Mathematics Knowledge Organiser

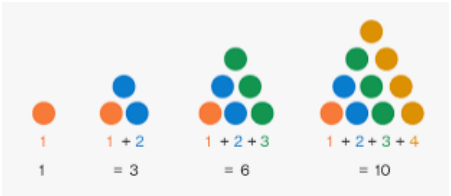
Year 8 – Summer T1

‘Sequences’

The Knowledge for Progression:

- To know that a sequence is a set of numbers or diagrams that follow a pattern
- To know that the term-to-term rule is the way that you obtain the next term using the previous term
- To know that an arithmetic sequence is a linear sequence where each term is generated by adding or subtracting a constant amount
- To know that a geometric sequence is where each term is generated by multiplying by a constant amount
- To know that terms in a triangular sequence are generated by adding consecutive numbers, starting from 1
- To know that the terms in a Fibonacci sequence are generated by adding the two previous terms

Speak Like a Mathematician

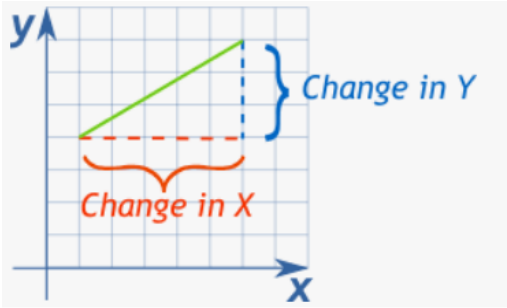
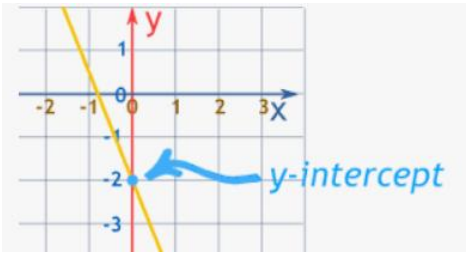
Key Word	Dual Coding	Definition
Sequence	2, 4, 8, 16 …	A set of values or diagrams that follow a pattern
Term	Term: 1 2 3 4  Term: 1 2 3 4 5	The position of a value or diagram in a sequence
Term-to-term rule	2, 4, 8, 16, 32 X2 X2 X2 X2	The way that you obtain the next term of a sequence using the previous term
Arithmetic sequence	3, 7, 11, 15 +4 +4 +4	Terms are generated by adding or subtracting a constant amount. This can also be called an arithmetic progression.
Geometric sequence	3, 12, 48, 194 X4 X4 X4	Terms are generated by multiplying by a constant amount. This can also be called a geometric progression.
Triangular sequence	 1 1 + 2 1 + 2 + 3 1 + 2 + 3 + 4 1 = 3 = 6 = 10	Terms are generated by adding consecutive numbers, starting from 1
Fibonacci sequence	1, 1, 2, 3, 5, 8, 13 + + + + + +	Terms are generated by adding the two previous terms

‘Linear graphs’

The Knowledge for Progression:

- To know that a coordinate is in the form (X,Y).
- To know that straight lines are continuous.
- To know that gradient is a measure of the steepness of a line.
- To know that the gradient of a vertical line is undefined.
- To know that the gradient of a horizontal line is 0.
- To know that all straight lines can be written in the form $y = mx + c$.
- To know that $'+c'$ is the y intercept – the point where the line crosses the y axis.
- To know that $'m'$ is the gradient.
- To know that $m = \frac{\Delta y}{\Delta x}$.

Speak Like a Mathematician

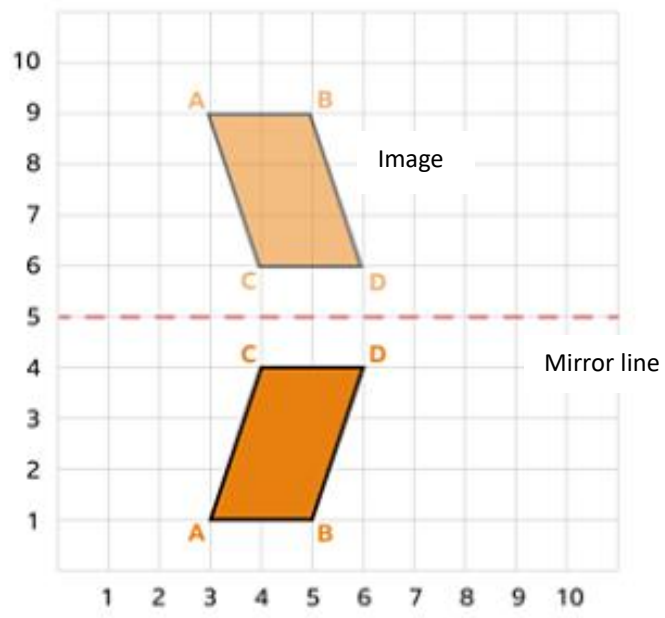
Key Word	Dual Coding	Definition
Gradient		A measure of the steepness of a line.
Y-intercept		The point where the line crosses the y-axis.

‘Reflections’

The Knowledge for Progression:

- To know that an object can be reflected across a mirror line to create an image.
- To know that the mirror line will be the line of symmetry between the object and the image.
- To know that the image is congruent to the original shape.
- To know that each vertex on the original object is the same perpendicular distance from the mirror line to its corresponding vertex on the image.

Speak Like a Mathematician

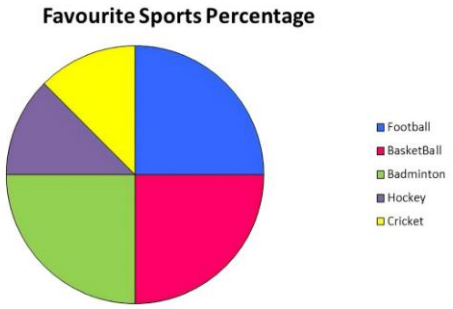
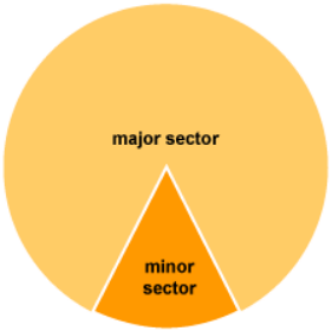
Key Word	Dual coding	Definition
Reflect		A transformation of an object including a mirror line and creating an image.
Mirror line		The line of symmetry between the object and image.
Image		The shape created after a reflection.
Congruent		Two or more objects that are the same in every way, except their position in space.

‘Pie Charts’

The Knowledge for Progression:

- To know that there are 360° in a circle.
- To know that a protractor is used to measure angles.
- To know that a pie chart shows the proportion of each section to the whole.
- To know that 90° is ¼ of a circle, 180° is ½ of a circle.

Speak Like a Mathematician

Key Word	Dual Coding	Definition
Pie Chart		A type of graph in which a circle is divided into sectors to represent data.
Sector		The region within a circle bounded by two radii and one of the arcs they cut off

Mathematics Knowledge Organiser

Year 8 – Summer T2

‘Constructions’

The Knowledge for Progression:

- To know how to measure and draw line segments with a ruler accurately.
- To know how to measure and draw angles with a protractor accurately.
- To know how to use a compass accurately.