

Walking Talking - Construction and Loci

1.

A valuable statue is on display.

To protect the statue a glass cuboid is built around it.

A scale drawing of the plan view (bird's eye or aerial view) of the cuboid is shown below.

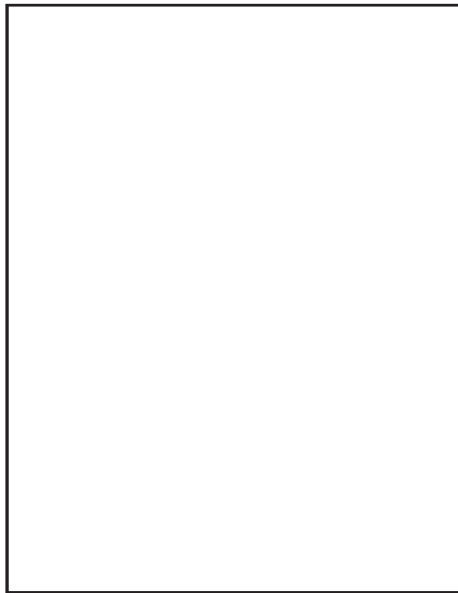
Scale 1 cm : 20 cm

A barrier is built around the cuboid so that no one can stand within 60 cm of the cuboid.



Using the given scale, draw accurately the locus of the barrier on the scale drawing shown below.

[5]



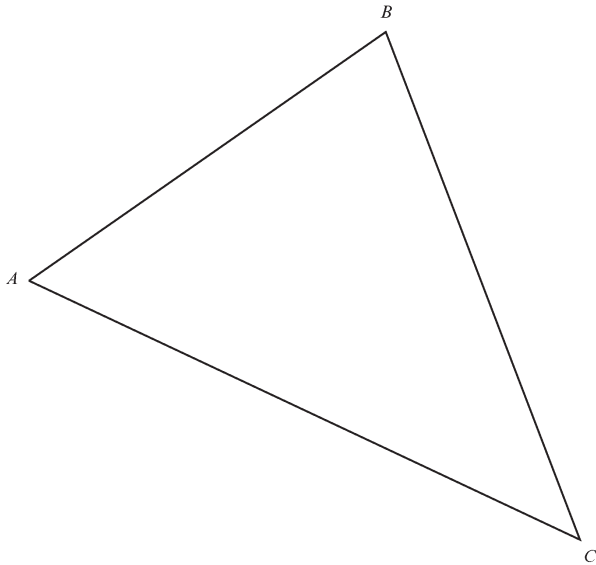
2.

(a) A region is found within triangle ABC using the following criteria.
Points in the region are:

- nearer to B than to C ,
- greater than 4 cm from A .

Shade this region in the triangle ABC .

[3]



(b) Calculate the area of the quadrilateral $ABCD$.

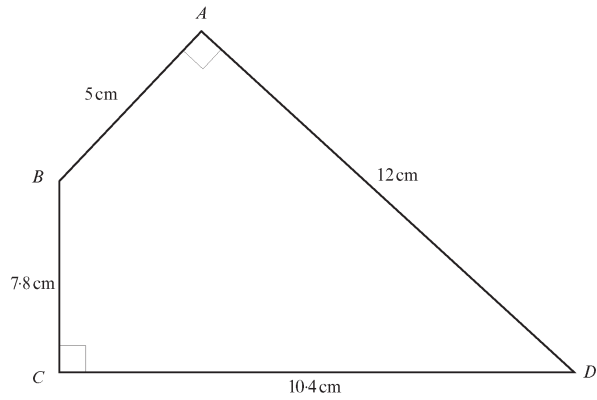


Diagram not drawn to scale

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[5]

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.

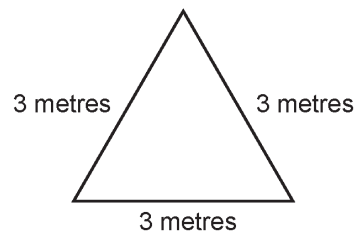


Diagram not drawn to scale

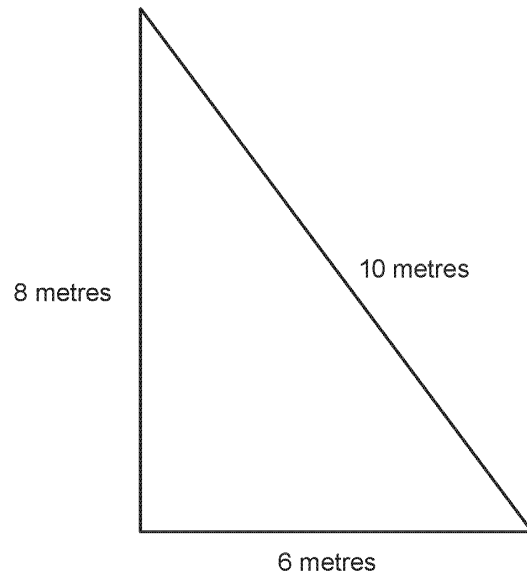
- (a) Use a pair of compasses and a ruler to make an accurate scale drawing of the base shown above.
Use a scale of **2 cm to represent 1 metre**. [3]

- (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]



4.

You will be assessed on the quality of your written communication in this question.

A fishing competition is to be held out at sea in a rectangular area that is 5 km by 4 km and marked out by buoys. Safety boats are positioned at two different corners of the rectangular area marked out by the buoys.

Each safety boat patrols an area not exceeding 3 km from its initial position.

Consider the options for positioning the two safety boats.

Decide which of your options is best for positioning the two safety boats.

You must clearly show and explain why your solution is the best option.

Explanation:

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[7]