

YEAR 6 — GEOMETRY ...

Properties of shape

@whisto_maths

What do I need to be able to do?

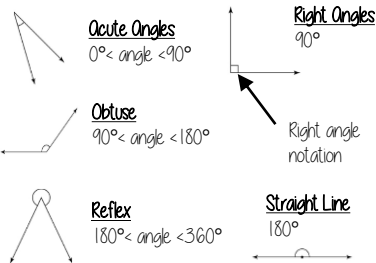
By the end of this unit you should be able to:

- Measure with a protractor
- Classify and calculate angles
- Know and calculate angles in a triangle
- Know properties of angles in special quadrilaterals
- Know properties of angles in regular polygons
- Draw shapes and nets of 3D shapes

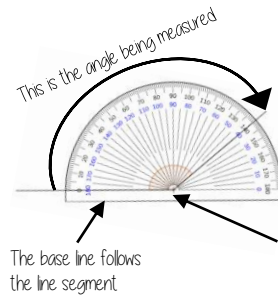
Keywords

Protractor: mathematical equipment used to measure angles
Angle: the amount of turn between two lines around their common point
Adjacent: lying next to each other
Sum: addition
Quadrilateral: a four-sided polygon
Polygon: an enclosed 2D shape made up of straight lines
Scalene triangle: a triangle with all different sides and different angles
Regular Polygon: a polygon with equal angles and all sides the same size

Measuring angles



Measure angles to 180°

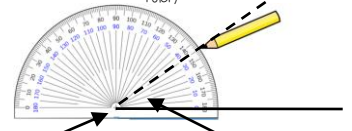


Read from 0° on the base line. Remember to use estimation. This is an obtuse angle so between 90° and 180°

Draw angles up to 180°

Draw a 35° angle

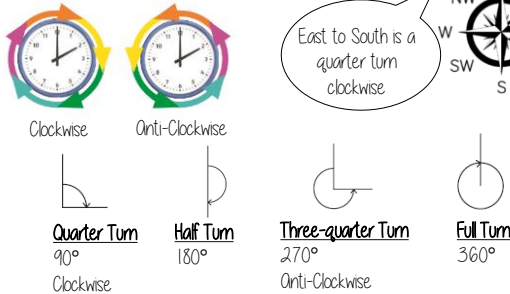
Make a mark at 35° with a pencil. And join to the angle point (use a ruler)



Make sure the cross is at the end of the line (where you want the angle)

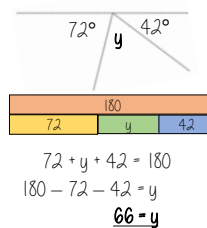
The angle

Angles as measures of turn

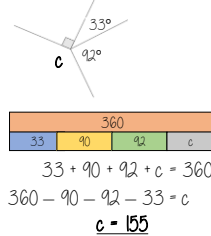


Calculating missing angles

Adjacent angles that share a common point on a line add up to 180°



The sum of angles around a point is 360°



Vertically opposite angles are equal



Opposite angles made from straight lines connecting are equal size

Triangles

All interior angles in a triangle add up to 180°

Isosceles Triangles

Two sides the same length
 Base angles the same size

Equilateral Triangles

All sides the same length
 All angles the same size

Look for combinations of angle rules in triangles. Dash notation indicates equal length sides.

Quadrilaterals

All interior angles in a quadrilateral add up to 360°

Rhombus

All sides equal size
 Opposite angles are equal

Kite

No parallel lines
 Equal lengths on top sides
 Equal lengths on bottom sides
 One pair of equal angles

Trapezium

One pair of parallel lines

Polygons

Interior Angles

The angles enclosed by the polygon



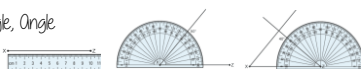
This is an **irregular** polygon — the sides and angles are different sizes

(number of sides - 2) x 180

Remember this is **all** of the interior angles added together

Drawing Triangles

Side, Angle, Angle



Side, Angle, Side



3D shapes and nets

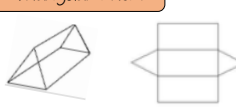
Cube



Cuboid



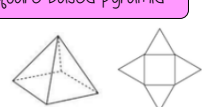
Triangular Prism



Cylinder



Square based pyramid



Vertex: a point where two or more line segments meet
Face: any of the flat surfaces of a solid object
Edge: a line segment on the boundary joining one vertex to another