YEAR 7 – LINES AND ANGLES

Constructing, measuring and using geometric notation

What do I need to be able to do?

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

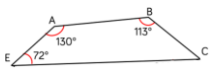
- Use letter and labelling conventions
- Draw and measure line segments and angles
- Identify parallel and perpendicular lines
- Recognise types of triangle
- Recognise types of quadrilateral
- Identify polygons
- Construct triangles (SAS, SSS, ASA)
- Draw Pie charts

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.

Letter and labelling convention

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

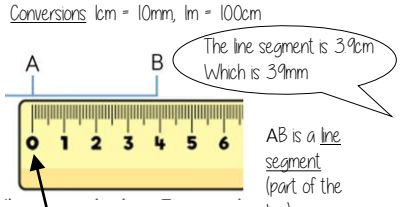


Angle Notation: three letters ABC
This is the angle at B = 113 °

Line Notation: two letters EC
The line that joins E to C

Draw and measure line segments

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



AB is a line segment (part of the line)

Make sure the start of the line is at 0.

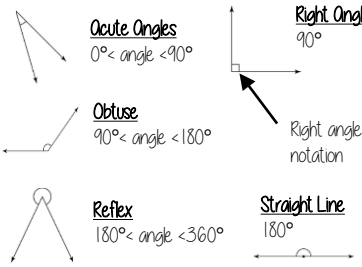
Angles as measures of turn

Clockwise Anti-Clockwise

East to South is a quarter turn clockwise

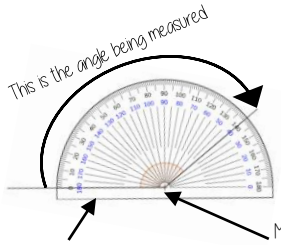
Quarter Turn 90° Clockwise
Half Turn 180°
Three-quarter Turn 270° Anti-Clockwise
Full Turn 360°

Classify angles



Acute Angles 0°< angle <90°
Right Angles 90°
Right angle notation
Obtuse 90°< angle <180°
Reflex 180°< angle <360°
Straight Line 180°

Measure angles to 180°

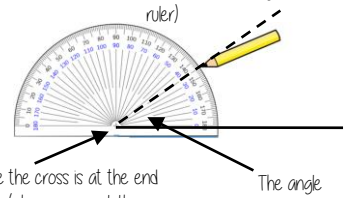


Read from 0° on the base line.
Remember to use estimation.
This is an obtuse angle so between 90 ° and 180 °

Draw angles up to 180°

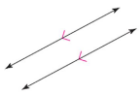
Draw a 35° angle

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

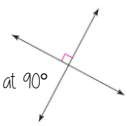


Parallel and Perpendicular lines

Parallel lines
Straight lines that never meet
(Have the same gradient)



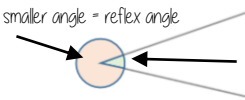
Perpendicular lines
Straight lines that meet at 90°



Angles over 180°

Use your knowledge of straight lines 180 ° and angles around a point 360 °

360 ° - smaller angle = reflex angle



Measure the smaller angle first (less than 180 °

Properties of Quadrilaterals

Square
All sides equal size
All angles 90°
Opposite sides are parallel

Parallelogram
Opposite sides are parallel
Opposite angles are equal
Co-interior angles

Rectangle
All angles 90°
Opposite sides are parallel

Trapezium
One pair of parallel lines

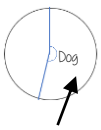
Kite
No parallel lines
Equal lengths on top sides
Equal lengths on bottom sides
One pair of equal angles

Rhombus
All sides equal size
Opposite angles are equal

Draw Pie Charts

Type of pet	Dog	Cat	Hamster
Frequency	32	25	3

$\frac{32}{60}$ "32 out of 60 people had a dog"



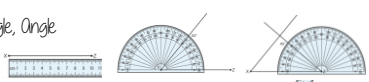
This fraction of the 360 degrees represents dogs

$\frac{32}{60} \times 360 = 192°$

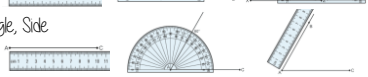
Use a protractor to draw This is 192°

SAS, SSS, ASA constructions

Side, Angle, Angle



Side, Angle, Side



Side, Side, Side

Polygons

3	- Triangle	5	- Pentagon	8	- Octagon
4	- Quadrilateral	6	- Hexagon	9	- Nonagon
		7	- Heptagon	10	- Decagon

If all the sides and angles are the same, it is a **regular** polygon