

9. A special pattern - **The Fibonacci Sequence.**

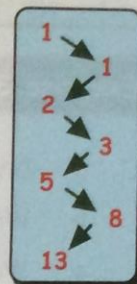
Look at this sequence :- **1, 1, 2, 3, 5, 8,**

The pattern can be described as follows :-

- "Start with any 2 numbers (1 and 1 in the above example).
- "the 3rd number is formed by adding the 1st and 2nd numbers $(2 = 1 + 1)$.
- "the 4th number is formed by adding the 2nd and 3rd numbers $(3 = 1 + 2)$.
- "the 5th number is formed by adding the 3rd and 4th numbers $(5 = 2 + 3)$.



Fibonacci



- a Find the 6th number = 4th number + 3rd number.
- b Find the 7th number = 5th number + 4th number.
- c What is the 8th Fibonacci number ?
- d Continue the pattern and find the first 12 Fibonacci numbers.

10. Find the first 10 numbers in these Fibonacci sequences :-

- a 3, 4, 7, 11,
- b 2, 5, 7,

11. Form your own Fibonacci sequence.

- a Start with any 2 numbers.
- b Carry on with your pattern to produce the first 10 terms in your sequence.

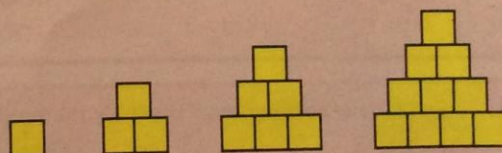
12. **A new pattern.**

Look at this set of numbers :- 3, 8, 15, 24, 35, 48,

- a It is difficult to see what the next number is. Can you ?
- b Can you see that $3 = (1 \times 3)$, $8 = (2 \times 4)$, $15 = (3 \times 5)$.
Write :- $24 = (4 \times \dots)$, $35 = (5 \times \dots)$, $48 = (\dots \times \dots)$.
- c Find the 7th number in the pattern.
- d Find the first 10 numbers in the sequence.

13. A boy was creating a pattern using building blocks.

- a Draw the 4 patterns of blocks neatly and draw the next 2 patterns (**5 and 6**).



- b Look at this pattern in the table :- 1, 3, 6, 10,

Can you see the connection ?

Write down the next pattern in the same way.

$1 = 1$
$3 = 1 + 2$
$6 = 1 + 2 + 3$
$10 = 1 + 2 + 3 + 4$

- c Write down the 6th, 7th and **10th** patterns in a similar way.