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 anglesAcute Angles Right Angles0°< angle <90° 90°Obtuse90°< angle <180° Right angle notationReflex Straight Line180°< angle <360° 180° | Measure angles to 180° Read from 0°on the baseline. Remember to use estimation.This is an obtuse angle so between 90 °and 180 °Make sure the crossThe base line follows is at the point thethe line segment two lines meet | Draw angles up to 180°Draw a 35° angle Make a mark at 35° with a pencilAnd join to the angle point (use a ruler)Make sure the cross is at the end The angle of the line (where you want theangle) |
| Parallel and Perpendicular linesParallel lines Perpendicular linesStraight 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 than180 ° and angles around a point 180 °360 ° |
| Properties of Quadrilaterals ParallelogramSquare Opposite sides are parallelAll sides equal size Opposite angles are equalAll angles 90° Co-interior anglesOpposite sides are parallelTrapeziumRectangle One pair of parallel lines All angles 90°Opposite sides are parallelKiteNo parallel linesRhombus Equal lengths on top sidesAll sides equal size Equal lengths on bottomOpposite angles are equal sidesOne pair of equal angles | Draw Pie Charts32 “32 out of 60 people had a dog”60 DogThis fraction of the 360 degreesrepresents dogs Use a protractor to draw32 X 360 = 192° This is 192°60 | SAS, SSS, ASA constructionsSide, Angle, AngleSide, Angle, Side Side, Side, Side |
| Polygons5 - Pentagon 8 - Octagon If all the sides and angles1. - Triangle 6 - Hexagon 9 - Nonagon are the same, it is a regular
2. - Quadrilateral 7 - Heptagon 10 - Decagon polygon
 |