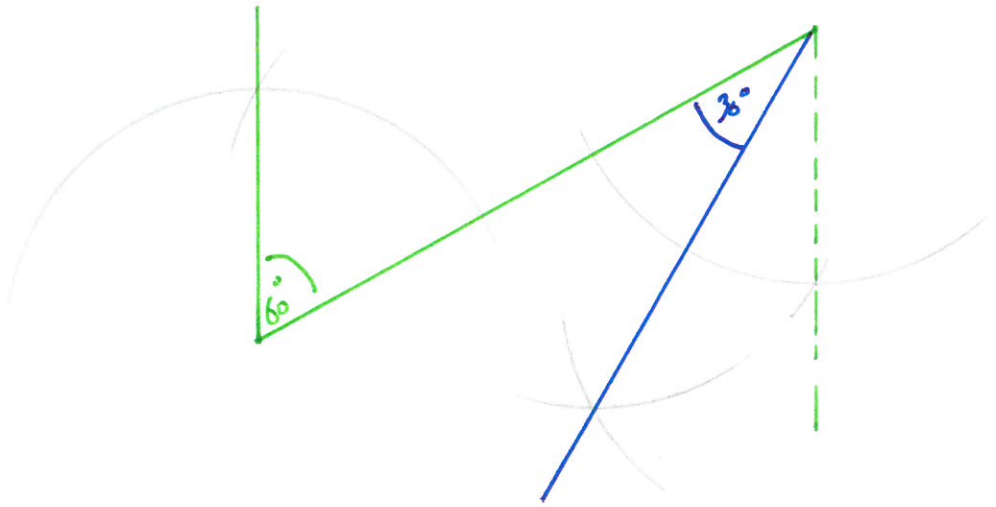
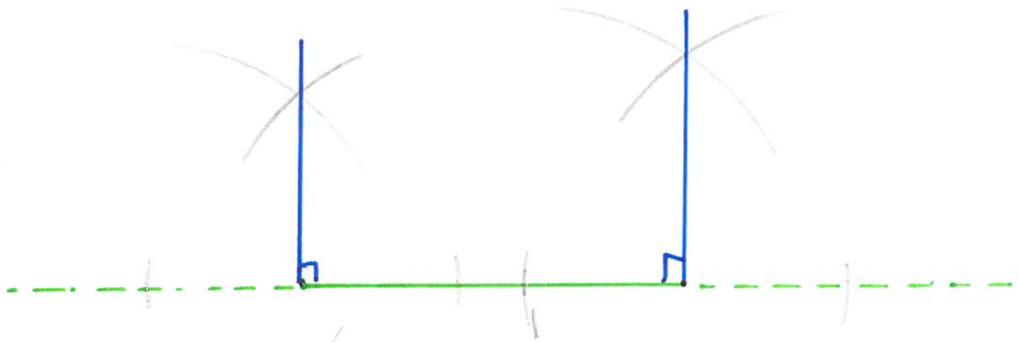
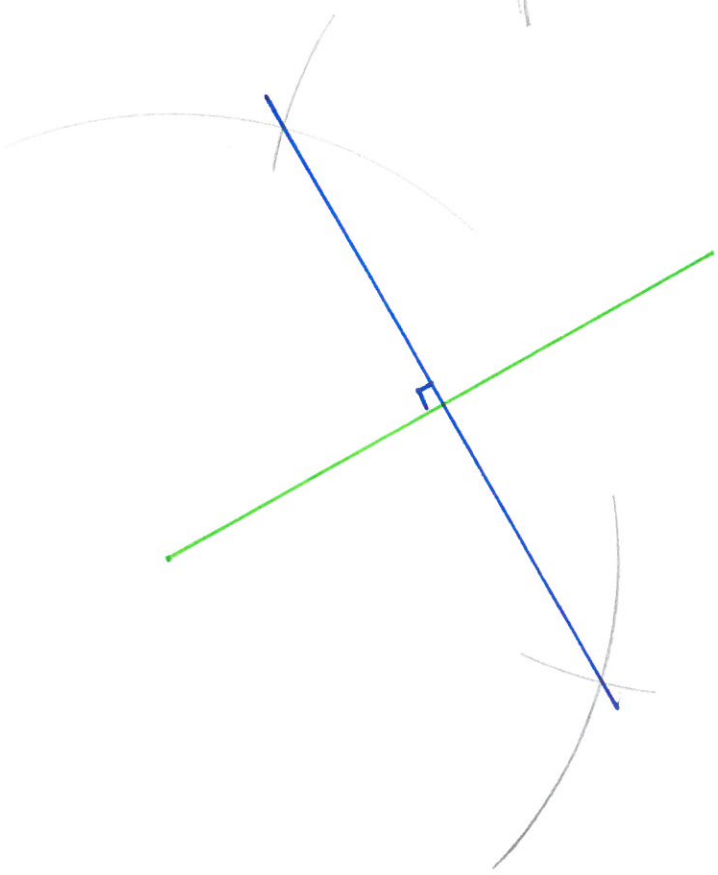
Constructions PPQs


30°
60°





1. Huw has designed a new clothes hook.

He has made a rough sketch as shown below.

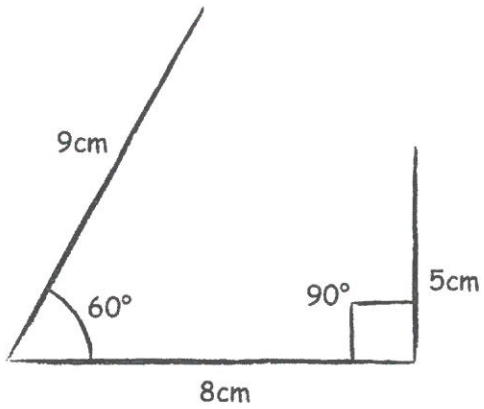
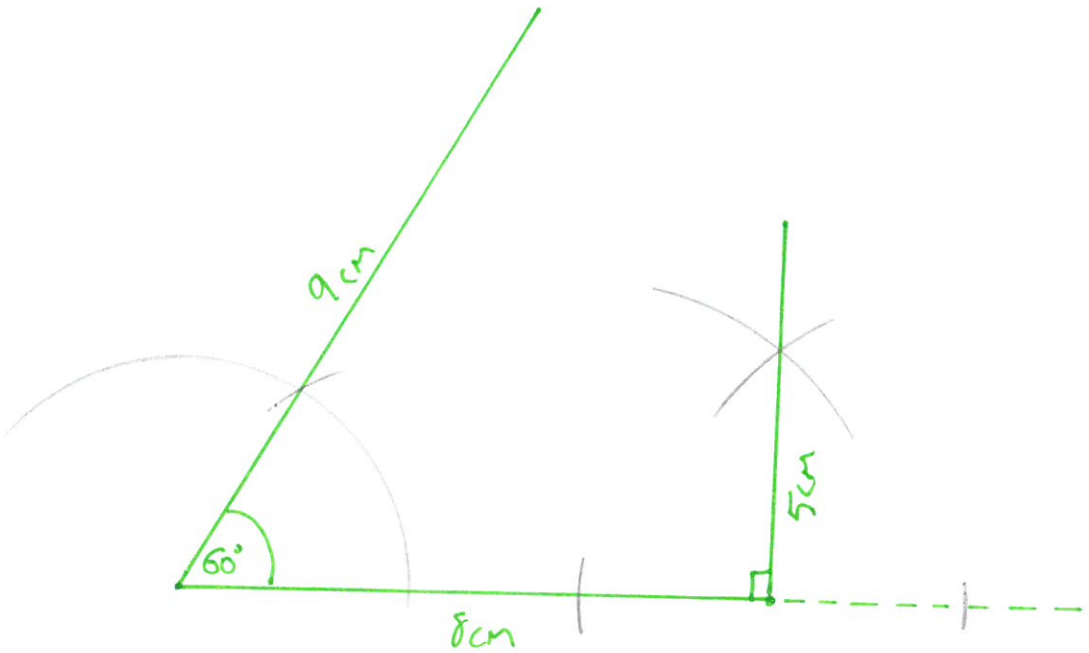


Diagram not drawn to scale

Use a pair of compasses and a ruler only to construct an accurate drawing of Huw's design.
You **must** show all your construction lines.

[5]

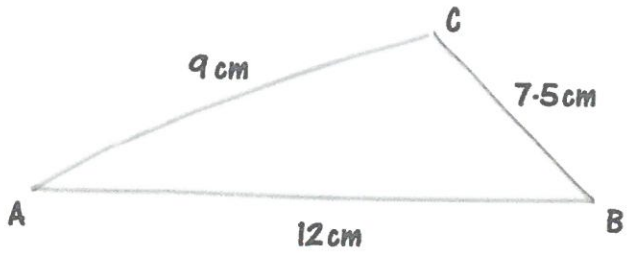


B1 lengths

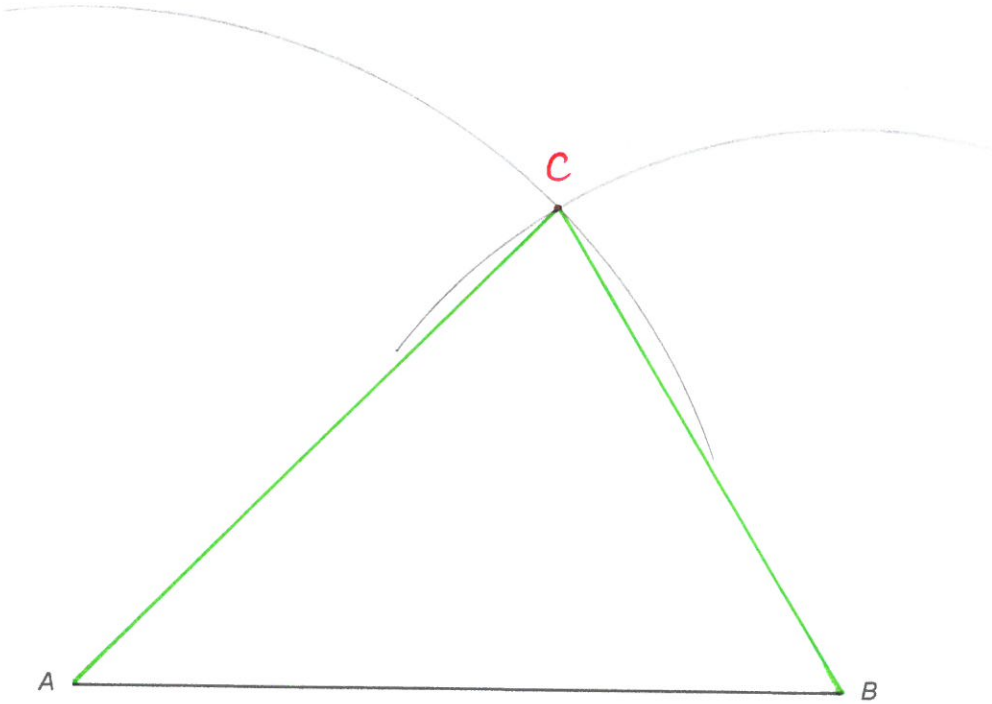
B2 60°

B2 90°

2. The diagram below shows a freehand sketch of a triangle *ABC* that is not drawn to scale.

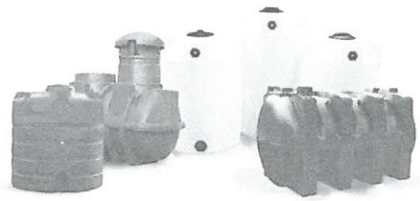


Use a ruler and a pair of compasses to draw an accurate diagram of triangle *ABC*.
Line *AB* is drawn accurately for you.
You must show all your construction arcs. [2]



3.

MacReardon Construction is contracted to work on a warehouse site where there are a number of liquid storage tanks.



A sketch of the base of one of the liquid storage tanks is shown below.

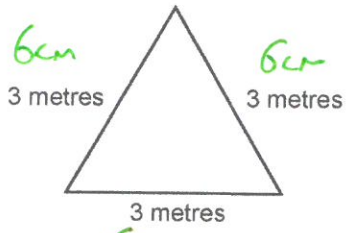
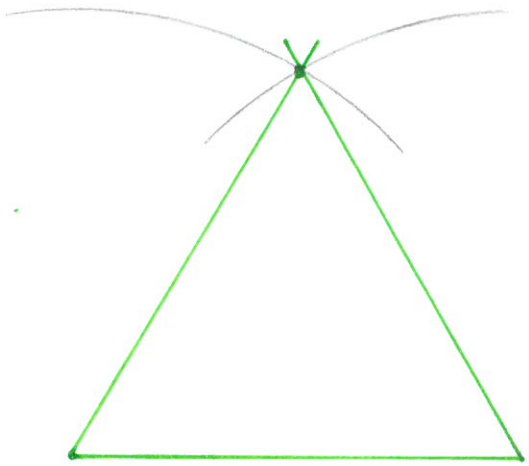


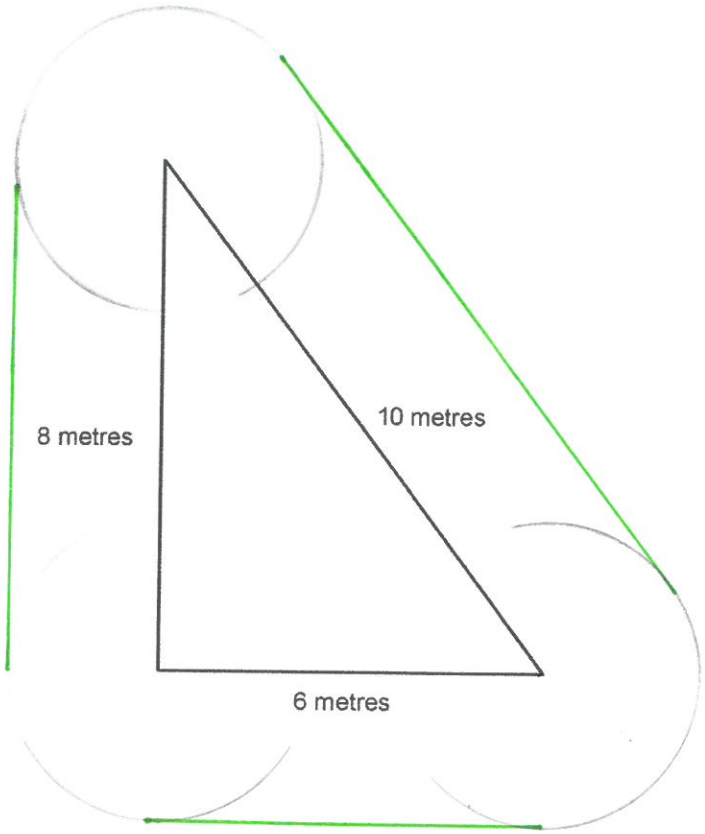
Diagram not drawn to scale

(a) Use a pair of compasses and a ruler to make an accurate scale drawing of the base shown above.
Use a scale of **2 cm to represent 1 metre**. [3]



(b) *MacReardon Construction* has been asked to lay a drain surrounding a different liquid storage tank. The drain must be exactly **2 metres** away from the perimeter of the base of the tank.

An accurate scale drawing of the base of this tank is shown below.
A scale of **1 cm to represent 1 metre** has been used.
On the scale drawing below, draw accurately the position of the drain surrounding the tank. [3]



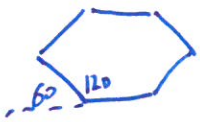
M1

M1

A1

4.

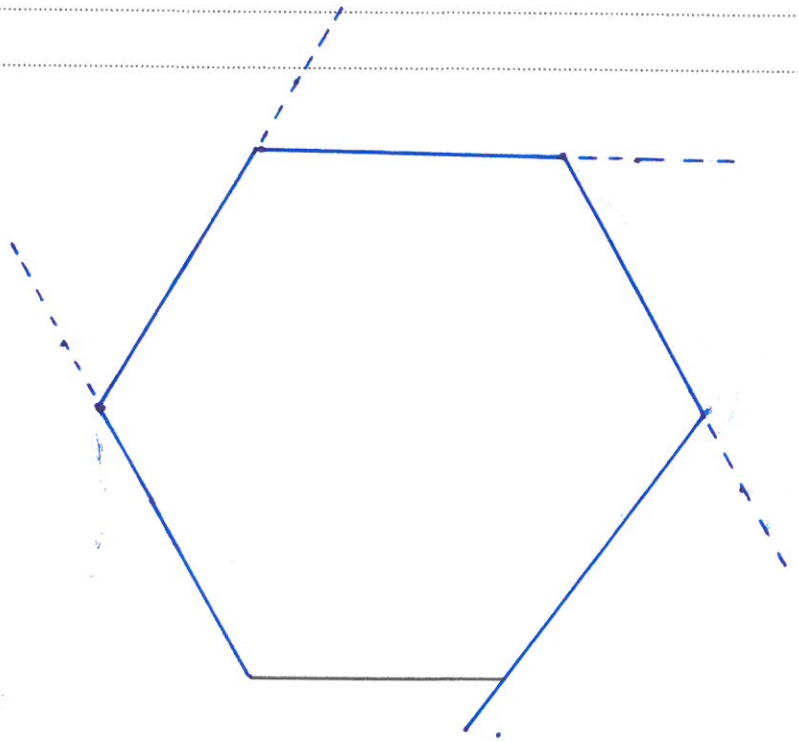
A tile maker needs to make an accurate drawing of a regular hexagon.
The length of each side of the hexagon is 4 cm.
Draw the hexagon accurately below.
You must mark on your drawing the size of each angle.



6 sides

external angle = $\frac{360}{6} = 60°$ M1

Internal angle = $180 - 60 = 120°$ A1



B3.

[5]

Marking Scheme

1.

1.(a) 9cm, 8cm and 5cm lines in correct orientation	B1	±2mm on all lengths *No arcs no marks!*
60°±2° constructed using the appropriate arcs	B2	B1 for appropriate arcs but angle slightly outside the tolerance, or for at least one arc correct with the other slightly outside of tolerance together with angle attempted, or for full method clearly attempted
90°±2° by appropriate compasses construction	B2	B1 for appropriate arcs but angle slightly outside the tolerance, or for full method clearly attempted If no construction arcs shown, then B0 apart from first B1 for the lengths
	5	

2.
3.

2.(a)		*Penalise -1 for incorrect scale in (a), then FT*
At least 2 sides of a triangle 6 cm (±2mm)	M1	
Construction arcs to make at least 1 60° (±2°) angle	M1	
Accurate triangle (see overlay)	A1	Depends on M2
(b)		*Penalise -1 for incorrect scale in (b), then FT*
Lines parallel to each side a distance of 2cm (±2mm) away	M1	
Arc 2cm (±2mm) centred on at least one vertex	M1	
Correct drain placement (as overlay)	A1	
	6	

4.

2. 360/6 OR 4 × 180/6 OR 720/6 60(° exterior) OR 120(° interior)	M1 A1	Need not be associated with interior or exterior angle Accept in working, or 120(°) **implied** in the drawing, Do not accept if incorrectly labelled on a drawing, e.g 120° drawn but incorrectly labelled 60°, allow M1, A0. Allow unless contradicted
4 (of the 5) sides to be drawn forming a polygon drawn all of length 4cm (±2mm)	B1	Irrespective of angles
4 (of the 6) angles drawn correctly (within 2° tolerance)	B1	
A correct hexagon, within tolerances allowed	B1	See overlay *Penalise drawing polygons with number of sides 5, 7, 8, ... as -1 then FT,*