

Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										



General Certificate of Secondary Education  
Foundation Tier  
June 2013

# Mathematics

# 43603F

## Unit 3

Friday 14 June 2013 9.00 am to 10.30 am

# F

<p><b>For this paper you must have:</b></p> <ul style="list-style-type: none"> <li>• a calculator</li> <li>• mathematical instruments.</li> </ul>	
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### Time allowed

- 1 hour 30 minutes

### Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book.
- If your calculator does not have a  $\pi$  button, take the value of  $\pi$  to be 3.14 unless another value is given in the question.

### Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 80.
- The quality of your written communication is specifically assessed in Questions 5 and 11. These questions are indicated with an asterisk (\*).
- You may ask for more answer paper, graph paper and tracing paper. These must be tagged securely to this answer book.

### Advice

- In all calculations, show clearly how you work out your answer.

For Examiner's Use	
Examiner's Initials	
Pages	Mark
3	
4 – 5	
6 – 7	
8 – 9	
10 – 11	
12 – 13	
14 – 15	
16 – 17	
18 – 19	
20 – 21	
22 – 23	
24 – 25	
26	
<b>TOTAL</b>	

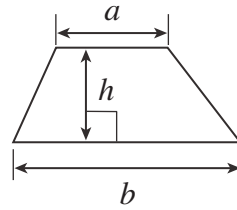


J U N 1 3 4 3 6 0 3 F 0 1

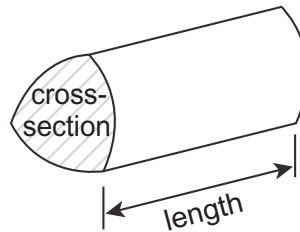
**Formulae Sheet: Foundation Tier**

You may need to use the following formulae:

**Area of trapezium** =  $\frac{1}{2}(a+b)h$

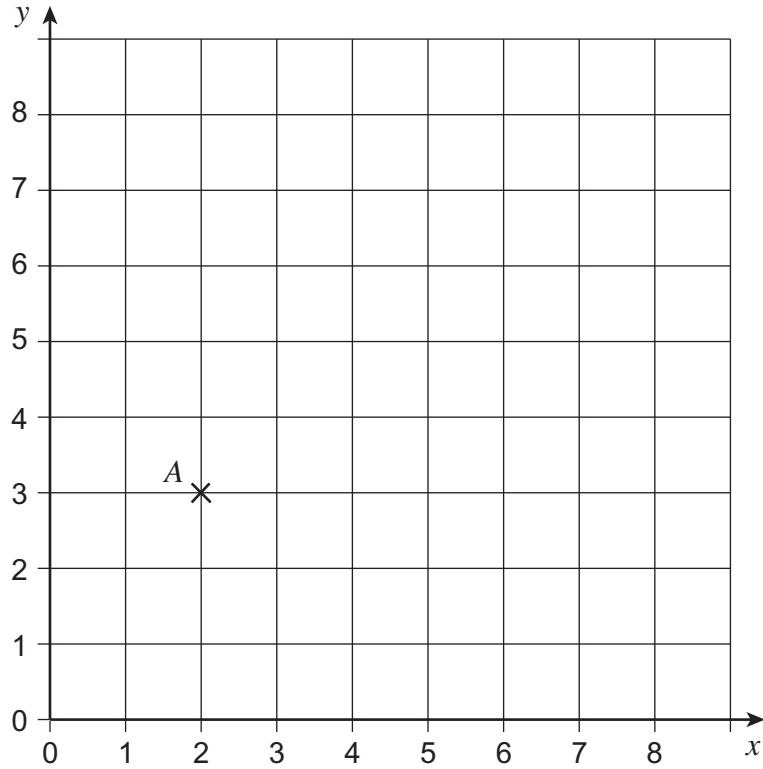


**Volume of prism** = area of cross-section  $\times$  length



Answer **all** questions in the spaces provided.

1



1 (a) Write down the coordinates of *A*.

Answer (....., .....) )

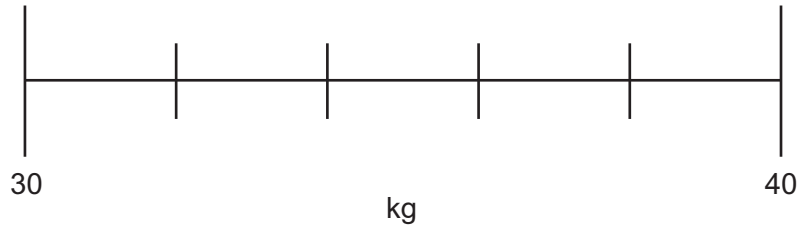
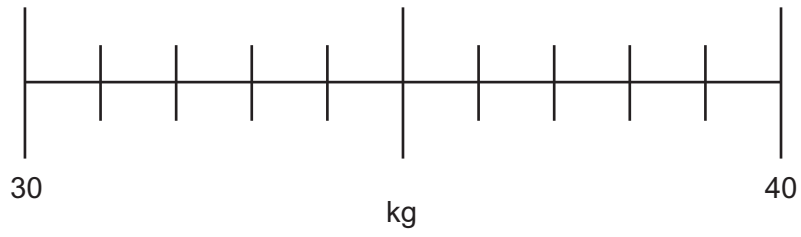
(1 mark)

1 (b) Plot the point *B*(8, 3) on the grid.

(1 mark)



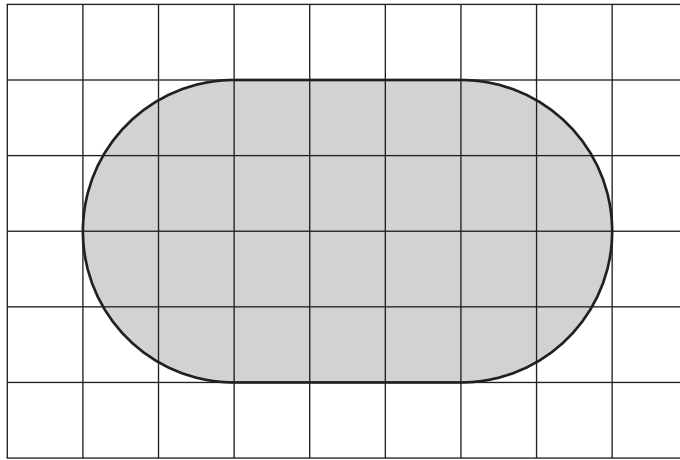
2 On each scale, mark 34 kg with an arrow.



(2 marks)



- 3 Jack drew this sketch of his lawn on squared paper.  
The length of each square represents 1 metre.

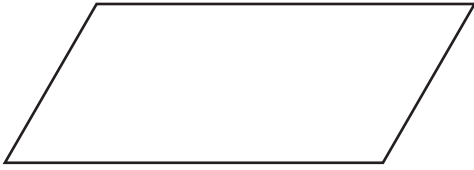


Work out an estimate for the area of his lawn.

Answer ..... m<sup>2</sup> (3 marks)



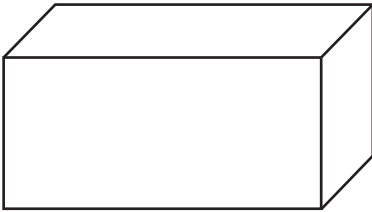
4 (a) Write down the mathematical name of this shape.



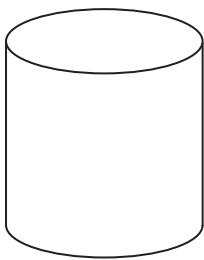
.....

(1 mark)

4 (b) Write down the mathematical names of these solid shapes.



.....



.....

(2 marks)



**\*5** A builder has a pipe that is 2 metres long.

He wants to cut lengths of 80 cm, 45 cm and 70 cm.

Does he have enough pipe?  
You **must** show your working.

.....  
.....  
.....  
.....

(3 marks)

**6 (a)** A pack of 8 batteries costs £ 5.99

How much does each battery cost?

.....  
.....

Answer ..... pence (2 marks)

**6 (b)** A pack of 6 batteries of the same type costs £ 3.99

Is this better value?

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.....

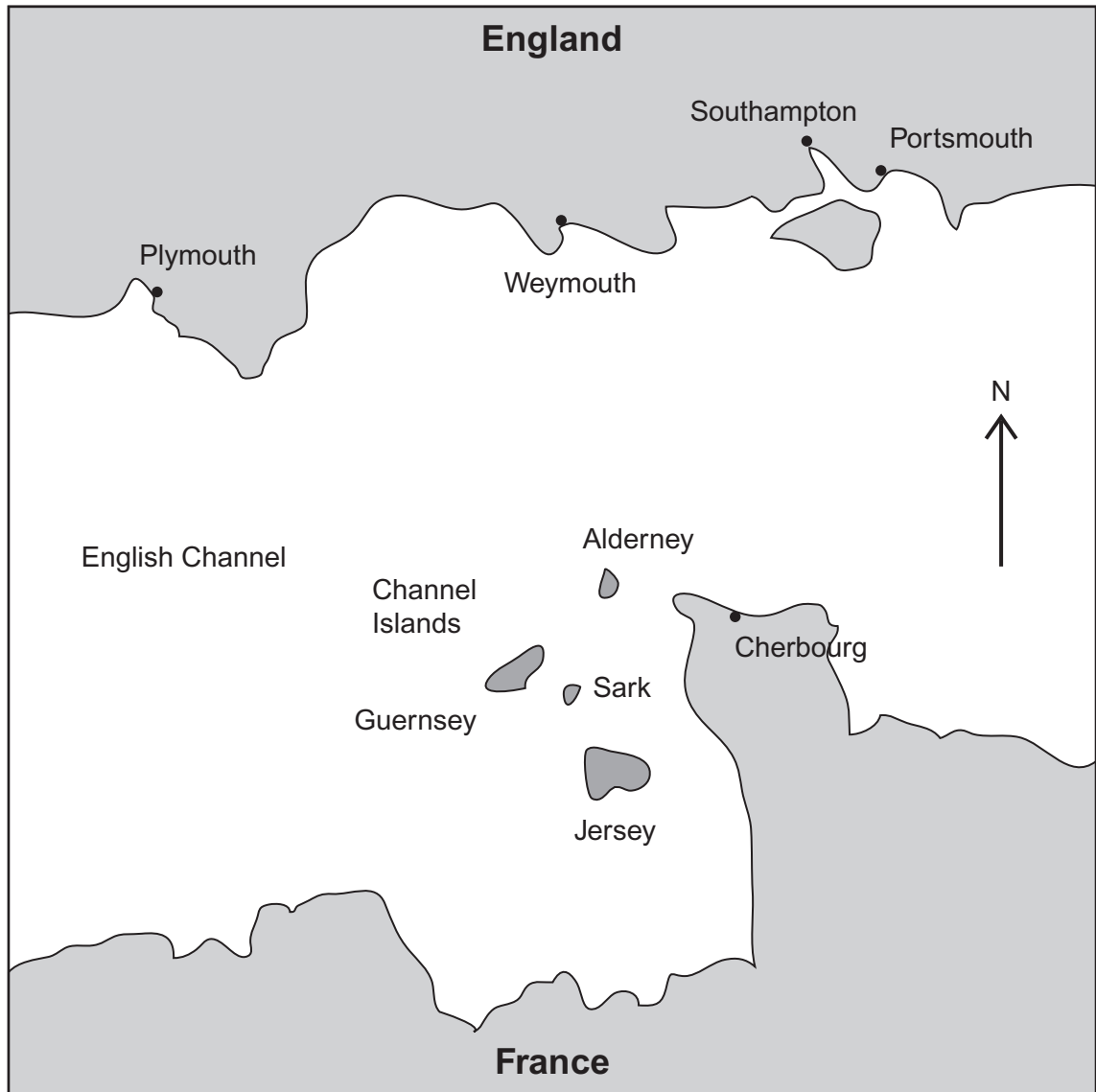
(2 marks)

10

Turn over ►



7 Here is a map.



7 (a) Complete the sentence using one of these words.

- North                      South                      East                      West

France is ..... of England.

(1 mark)





- 7 (b)** Which place **in England** on the map is North-West of Sark?  
Circle your answer.

Plymouth

Weymouth

Southampton

Portsmouth

*(1 mark)*

- 7 (c)** Which of these Channel Islands is closest to Cherbourg?  
Circle your answer.

Guernsey

Sark

Jersey

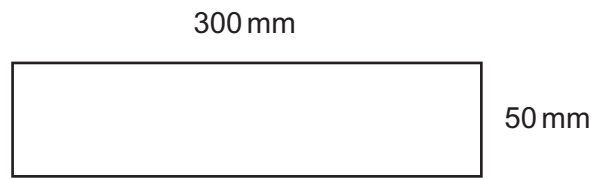
Alderney

*(1 mark)*

**Turn over for the next question**

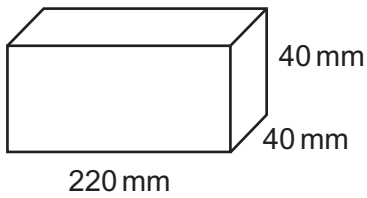


8 (a) The diagram shows a letterbox.

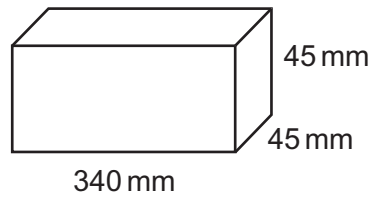


Not drawn  
accurately

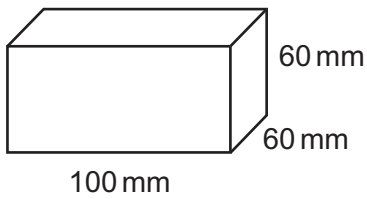
Which of these parcels will fit through the letterbox?  
Circle Yes or No for each parcel.



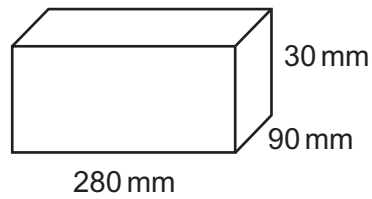
Yes      No



Yes      No



Yes      No



Yes      No

(4 marks)



**8 (b)** Pat wants a letterbox that all four of the parcels will fit through.  
What is the width and height of the smallest letterbox possible?

Width = ..... mm

Height = ..... mm (3 marks)

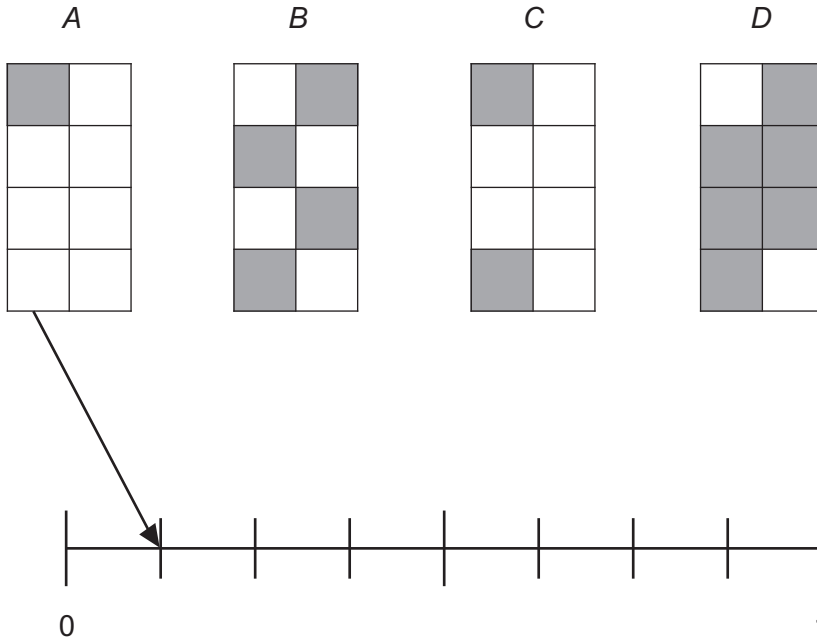
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**Turn over ►**

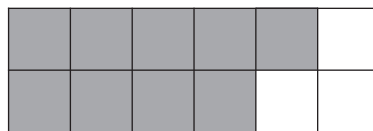


**9 (a)** Join each shape to the number line to show the fraction shaded.  
The first one has been done for you.



(3 marks)

**9 (b)** What fraction of this shape is shaded?



Give your answer in its simplest form.

.....

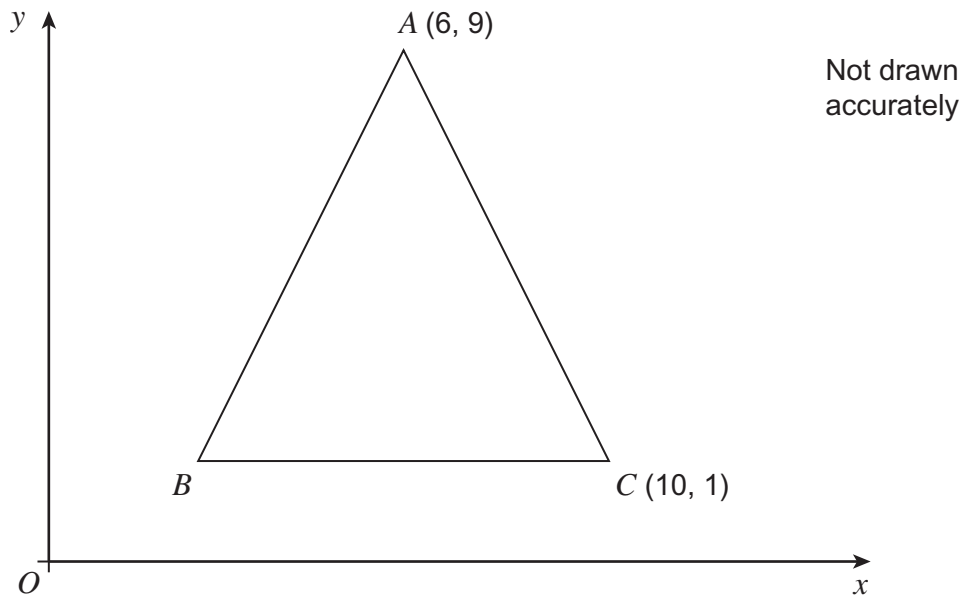
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Answer ..... (2 marks)



10

$ABC$  is an isosceles triangle.  
 $AB = AC$   
 $BC$  is parallel to the  $x$ -axis.



Work out the coordinates of  $B$ .

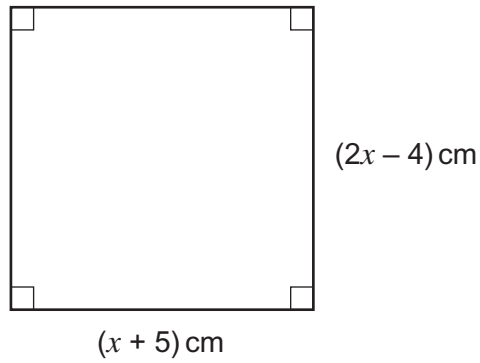
Answer ( ..... , ..... )

(2 marks)

Turn over for the next question



\*11 Give **two** reasons why this shape is a square when  $x = 9$



Not drawn  
accurately

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(4 marks)



**12** A plasterer uses this method to work out how much she charges (£).

Calculate the area to be plastered in square metres.  
Round this value to the nearest whole number.  
Multiply by 10.  
Add 30.

A rectangular ceiling measures 7.6 m by 2.4 m.

How much does she charge?

.....

.....

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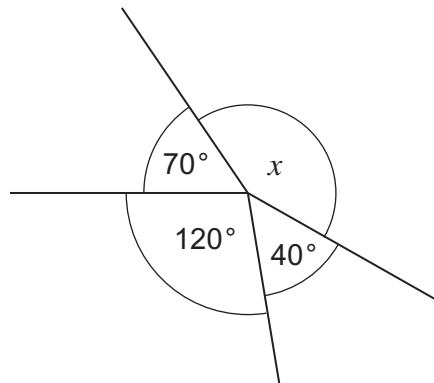
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Answer £ ..... (5 marks)

**Turn over for the next question**



13 (a) Work out the size of angle  $x$ .



Not drawn  
accurately

.....

.....

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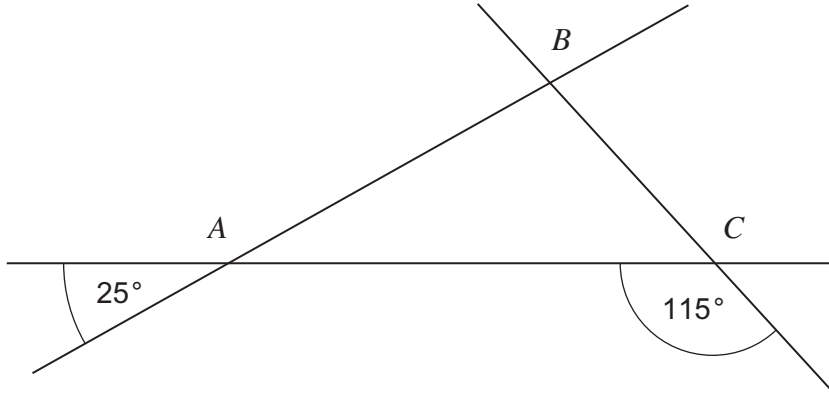
Answer ..... degrees (3 marks)





13 (b) Three straight lines cross as shown.

Not drawn  
accurately



What type of triangle is  $ABC$ ?  
You **must** show your working, which may be on the diagram.

.....

.....

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Answer ..... (4 marks)

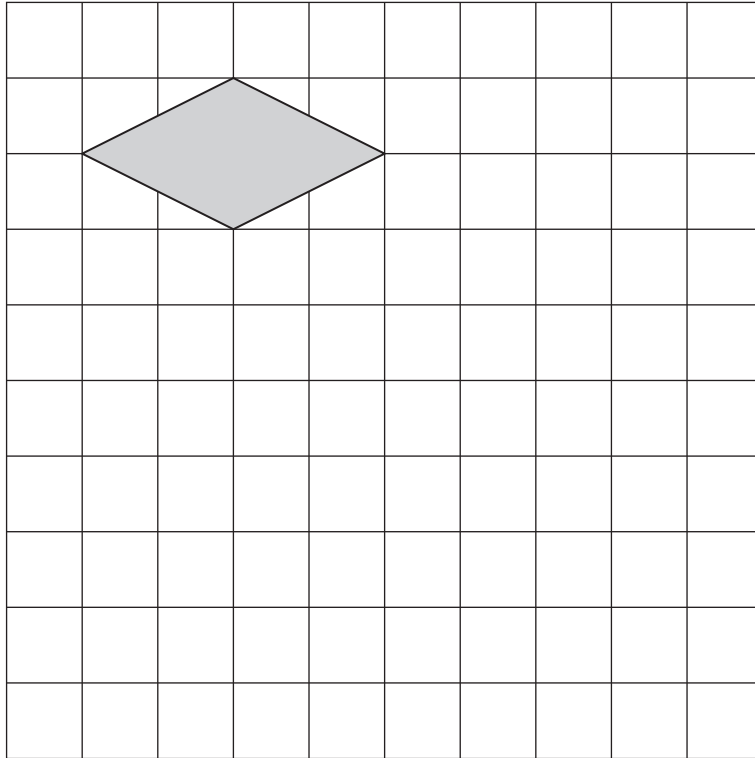
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7
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Turn over ►



14 Enlarge this shape by scale factor 2.



(2 marks)



15 You are given 2.2 pounds = 1 kilogram  
1 kilogram = 1000 grams

Matthew's grandmother asked him to buy  $\frac{1}{2}$  pound of cherries.

Cherries are sold in 100 g, 250 g and 500 g packs.

Which pack should he buy to get the nearest amount?  
You **must** show your working.

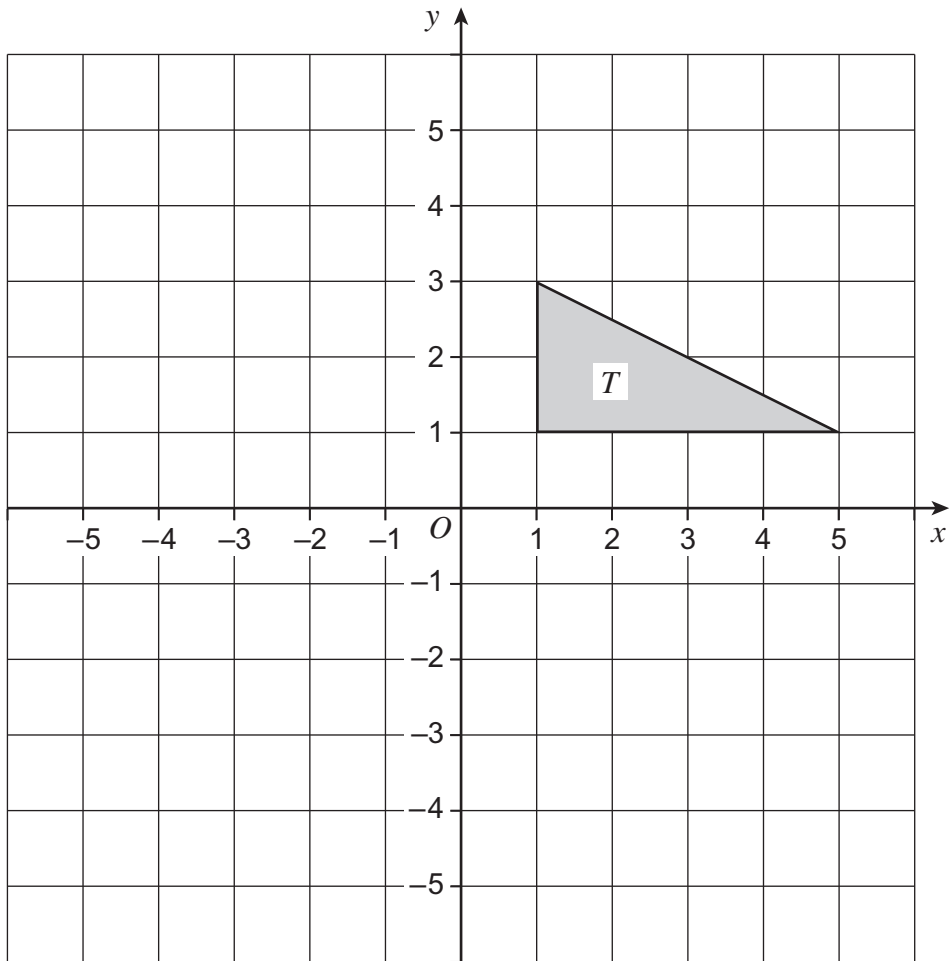
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Answer ..... g (4 marks)

Turn over for the next question



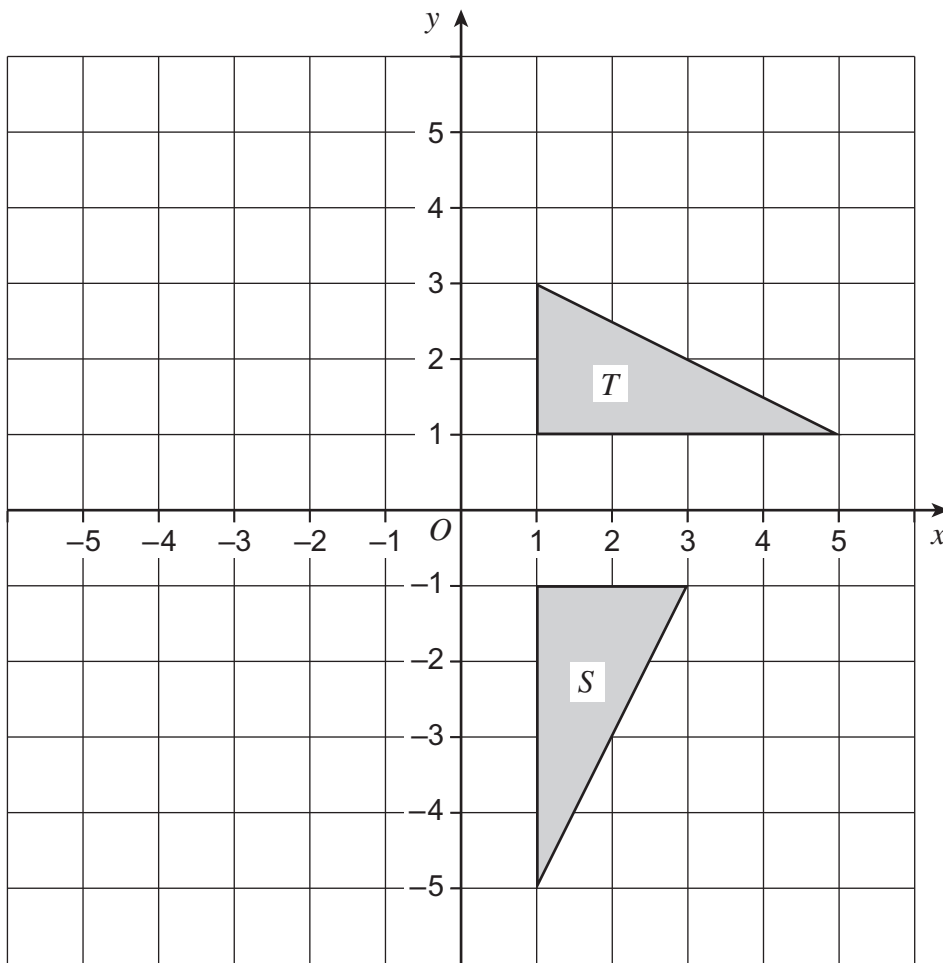
16 (a) Reflect triangle  $T$  in the line  $y = -1$



(2 marks)



16 (b) Describe fully the **single** transformation that maps triangle  $T$  to triangle  $S$ .



.....  
 ..... (3 marks)



- 17 Work out the area of a circle, radius 3.5 cm.  
Give your answer to 1 decimal place.

.....

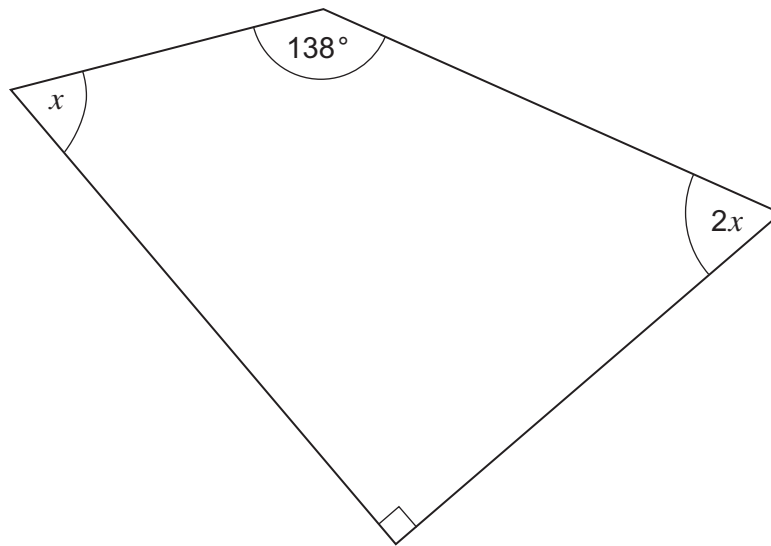
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Answer ..... cm<sup>2</sup> (3 marks)



18

Work out the value of  $x$ .Not drawn  
accurately

.....

.....

.....

Answer ..... degrees (4 marks)

Turn over for the next question

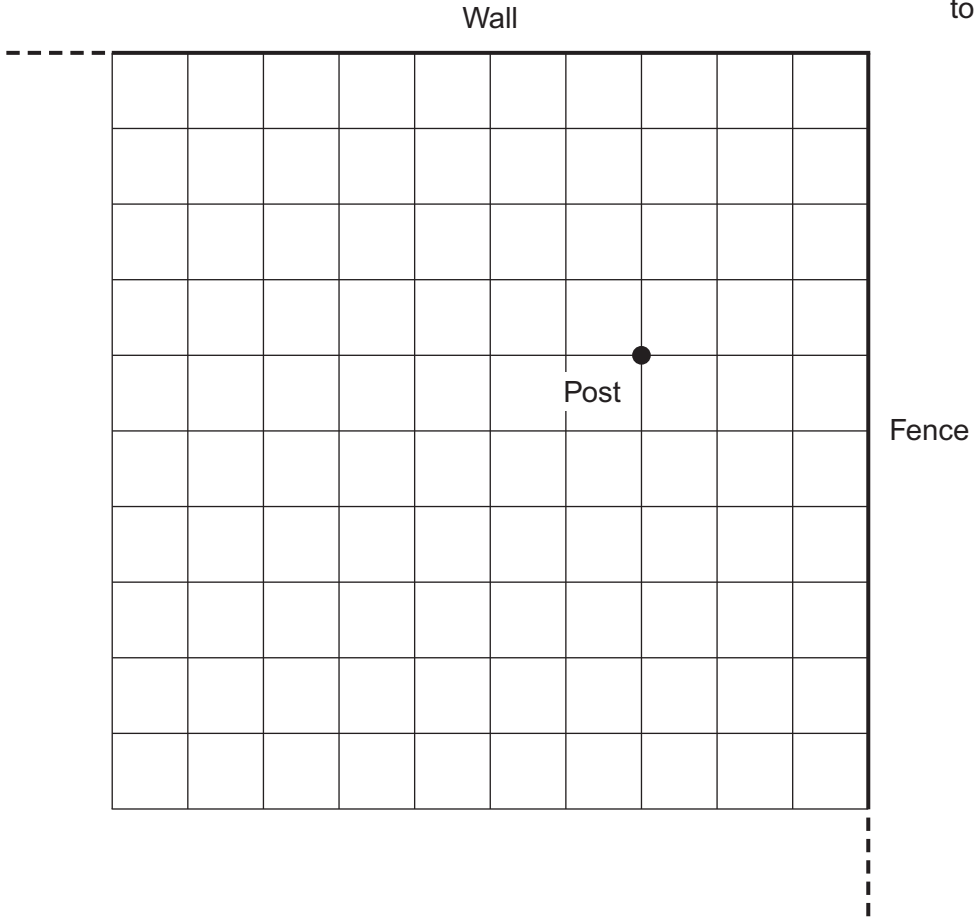
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19 The scale drawing shows a post which is 1.5 metres from the fence.

Drawn to scale



19 (a) How far is the post from the wall?

.....

.....

Answer ..... metres (1 mark)

19 (b) A pony is tied to the post by a rope. The pony can reach 2.5 metres from the post.

On the scale drawing, show accurately the area that the pony can reach. (2 marks)





- 19 (c)** Work out the scale of the drawing as a ratio.  
Give your answer in its simplest form.

.....  
.....

Scale ..... : .....

(3 marks)

**Turn over for the next question**

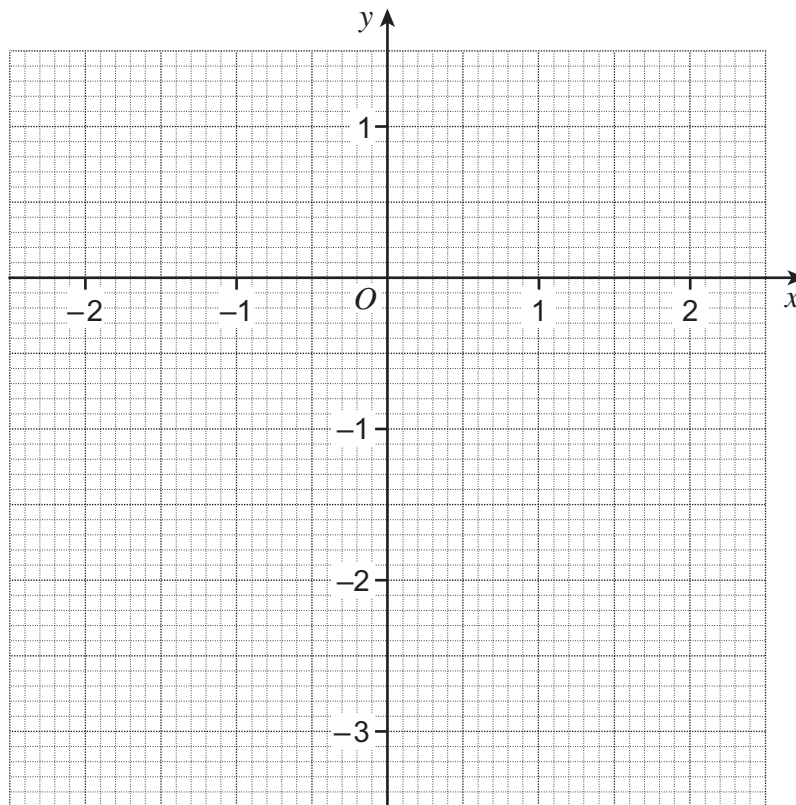


20 (a) Complete the table of values for  $y = x^2 - 3$

$x$	-2	-1	0	1	2
$y$	1				1

(2 marks)

20 (b) Draw the graph of  $y = x^2 - 3$  for values of  $x$  from -2 to 2.



(2 marks)

20 (c) Use your graph to work out the values of  $x$  when  $y = 0.5$

.....

.....

Answer ..... and ..... (2 marks)

**END OF QUESTIONS**



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