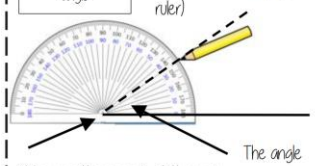
Draw and measure angles (R)

Draw a 35° angle

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



The angle

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

Scale drawings (R)

A picture of a car is drawn with a scale of 1:30

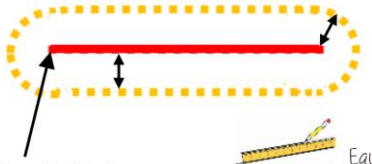
For every 1cm on my image is 30cm in real life

The car image is 10cm

Image :	Real life
1cm :	30cm
10cm :	300cm

(×10 / ×10)

Locus of a distance from a straight line



All points are equidistant (the same distance) from line

The ends of the line are fixed points

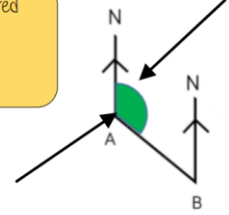
Equipment needed

The line is straight so a ruler is used for the straight lines parallel to your original line

Understand and represent bearings

- A bearing is always measured from NORTH
- It is always given as three figures

The bearing of B from A is calculated by measuring the highlighted angle



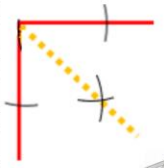
The angle indicated starts from the North line at A and joins the path connecting A to B

This angle shows the bearing of B from A

Using estimation it is clear this angle is between 090° and 180°

The sentence... "Bearing of ____ from _____" is really important in identifying the bearing being represented

Locus of a distance from two lines



Also an angle bisector
This cuts the angle in half

From the angle vertex draw two arcs that cut the lines forming the angle

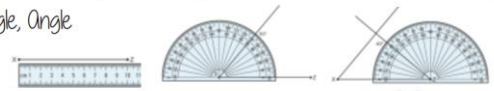
Keep the compass the same size and use the new arcs as centres to draw intersecting arcs in the middle

Join the vertex to the intersection

Constructing Triangles (R)

Link to steps

Side, Angle, Angle

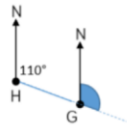


Side, Angle, Side

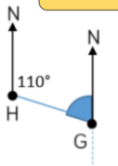
Side, Side, Side

Bearings with angle rules

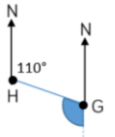
Because two North lines are PARALLEL....



They form corresponding angles and therefore are the same size

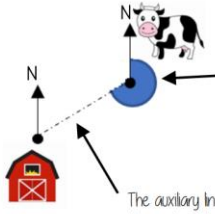


They form co-interior angles and add up to 180°



They form alternate angles and therefore are the same size

Measure and read bearings

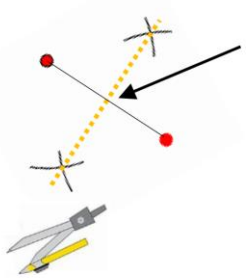


The bearing of the cow to the barn

This angle is measured from NORTH
It is measured in a clockwise direction
Estimation indicates this angle is between 180° and 270°
Use a protractor to measure accurately
Remember bearings are written as three figures

The auxiliary line is drawn to help you measure and draw the angle that is measured to represent the bearing

Locus equidistant from two points



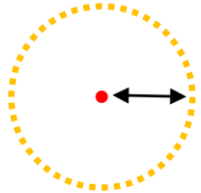
Also a perpendicular bisector

Because if the points are joined, this new line intersects it at a 90°

Keep the compass the same size and draw two arcs from each point

Join the intersections with a ruler.
All points on this line are equidistant from both points

Locus of a distance from a point

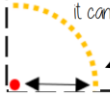


All points are equidistant (the same distance) from the fixed point in the middle

Equipment needed

The radius is the distance from the fixed point

If the point is in the corner it can only make a quarter circle

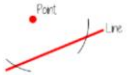


Construct a perpendicular from a point

Point

Line

Use a compass and draw an arc that cuts the line. Use the point to place the compass



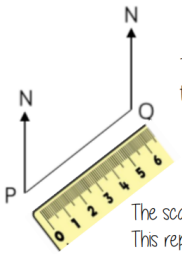
Keep the compass the same distance and now use your new points to make new interconnecting arcs

Connecting the arcs makes the bisector

If P is a point on the line the steps are the same

Scale drawings using bearings

Remember – angles DO NOT change size in scaled drawings



The bearing measurements do not change from "real life" to images

The units in the ratio scale are the same

The scale may need to be calculated from the image. This represents 30km from P to Q

6cm = 30km
6:3,000,000

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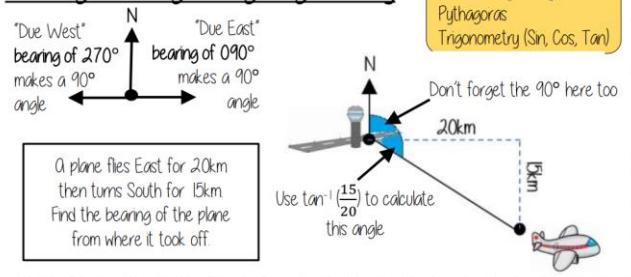
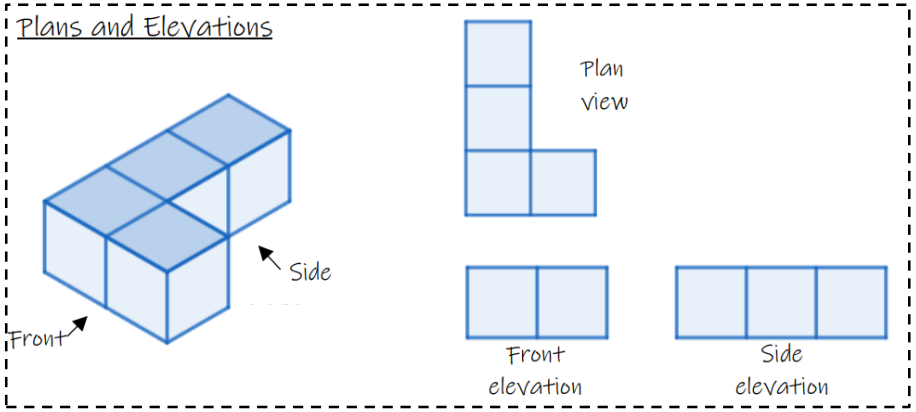
Bearings with right-angled geometry

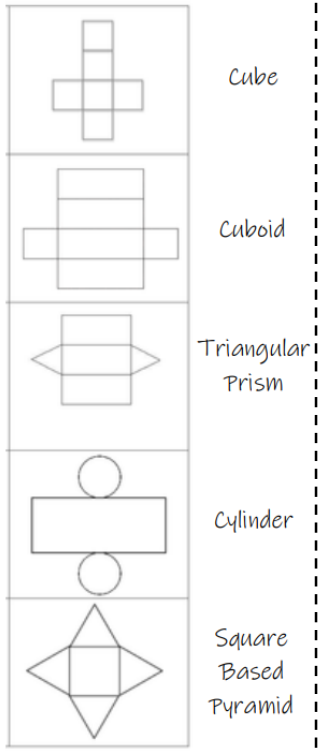


Directions

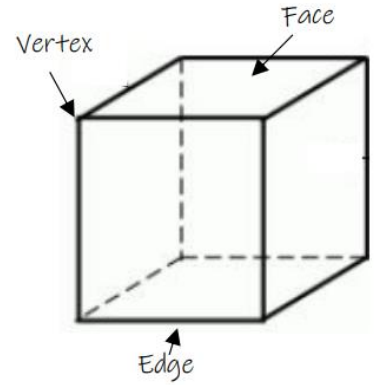
Plans and Elevations



Nets



Properties of 3D Shapes



A cube has:

6 faces 12 edges 8 vertices

There is a famous formula known as Euler's formula (pronounced Oy-ler).

It states that for all 3D shapes which have flat faces and straight edges:

Faces + Vertices = Edges + 2

So for the cube, 6 + 8 = 12 + 2