

Year 4 – Maths – Geometry: Properties of Shape

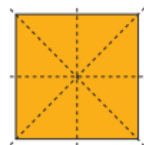
Key vocabulary

angle
right angle
acute
obtuse
horizontal
vertical
diagonal
parallel
perpendicular
two-dimensional
polygon
line of symmetry
reflection
mirror line
isosceles
equilateral
scalene
quadrilateral
rhombus
parallelogram
trapezium

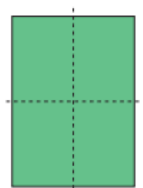
Lines of symmetry and symmetric figures

Lines of symmetry may be horizontal, vertical or diagonal. Some 2D shapes will have no lines of symmetry and some 2D shapes will have multiple lines of symmetry.

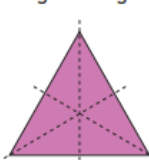
A square has four lines of symmetry.



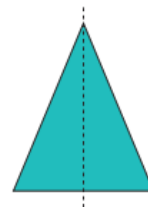
A rectangle has two lines of symmetry.



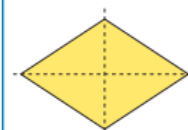
An equilateral triangle has three lines of symmetry.



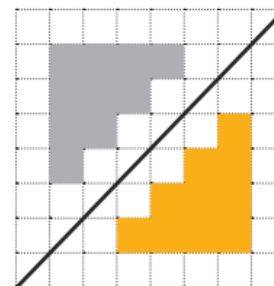
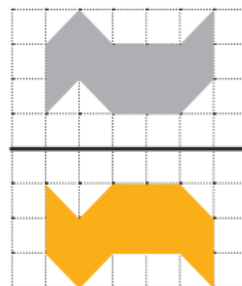
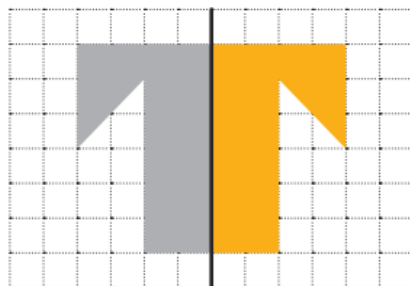
An isosceles triangle has one line of symmetry.



A rhombus has two lines of symmetry.



Patterns and shapes can be reflected in a mirror line. Mirror lines can be vertical, horizontal or diagonal.



Key questions

Can you identify the lines of symmetry?

Can you sort the angles into acute, obtuse and right angles?

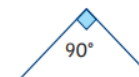
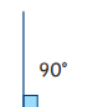
Can you describe the properties of each type of triangle?

Angles

An angle is created when two straight lines meet at a point or intersect.

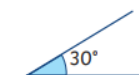
Right angle

The intersection of perpendicular lines creates a right angle.



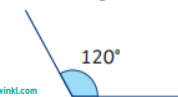
Acute angle

Any angle measuring more than 0 degrees and less than 90 degrees is acute.



Obtuse angle

Any angle measuring more than 90 degrees but less than 180 degrees is obtuse.

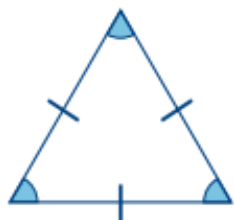


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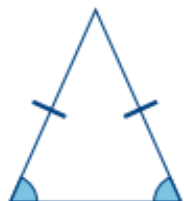
Triangles and quadrilaterals



Triangles have 3 sides and 3 vertices. The total of the angles in a triangle is 180° .



An equilateral triangle is a regular polygon. It has sides of equal length and each angle is 60° .



An isosceles triangle has two sides of equal length and two angles of equal size.



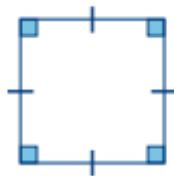
A right-angled triangle always has one 90° angle.

It can be isosceles or scalene.

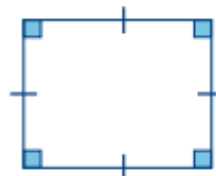


A scalene triangle has no equal sides or angles.

A quadrilateral is a polygon with four sides.



A square has four sides of equal length and four right angles (90°). A square is also a rectangle, a rhombus and a parallelogram.



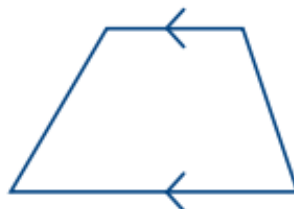
A rectangle has two pairs of parallel, equal sides and four right angles. A rectangle is also a parallelogram.



A parallelogram has two pairs of parallel, equal sides and opposite equal angles.



A rhombus has four sides of equal length and opposite equal angles. A rhombus is also a parallelogram.



A trapezium only has one pair of opposite parallel sides.



A kite has two pairs of adjacent equal sides and one pair of opposite equal angles.

Links to other learning

Year 3 - Draw 2-D shapes and make 3-D shapes using modelling materials; Recognise 3-D shapes in different orientations and describe them; Recognise angles as a property of shape or a description of a turn; Identify right angles, recognise that 2 right angles make a half-turn, 3 make three-quarters of a turn and 4 a complete turn; Identify whether angles are greater than or less than a right angle; Identify horizontal and vertical lines and pairs of perpendicular and parallel lines.

Year 5 - Identify 3-D shapes, including cubes and other cuboids, from 2-D representations; Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles; Draw given angles, and measure them in degrees ($^\circ$); Identify angles at a point and 1 whole turn (total 360°), angles at a point on a straight line and half a turn (total 180°), and other multiples of 90° ; Use the properties of rectangles to deduce related facts and find missing lengths and angles; Distinguish between regular and irregular polygons based on reasoning about equal sides and angles.