# Y7 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

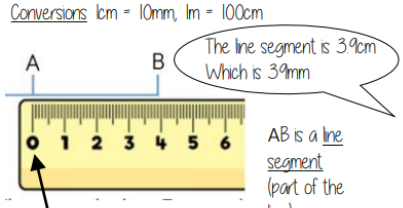
The letter in the middle is the angle
The arc represents the angle


**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


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°

**Obtuse** 90° < angle < 180°

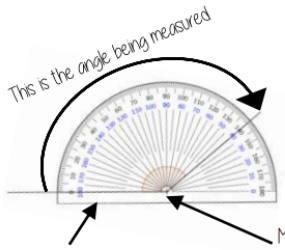
Right angle notation

**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°

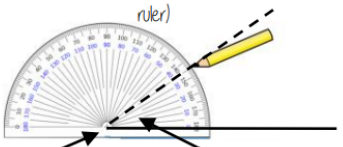
The base line follows the line segment

Make sure the cross is at the point the 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)

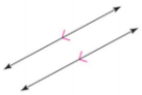


Make sure the cross is at the end of the line (where you want the angle)

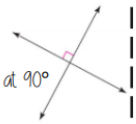
The angle

## Parallel and Perpendicular lines

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



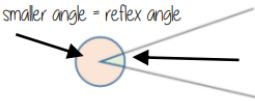
**Perpendicular lines**
Straight lines that meet at 90°



## Angles over 180°

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

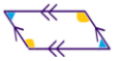
360° - smaller angle = reflex angle



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

**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

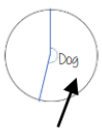
## Draw Pie Charts

| 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

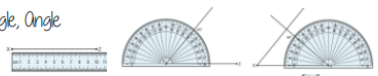
$\frac{32}{60} \times 360 = 192°$



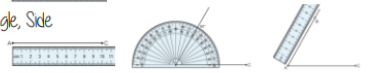

Use a protractor to draw
This is 192°

## 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