

# 'Ratio and Proportion'

## The Knowledge for Progression:

- To know that a ratio is a comparison of 2 or more quantities in relation to each other
- To know that proportion is a multiplicative relationship between values, as one value increase so does the other
- To know that inverse proportion is the multiplicative relationship between values, where one value increases the other decreases
- To know that an exchange rate is the proportional relationship between 2 currencies
- To know that better value for money is when the cost per unit is less.

## Speak Like a Mathematician

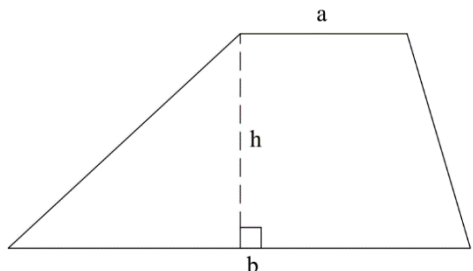
Key Word	Dual Coding	Definition
<b>Ratio</b>	<p style="text-align: center;"><b>1 : 2</b></p>	A part-to-part comparison
<b>Proportion</b>	<p> <math>\begin{matrix} \text{x 2} &amp; \left( \begin{matrix} 3 : 4 \\ = \\ 6 : 8 \end{matrix} \right) &amp; \text{x 2} \end{matrix}</math> </p> <p> <math>\begin{matrix} \text{x 2} &amp; \left( \begin{matrix} 3 : 4 \\ = \\ 6 : 2 \end{matrix} \right) &amp; \div 2 \end{matrix}</math> </p>	A mathematical relationship, where quantities are increasing or decreasing in the same ratio

## 'Area of a trapezium'

### The Knowledge for Progression:

- To know that the area of a trapezium is half of the sum of the parallel sides multiplied by the perpendicular distance between them
- To know that the formula to find the area of a trapezium is  $\frac{(a+b)}{2} h$ .  
Where a and b are the parallel sides.

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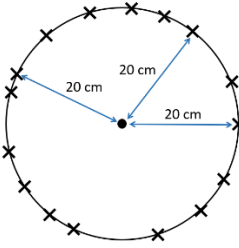
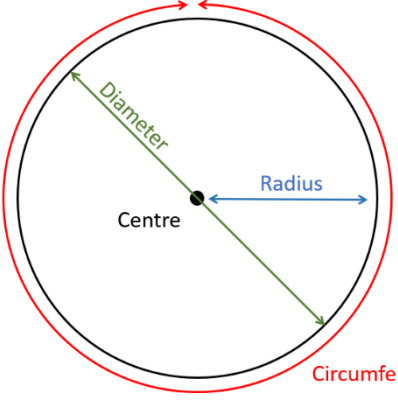
Key Word	Dual Coding	Definition
<b>Trapezium</b>	 <p>The diagram shows a trapezium with a horizontal top side labeled 'a' and a horizontal bottom side labeled 'b'. A vertical dashed line represents the height, labeled 'h', with a right-angle symbol at its intersection with the bottom side.</p>	A quadrilateral with one pair of parallel sides

# 'Area and circumference of circles'

## The Knowledge for Progression:

- To identify the parts of a circle; radius, diameter and circumference
- To know that the radius is the distance from the centre of the circle to its circumference
- To know that the diameter is the distance from one point of the circumference to another point going through the centre
- To know that the circumference is the perimeter of the circle
- To know that the diameter is twice the radius
- To know that the radius is half of the diameter
- To know that the formula to calculate the area of a circle is  $A = \pi \times radius^2$
- To know that the formula to calculate the circumference of a circle is  $C = \pi \times diameter$

## Speak Like a Mathematician

Key Word	Dual Coding	Definition
<b>Circle</b>		A 2D shape where all points are equidistant from the centre
<b>Radius</b>		The distance from the centre of the circle to the circumference
<b>Diameter</b>		The distance from one point of the circumference to another point going through the centre
<b>Circumference</b>		The perimeter of the circle

# 'Rotation'

## The Knowledge for Progression:

- To know that a rotation is the turning of a shape around a centre of rotation
- To know that the centre of rotation is the fixed point which you rotate the shape about
- To know that rotational symmetry is the property a shape has when it looks the same after a partial turn
- To know that the order of rotational symmetry is the number of times the shape fits exactly into itself during a full rotation of  $360^\circ$

## Speak Like a Mathematician

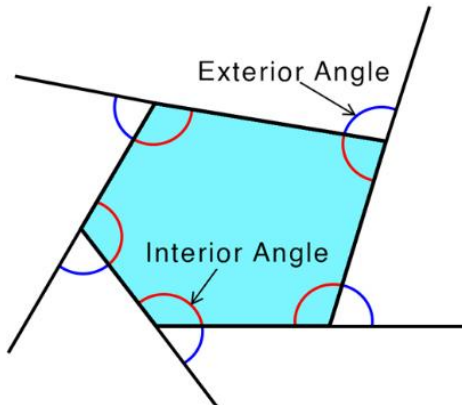
Key Word	Dual Coding	Definition
<b>Rotation</b>		The turning of a shape around a centre of rotation
<b>Centre of rotation</b>		The fixed point which you rotate the shape about
<b>Rotational symmetry</b>		A property of a shape when it looks the same after a partial turn
<b>Order of rotational symmetry</b>		The number of times the shape fits exactly into itself during a full $360^\circ$ rotation

## 'Angles in polygons'

### The Knowledge for Progression:

- To know that the sum of interior angles is calculated by  $(n-2) \times 180^\circ$ , where  $n$  is the number of sides of the polygon
- To know that sum of the interior angle and the exterior angle equal  $180^\circ$

### Speak Like a Mathematician

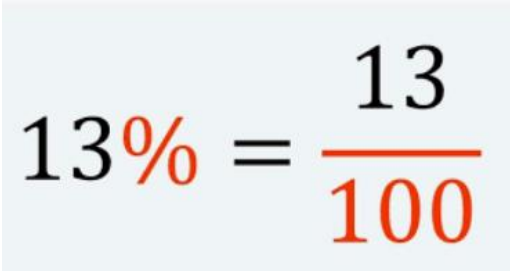
Key Word	Dual Coding	Definition
<b>Interior angle</b>	 A diagram of a quadrilateral with a light blue fill. At each of its four vertices, an interior angle is marked with a red arc and labeled 'Interior Angle' with an arrow. At each vertex, an exterior angle is marked with a blue arc and labeled 'Exterior Angle' with an arrow. The exterior angles are formed by extending one side of the polygon.	The angle that lies within a polygon
<b>Exterior angle</b>		An angle formed outside the polygon

## 'Percentages'

### The Knowledge for Progression:

- To know that multipliers are percentages expressed in decimal form
- To know that any original amount is 100%

### Speak Like a Mathematician

Key Word	Dual Coding	Definition
<b>Percentage</b>	 <p><math>13\% = \frac{13}{100}</math></p>	Per one hundred
<b>Multiplier</b>	$25\% \equiv 0.25$ $140\% \equiv 1.4$	The equivalent decimal to a percentage