



The Sutton Academy

# Knowledge Rich Curriculum Plan

Year 8 Support – Sequences and Graphs

Lesson Objective	Intended Knowledge: <i>Students will know that...</i>	Tiered Vocabulary	Prior Knowledge: <i>In order to know this, students need to already know that...</i>	Assessment
<p><b>To learn how to continue sequences of diagrams and numbers and identify the term-to-term rule</b></p>	<ul style="list-style-type: none"> <li>• Students will know how to find the next terms in pattern sequences</li> <li>• Students will know how to continue linear sequences to find subsequent terms</li> <li>• Students will know how to continue geometric sequences to find subsequent terms</li> <li>• Students will know how to continue other simple sequences</li> <li>• Students will know how to identify the term to term rule for an arithmetic sequence</li> <li>• Students will know how to identify the term to term rule for a geometric sequence</li> <li>• Students will know how to use ascending/descending to describe sequences.</li> <li>• Students will know that triangular numbers are numbers that make a triangular dot pattern. E.g. 1,3,6,10,15</li> <li>• Students will know how to recognise and continue Fibonacci sequences</li> </ul>	<p><b>Sequence</b> - a particular order in which related things follow each other.  <b>Ascending</b> – going up  <b>Descending</b> – going down  <b>Linear or Arithmetic Sequence</b> – a number pattern which increases (or decreases) by the same amount each time  <b>Geometric Sequence</b> – a sequence made by multiplying by the same value each time  <b>Fibonacci Sequence</b> – a sequence of numbers in which each number is the sum of the two preceding numbers. The simplest is the series 1, 1, 2, 3, 5, 8, etc.  <b>Triangular Numbers</b> – any of the series of numbers (1, 3, 6, 10, 15, etc.) obtained by continued adding of the natural numbers 1, 2, 3, 4, 5, etc.</p>	<ul style="list-style-type: none"> <li>• Students should already know how to continue a numerical, linear sequence</li> </ul>	<p>Mini-Assessment 6</p>
<p><b>To learn how to find missing terms in sequences given the term-to-term rule</b></p>	<ul style="list-style-type: none"> <li>• Students will know how to find missing terms in a sequence given the term-to-term rule</li> <li>• Students will know how to find missing terms within a sequence by first finding the term-to-term rule</li> </ul>		<ul style="list-style-type: none"> <li>• Students need to know how to add and subtract</li> </ul>	<p>Mini-Assessment 6</p>
<p><b>To learn how to generate a sequence from the nth term</b></p>	<ul style="list-style-type: none"> <li>• Students will know how to generate a linear sequence using the nth term</li> <li>• Students will understand the relationship between the nth term of a sequence and the terms in a sequence, for example a '2n' sequence goes up in 2s etc</li> </ul>	<p><b>Generate</b> – produce or create.  <b>Substitute</b> – use or add in place of</p>	<ul style="list-style-type: none"> <li>• Students will need to know how to substitute numbers into linear formulae</li> </ul>	<p>Mini-Assessment 6</p>
<p><b>To learn how to find the nth term of a linear sequence</b></p>	<ul style="list-style-type: none"> <li>• Students will know how to find the nth term of a linear sequence.</li> </ul> <p><b>Opportunity for Challenge:</b></p> <ul style="list-style-type: none"> <li>• Students will know how to find the nth term of a pattern sequence.</li> <li>• Students will know how to solve problems involving sequences from real life situations.</li> </ul>	<p><b>Linear or Arithmetic Sequence</b> – a number pattern which increases (or decreases) by the same amount each time</p>	<ul style="list-style-type: none"> <li>• Students will need to know how to describe the term-to-term rule for a sequence</li> </ul>	<p>Mini-Assessment 6</p>

Lesson Objective	Intended Knowledge: <i>Students will know that...</i>	Tiered Vocabulary	Prior Knowledge: <i>In order to know this, students need to already know that...</i>	Assessment
<p><b>To learn how to write and plot coordinates in all four quadrants</b></p>	<ul style="list-style-type: none"> <li>• Students will need to know that the horizontal axis is the x-axis and that the vertical axis is the y-axis.</li> <li>• Students will know how to plot coordinates in all four quadrants.</li> <li>• Students will know how to write the coordinates of a point plotted in any of the four quadrants</li> </ul> <p><b>Opportunity for challenge:</b></p> <ul style="list-style-type: none"> <li>• Students will know how to solve shape problems involving plotting coordinates</li> </ul>	<p><b>Coordinate</b> – two numbers or sometimes a letter and a number, that locate a specific point on a grid. They are written in the form (x, y) most commonly.</p> <p><b>Vertical</b> – something that is vertical stands or points straight up</p> <p><b>Horizontal</b> – something that is arranged sideways, parallel to the horizon, like a person lying down</p> <p><b>Quadrant</b> – one of the four quarters of the coordinate plane</p>	<ul style="list-style-type: none"> <li>• Students will need to know how to read from a number line</li> </ul>	<p>Mini-Assessment 6</p>
<p><b>To learn how to draw straight line graphs</b></p>	<ul style="list-style-type: none"> <li>• Students will know how to plot and draw graphs that are parallel to either the x- or y-axis (equations in the form <math>y = a</math>, <math>x = a</math>)</li> <li>• Students will know how to plot the graphs of <math>y = x</math> and <math>y = -x</math></li> </ul> <p><b>Opportunity for challenge:</b></p> <ul style="list-style-type: none"> <li>• Students will know how to plot graphs in the form <math>y = x + c</math> or <math>y = x - c</math></li> </ul>		<ul style="list-style-type: none"> <li>• Students will need to know how to plot coordinates</li> </ul>	<p>Mini-Assessment 6</p>
<p><b>To learn how to draw straight line graphs</b></p>	<ul style="list-style-type: none"> <li>• Students will know how to plot graphs in the form <math>y = x + c</math> or <math>y = x - c</math></li> <li>• Students will know how to plot graphs in the form <math>y = mx</math></li> <li>• Students will know how to plot straight line graphs in the form <math>y = mx + c</math> by first completing a given table of values</li> </ul>	<p><b>Substitute</b> – use or add in place of</p>	<ul style="list-style-type: none"> <li>• Students will know how to plot and draw graphs of <math>y = a</math>, <math>x = a</math>, <math>y = x</math> and <math>y = -x</math>, drawing and recognising lines parallel to axes.</li> <li>• Students will know how to draw <math>y = x</math> and <math>y = -x</math></li> </ul>	<p>Mini-Assessment 6</p>