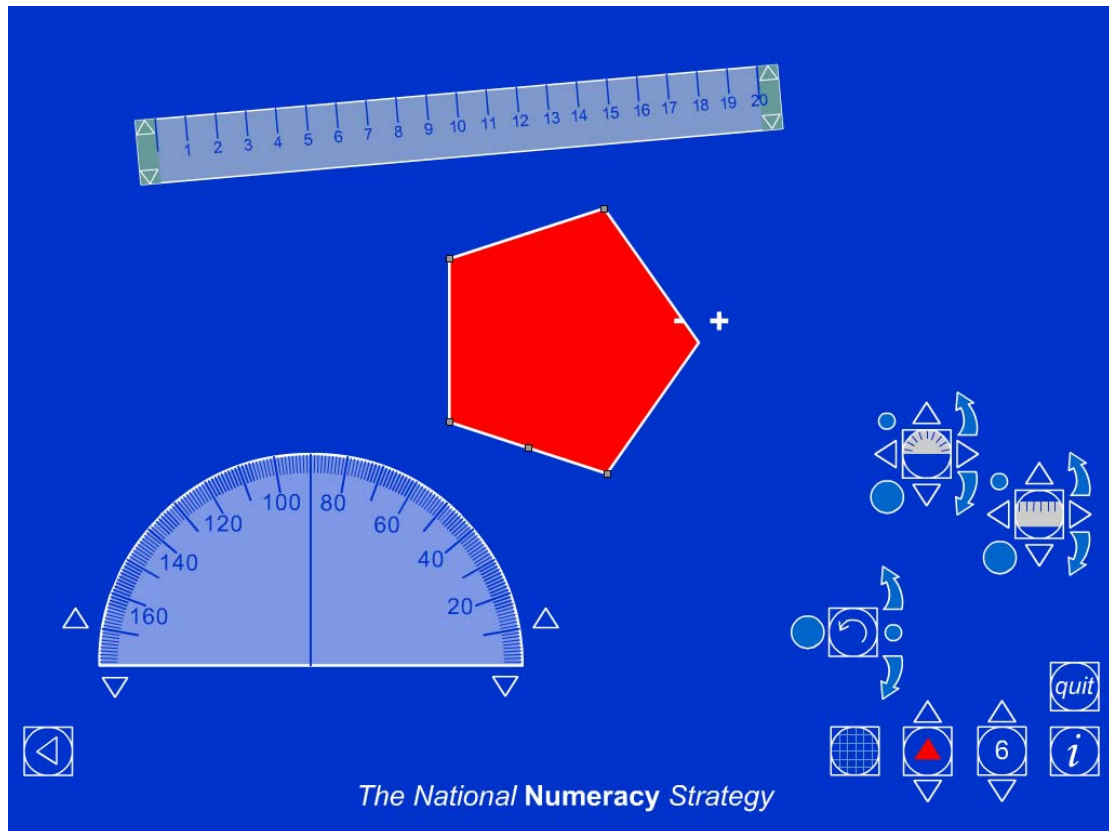


Tutorial 10 Polygon



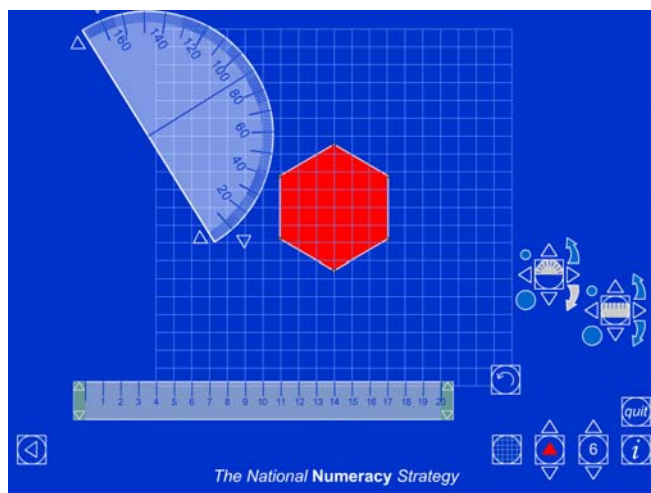
To show the background grid click on the



icon, a second click turns the grid

off.

For this tutorial keep the background grid on.

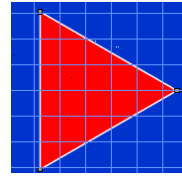


To create a regular polygon, in this case an equilateral triangle, click on the centre



circle on the icon. You can use the arrows to indicate the number of sides (up to ten) you wish the regular polygon to have.

For this tutorial we have selected the preset three sides.

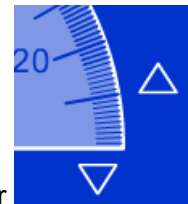


Click on this icon to use the protractor. This icon allows us to move the



protractor to the correct position.

Note that the protractor can be moved and rotated by using the four arrows and the curved arrows on the icon. (The size of the movement and rotation can be altered by clicking on the large or small circle).



Similarly you can use the small arrows adjacent to the protractor

Measure the three angles to confirm that they are 60° and that it is an equilateral triangle.

After measuring the angles click on the centre of the protractor icon to remove it.



Click on the arrows on the icon to increase or decrease the size of this equilateral triangle. Make the triangle larger.

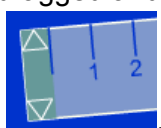
Q: Is this still an equilateral triangle?



Click on this icon to use the ruler to measure the lengths of the sides. The ruler can be dragged and moved using similar icons to that of the protractor, i.e.



and



Measure the sides to check they are the same length.

To remove the ruler click on the centre of the icon.

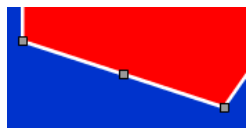
You can rotate the triangle about its centre by clicking on the icon with the curved arrow and, as for the protractor and ruler, using the arrows revealed. To move the position of the triangle, click on it and drag.

Choose a vertex or corner of your triangle. Click on this vertex and a plus and minus



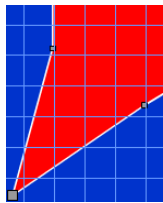
sign will appear

Click on the + sign. This will place an intermediate point between two vertices on



your shape

This point, or any other, can be dragged to any position to change the shape

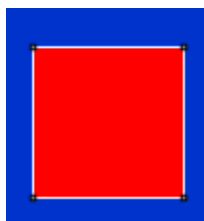


. This will allow you to increase the vertices by 1 and the sides by 1.

The – sign works in the opposite way, a vertex and a side is lost as the two vertices either side of this vertex are joined to form a new side.



Create a square by clicking on the up arrow on the icon and then click on the 4 in the middle of the icon. This will automatically launch a square, clearing away any other shapes on the screen.

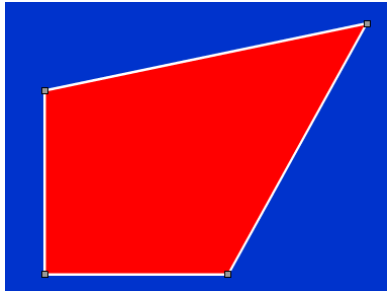


. Increase the size of the square by clicking on the up arrow of the

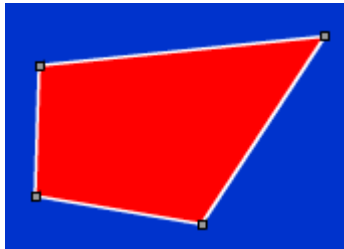


icon. Drag this shape across to the left-hand edge of your screen.

Drag one vertex so that the shape has two obtuse angles, one acute angle and one right angle.



Move another vertex to make three obtuse angles and one acute angle.



Q: Can you make a four-sided shape with four obtuse angles?

Remember that a quadrilateral shape has an angle sum of 360° and obtuse angles by definition are more than 90° .

Explore the different internal angles in different polygons.

Q: Can a hexagon have three reflex angles?

Use the Polygon ITP to explore various sets of shapes, e.g. quadrilaterals, irregular pentagons, and to explore whether shapes meeting specified properties can be made or not.