

# Mathematics Knowledge Organiser

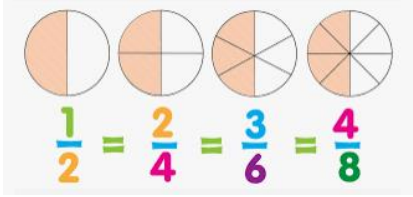
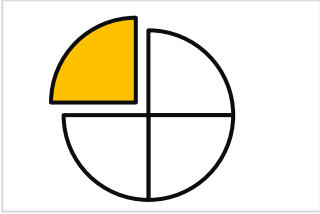

## Year 7 – Spring T1

### 'Calculating with fractions'

#### The Knowledge for Progression:

- To know that a fraction is a numerical value that is not an integer.
- To know that the numerator is the top value of a fraction.
- To know that the denominator is the bottom value of a fraction.

#### Speak Like a Mathematician

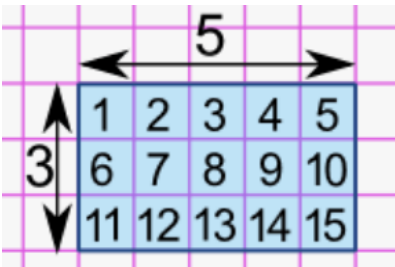
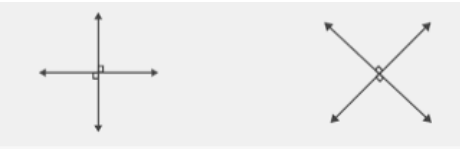
Key Word	Dual Coding	Definition
<b>Fraction</b>		A numerical value that is not an integer; representing how many parts of a whole we have.
<b>Numerator</b>	 $\frac{1}{4}$	The number above the line in a fraction.  Represents the number of equal parts of the whole.
<b>Denominator</b>	 $\frac{2}{5}$	The number below the line in a fraction.  Total of parts that make up the whole.
<b>Reciprocal</b>	$\frac{3}{4} \times \frac{4}{3} = 1$	The multiplicative inverse of any non-zero number.  Any non-zero number multiplied by its reciprocal is equal to 1.

## 'Area'

### The Knowledge for Progression:

- To know that area is the number of square units inside a 2D shape.
- To know that area is measured in square units e.g. mm<sup>2</sup>, cm<sup>2</sup>, m<sup>2</sup>.
- To know that the perpendicular height is the height that meets the base at a 90° angle.
- To know that the area of a square, rectangle, rhombus and parallelogram is *base × perpendicular height*.
- To know that the area of a triangle is  $\frac{\text{Base} \times \text{perpendicular height}}{2}$ .

### Speak Like a Mathematician


Key Word	Dual Coding	Definition
<b>Area</b>		The number of square units inside a 2D shape.
<b>Perpendicular height</b>		The line that meets the base at a 90° angle.

## 'Ratio'

### The Knowledge for Progression:

- To know that a ratio compares quantities to one another.
- To know that the order of a ratio is stated is important.

### Speak Like a Mathematician

Key Word	Dual Coding	Definition
<b>Ratio</b>	 <p>1 : 2</p>	A part-to-part comparison

# Mathematics Knowledge Organiser

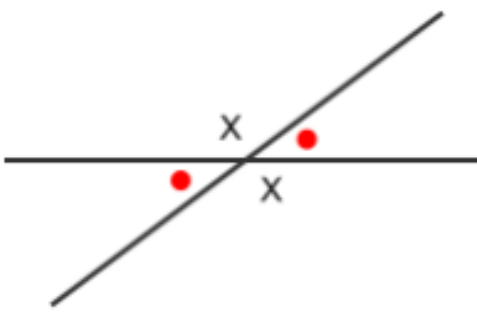
## Year 7 – Spring T2

### 'Introduction to angle geometry'

#### The Knowledge for Progression:

- To know that angles on a straight line sum to  $180^\circ$ .
- To know that angles around a point sum to  $360^\circ$ .
- To know that vertically opposite angles are equal.
- To know that angles in a triangle sum to  $180^\circ$ .
- To know that angles in a quadrilateral sum to  $360^\circ$ .

### Speak Like a Mathematician


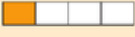


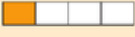


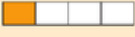

Key Word	Dual Coding	Definition
<b>Vertically opposite angles</b>		The pair of equal angles between two intersecting straight lines.

## 'Fractions, decimals, and percentages'

### The Knowledge for Progression:

- To know that the place value of the decimal gives the denominator of the fraction.
- To know that a fraction shows a division.
- To know that 100% and 1 whole are equivalent.

### Speak Like a Mathematician

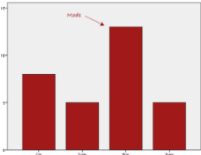
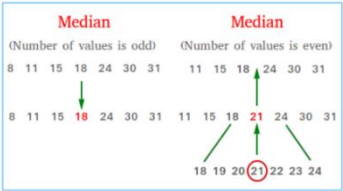
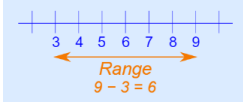
Key Word	Dual Coding				Definition													
<b>Equivalent</b>	<table border="1"><thead><tr><th>Fraction</th><th>Decimal</th><th>Percentage</th><th>Image</th></tr></thead><tbody><tr><td><math>\frac{1}{2}</math></td><td>0.5</td><td>50%</td><td></td></tr><tr><td><math>\frac{1}{4}</math></td><td>0.25</td><td>25%</td><td></td></tr><tr><td><math>\frac{3}{4}</math></td><td>0.75</td><td>75%</td><td></td></tr></tbody></table>	Fraction	Decimal	Percentage	Image	$\frac{1}{2}$	0.5	50%		$\frac{1}{4}$	0.25	25%		$\frac{3}{4}$	0.75	75%		Same in value but in a different form
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$\frac{3}{4}$	0.75	75%																

## 'Averages and range':

### The Knowledge for Progression:

- To know that the mode/modal means the most common item of data (this does not need to be numerical).
- To know that the median is the middle item of ordered numerical data.
- To know that the mean is the sum of quantities in a data set divided by the total number of quantities in the set.
- To know that the range is a measure of spread. It is the difference between the largest and smallest items of numerical data.

### Speak Like a Mathematician

Key Word	Dual Coding	Definition
<b>Mode</b>		The most common item of data.
<b>Median</b>		The middle item in ordered numerical data.
<b>Mean</b>	<div style="background-color: #00FF00; padding: 5px; display: inline-block; margin-bottom: 10px;"> <math>7 + 4 + 5 + 3 + 4 + 7 = 30</math> </div> <div style="display: flex; justify-content: space-around; width: 100%;"> <div style="text-align: center;"> <p>There are 6 quantities</p> <p style="color: red; font-size: 1.2em;"><math>30 \div 6 = 5</math></p> <p style="font-weight: bold; color: black;">The mean = 5</p> </div> <div style="text-align: center;"> <p>The sum of quantities</p> </div> </div>	The sum of quantities in a data set divided by the total number of quantities in the set.
<b>Range</b>		A measure of spread.

