



Aberdare Community School
Mathematics Department

WJEC GCSE

Higher – Calculator

Shape

Loci

Name:

Set:

Date:

Teacher:

7. A valuable statue is on display.

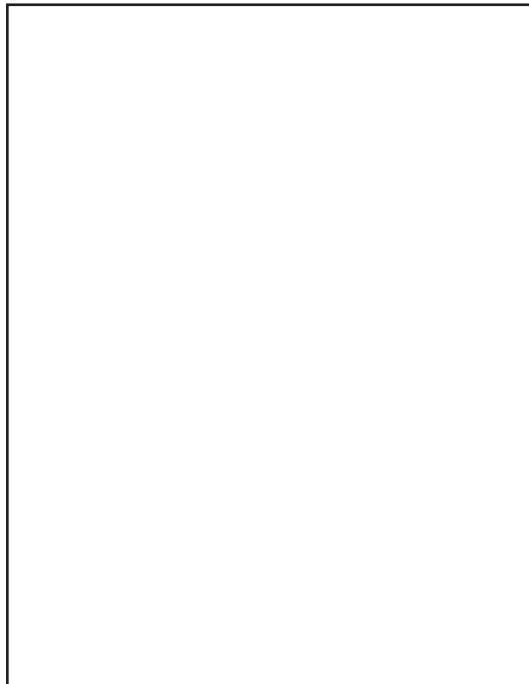
To protect the statue a glass cuboid is built around it.

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

Scale 1 cm : 20 cm

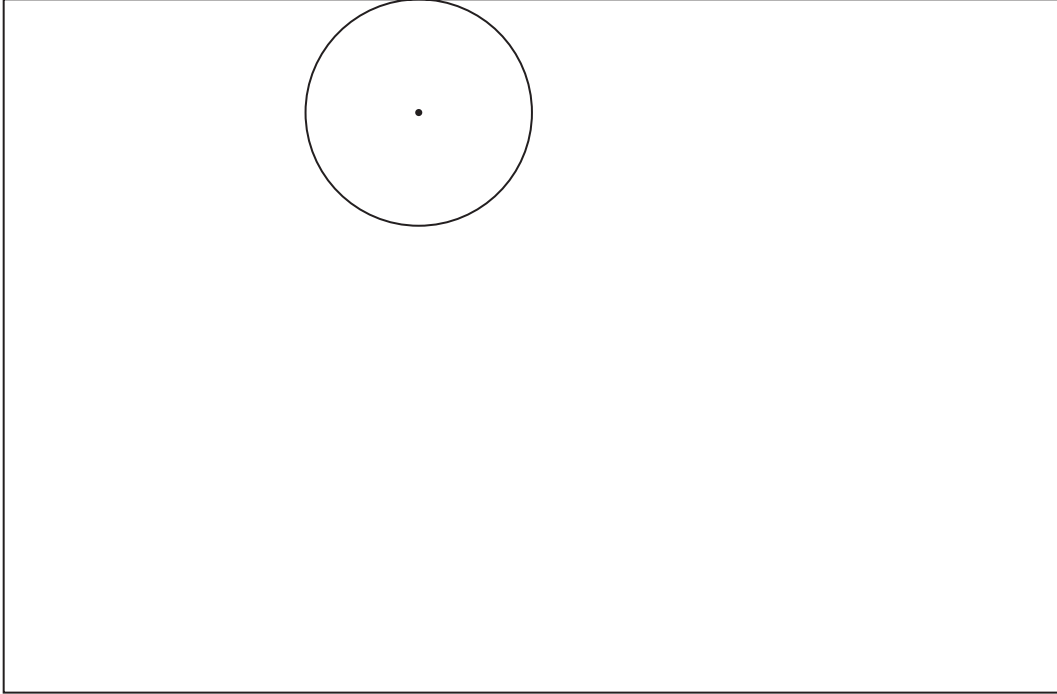
A barrier is built around the cuboid so that no one can stand within 60 cm of the cuboid.

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



[5]

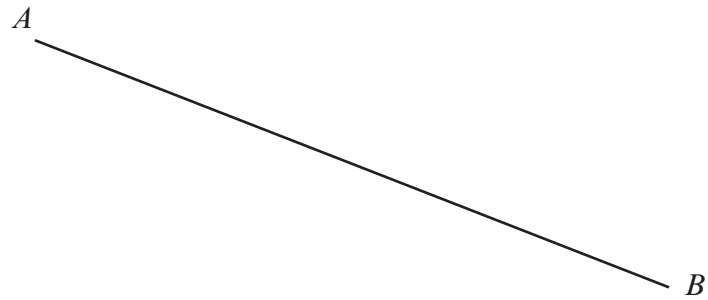
5. The diagram shows the aerial view of a ball in a box.
The centre of the ball is marked on the diagram.
The ball must remain in contact with at least one side of the box.
Draw the locus of the set of points where the centre of the ball could be inside this box.



(b) Shade the region that satisfies both of the following conditions.

- (i) The points are less than 6.5 cm from A .
- (ii) The points are nearer to B than to A .

[3]



Examiner
only

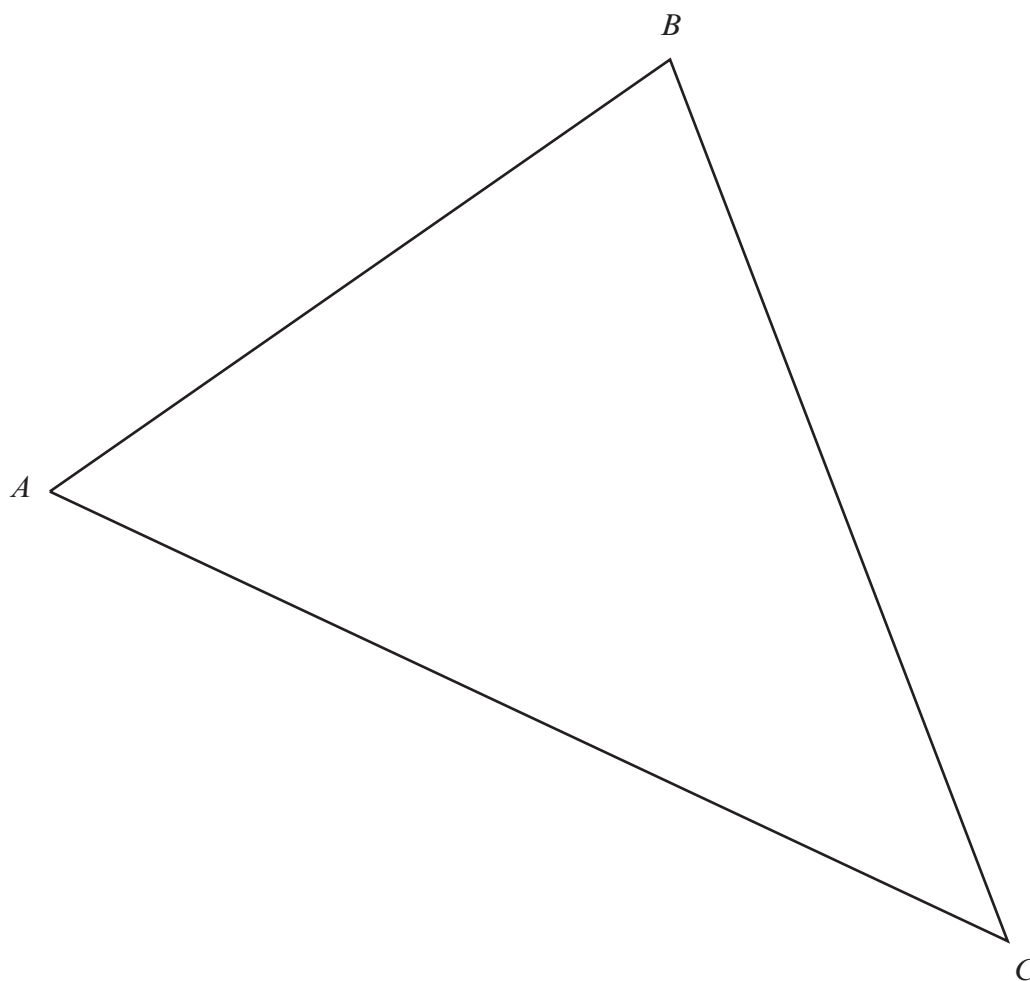
4353
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6. (a) A region is found within triangle ABC using the following criteria.
Points in the region are:

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

Shade this region in the triangle ABC .

[3]

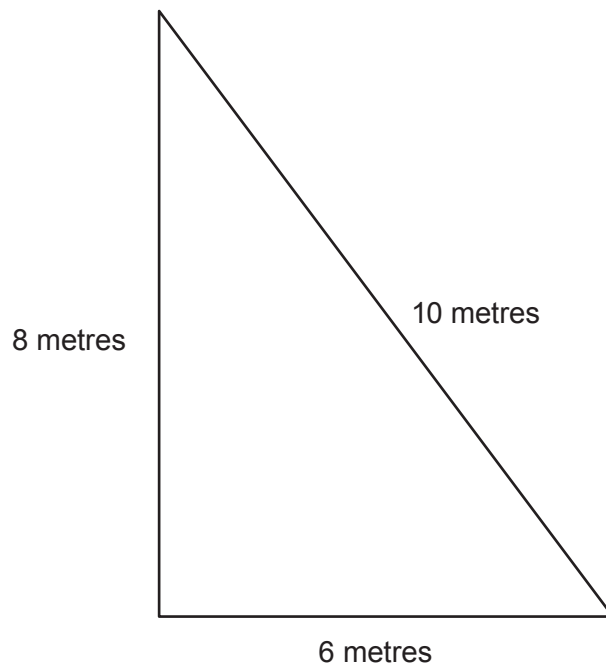


- (b) *MacReardon Construction* has been asked to lay a drain surrounding a different liquid storage tank. The drain must be exactly **2 metres** away from the perimeter of the base of the tank.

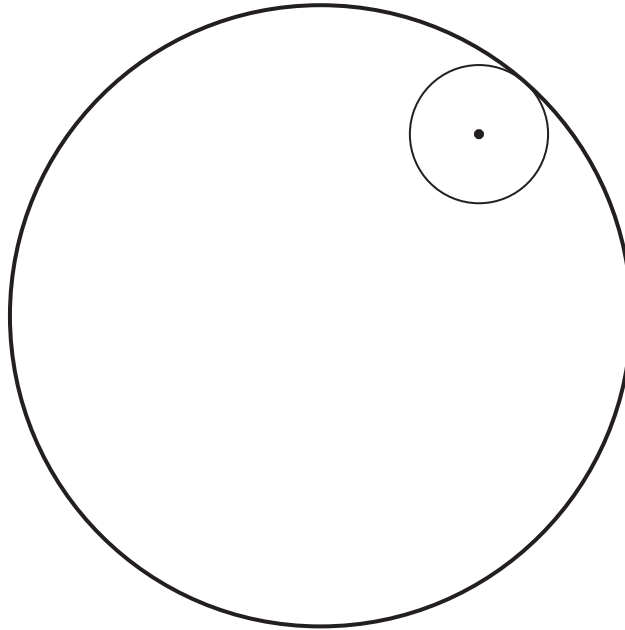
An accurate scale drawing of the base of this tank is shown below.

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]



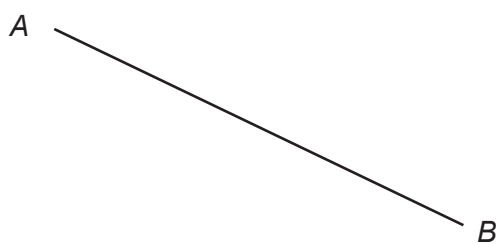
6. The diagram shows a coin inside a large circular ring. The centre of the coin is shown. The coin is rolled around the inside of the ring, so that it is always in contact with the ring. Sketch the locus of the centre of the coin as it is rolled around the inside of the ring. [2]



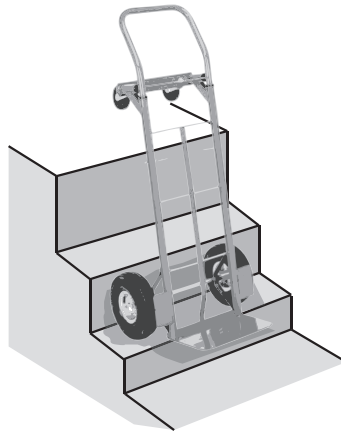
6. Shade the region that satisfies both of the following conditions.

- (i) The points are less than 4 cm from B .
- (ii) The points are nearer to B than to A .

[3]

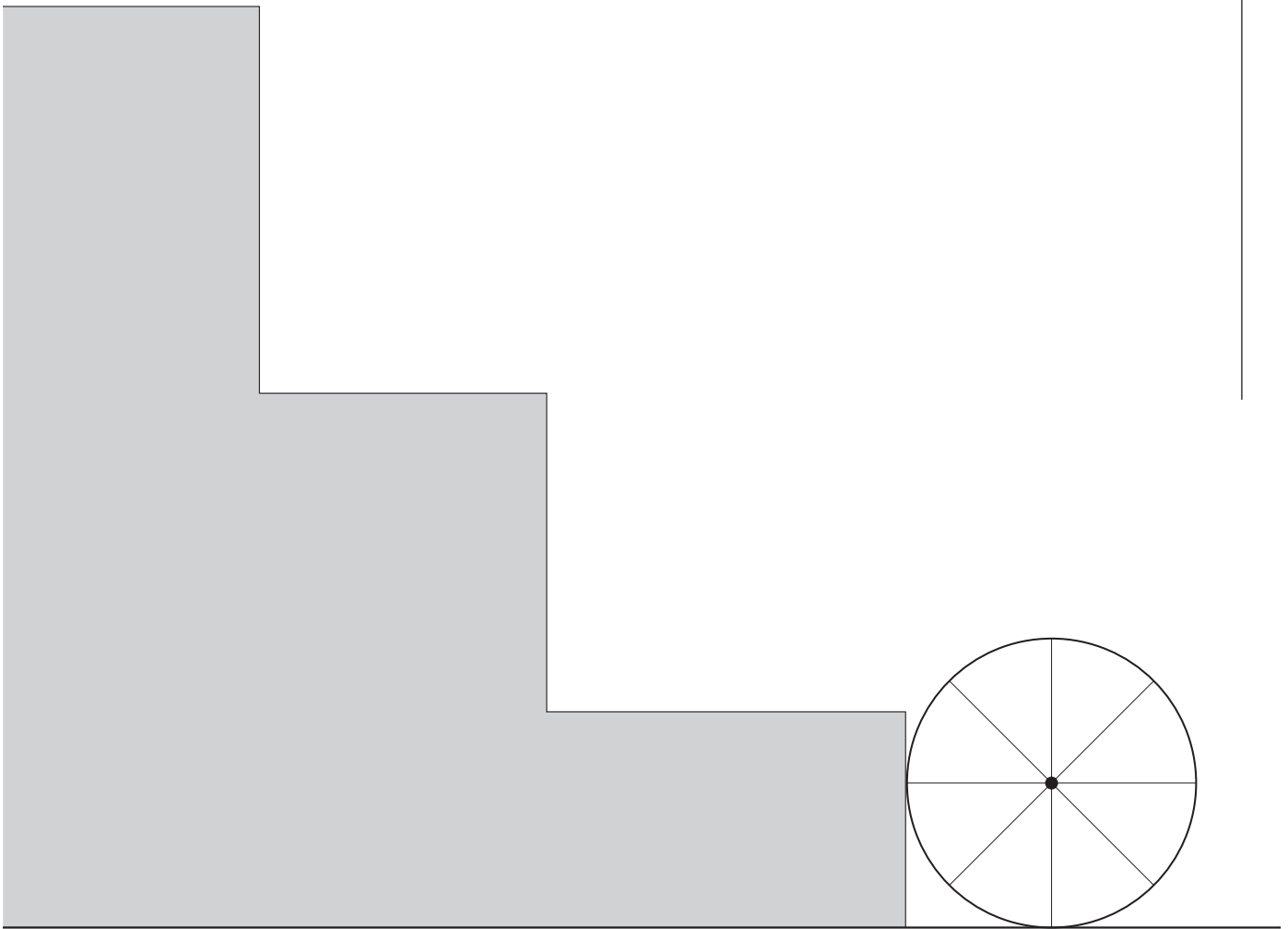


8. A trolley is pulled up a few steps.



The wheels of the trolley always stay in contact with the steps on the way up.

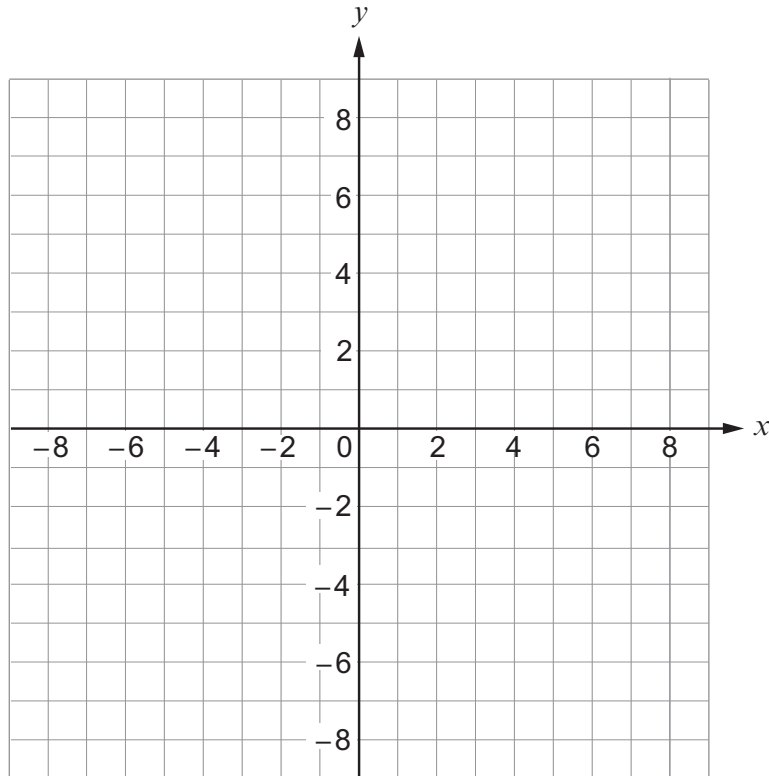
The diagram on the opposite page shows the side view of a trolley wheel and the steps.
On the diagram, draw the locus of the **centre** of the trolley wheel as the trolley is pulled up onto the top step. [5]



11. (a) A point moves such that it is equidistant from the x -axis and the y -axis.

(i) On the grid below, plot the locus of the point.

[2]



(ii) Write down the equations that represent the locus of the point.

[2]

.....
 and

(b) A point moves such that its distance from the origin is 3 units.
 Write down the equation that represents the locus of the point.

[1]

.....

8. Shade the region, inside the triangle below, that satisfies both of the following conditions:

- it is less than 5 cm from AC , and
- it is less than 4 cm from B .

[3]

