LINES AND ANGLES

# Constructing, measuring and using

@whisto\_maths

# geometric notation

tthat do I need to be able to do?

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

* Use letter and labelling conventions
* Draw and measure line segments and angles
* Identify parallel and perpendicular lines
* Recognise types of triangle
* Recognise types of quadrilateral
* Identify polygons
* Construct triangles (SAS, SSS, ASA)
* Draw Pie charts

Keywords

Polygon: A 2D shape made with straight lines

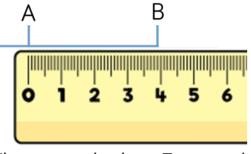
Scalene triangle: a triangle with all different sides and angles

Isosceles triangle: a triangle with two angles the same size and two angles the same size Right-angled triangle: a triangle with a right angle

frequency: the number of times a data value occurs

Sector: part of a circle made by two radii touching the centre Rotation: turn in a given direction

Protractor: equipment used to measure angles Compass: equipment used to draw arcs and circles.



Angles as measures of turn

East to South is a quarter turn clockwise

Clockwise Anti-Clockwise

Quarter Turn Half Turn

90° 180°

Clockwise

Three-quarter Turn

270°

Anti-Clockwise

full Turn

360°

Draw and measure line segments

Conversions 1cm = 10mm, 1m = 100cm

The line segment is 3.9cm tthich is 39mm

AB is a line segment (part of the line)

Make sure the start of the line is at 0;

Angle Notation: three letters **A**BC

This is the angle at B = 113 °

Line Notation: two letters EC

The line that joins E to C.

Letter and labelling convention

The letter in the middle is the angle The arc represents the angle

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Classify angles  Acute Angles Right Angles  0°< angle <90° 90°  Obtuse  90°< angle <180° Right angle notation  Reflex Straight Line  180°< angle <360° 180° | 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 °  Make sure the cross  The base line follows is at the point the  the line segment two lines meet | | | 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 The angle of the line (where you want the  angle) |
| Parallel and Perpendicular lines  Parallel lines Perpendicular lines  Straight lines that never meet Straight lines that meet at 90°  (Have the same gradient) | | | Angles over 180° 360 ° - smaller angle = reflex angle Measure the smaller Use your knowledge of straight lines angle first (less than  180 ° and angles around a point 180 °  360 ° | |
| Properties of Quadrilaterals Parallelogram  Square Opposite sides are parallel  All sides equal size Opposite angles are equal  All angles 90° Co-interior angles  Opposite sides are parallel  Trapezium  Rectangle One pair of parallel lines All angles 90°  Opposite sides are parallel  Kite  No parallel lines  Rhombus Equal lengths on top sides  All sides equal size Equal lengths on bottom  Opposite angles are equal sides  One pair of equal angles | | Draw Pie Charts  32 “32 out of 60 people had a dog”  60 Dog  This fraction of the 360 degrees  represents dogs Use a protractor to draw  32 X 360 = 192° This is 192°  60 | | SAS, SSS, ASA constructions  Side, Angle, Angle    Side, Angle, Side Side, Side, Side |
| Polygons  5 - Pentagon 8 - Octagon If all the sides and angles   1. - Triangle 6 - Hexagon 9 - Nonagon are the same, it is a regular 2. - Quadrilateral 7 - Heptagon 10 - Decagon polygon | | |