

Loci

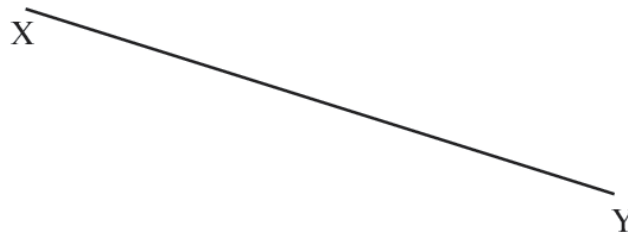
The following questions come from past GCSE exam papers (Higher Tier).

QUESTION 1: June 2011 Paper 1 (Linear 185/09); Question 6a
(3 marks).

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

- (i) The points are less than 5 cm from X .
- (ii) The points are nearer to Y than to X .

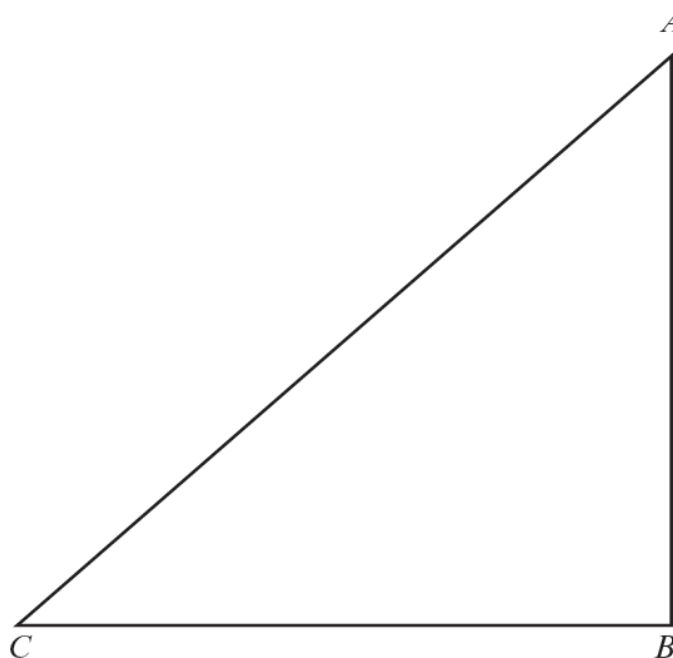
[3]



QUESTION 2: November 2011 Paper 1 (Linear 185/09); Question 4d
(3 marks).

(d) The diagram below shows a triangle ABC . Find and **shade** the region inside the triangle which satisfies **both** of the following conditions.

- (i) All points in the region are nearer to AC than to AB .
- (ii) All points in the region are less than 5 cm from A .

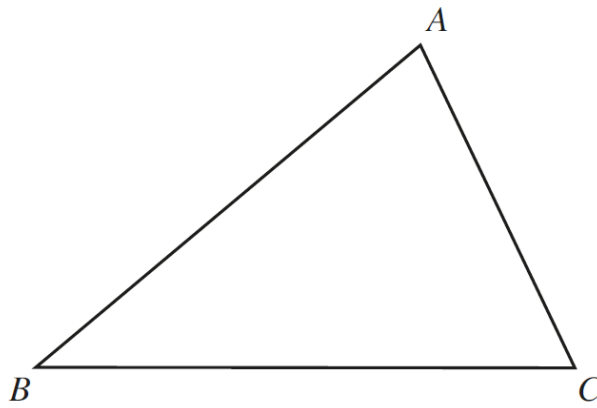


QUESTION 3: November 2009 Paper 1 (Linear 185/09); Question 5b
(3 marks).

(b) Find and shade the region of points inside triangle ABC that satisfy both the following conditions.

- (i) The points are nearer to BC than to AB .
- (ii) The points are less than 5 cm from B .

[3]

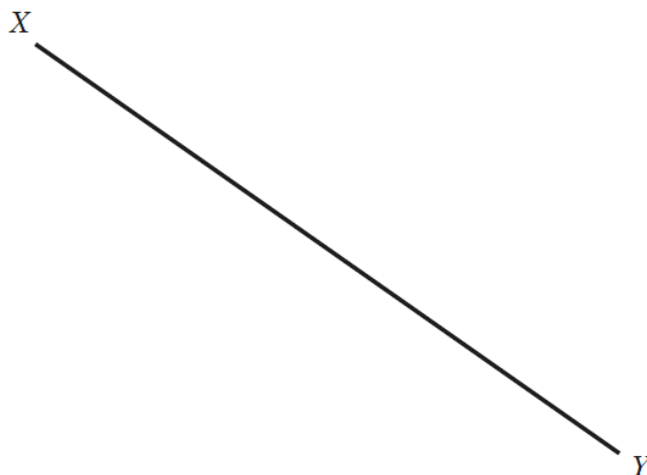


QUESTION 4: May 2008 Paper 1 (Linear 185/09); Question 11
(3 marks).

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

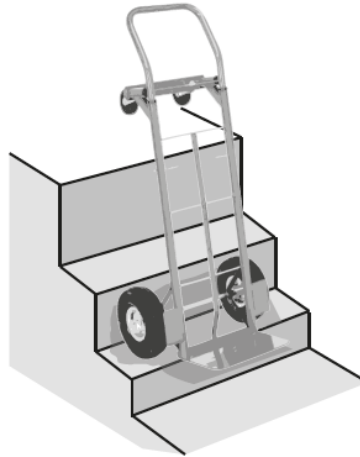
- (i) The points are less than 7 cm from X .
- (ii) The points are nearer to Y than to X .

[3]



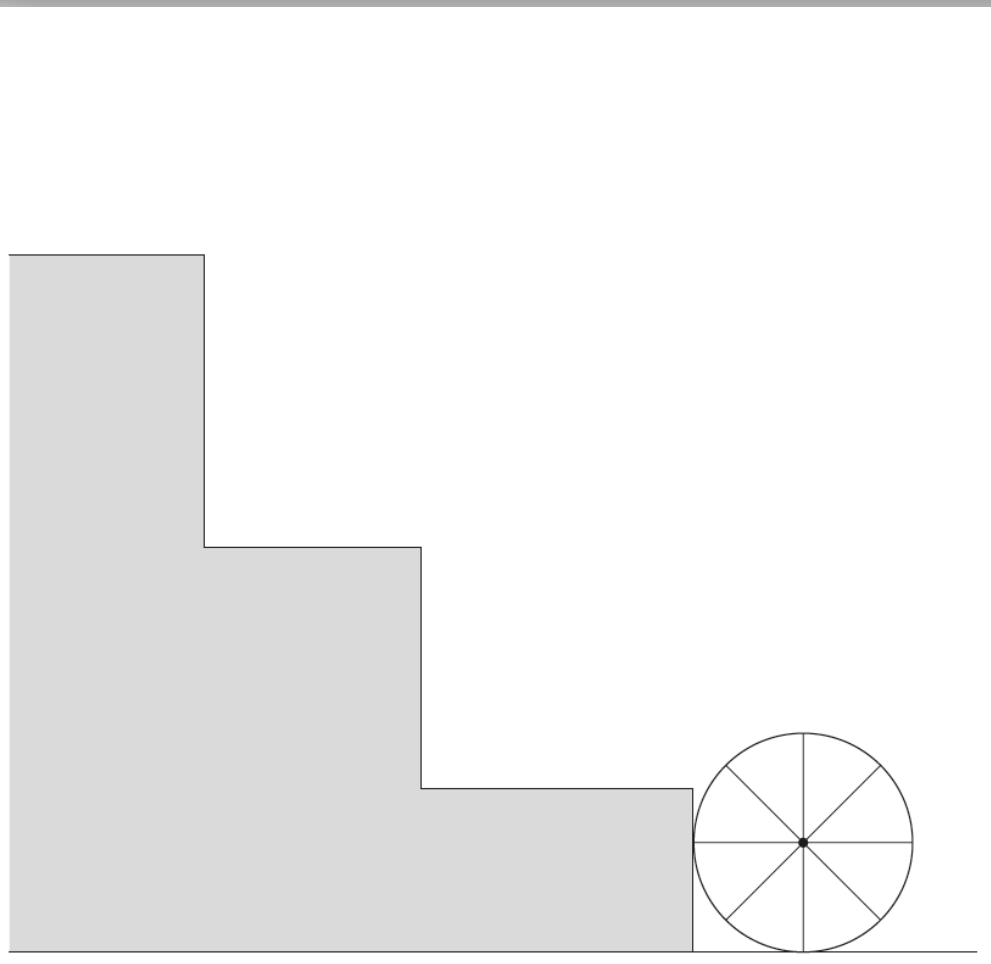
QUESTION 5: Linked Pair Pilot – June 2014 Unit 1 Applications (4361/02); Question 8 (5 marks).

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]



QUESTION 6: Linked Pair Pilot – June 2012 Unit 1 Applications (4361/02); Question 8 (7 marks).

8. *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.

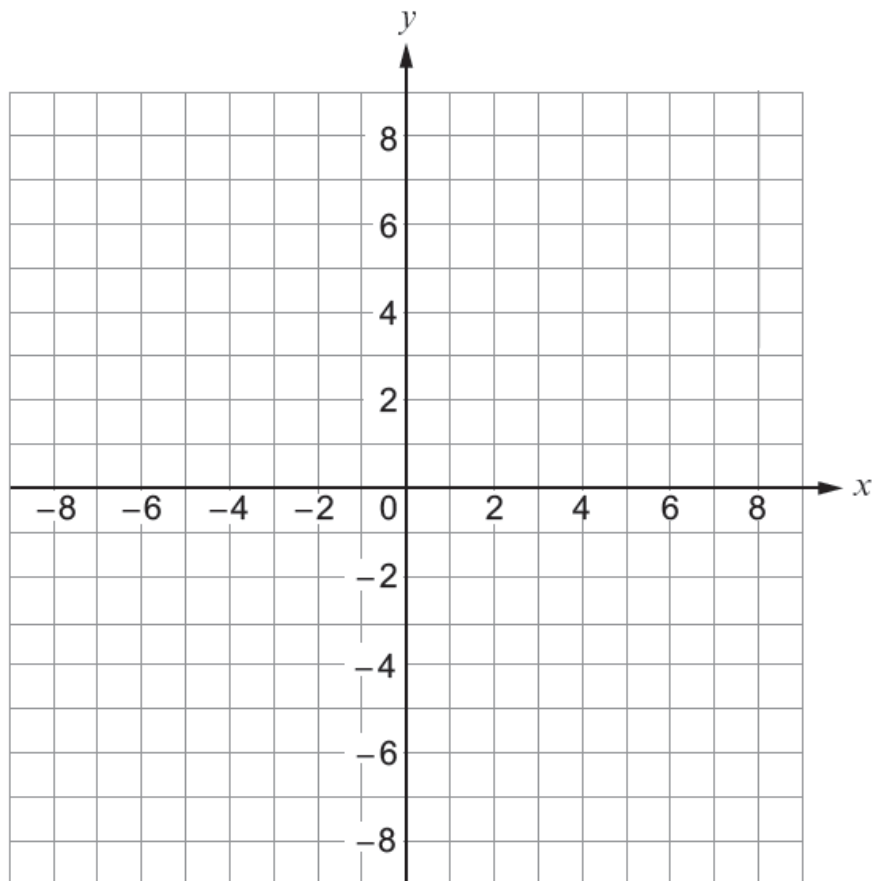
You must clearly show and explain why your solution is the best option.

QUESTION 7: Linked Pair Pilot – June 2014 Unit 2 Methods (4364/02); Question 11 (4 marks).

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]

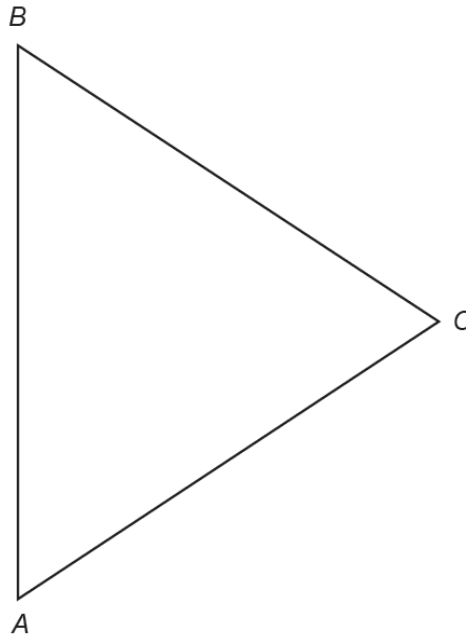
.....
..... and

QUESTION 8: June 2014 Unit 2 (Unitised 4353/02); Question 8 (3 marks).

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 .

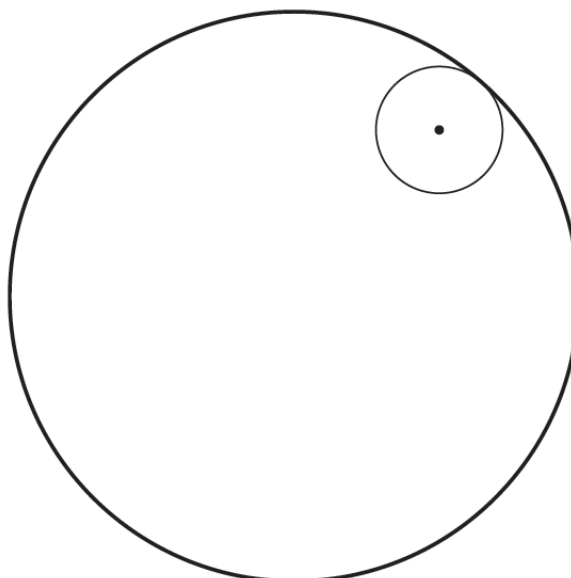
[3]



QUESTION 9: January 2014 Unit 3 (Unitised 4353/02); Question 6 (2 marks).

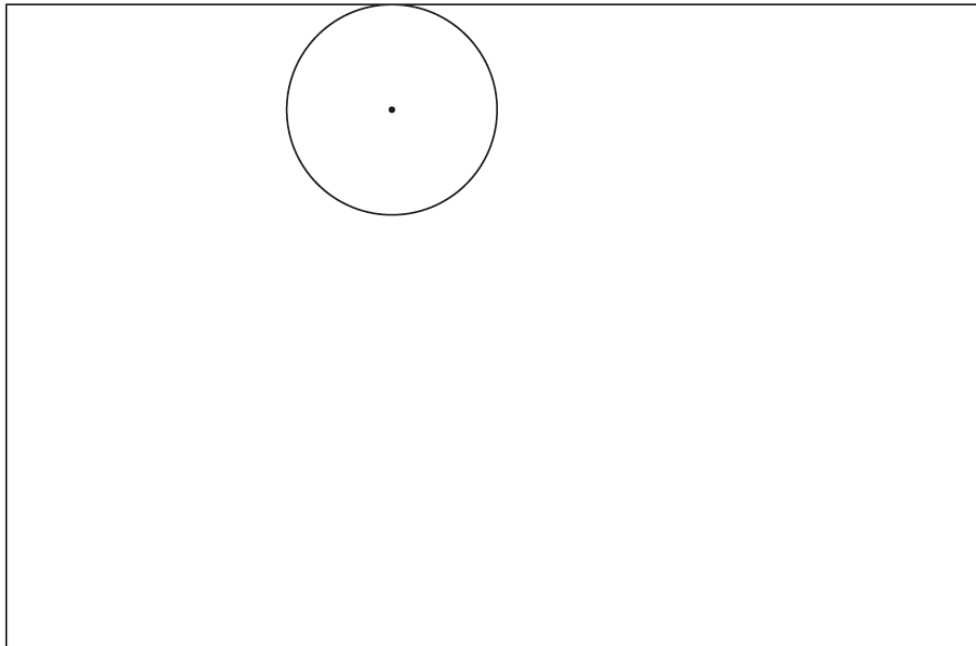
6. The diagram shows a coin inside a large circular ring. The centre of the coin is shown. The coin is rolled around the inside of the ring, so that it is always in contact with the ring. Sketch the locus of the centre of the coin as it is rolled around the inside of the ring.

[2]



QUESTION 10: June 2012 Unit 3 (Unitised 4353/02); Question 5 (3 marks).

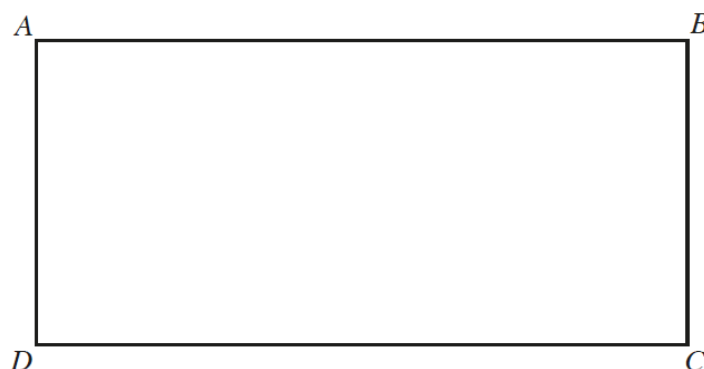
5. The diagram shows the aerial view of a ball in a box.
 The centre of the ball is marked on the diagram.
 The ball must remain in contact with at least one side of the box.
 Draw the locus of the set of points where the centre of the ball could be inside this box.



QUESTION 11: May 2009 Paper 1 (Pilot 185/13); Question 6 (3 marks).

6. Find and shade the region of points within the rectangle $ABCD$ that satisfy **both** of the following conditions.
- The points are nearer to the line AB than to the line DC .
 - The points are less than 6 cm from the point A .

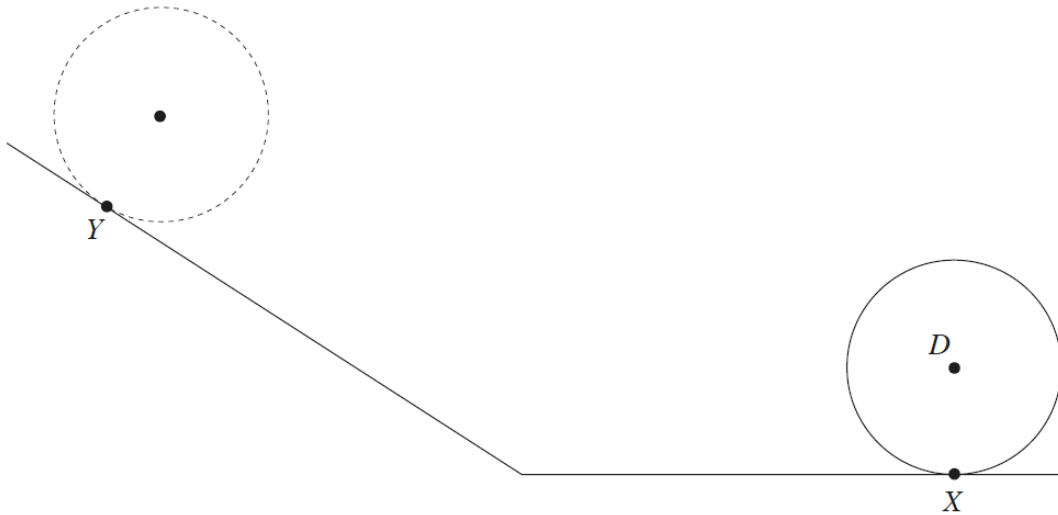
[3]



QUESTION 12: May 2008 Paper 1 (Linear 3 Tier 184/09); Question 6c (2 marks).

- (c) A circular disc, centre D , is rolled along level ground then up a slope. Draw the locus of D as the disc is rolled from X to Y .

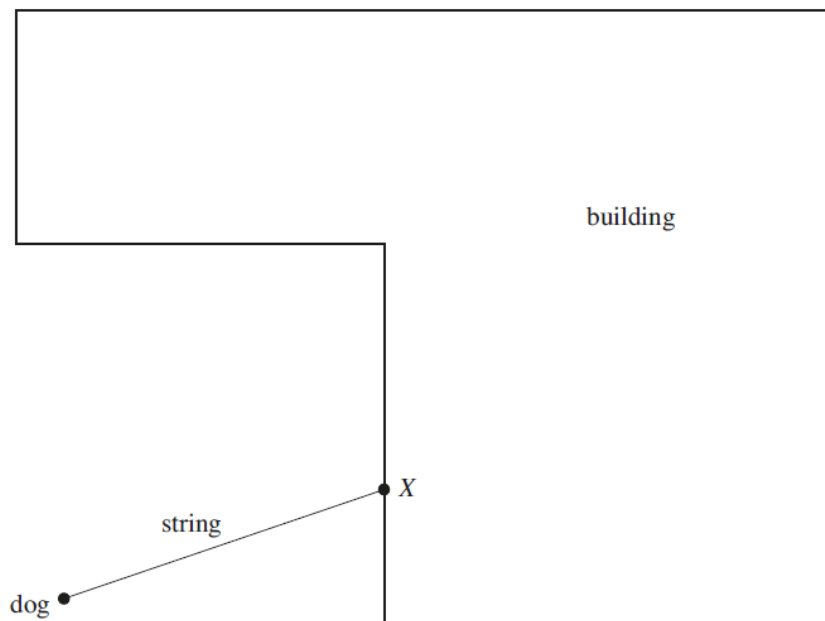
[2]



QUESTION 13: June 2006 Paper 1 (Linear 3 Tier 184/09); Question 5 (3 marks).

5. The diagram represents an aerial view of a building. A dog is tied, by means of a string, to a side of the building at X . Draw the boundary of the region in which the dog can roam.

[3]



QUESTION 14: June 2008 Module 2 Paper 1 (Modular 182/05); Question 2 (4 marks).

2. The diagram represents a plan of a field $ABCD$. There is a well at the point W . The scale used is 1cm represents 10m.

Shade in the region that satisfies all of the following conditions.

All the points in the region are

- (i) nearer to AB than to AD ,
- (ii) not more than 50m from AB ,
- (iii) within 40m of the well marked as W .

Be sure to clearly indicate the region that satisfies all three conditions.

[4]

