

# Year 8 Spring 2

## KEYWORDS:

<b>Sequence</b>	A set of things (usually numbers) that are in order.	<b>Nth term</b>	A formula with n in it which enables you to find any term of a sequence.
<b>Fibonacci</b>	Each term of a Fibonacci sequence is obtained by adding the two previous terms.	<b>Linear</b>	A sequence which increases or decreases by the same amount each time.
<b>Term</b>	Each number in a sequence is called a term. E.g. the third term in the sequence 1,3,5,7 is 5.	<b>Term to term</b>	The difference between the numbers in a sequence. E.g. 2,4,6,8,.. The rule is plus 2

## Spatial sequences

### Matchstick puzzles



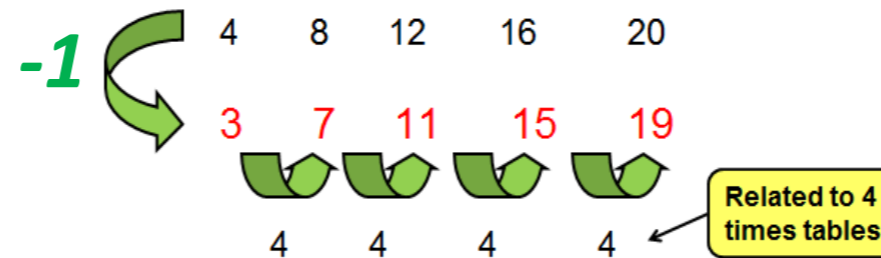
$$1 + 3 + 3 + 3 + \dots$$

How many times must I add 3?

$$1 + 3 \times 100$$

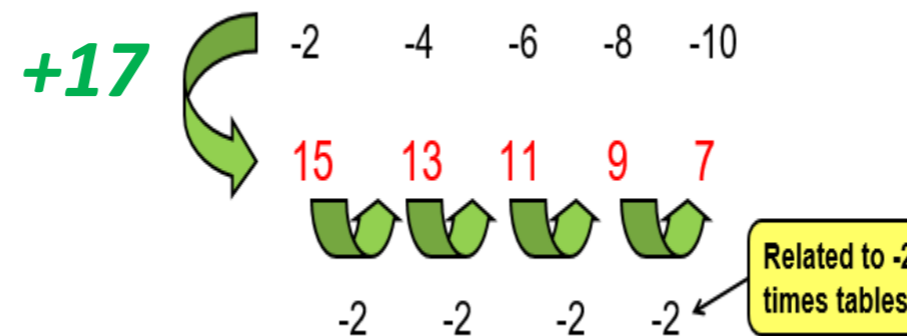
## Finding the nth term

Find the nth term of the sequence 3, 7, 11, 15, 19,...



$$4n - 1$$

Find the nth term of the sequence 15, 13, 11, 9, 7,...



$$-2n + 17$$

## The Fibonacci sequence

1, 1, 2, 3, 5, 8, 13, 21, 34, 55, ...

The third term is  $1 + 1 = 2$

The fourth term is  $1 + 2 = 3$

The fifth term is  $2 + 3 = 5...$

Clip 141

## Generating Sequences from the nth term

Find the first 4 terms of the sequence:

$$T(n) = 4n - 2$$

$$n = 1: (4 \times 1) - 2 = 2$$

$$n = 2: (4 \times 2) - 2 = 6$$

$$n = 3: (4 \times 3) - 2 = 10$$

$$n = 4: (4 \times 4) - 2 = 14$$

The sequence is 2, 6, 10, 14, ...

Clip A11B

## Triangle numbers

Counts objects arranged in an equilateral triangle. The first four terms are below;

