
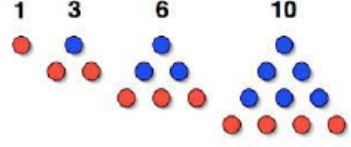


## Maths Knowledge Organiser

### Sequences

Linear Sequence	A number pattern with a <b>common difference</b> .	2, 5, 8, 11... is a linear sequence
Term	Each <b>value</b> in a sequence is called a term.	In the sequence 2, 5, 8, 11..., 8 is the third term of the sequence.
Term-to-term rule	A rule which allows you to <b>find the next term</b> in a sequence if you know the <b>previous term</b> .	First term is 2. Term-to-term rule is 'add 3'  Sequence is: 2, 5, 8, 11...
nth term	A rule which allows you to <b>calculate the term</b> that is in the <b>nth position</b> of the sequence.  Also known as the 'position-to-term' rule.  $n$ refers to the <b>position</b> of a term in a sequence.	nth term is $3n - 1$  The 100 <sup>th</sup> term is $3 \times 100 - 1 = 299$
Finding the nth term of a linear sequence	<ol style="list-style-type: none"> <li>1. Find the <b>difference</b>.</li> <li>2. <b>Multiply that by <math>n</math></b>.</li> <li>3. Substitute <math>n = 1</math> to <b>find out what number you need to add or subtract to get the first number in the sequence</b>.</li> </ol>	Find the nth term of: 3, 7, 11, 15...  <ol style="list-style-type: none"> <li>1. Difference is +4</li> <li>2. Start with <math>4n</math></li> <li>3. <math>4 \times 1 = 4</math>, so we need to subtract 1 to get 3.</li> </ol> nth term = $4n - 1$
Fibonacci type sequences	A sequence where the next number is found by <b>adding up the previous two terms</b>	The Fibonacci sequence is: 1, 1, 2, 3, 5, 8, 13, 21, 34 ...  An example of a Fibonacci-type sequence is: 4, 7, 11, 18, 29 ...
Geometric Sequence	A sequence of numbers where each term is found by <b>multiplying the previous one</b> by a number called the <b>common ratio, <math>r</math></b> .	An example of a geometric sequence is: 2, 10, 50, 250 ... The common ratio is 5  Another example of a geometric sequence is: 81, -27, 9, -3, 1 ... The common ratio is $-\frac{1}{3}$
Quadratic Sequence	A sequence of numbers where the <b>second difference is constant</b> .  A quadratic sequence will have a $n^2$ term.	 <p>2      6      12      20      30      42</p> <p>+4    +6    +8    +10    +12</p> <p>+2    +2    +2    +2</p>
Triangular numbers	The sequence which comes from a pattern of dots that form a triangle.  1, 3, 6, 10, 15, 21 ...	 <p>1      3      6      10</p>