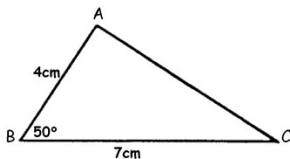## Triangle construction (3 types)

Side, side, side
1. Draw the base of the triangle using a ruler.
2. Open a pair of compasses to the width of one side of the triangle.
3. Place the point on one end of the line and draw an arc.
4. Repeat for the other side of the triangle at the other end of the line.
5. Using a ruler, draw lines connecting the ends of the base of the triangle to the point where the arcs intersect .
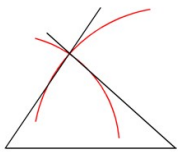
Side, angle, side
1. Draw the base of the triangle using a ruler.
2. Measure the angle required using a protractor and mark this angle.
3. Remove the protractor and draw a line of the exact length required in line with the angle mark drawn.
4. Connect the end of this line to the other end of the base of the triangle .
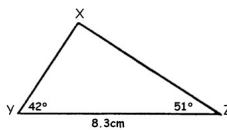
A
4cm
B 50°
7cm
C

Year 10 foundation topic 15
Constructions, loci and bearings

What careers would use these skills?
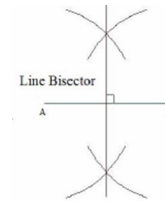Architect, graphic designer, town planning, electrical engineers.

Angle, side, angle
1. Draw the base of the triangle using a ruler.
2. Measure one of the angles required using a protractor and mark this angle.
3. Draw a straight line through this point from the same point on the base of the triangle.
4. Repeat this for the other angle on the other end of the base of the triangle .

X
Y 42°   51° Z
8.3cm

Loci
- A locus is a path of points that follow a rule.
- For the locus of points closer to B than A, create a perpendicular bisector between A and B and shade the side closer to B.
- For the locus of points equidistant from A, use a compass to draw a circle, centre A.
- For the locus of points equidistant to line X and line Y, create an angle bisector.
- For the locus of points a set distance from a line, create two semi-circles at either end joined by two parallel lines.
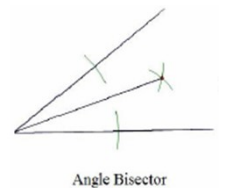
D   E

Line bisector (cut line in half)
1. Put the sharp point of a pair of compasses on A.
2. Open the compass over half way on the line.
3. Draw an arc above and below the line.
4. Without changing the compass, repeat from point B.
5. Draw a straight line through the two intersecting arcs.

Line Bisector
A   B

Equilateral triangle construction
1. Draw the base of the triangle using a ruler.
2. Open the pair of compasses to the exact length of the side of the triangle.
3. Place the sharp point on one end of the line and draw an arc.
4. Repeat this from the other end of the line.
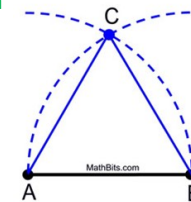
C
MathBits.com
A   B

Angle bisector (cut angle in half)
1. Place the sharp end of a pair of compasses on the vertex.
2. Draw an arc, marking a point on each line.
3. Without changing the compass put the compass on each point and mark a centre point where two arcs cross over.
4. Use a ruler to draw a line through the vertex and centre point.
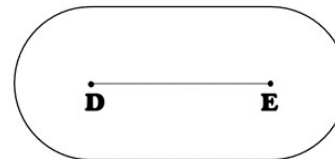
Angle Bisector

Plans and elevations
A plan is what a shape looks like from above, also called a birds eye view.

An elevation is what the shape looks like from the side.

These are both 2D representations of a 3D shape.

Bearings
1. Measure from North (draw a North line)
2. Measure clockwise
3. Your answer must have 3 digits (eg. 047°)

Look out for where the bearing is measured from.

The bearing of B from A
A
The bearing of A from B
B

(This links to angles in parallel lines calculations)