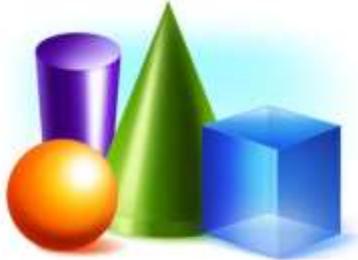
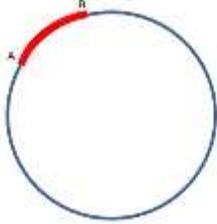
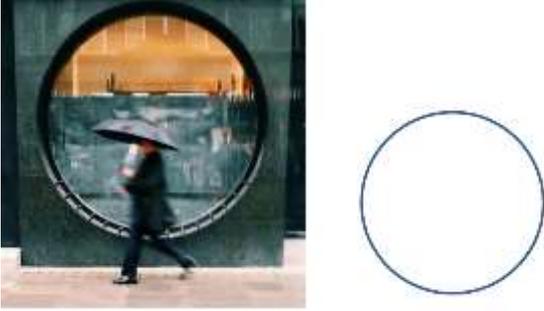
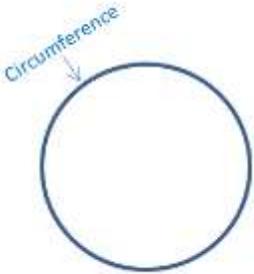


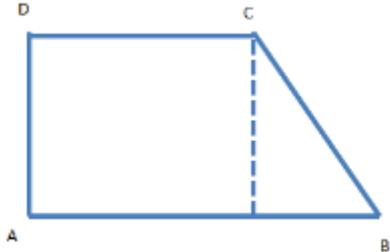
Properties of 2D shapes and 3D objects

| Terms | Illustrations | Definitions |
|-----------------------------------|--|---|
| 2 Dimensional shapes (2D) |  | <p>2D shapes have only 2 dimensions and are flat e.g. square, rectangle, triangle, circle, pentagon, hexagon, heptagon, octagon, nonagon, decagon, parallelogram, rhombus, kite, quadrilateral, trapezium.</p> |
| 3 Dimensional objects (3D) |  | <p>3D objects have three dimensions. The flat surfaces (faces) of many 3D objects are made up of 2D shapes e.g. cube, cuboid, sphere, cylinder, prism.</p> <p>3D objects can be stacked or rolled and items can be put inside some 3D objects. They can also be combined to make models.</p> |

Properties of 2D shapes and 3D objects

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| Arc |  | Part of the circumference of a circle or part of any curve. |
| Circle |  | A 2-dimensional round shape with no corners or straight edges. Made by drawing a curve that is always the same distance from a centre. Circle calculations are interrelated. Given any one of radius, diameter, circumference or area all the others can be calculated. |
| Circumference |  | The distance all the way around a circle . Circumference can be measured using the formula; $2 \times \pi \times r$ or $\pi \times d$ |

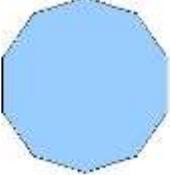
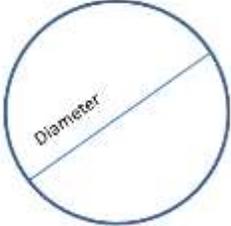
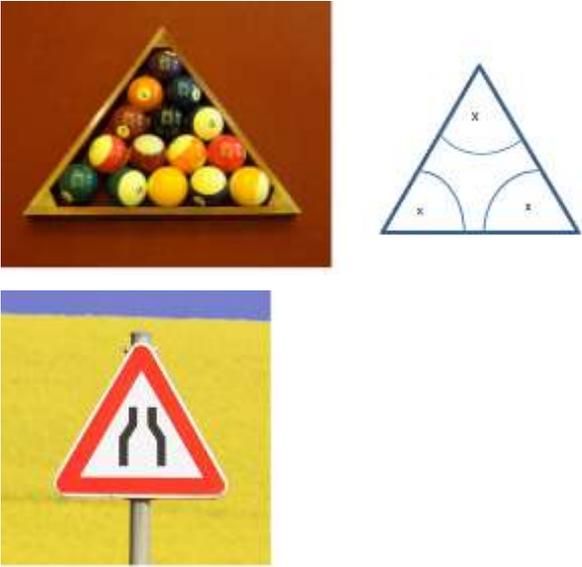
Properties of 2D shapes and 3D objects

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| <p>Composite shape or composite figure</p> |  | <p>A figure (or shape) that can be divided into more than one of the basic figures/shapes. For example, figure ABCD is a composite figure as it consists of two basic figures – a rectangle and triangle as shown here.</p> |
| <p>Congruent triangles</p> | | <p>Pairs or groups of triangles are congruent when they have exactly the same three sides and exactly the same three angles. The equal sides and angles may not be in the same position (if there is a turn or a flip).</p> |
| <p>Cross section of a shape</p> | | <p>A cross section is the shape made by cutting straight across an object.</p> |
| <p>Cube</p> |  | <p>A 3D object made up of 6 square faces, 8 vertices and 12 edges. All edges and faces are equal.</p> <p>It is also a prism because it has the same cross-section along a length. It is a square prism. All angles are 90°.</p> |

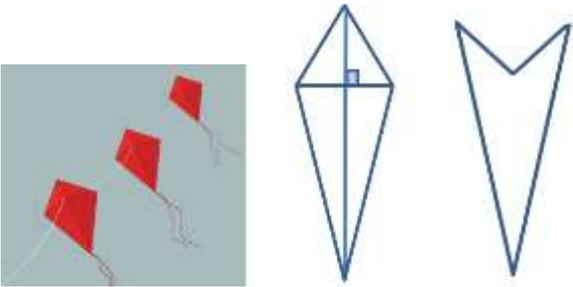
Properties of 2D shapes and 3D objects

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| Cuboid |  | <p>A 3D object made up of 6 rectangular faces or a mix of 4 rectangular faces and 2 square faces, 8 vertices and 12 edges.</p> <p>It is also a prism because it has the same cross-section along a length. It is a rectangular prism. All angles are 90°.</p> |
| Cylinder |   | <p>A 3D object with a curved face joined by two circular faces at each end. The curved face is made of a rectangle.</p> <p>It is also a prism because it has the same cross-section along a length.</p> |

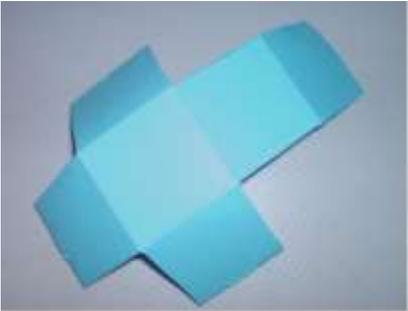
Properties of 2D shapes and 3D objects

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| Decagon |  | Any 2D shape with 10 sides. |
| Diameter |  | A straight line which passes through the centre of a circle. |
| Equilateral triangle |  | All sides are equal and all angles are equal. Each angle = 60° |

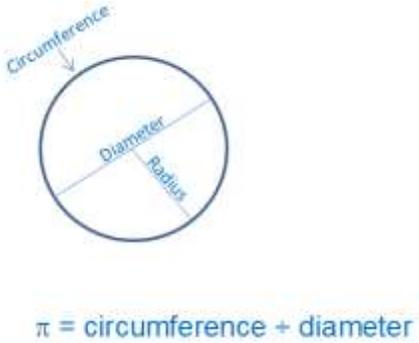
Properties of 2D shapes and 3D objects

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| Heptagon |  | Any 2D shape with 7 sides. |
| Hexagon |  | Any 2D shape with 6 sides. |
| Isosceles triangle |  | Has two equal sides and two opposite equal angles. |
| Kite |  | Has two pairs of equal sides next to each other. Has no parallel lines. One pair of diagonally opposite angles is equal. Only one diagonal is bisected by the other. The diagonals cross at 90° . |

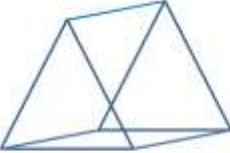
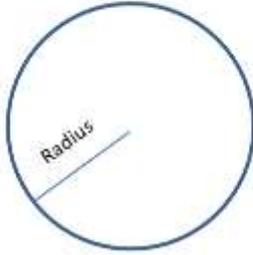
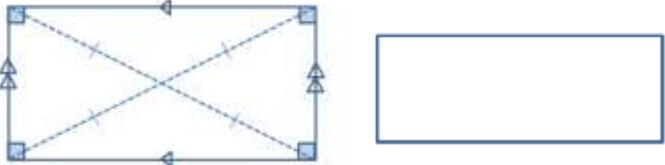
Properties of 2D shapes and 3D objects

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| Nets |  | The 2D pattern that creates a 3D object when folded together. This is a net of a cube. |
| Nonagon |  | Any 2D shape with 9 sides. |
| Octagon |  | Any 2D shape with 8 sides. |

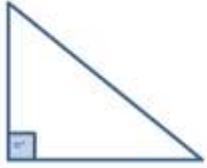
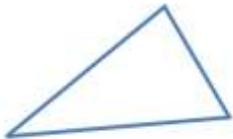
Properties of 2D shapes and 3D objects

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| <p>Parallelogram</p> |  | <p>Has two pairs of opposite equal sides. Opposite sides are parallel to each other and opposite angles are equal.</p> <p>The diagonals bisect each other.</p> |
| <p>Pentagon</p> |  | <p>Any 2D shape with 5 sides.</p> |
| <p>Perimeter</p> | | <p>The distance all the way around the edge of a 2D shape.</p> <p>To find the perimeter of a shape, add together the lengths of all the sides.</p> |
| <p>Pi (3.14...)</p> |  <p>$\pi = \text{circumference} \div \text{diameter}$</p> | <p>The ratio of a circle's circumference to its diameter.</p> <p>Equal to 3.14159265358979323846... (the digits go on infinitely without repeating). Pi is often rounded to 2 decimal places to 3.14.</p> |

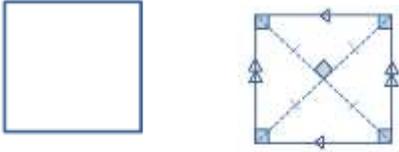
Properties of 2D shapes and 3D objects

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| <p>Polygons</p> | | <p>Shapes with many straight sides. There are regular and irregular polygons. Regular polygons have equal angles and sides of equal length. Irregular polygons have sides of different lengths.</p> |
| <p>Polyhedron</p> | | <p>Any 3D object with flat faces.</p> |
| <p>Prism</p> |  | <p>Any 3D object with two identical ends and faces where the cross section is the same all along its length. In a triangular prism, there are two triangular faces and three rectangular faces. The face of any cross section of this shape when cut would always give you a triangle which gives it its name.</p> |
| <p>Quadrilateral</p> | | <p>Any 2D shape with four sides.</p> |
| <p>Radius</p> |  | <p>The distance from the centre of a circle to any point on its circumference.</p> |
| <p>Rectangle</p> |  | <p>Any 2D shape with 4 sides and 4 corners. The opposite sides are of equal length and angles are equal (90°).</p> |

Properties of 2D shapes and 3D objects

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|--|---|--|
| <p>Representation of 2D shapes and 3D objects</p> |  | <p>Using sketches, isometric paper (graph paper) or computer packages to draw 3D objects on a 2D plane.</p> |
| <p>Rhombus</p> |  | <p>Has four equal sides. Opposite sides are parallel to each other and opposite angles are equal.</p> <p>Diagonally opposite angles are equal. The diagonals bisect each other at 90°.</p> <p style="text-align: right;">©BBC Bitesize ©BBC Bitesize</p> |
| <p>Right angled triangle</p> |  | <p>One of its angles is a right angle (90°)</p> |
| <p>Scalene Triangle</p> |  | <p>A triangle with no two sides equal and no two angles equal.</p> |

Properties of 2D shapes and 3D objects

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|---|--|--|
| <p>Sphere</p> |  | <p>A 3D object shaped like a ball with no straight edges or vertices.</p> <p>Every point on the surface is the same distance from the centre.</p> |
| <p>Square</p> |  | <p>A 2D shape with 4 equal sides and 4 corners.</p> <p>All sides are of equal length. All angles are equal (90°). Opposite sides are parallel.</p> <p>The diagonals of a square bisect each other at 90°. The diagonals are equal in length.</p> |
| <p>Trapezium</p> |  | <p>A 2D shape which has one pair of parallel sides of different lengths and a pair of opposite sides of equal length.</p> |
| <p>Triangle</p> | | <p>A 2D shape with 3 sides and 3 corners.</p> <p>There are different types of triangles <i>e.g. equilateral, isosceles, scalene, right angled.</i></p> |
| <p>Vertex or vertices (plural)</p> | | <p>A 'corner' or corners on a 3D object.</p> <p>A point(s) where two or more straight lines meet.</p> |