The Sutton Academy

Knowledge Rich Curriculum Plan

Year 7 Support – Similarity, Congruency and Transformations

Lesson objective	Intended Knowledge:	Tiered Vocabulary	Prior Knowledge:	Steps to Success	Feedback
To learn how to identify congruent and similar shapes.	• Students will know how to identify congruent shapes. • Students will know how to identify similar shapes.	**Congruent** – the same **Similar** - having a resemblance in appearance, without being identical. **Similar Shapes –** two shapes are similar when one is an enlargement of the other. When a shape is enlarged, the image is similar to the original shape. It is the same shape but a different size.	• Students need to know identify and name the properties of 2D shapes.		
To learn how to calculate missing lengths in similar shapes.	• Students will know how to calculate the length scale factor for a pair of similar shapes. • Students will know how to use the length scale factor to find missing lengths in similar shapes.	**Scale factor –** how much the shape has been enlarged, the scale factor tells us what the corresponding measures have been multiplied by	• Students need to know how to identify similar and congruent shapes.	**Steps to success – Finding missing lengths of similar shapes** **Step one:** Check that your two shapes are similar. **Step two:** Find the each pair of corresponding sides of the two shapes. **Step three:** Divide the larger length by the smaller length in order to find the scale factor. **Step four:** Find the pair of corresponding sides you need in order to find your answer. **Step five:** Multiply or divide your known corresponding length by your scale factor.	
To learn how to translate shapes.	• Students will know how to translate a shape by given units to the left/right up/ down. • Students will know how to write movements as column vectors. • Students will know how to translate a shape by a given column vector.	**Transform –** change **Transformation –** in maths, a transformation is a process that manipulates a polygon or other two-dimensional object on a plane or coordinate system **Translation –** the process of moving something from one place to another.	• Students need to know and understand directions E.g. up, down, left or right.	**Steps to Success – Translating a Shape** **Step 1:** Interpret the column vector to determine how many spaces you need to move the shape to the left/right and/or up/down. **Step 2:** Pick one **vertex** of the original shape and translate this coordinate the given number of spaces to the left/right and/or up/down. **Step 3:** Repeat for all other **vertices** of the shape and then join them up using a ruler and pencil. **Step 4:** Check that the shape you are giving as your answer is the same size as the original shape.	
To learn how to reflect shapes in a mirror line.	• Students will know how to reflect a 2D shape using a horizontal or vertical mirror line. • Students will know how to reflect a 2D shape in a diagonal line. **Opportunity for challenge:** • Students will know how to reflect a shape in the x-axis or y-axis.	**Reflection –** In maths, a reflection is a type of transformation where each point in a shape appears at an equal distance on the opposite side of a given line - the line of reflection **Symmetry –** the quality of being made up of exactly similar parts facing each other or around an axis.	• Students need to know how to use a simple mirror line.	**Steps to Success – Reflecting a Shape** **Step 1:** Draw the mirror line stated in the question **Step 2:** Reflect each vertex in the mirror line **Step 3:** Join them up using a ruler and pencil **Step 4:** Check that the shape you are giving as your answer is the same size as the original shape	

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To learn how to rotate shapes.	• Students will know how to rotate a shape around the origin. **Opportunity for challenge:** • Students will know how to rotate shapes around other given centres. E.g. (3,5)	**Rotate** – turn **Clockwise** – in the same direction as the hands move around a clock (to the right) **Anti-clockwise** – in the opposite direction as the hands move around a clock (to the left) **Origin** – The origin is located at the intersection of the vertical and horizontal axes at the coordinates (0, 0)	• Students need to know how to plot and write coordinates.	**Steps to Success – Rotating a Shape** **Step 1:** Place your tracing paper over the shape you are rotating and trace over it **Step 2:** Place your pencil on top of the tracing paper over the coordinate that is the centre of the rotation **Step 3:** Rotate the tracing paper the appropriate degrees and in the correct direction (clockwise or anti-clockwise) **Step 4:** Remove the tracing paper and draw the shape in its new position	
To learn how to enlarge shapes.	• Students will know how to enlarge a shape by a positive scale factor.	**Enlarge –** change the size **Enlargement –** a type of transformation where we change the size of the original shape to make it bigger or smaller by multiplying it by a scale factor **Scale factor –** how much the shape has been enlarged, the scale factor tells us what the corresponding measures have been multiplied by	• Students will need to know how to identify similar shapes.	**Steps to Success – Enlarging a Shape with a Positive Scale Factor** **Step 1:** Identify the centre of enlargement **Step 2:** Choose one of the vertices on the shape you are enlarging and count how many spaces you need to move horizontally and vertically to get from the centre of enlargement to that vertex. Jot this down if it helps you. **Step 3:** Multiply the horizontal and vertical distances by the scale factor of the enlargement, write this down if it helps **Step 4:** Go back to the centre of enlargement and move horizontally and vertically the scaled up movements you worked out in step 3 and mark this point as the new location of that vertex **Step 5:** Repeat this for all other vertices **Step 6:** Join up all of the points you have marked using a ruler and a pencil **Step 7:** Check that your new shape is the correct size by multiplying each of the lengths for the original shape by the scale factor and checking that the corresponding side on the new shape is that length. Do this for all lengths to be sure.	
Mini-Assessment 10					