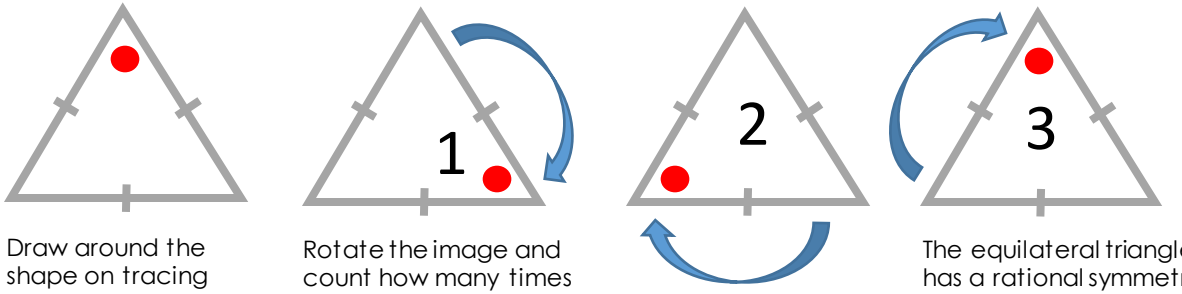
Y7 Mastery: Unit 8 – Classifying 2D shapes

Rotational Symmetry

If a shape has rotational symmetry of order 1, then we say that it has **no rotational symmetry**

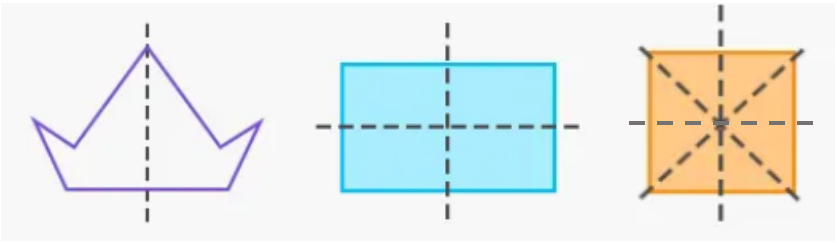


Draw around the shape on tracing paper. Do not start counting when the shape is in the original position.

Rotate the image and count how many times the image fits exactly onto the object in one complete rotation.

The equilateral triangle has a rational symmetry of **order 3**. This is because it fits on itself 3 times in one complete rotation.

Reflective Symmetry



This heptagon has **1 line of symmetry.**

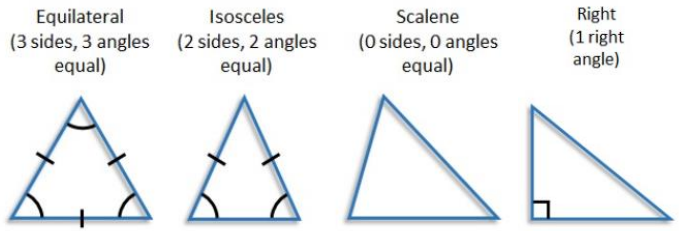
A rectangle has **2 lines of symmetry.**

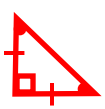
A square has **4 lines of symmetry.**

- Lines of symmetry can be vertical, horizontal or diagonal.
- The line of symmetry is also called the **mirror line** or the axis of symmetry.
- A circle has infinite lines of symmetry.
- The lines of symmetry on a shape intersect (cross) at a point.

Make sure that you find **all** the lines of symmetry to answer a question.

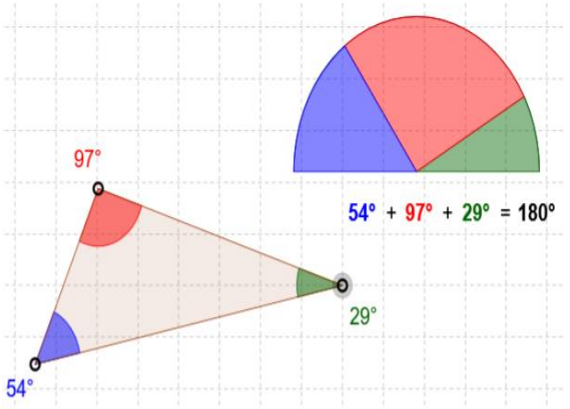
Properties of Triangles



	Scalene	Isosceles	Equilateral
Has a right angle			Impossible as all angles are 60°
No right angle			

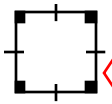
Keyword/Skill	Definition/Tips
Rotational Symmetry	Looks at how many times an image looks exactly the same in a complete turn.
Order	The number of times an object fits over its own image in one complete turn
Reflective symmetry	The reflected shape will be exactly the same as the original, the same distance from the mirror line and the same size.
Line of symmetry	The line that cuts a shape in half exactly.
Scalene triangle	Triangle where the three sides are different lengths and the angles are all different sizes.
Equilateral triangle	Triangle where all three sides are equal length and all angles are equal.
Isosceles triangle	Triangle with two sides of equal length and two equal angles.
Right-angle triangle	Triangle where one of its angles is a right-angle.
Angle	A measure of turn with the units being degrees

Angles in a triangle sum to 180

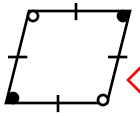


Y7 Mastery: Unit 8 – Classifying 2D shapes

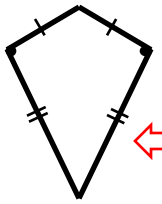
Comparing Quadrilaterals



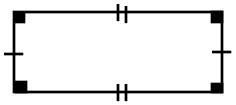
Square
- → Equal sides
- → 2 pairs of Parallel sides
- → 4 right-angles
- → 4 lines of symmetry



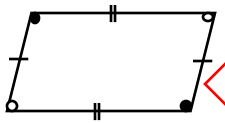
Rhombus
- → Equal length sides
- → 2 pairs of parallel
- → Opposite angles equal
- → 2 lines of symmetry



Kite
- → 2 pairs of equal length adjacent sides
- → One pair of equal angles
- → One line of symmetry

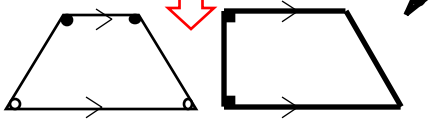


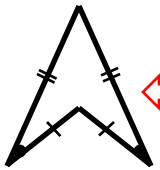
Rectangle
- → 2 pairs of equal length sides
- → 2 pairs of Parallel sides
- → 4 right-angles
- → 2 lines of symmetry



Parallelogram
- → 2 pairs of equal sides
- → Opposite sides parallel
- → Opposite angles equal

Trapezium
- → 1 pair of parallel sides



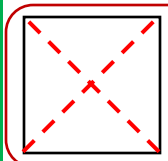


Delta (Arrowhead)
- → Contains a reflex angle
- → Adjacent sides are equal length
- → One line of symmetry

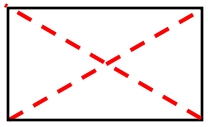
Diagonals in Quadrilaterals

Diagonals information is in red

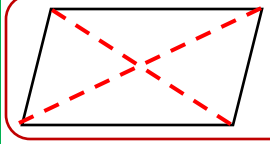
Order of rotational symmetry is in blue



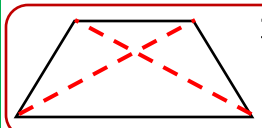
Square
Bisect
Perpendicular
Order 4



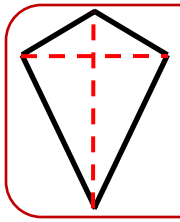
Rectangle
Bisect
NOT perpendicular
Order 2



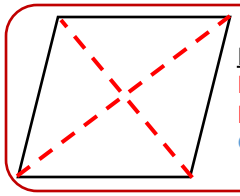
Parallelogram
Bisect
NOT perpendicular
Order 2



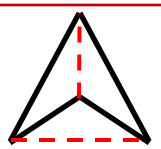
Trapezium
DO NOT Bisect
NOT perpendicular
No rotational symmetry



Kite
DO NOT Bisect
Perpendicular
No rotational symmetry

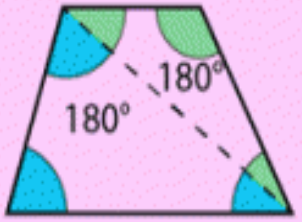


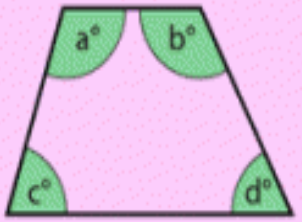
Rhombus
Bisect
Perpendicular
Order 2



Arrowhead (Delta)
DO NOT intersect
No rotational symmetry

Angles in a Quadrilateral





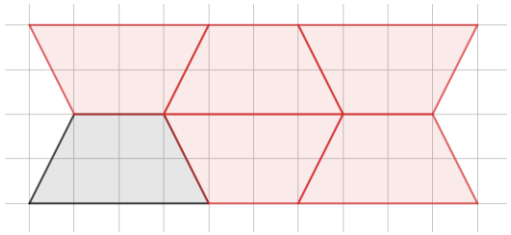
$a° + b° + c° + d° = 360$

Keyword/Skill	Definition/Tips
Quadrilateral	Any 2-dimensional four sided shape
Diagonal	Created by joining opposite corner with a line (in a quadrilateral)
Vertex	Corner
Parallel	Lines side by side that are always the same distance apart and never meet
Perpendicular	Meet at a right-angle
Adjacent	Next to
Intersect	Cross – usually referring to lines
Bisect	Cut exactly in half
Opposite	Situated on the other side
Reflex angle	Bigger than 180° and smaller than 360°
Congruent	Exactly the same size and shape
Pair	A set of two

Tessellation

A shape tessellates if it fits together without any gaps. (Like tiling)

Isosceles Trapezium



Other topic/units this could appear in:
Angles in Polygons, Transformations, Solving problems involving angles,