



ESSENTIAL VOCABULARY

quarter turn	right angle
half turn	acute
three-quarter turn	obtuse
angle	horizontal
parallel	vertical
perpendicular	protractor
polygon	regular
two-dimensional	irregular
three-dimensional	radius
flat face	diameter
curved surface	circumference
edge	apex
vertex	vertices

Stem sentences

In an isosceles triangle, two _____ are equal and two _____ are equal.

In a right-angled triangle, one of the angles is _____.

The radius of a circle is _____ the size of the diameter of the circle.

All the points on the circumference of a circle are an _____ distance from the _____.

The angle is _____ than _____ of a turn. It is a/an _____ angle.

Angle Types



Acute Angles

Any angle that measures less than 90° is called an **acute** angle.



Obtuse Angles

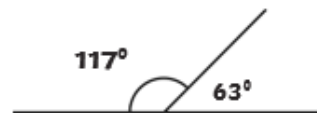
Any angle that measures greater than 90° and less than 180° is called an **obtuse** angle.



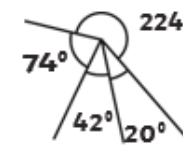
Reflex Angles

Any angle that measures greater than 180° is called a **reflex** angle.

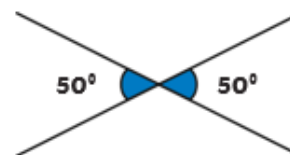
Calculating Angles



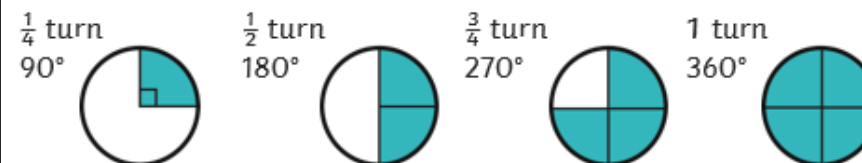
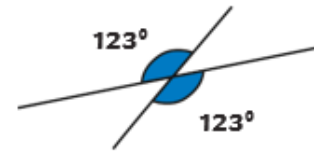
Angles on a straight line always total 180° .



Angles around a point always total 360° .

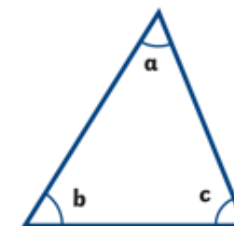


Vertically opposite angles are formed when two straight lines cross. Opposite angles that share a vertex are equal.



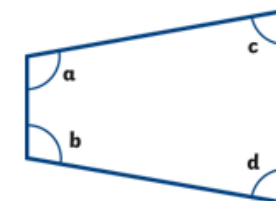
Multiples of 90° can be used as descriptions of a turn.

Angles in a Triangle



$$a + b + c = 180^\circ$$

Angles in a Quadrilateral



$$a + b + c + d = 360^\circ$$

National Curriculum statements

- Compare and classify geometric shapes based on their properties and sizes Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius
- Recognise, describe and build simple 3-D shapes, including making nets
- Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles



Recognise and Describe 2D Shapes

Properties of 3D Shapes

flat, side, corner/vertex

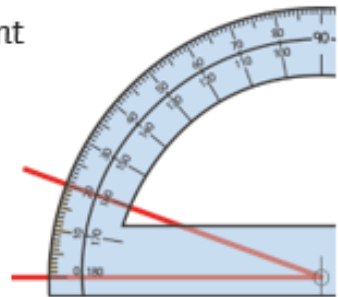
triangle, square, rectangle, hexagon, pentagon, heptagon, octagon

3D shapes have three dimensions – **length, width** and **depth**.
 A **polyhedron** is a 3D shape with flat faces. Spheres, cylinders and cones are not polyhedrons as they have curved surfaces.

Cube 6 square faces 12 edges 8 vertices	Tetrahedron 4 triangular faces 6 edges 4 vertices	Pentagonal prism 7 faces 15 edges 10 vertices
Cuboid 6 faces 12 edges 8 vertices	Octahedron 8 faces 12 edges 6 vertices	Triangular prism 5 faces 9 edges 6 vertices
Square-based pyramid 5 faces 8 edges 5 vertices	Hexagonal prism 8 faces 18 edges 12 vertices	Octagonal prism 10 faces 24 edges 16 vertices

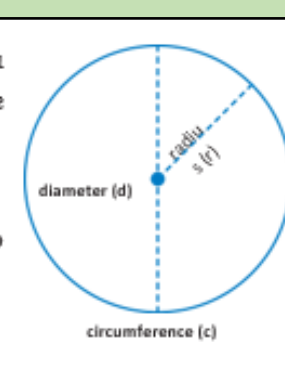
Using a Protractor

Place the cross or circle at the point of the angle you are measuring.
 Read from the zero on the outer scale of your protractor.
 Count the degree lines carefully.



Parts of Circles

A circle is a 2D shape. The perimeter of a circle is called the **circumference** (c). The distance across the circle, passing through the centre, is called the **diameter** (d).
 The distance from the centre of the circle to the circumference is called the **radius** (r).
 $r \times 2 = d$ $\frac{d}{2} = r$



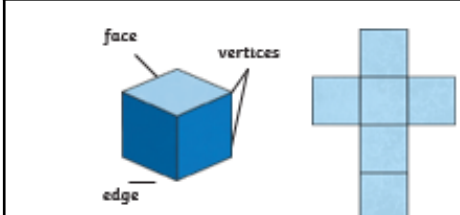
Angles in Regular Polygons

As the number of sides of a polygon increases by one, the total of the interior angles increases by 180°. When n = number of sides, this formula can be used to find the size of each angle in a **regular polygon**:

Sum of Interior Angles = $(n - 2) \times 180^\circ$ **Each Angle = $\frac{(n - 2) \times 180^\circ}{n}$**

 Pentagon $n = 5$ $(5 - 2) \times 180^\circ = 540^\circ$ $540^\circ \div 5 = 108^\circ$	 Hexagon $n = 6$ $(6 - 2) \times 180^\circ = 720^\circ$ $720^\circ \div 6 = 120^\circ$
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Nets of 3D Shapes



A shape net shows which 2D shapes can be folded and joined to make a 3D shape. When you are drawing a net, or solving a problem involving a shape net, think carefully about where the edges of the faces meet.