Shape, space, line and direction - Maths Vocabulary

Unsure of what that word means in your homework? Well you may find it here!

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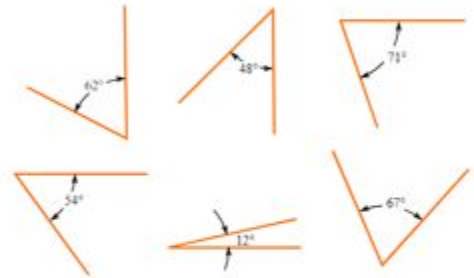
Acute

Angles between 0 and 90 degrees

All the angles below are acute angles:



Acute

Also: the letter "A" has an acute angle.

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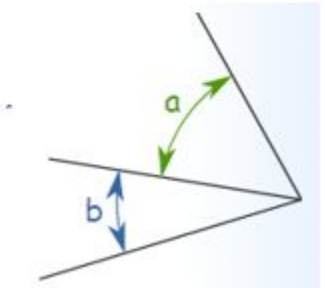
Adjacent

Adjoining (as used to describe lines and angles).

Lying next to each other.

Here a and b are adjacent angles (which must also share a corner point and not overlap):



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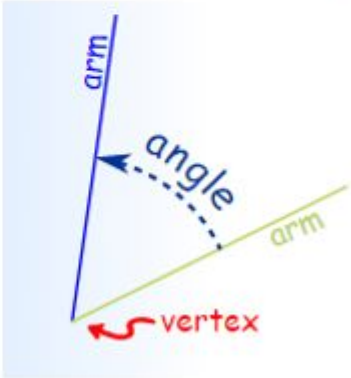
Angle

The number of degrees rotated around a point (the vertex).



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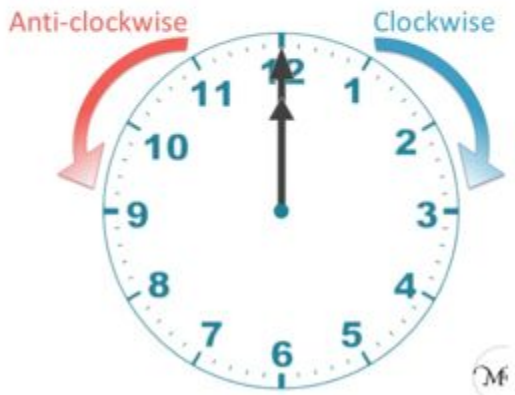
Anticlockwise

Moving in the opposite direction to the hands on a clock.

Also called counter clockwise (US English).

Angles are usually measured anticlockwise.



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Area

The amount of space within a perimeter

(expressed in square units cm^2).

1	2	3	4	5	6	7	8	9

1	2	3
4	5	6
7	8	9

1	2
3	4
5	6
7	8	9

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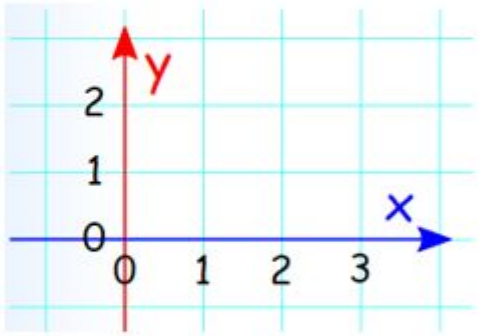
Axis

(Graph)

A reference line drawn on a graph (you can measure from it to find values).



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Axis of symmetry

A line dividing a shape into two symmetrical parts.

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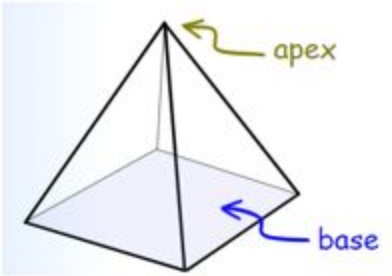
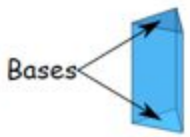
Base

The line or face on which a shape is standing.





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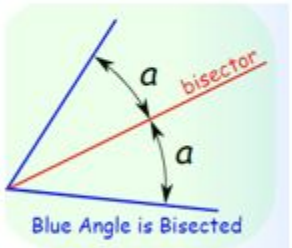
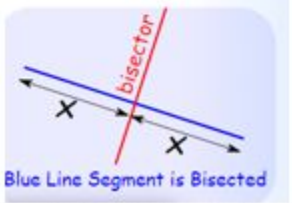
Bisect

To divide into two equal parts





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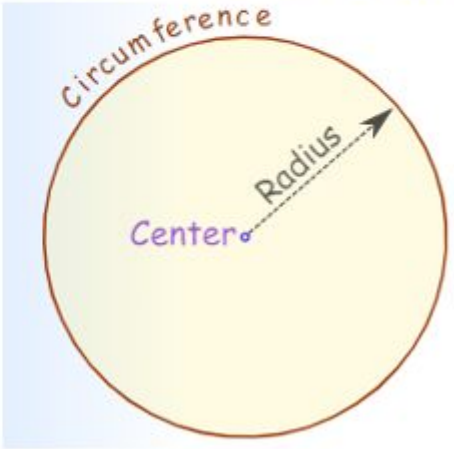
Circle

A 2-dimensional shape made by drawing a curve that is always the same distance from a centre.



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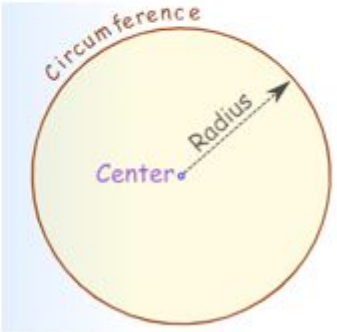
Circumference	The distance around a circle (its perimeter).



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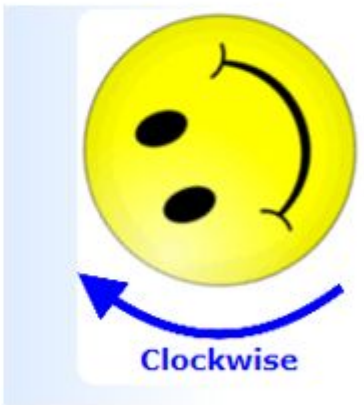
Clockwise

Moving in the direction of the hands on a clock.

(The opposite direction is called Anticlockwise.)



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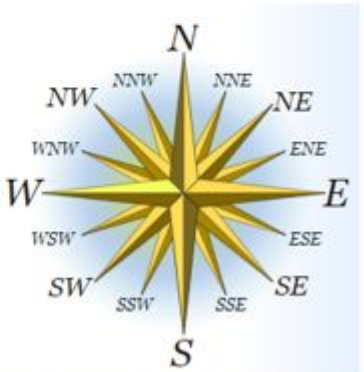
Compass Points

The directions on the magnetic compass.

The 4 main points are North, South, East and West (going clockwise they are NESW).

Halfway between each of these is North-East, South-East, South-West and North-West.



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Cone

A solid (3-dimensional) object that has a circular base joined to a point by a curved side.

The point is called a vertex.

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Congruent

Congruent shapes are the same shape and size (equal).

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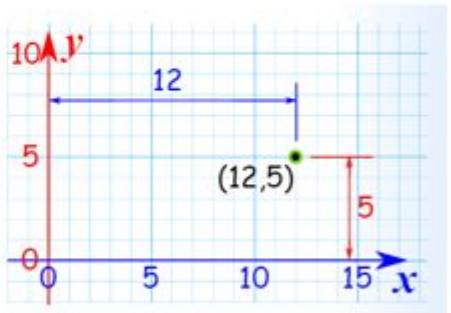
Coordinates

Numbers used to locate a point on a grid.



(along the corridor and up the stairs)

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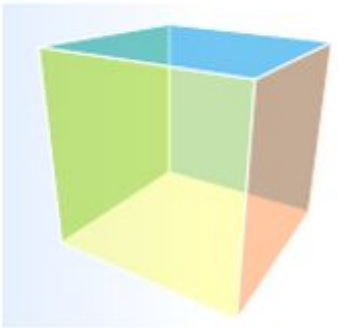
Cube

A box-shaped solid object that has six identical square faces.



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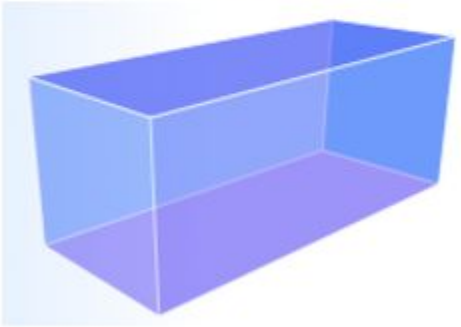
Cuboid

A box-shaped solid object.

- It has six flat sides
- All angles are right angles
- All of its faces are rectangles



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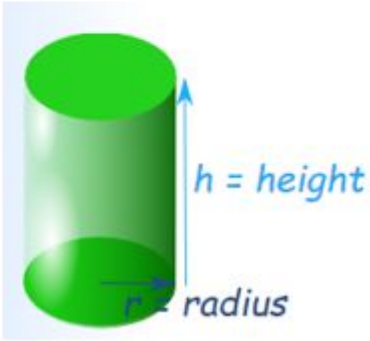
Cylinder

A solid object with:

- two identical flat ends that are circular or elliptical
- and one curved side.

It has the same cross-section from one end to the other.



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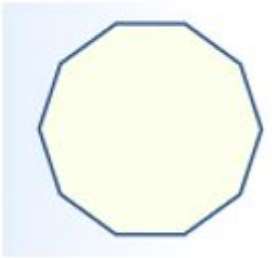
Decagon

A 10-sided polygon (a flat shape with straight sides)



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Decahedron

A solid shape with ten flat faces.

It is a polyhedron.

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Decrease Decreasing	Make something smaller (in size or quantity).

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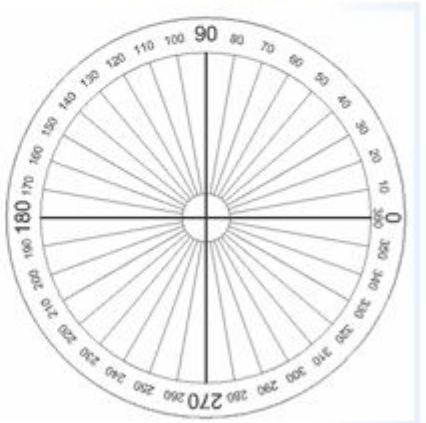
Degree

(Angles)

A measure for angles. There are 360 degrees in a full rotation.

The symbol for degrees is °

Example: 90 degrees (90°) is a right angle.



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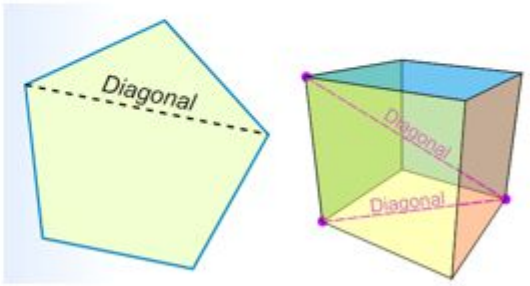
Diagonal

A straight line connecting two non-adjacent vertices (corners) of a polygon



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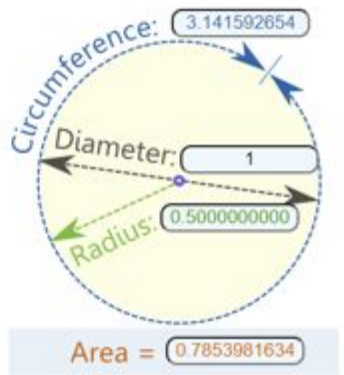
Diameter

The distance from one point on a circle **through the centre** to another point on the circle.

It is also the longest distance across the circle.

It is twice the radius.



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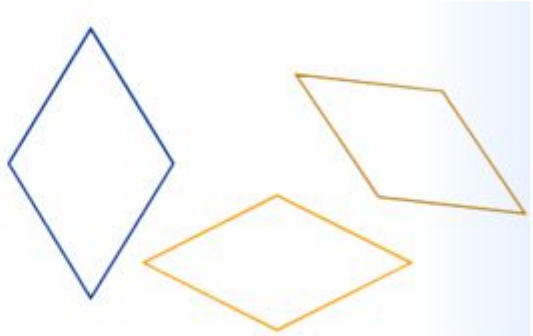
Diamond

Another name for a rhombus



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Dimensions	The measurements of a shape (i.e. length, width, height). A line has one dimension (1D), a square has two dimensions (2D), and a cube has three dimensions (3D).

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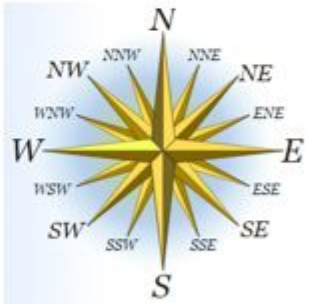
Direction

Where something is pointing

Examples: North South East and West are all directions.

Up, Down, Left and Right are also directions.



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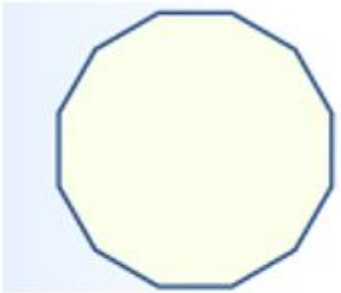
Dodecagon

A twelve sided polygon. (a flat shape with straight sides)



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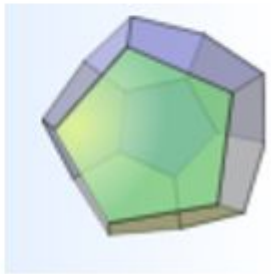
Dodecahedron

A polyhedron (a flat-sided solid object) with 12 Faces.

When it is "regular" (side lengths are equal and angles are equal) it is one of the Platonic Solids.



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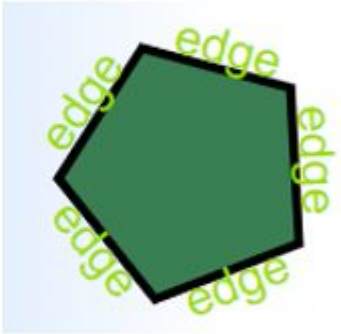
Edge

(2D)

For a **polygon**: A line segment on the boundary joining one vertex (corner point) to another.



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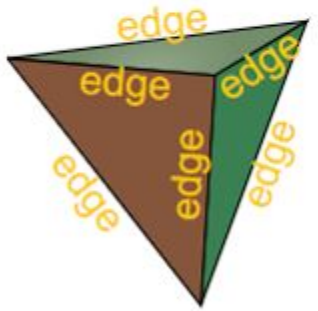
Edge

(3D)

The intersection of two faces of a three-dimensional object.



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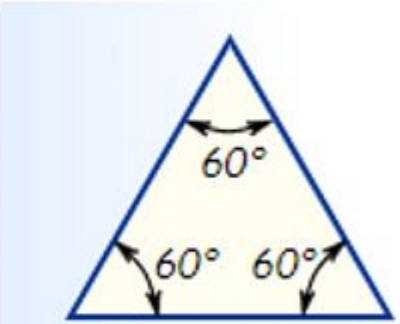
Equilateral triangle

A triangle with congruent (equal) sides and angles.



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Exterior	Outside.

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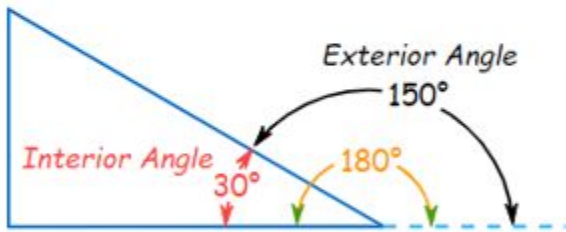
Exterior Angle

The angle between any side of a shape, and a line extended from the next side



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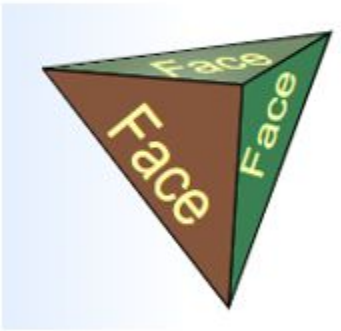
Face

A plane surface of a three-dimensional object.



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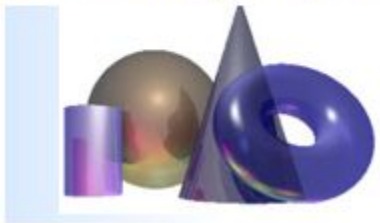
Geometry

The branch of mathematics that deals with points, lines, shapes and space.

- Plane Geometry is about flat shapes like lines, circles and triangles.

- Solid Geometry is about solid (3-dimensional) shapes like



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Grid

A set of lines used to help us accurately draw graphs etc.

The most common grid has uniformly spaced horizontal and vertical lines.

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Hectagon	A 100-sided polygon (a flat shape with straight sides). 

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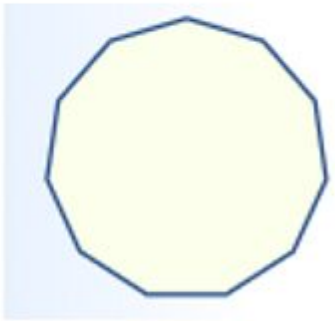
Hendecagon

An 11-sided polygon (a flat shape with straight sides).



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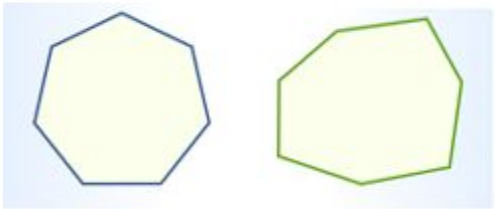
Heptagon

A two dimensional shape with seven sides and seven angles.



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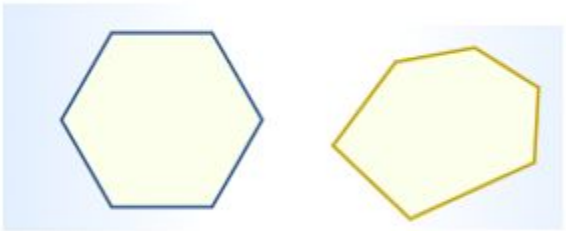
Hexagon

A polygon with six sides.



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Horizontal

Going side-to-side, like the horizon.

Parallel to the horizon.

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Interior	Inside.

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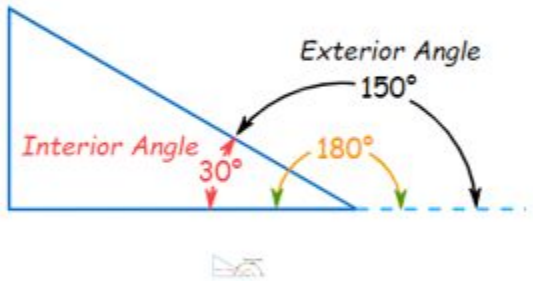
Interior Angle

An angle inside a shape, between two joined sides.



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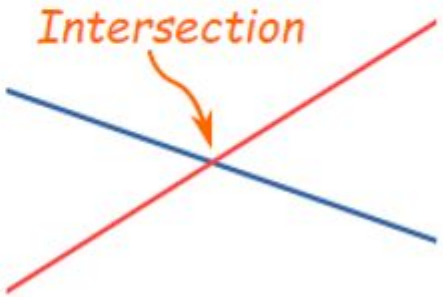
Intersection

The point or line where two lines or two faces meet.



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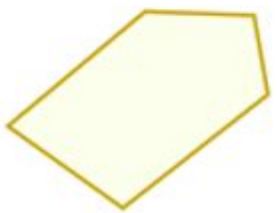
Irregular Polygon

A polygon that does not have all sides equal and all angles equal.

(A polygon is "regular" only when all angles are equal and all sides are equal, otherwise it is irregular.)



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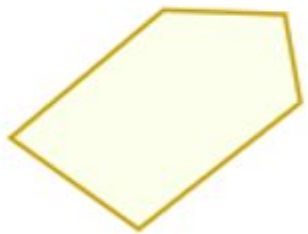
Irregular shapes

Shapes, which do not have all congruent sides and all congruent angles.



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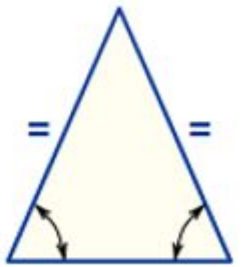
Isosceles triangle

A triangle which has two equal sides of equal length.



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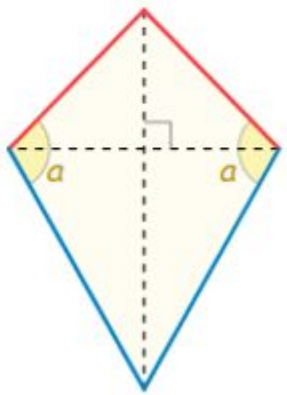
Kite

A quadrilateral that has two adjacent pairs of sides that are equal in length, and at least one pair of opposite angles are equal.



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Line

In **Geometry** a line:

- is straight (no bends),
- has no thickness, and
- extends in both directions without end (infinitely).

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Line of symmetry

Another name for reflection symmetry. One half is the reflection of the other half.

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Mirror Image

An image which is like a reflection in a mirror.

Everything is the same, except reversed.

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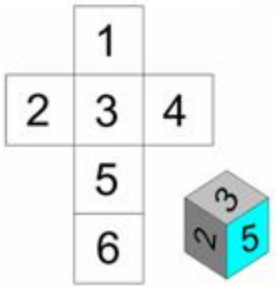
Net

Geometry: A pattern that you can cut and fold to make a model of a solid shape.



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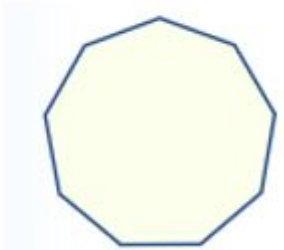
Nonagon

A 9-sided polygon (a flat shape with straight sides).



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Oblong

A shape with two pairs of straight, unequal sides and four right angles. Also known as a rectangle.

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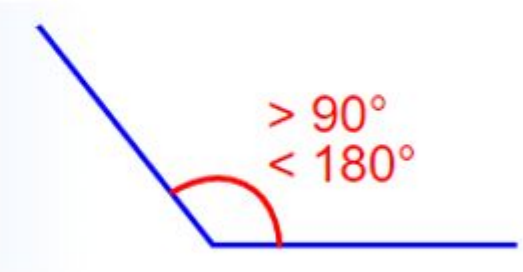
Obtuse angle

An angle between 90 and 180 degrees.



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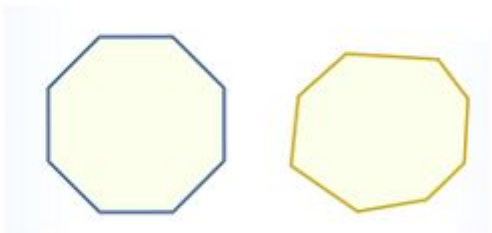
Octagon

A polygon with eight sides and eight angles.



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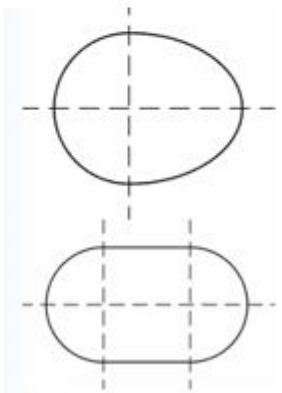
Oval

An oval or ovoid is any curve that looks like an egg or an ellipse.



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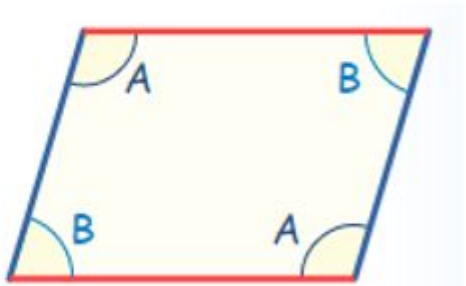
Parallelogram

A four-sided polygon with opposite sides equal and parallel and the opposite angles are equal in size.



Ocean Academy Poole

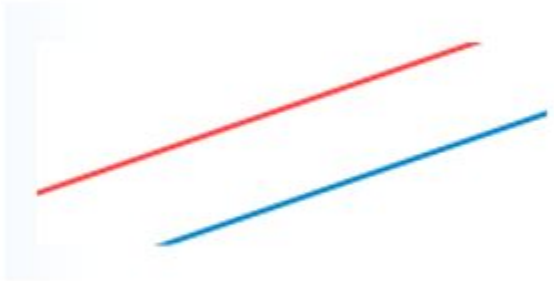
Pattern

Things arranged following a rule or rules.

Ocean Academy Poole

Parallel lines

Lines with no common points and always the same distance apart.



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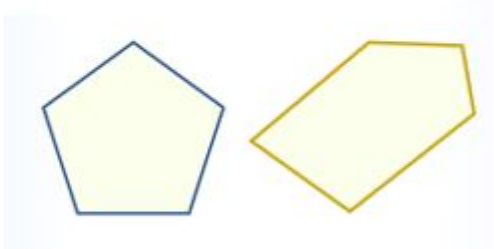
Pentagon

A 5-sided polygon (a flat shape with straight sides)



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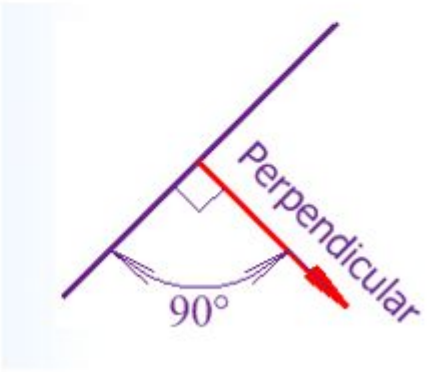
Perpendicular

line

A line at right angles to another line or plane (90^0)



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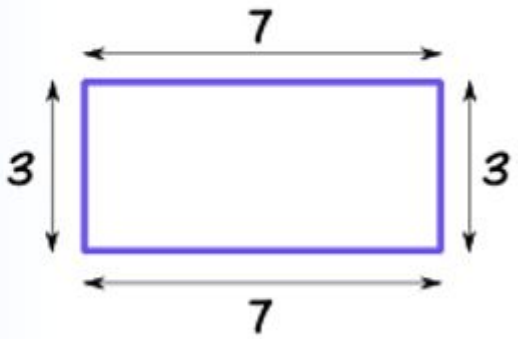
Perimeter

The length of the distance around the boundary of a shape.



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Plain Geometry

Is about flat shapes like lines, circles and triangles ... shapes that can be drawn on a piece of paper. 2D shapes.

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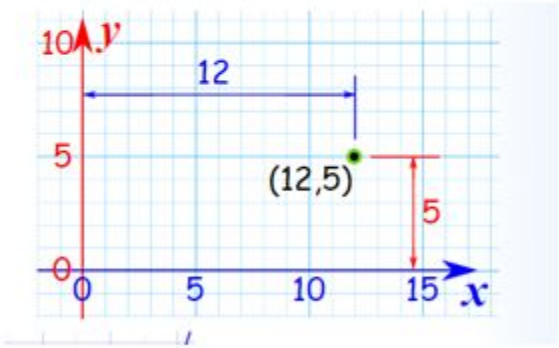
Plot

To draw on a graph or a map



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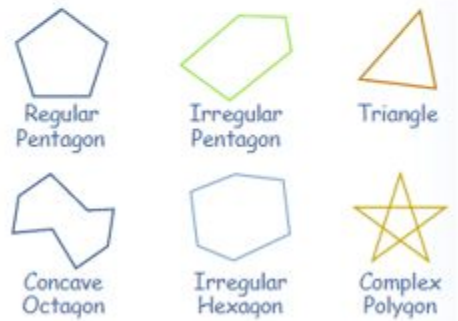
Polygon

A plain shape (two-dimensional) with straight sides.

(Note: a circle is not a polygon because it has a curved side)



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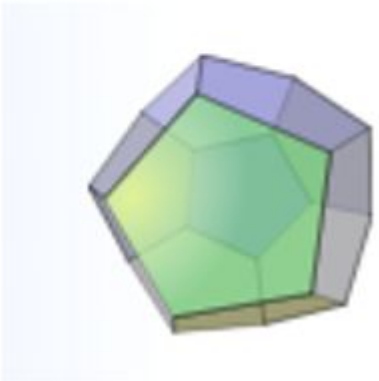
Polyhedron

A three dimensional shape with plane faces.



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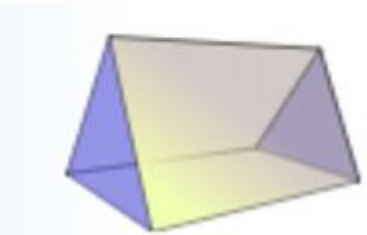
Prism

A solid object with two identical ends and flat sides.



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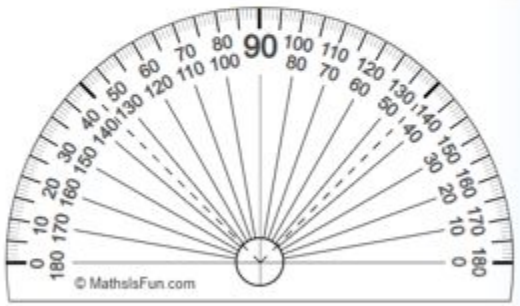
Protractor

An instrument used in measuring or drawing angles.



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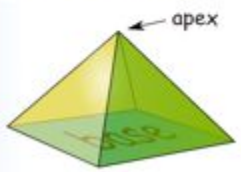
Pyramid

A solid object where:

- The sides are triangles which meet at the top (the apex).
- The base is a polygon (a flat shape with straight sides)

This is a square pyramid, but there are also triangular pyramids, pentagonal pyramids, and so on.



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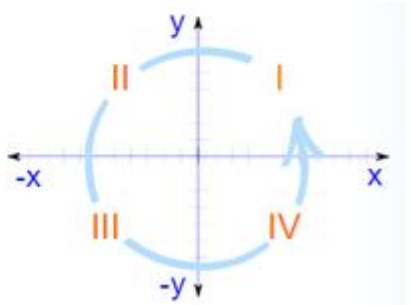
Quadrant

A quarter of the area of a circle which also contains a right angle.



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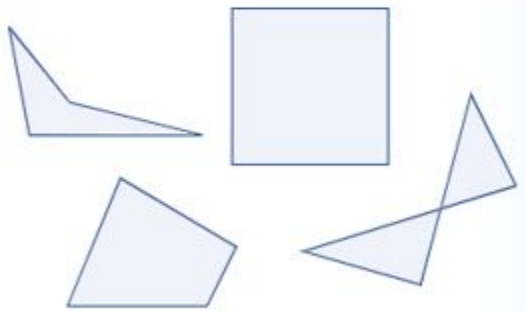
Quadrilateral

A flat shape with four straight sides.



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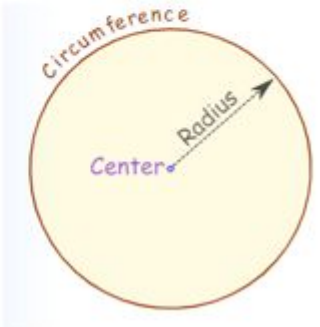
Radius

The distance from the centre to the circumference of a circle



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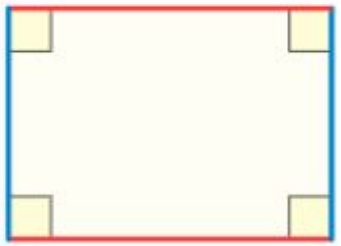
Rectangle

A quadrilateral with opposite sides equal and parallel and containing four right angles.



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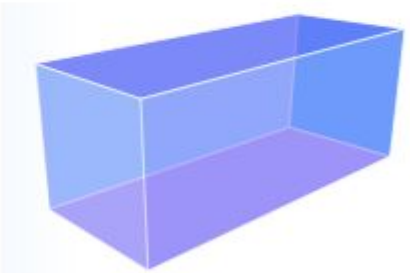
Rectangular Prism

A solid (3-dimensional) object which has six faces that are rectangles.



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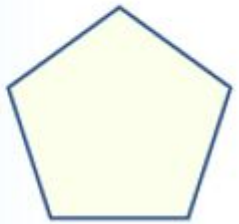
Regular Polygon

A polygon is **regular** when all angles are equal and all sides are equal (otherwise it is "irregular").



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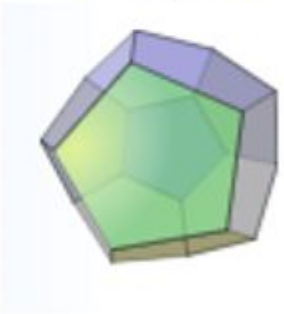
Regular Polyhedron

A polyhedron whose faces are identical regular polygons. All side lengths are equal, and all angles are equal.



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Reflection Symmetry

A type of symmetry where one half is the reflection of the other half.

You could fold the image and have both halves match exactly.

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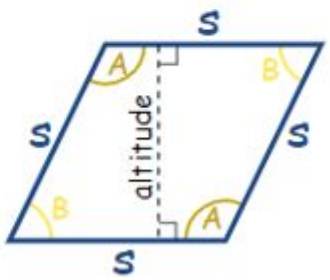
Rhombus

A parallelogram with congruent sides. Opposite sides are parallel and opposite sides are equal in size.



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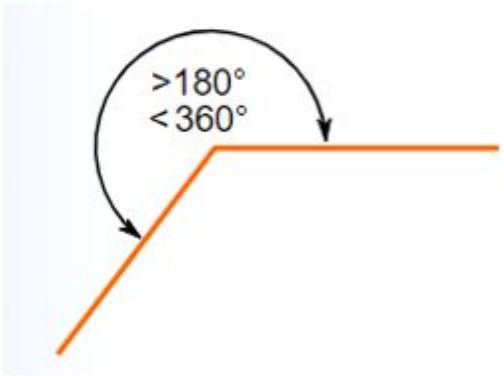
Reflex angle

An angle greater than 180 degrees.



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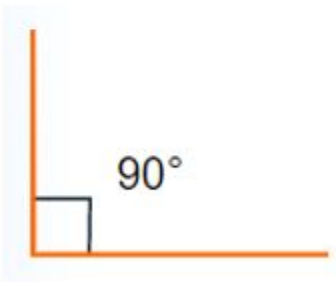
Right Angle

An angle which is equal to 90°, one quarter of a full revolution.

Also equal to $\pi/2$ radians.



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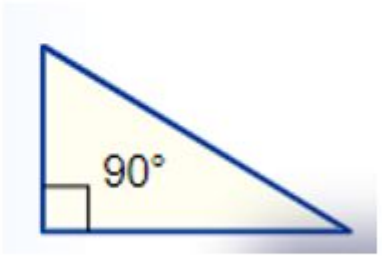
Right-angled Triangle

A triangle that has a right angle (90°)



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Rotational symmetry

A shape is said to have rotational symmetry if it looks the same in different positions when rotated about its centre.

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Scalene triangle

A triangle that has three sides of different length and no equal angles.

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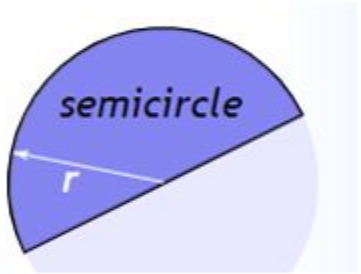
Semi-

A prefix meaning **half**



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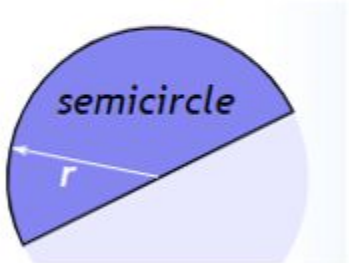
Semicircle

Half a circle (made by a diameter and the connecting arc)



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Shape

The form of an object, how it is laid out in space (not what it is made of, or where it is).

Common two dimensional (2D) shapes are: Circles, squares, triangles, etc

Common three dimensional (3D) shapes are: Spheres, cubes, pyramids, etc

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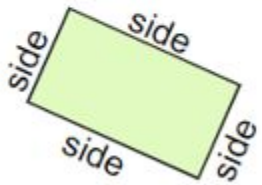
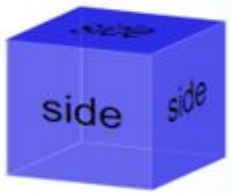
Side

One of the line segments that make a flat (2-dimensional) shape.

Or one of the faces that make a solid (3-dimensional) object.





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Similar

When one shape can become another after a resize, flip, slide or turn.

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Size

How big something is.

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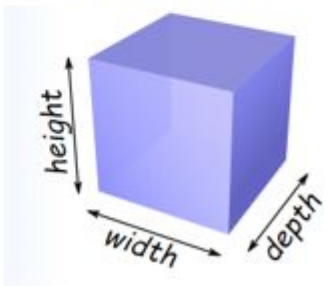
Solid

A three dimensional (3D) object.

The 3 dimensions are called width, depth and height.

Examples include spheres, cubes, pyramids and cylinders.



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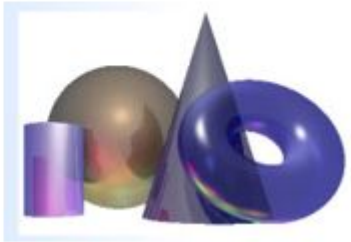
Solid Geometry

Is about three dimensional objects like cubes, prisms, cylinders and spheres – 3D



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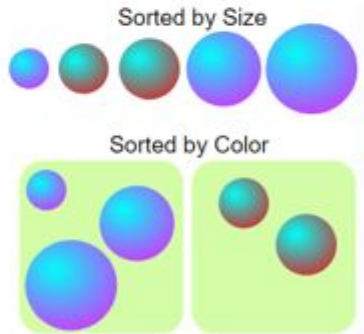
Sort

To arrange or group in a special way (such as by size, type or alphabetically).



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Sphere

A 3-dimensional object shaped like a ball.

Every point on the surface is the same distance from the centre.

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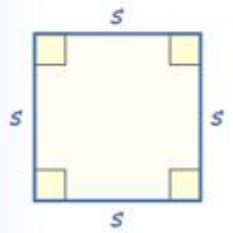
Square

A flat shape with 4 straight sides where:

- all sides have equal length, and
- every interior angle is a right angle (90°)

It is a Quadrilateral and a Regular Polygon



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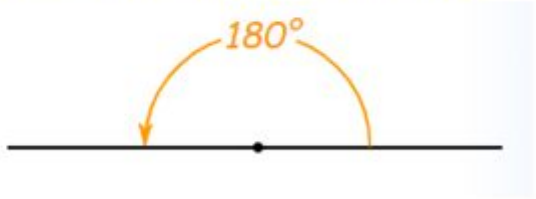
Straight Angle

A straight angle changes the direction to point the opposite way. It looks like a straight line.

It measures 180° (half a revolution of two right angles)



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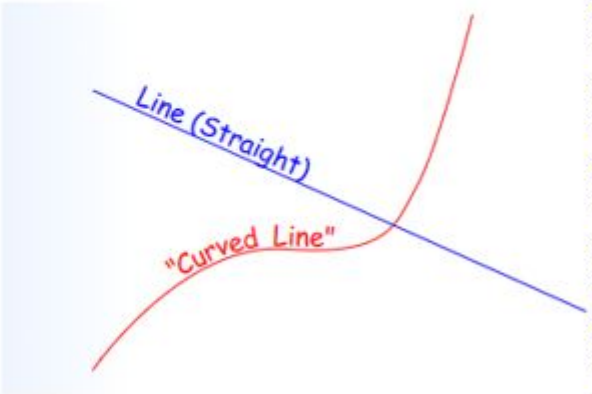
Straight Line

A line that does not curve.

In geometry a line is always straight (no curves).



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Symmetrical

A shape is symmetrical if it is identical on either side of a line dividing it into two parts.

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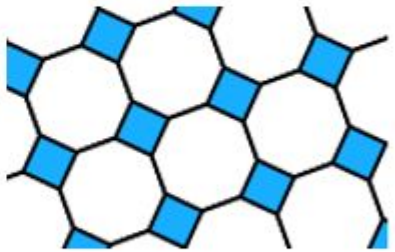
Tessellation

Shapes fitted together with a number of exact copies and with no overlaps or gaps.



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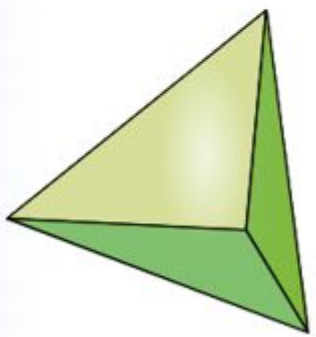
Tetrahedron

A polyhedron (a flat-sided solid object) with 4 faces.

When it is "regular" (side lengths are equal and angles are equal) it is one of the Platonic Solids.



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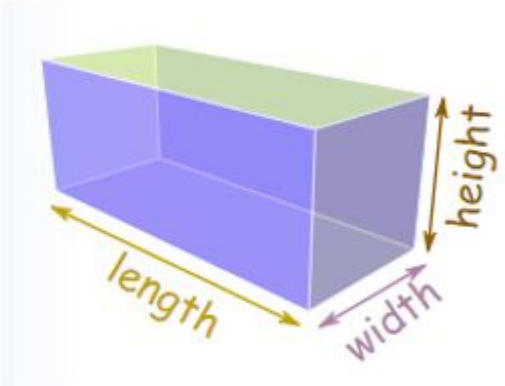
Three – Dimensional

Having three dimensions (such as height, width and depth), like any object in the real world.

Also known as "3D"



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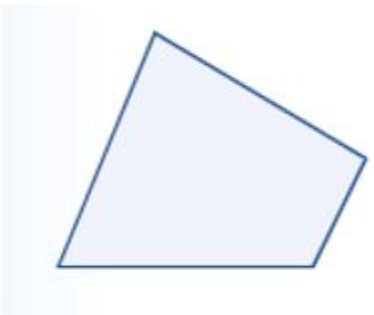
Trapezium

A quadrilateral with two parallel sides.



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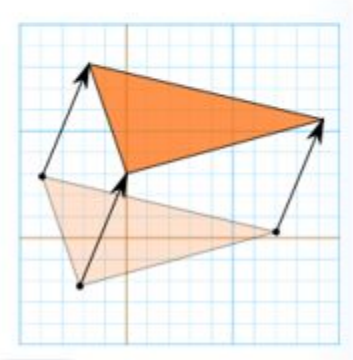
Translation

This takes place when a shape is moved from one place to another just by sliding it (without rotating, reflecting or enlarging).



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Triangle

A 3-sided flat shape with straight sides.

It is a polygon.

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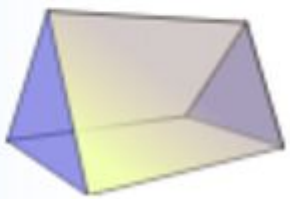
Triangular Prism

A prism with the cross section of a triangle



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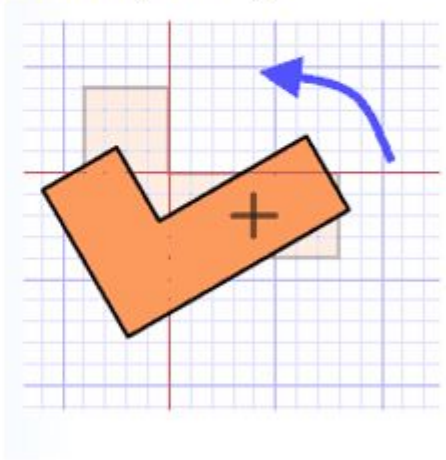
Turn

To rotate about a point.

"One Turn" is a full rotation (360°)



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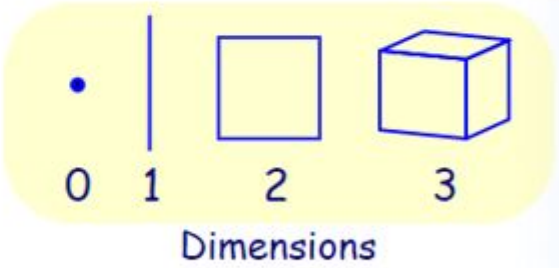
Two-dimensional

Having only two dimensions, such as width and height but no thickness



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Vertical line

A line which is at right angles to a horizontal line.

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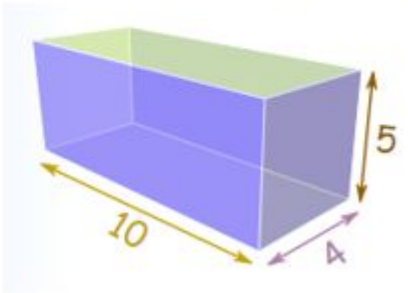
Volume

The amount of 3-dimensional space something takes up.

Also called Capacity.



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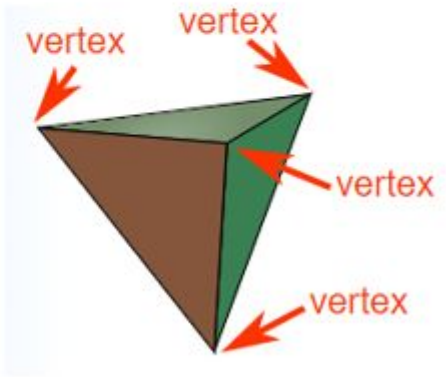
Vertices

Plural of "Vertex"

This shape has 4 vertices.



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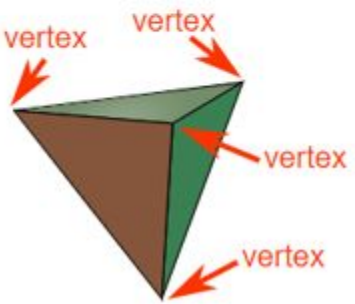
Vertex

The point at which two or more line segments or two or more edges of a polyhedron meet.



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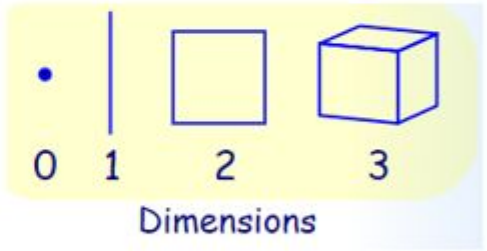
What does 1D stand for?

A line has 1 dimension



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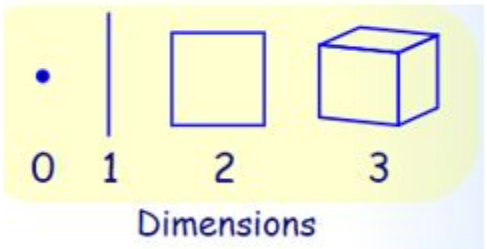
What does 2D stand for?

a square (or flat shape) has two dimensions



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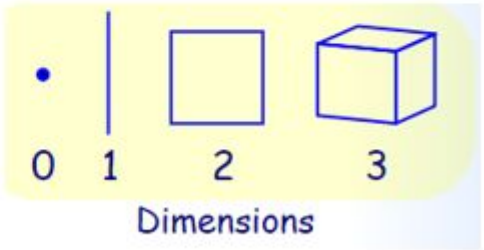
What does 3D stand for?

A cube (or solid shape) has three dimensions



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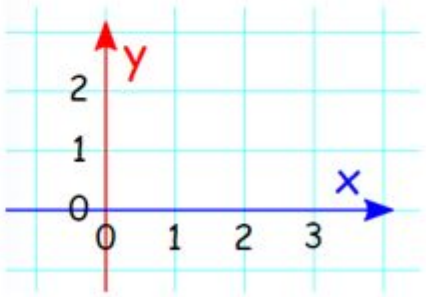
X Axis

The line on a graph that runs horizontally (left-right) through zero.

It is used as a reference line so you can measure from it.



Ocean Academy Poole

Y Axis

The line on a graph that runs vertically (up-down) through zero.

It is used as a reference line so you can measure from it.

Ocean Academy Poole