example:



5. Progressive patterns

A pattern that increases or decreases in two or more ways are called progressive patterns.

These patterns are combination of more than one change. It can vary in combination of size, colour and value.



Practice Questions Paper:-

1. Fill in the missing shape to complete the below pattern.



A. Circle the unit of repeat in each pattern. Then draw the next two figures for the pattern.

- _____
- _____
- _____
- _____

2. Complete the given pattern:

(i) 5, 20, 10, 30, 15, 40,,,

(ii) 1, 3, 5, 7, 11,,,

(iii) 5, 8, 11, 14, 17,,,

(iv) 6, 95, 7, 90, 8, 85,,,

(v) 1, 5, 25, 125,,,

(vi) 800, 400, 200, 100,,,

(vii) 2, 6, 18, 54,,,

(viii) 1, 4, 9, 16, 25,,,

(ix) 99999, 9999, 999,,

3. Find the next number in pattern.

A → C → F → J → ?

- A. O
- B. P
- C. N
- D. M

4. ORANGE → RANG → ORANGE → RANG → _____ ?

- A. ANG
- B. AN
- C. RAN
- D. NG

Q) Complete the pattern:



A.



B.



C.



D.



Questions and Answers on Progressive Patterns:

1. Find the missing pair in the pattern.

(i) (3, 9), (5, 15), (_____, _____), (9, 27)

(ii) (1, 7), (3, 21), (5, 35), (_____, _____).

(iii) 90, 85, 100, 95, 110, _____, _____.

(iv) 1, 2, 4, 7, 11, 16, _____, _____.

(v) A, AB, ABC, ABCD, _____, _____.

Write True or False:-

1. A set of shapes that repeat in a fixed order forms a pattern. _____
2. The number 4 is a Triangular number. _____
3. The square number that comes after 36 is 44. _____
4. The third square number is 9. _____
5. The triangular number that comes after 28 is 45. _____