

# Mathematics Knowledge Organiser

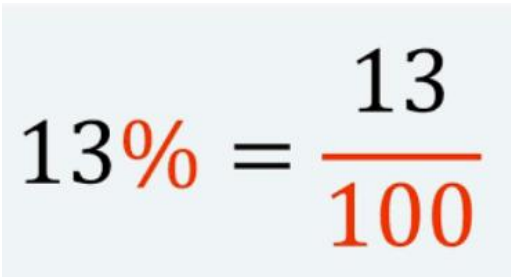
## Year 7 – Summer T1

### 'Calculating with percentages'

#### The Knowledge for Progression:

- To know that percentages are out of one hundred.
- To know that all percentages can be written as a fraction.

### Speak Like a Mathematician

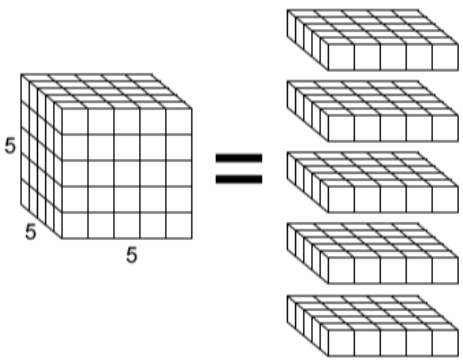
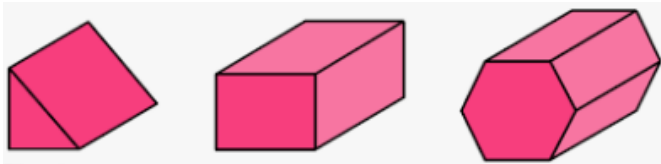
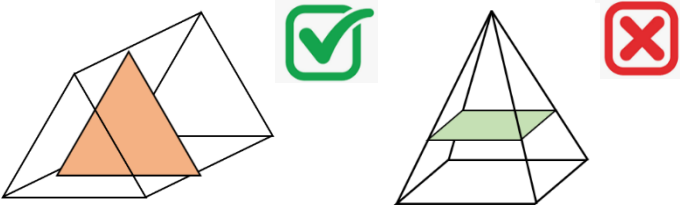
Key Word	Dual Coding	Definition
<b>Percentage</b>	 <p>The diagram shows the equation <math>13\% = \frac{13}{100}</math>. The percentage symbol and the numbers 13 and 100 are in red, while the equals sign and the fraction bar are in black.</p>	Per one hundred.

## 'Volume of prisms'

### The Knowledge for Progression:

- To know that volume = area of the cross-section x length.
- To know that volume is the number of cube units inside a 3D shape.

### Speak Like a Mathematician

Key Word	Dual Coding	Definition
<b>Volume</b>		The number of cube units inside a 3D shape.
<b>Prism</b>		A 3D shape with a uniform cross section. The cross section is a polygon.
<b>Uniform cross-section</b>		The <b>same</b> face that runs through the length of a 3D shape.

# Mathematics Knowledge Organiser

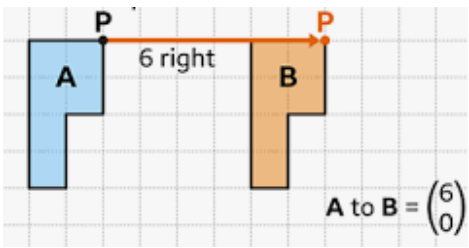
## Year 7 – Summer T2

### 'Translations'

#### The Knowledge for Progression:

- To know that a translation is horizontal and vertical movement of a shape.
- To know that a column vector describes a movement e.g. ADD VECTOR
- To know that the top value of a column vector represents the horizontal movement.
- To know that the bottom value of a column vector represents the vertical movement.
- To know that movements up and down are represented by a positive value.
- To know that movements left and down are represented by a negative value.

#### Speak Like a Mathematician


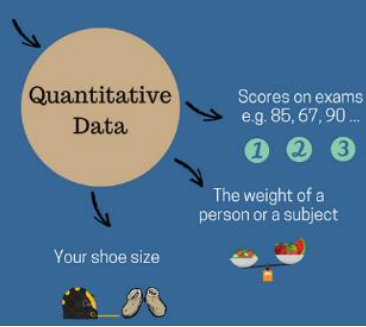
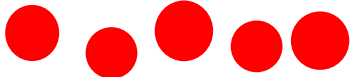

Key Word	Dual Coding	Definition
<b>Translation</b>	 <p><math>A \text{ to } B = \begin{pmatrix} 6 \\ 0 \end{pmatrix}</math></p>	A transformation that moves an object.
<b>Column vector</b>	$\begin{pmatrix} 3 \\ 2 \end{pmatrix}$ is $\begin{pmatrix} 3 \text{ right} \\ 2 \text{ up} \end{pmatrix}$	Describes the movement of a translation

# 'Measuring discrete data'

## The Knowledge for Progression:

- To know that the range is a measure of spread and consistency
- To know the range is the difference between the largest value and the smallest value
- To know that the mode is the item of data with the highest frequency
- To know that the median is the middle value when in size order
- To know that qualitative data relates to qualities and attributes
- To know that quantitative data relates to quantities and amounts. It can be discrete or continuous
- To know that discrete data is data which is counted
- To know that continuous data is data which is measured

## Speak Like a Mathematician

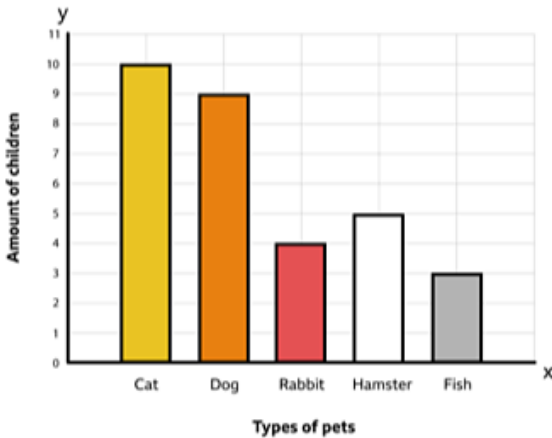
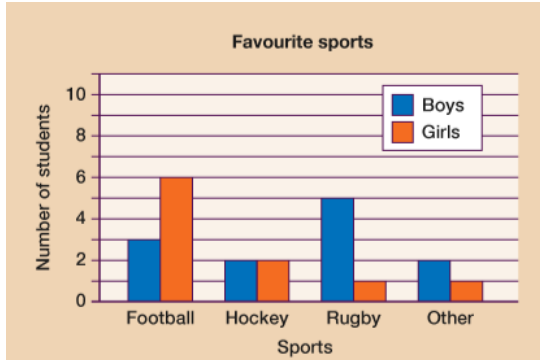
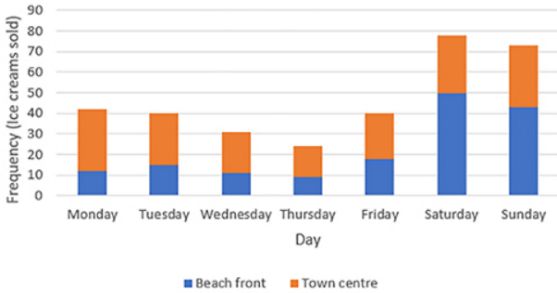
Key Word	Dual Coding	Definition																		
<b>Frequency</b>	<table border="1"> <thead> <tr> <th>Colour</th> <th>Tally marks</th> <th>Frequency</th> </tr> </thead> <tbody> <tr> <td>Black</td> <td> </td> <td>1</td> </tr> <tr> <td>Blue</td> <td>    </td> <td>5</td> </tr> <tr> <td>Pink</td> <td>  </td> <td>2</td> </tr> <tr> <td>White</td> <td>    </td> <td>4</td> </tr> <tr> <td colspan="2"></td> <td>Total = 12</td> </tr> </tbody> </table>	Colour	Tally marks	Frequency	Black		1	Blue		5	Pink		2	White		4			Total = 12	The number of times an event occurs
Colour	Tally marks	Frequency																		
Black		1																		
Blue		5																		
Pink		2																		
White		4																		
		Total = 12																		
<b>Qualitative data</b>	<p>Red</p>  <p>Blonde</p> <p>Sour</p> <p>Rough</p>	Relates to qualities and attributes																		
<b>Quantitative data</b>		Relates to quantities and amounts																		
<b>Discrete data</b>	 <p>5 circles</p>	Data which is counted																		
<b>Continuous data</b>	<p>Height</p>  <p>Weight Distance Time</p>	Data which is measured																		

## 'Presenting discrete data'

### The Knowledge for Progression:

- To know that a frequency table shows the frequencies of data .
- To know that a bar chart and vertical line chart are used to display discrete data.
- To know that a comparative bar chart is used to compare two sets of data on the same chart.

### Speak Like a Mathematician


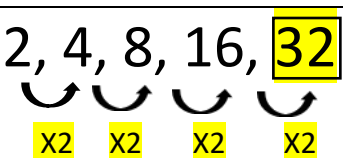

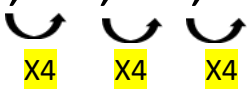
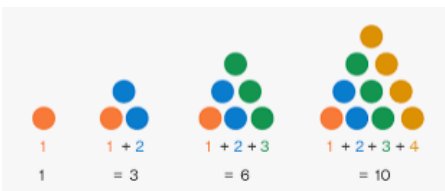
Key Word	Dual Coding	Definition
<b>Bar chart</b>	 <p style="text-align: center;">Types of pets</p>	<p>A way of presenting discrete data.</p>
<b>Comparative bar chart</b>	 <p style="text-align: center;">Sports</p>	<p>Used to compare two sets of data.</p>
<b>Composite bar chart</b>	 <p style="text-align: center;">Day</p>	<p>Used to compare two sets of data</p>

# '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
<b>Sequence</b>	2, 4, 8, 16 ...	A set of values or diagrams that follow a pattern
<b>Term</b>	Term: <span style="margin-left: 20px;">1</span> <span style="margin-left: 20px;">2</span> <span style="margin-left: 20px;">3</span> <span style="margin-left: 20px;">4</span>  Term: <span style="margin-left: 20px;">1</span> <span style="margin-left: 20px;">2</span> <span style="margin-left: 20px;">3</span> <span style="margin-left: 20px;">4</span> <span style="margin-left: 20px;">5</span>	The position of a value or diagram in a sequence
<b>Term-to-term rule</b>	2, 4, 8, 16, <span style="border: 1px solid black; padding: 2px;">32</span> 	The way that you obtain the next term of a sequence using the previous term
<b>Arithmetic sequence</b>	3, 7, 11, 15 	Terms are generated by adding or subtracting a constant amount. This can also be called an arithmetic progression.
<b>Geometric sequence</b>	3, 12, 48, 194 	Terms are generated by multiplying by a constant amount. This can also be called a geometric progression.
<b>Triangular sequence</b>		Terms are generated by adding consecutive numbers, starting from 1
<b>Fibonacci sequence</b>	1, 1, 2, 3, 5, 8, 13 +   +   +   +   +   +	Terms are generated by adding the two previous terms

