

# Mathematics poster

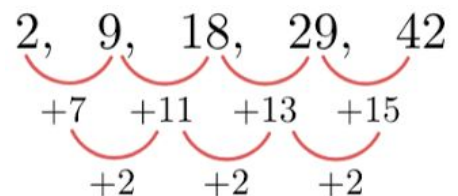
## Sequence:

A sequence is a selection of numbers and letters that correspond in certain ways. For example 1 2 3 4 would be a numerical sequence that goes up in ones. There are different types of sequence.



## Quadratic sequence

A quadratic sequence is a sequence of numbers in which the second differences between each consecutive term differ by the same amount, called a common second difference.



## Geometric Sequence

In mathematics, a geometric progression, also known as a geometric sequence, is a sequence of numbers where each term after the first is found by multiplying the previous one by a fixed, non-zero number called the common ratio. For example, the sequence 2, 6, 18, 54 is a geometric progression with common ratio 3.

### Geometric Sequence

A geometric sequence is one where to get from one term to the next you multiply by the same number each time. This number is called the **common ratio,  $r$** .



### Recursive Form of a Sequence

A sequence is defined **recursively** if the first term is given and there is a method of determining the  $n^{\text{th}}$  term by using the terms that precede it.

Define the sequence  $\{-7, -4, -1, 2, 5, \dots\}$  recursively and graph it.

$$U_1 = -7, \quad U_n = U_{n-1} + 3, \quad \text{for } n \geq 2$$

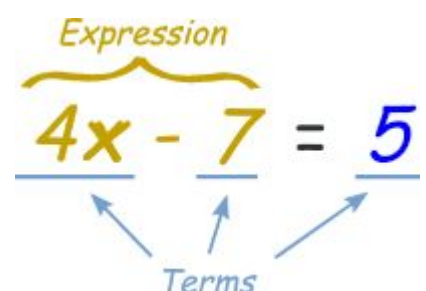
First Term    $n^{\text{th}}$  Term   Must always be one greater than subscript used for first term.

## Recursive sequence

A recursive sequence, also known as a recurrence sequence, is a sequence of numbers indexed by an integer and generated by solving a recurrence equation.

## Term

In Algebra a term is either a single number or variable, or numbers and variables multiplied together. Terms are separated by + or - signs.



## Term-To-Term rule

A term to term rule allows you to find the next number in the sequence if you know the previous term (or terms.) This is also called a recursive rule. For example, if the sequence is 1,3,5,7,... then in order to find the next term you add 2 to the previous term. or in general.

A few sequences...

9, 13, 17, 21....

..... 25, 29

term to term rule: add 4

## Position-to-Term rule

A position to term rule refers to a position sequence that carries on through a sequenced pattern that is uneven. It is usually used to find out the next number in a sequence.

## Common Difference

The common difference is the difference between two numbers in an arithmetic sequence. For example, 1357 has a common difference of 2.

Position to term rules - ①

|          |   |    |    |    |    |
|----------|---|----|----|----|----|
| Position | 1 | 2  | 3  | 4  | 5  |
| Term     | 7 | 10 | 13 | 16 | 19 |

+4

3n: 3 | 6 | 9 | 12 | 15

## Common Ratio

For a geometric sequence or geometric series, the common ratio is the ratio of a term to the previous term. This ratio is usually indicated by the variable  $r$ . Example: The geometric series 3, 6, 12, 24, 48 has common ratio  $r = 2$ .

## Linear sequence

Linear sequences. A number pattern which increases (or decreases) by the same amount each time is called a linear sequence. The amount it increases or decreases by is known as the common difference.