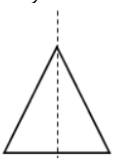


Y8 Maths Knowledge organiser Topic 11: Symmetry and Tessellation

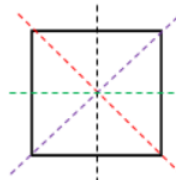
What must I be able to do?	Key vocabulary	
<ul style="list-style-type: none"> <input type="checkbox"/> Identify lines of symmetry in any shape ➤ Sparx M523 <input type="checkbox"/> Identify the order of rotational symmetry in any shape ➤ Sparx M523 <input type="checkbox"/> Create shapes given details of their symmetries <input type="checkbox"/> Investigate and create tessellations 	Line Symmetry A line of symmetry is an imaginary line where you could fold a picture and both halves would be exactly the same, although flipped over.	Rotational Symmetry A shape has rotational symmetry if it looks exactly the same after being rotated. The number of times it matches during one full rotation is called its order of rotational symmetry. Every shape has an order of at least 1.
	Tessellation A pattern of repeated shapes, which fit together closely without gaps or overlapping.	

Line Symmetry

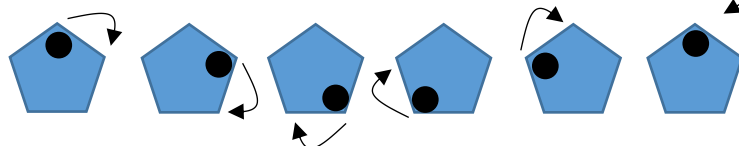
An isosceles triangle has 1 line of symmetry




A square has 4 lines of symmetry



Rotational Symmetry



Through 1 full turn (360°) about its center, a regular pentagon looks the same as its starting position 5 times. It has order of rotation 5.



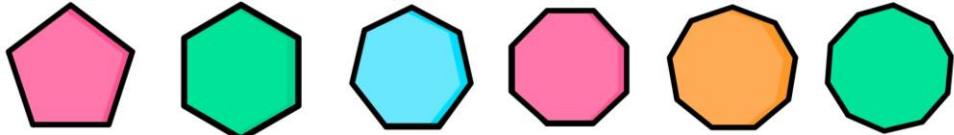
An equilateral triangle has order of rotation 3

A rectangle has order of rotation 2

A square has order of rotation 4

Regular Polygons

A regular polygon has all sides and angles the same size. A square and an equilateral triangle are examples of regular shapes.



Name	Pentagon	Hexagon	Heptagon	Octagon	Nonagon	Decagon
Number of sides	5	6	7	8	9	10
Lines of symmetry	5	6	7	8	9	10
Order of rotational symmetry	5	6	7	8	9	10

If a shape is regular then the number of lines of symmetry **and** the order of rotational symmetry will be the same as the number of sides. If the shape is not regular then they will all be different.

Tessellation

Not all shapes tessellate. The only regular polygons which tessellate on their own are squares, equilateral triangles and hexagons. Some shapes can be combined to create other tessellation patterns but the key is that there are no gaps left.

