

Write your name here

Surname

Other names

**Pearson Edexcel  
International GCSE**

Centre Number

--	--	--	--	--

Candidate Number

--	--	--	--

# Mathematics B

**Level 2  
Paper 2**



Sample assessment material for first teaching September 2016

**Time: 2 hours 30 minutes**

Paper Reference

**4MB1/02**

**You must have:**

Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

Total Marks

## Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided  
– *there may be more space than you need.*
- **Calculators may be used.**

## Information

- The total mark for this paper is 100.
- The marks for **each** question are shown in brackets  
– *use this as a guide as to how much time to spend on each question.*

## Advice

- Read each question carefully before you start to answer it.
- Check your answers if you have time at the end.
- Without sufficient working, correct answers may be awarded no marks.

Turn over ►

S51835A

©2016 Pearson Education Ltd.



S 5 1 8 3 5 A 0 1 2 0

**PEARSON**





3 On one day, 90 customers bought food at a supermarket.

All 90 customers bought at least one of soup ( $S$ ), milk ( $M$ ) and bread ( $B$ ).

10 customers bought soup only.

45 customers bought milk only.

8 customers bought bread only.

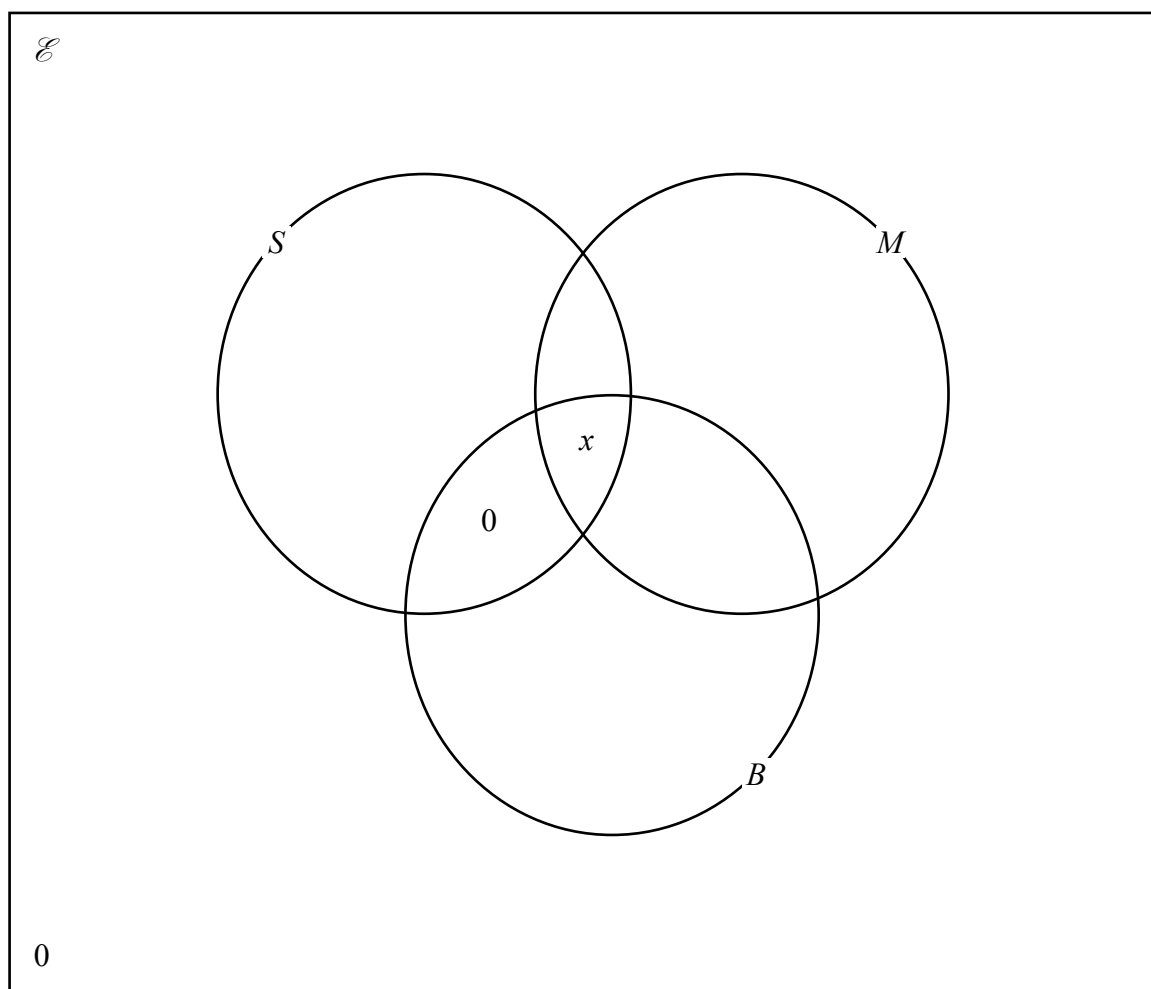
25 customers bought soup and milk.

13 customers bought milk and bread.

No customers bought soup and bread only.

$x$  customers bought soup, milk and bread.

(a) Show all this information in the Venn diagram.



(2)





DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

5 Solve the simultaneous equations

$$\begin{aligned}x^2 + y^2 &= 5 \\x + 1 &= y\end{aligned}$$

Show clear algebraic working.

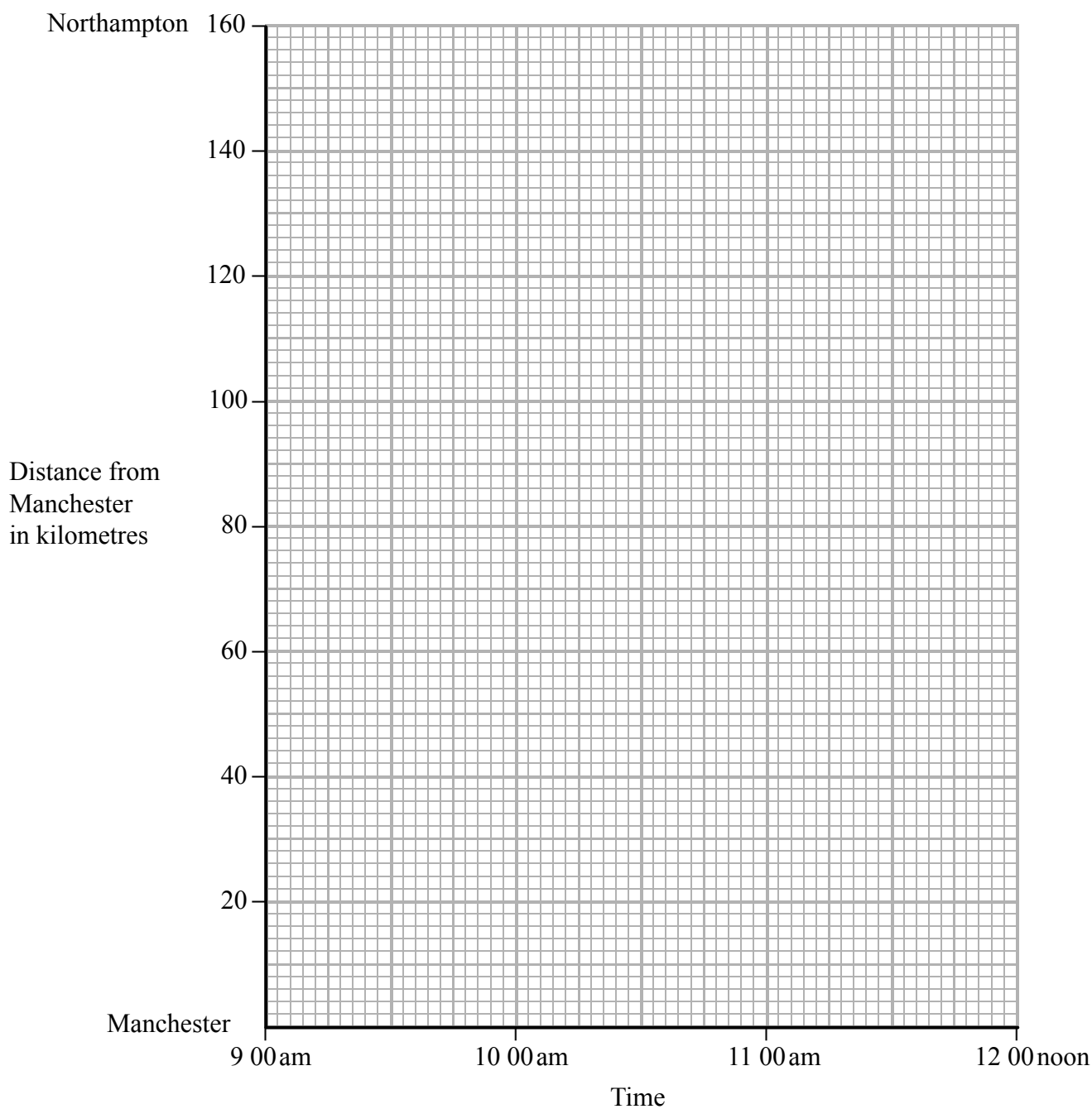
Area for showing algebraic working, consisting of multiple horizontal dotted lines.

**(Total for Question 5 is 6 marks)**





**Question 6 continued**



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

**(Total for Question 6 is 9 marks)**

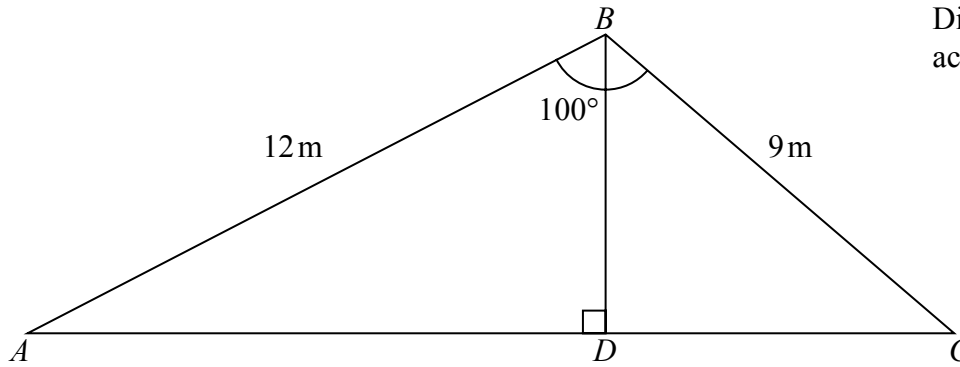


Diagram **NOT**  
accurately drawn

**Figure 1**

$A$ ,  $B$  and  $C$  are three points on horizontal ground such that  $AB = 12$  m,  $BC = 9$  m and  $\angle ABC = 100^\circ$  as shown in Figure 1.

Calculate to 3 significant figures,

(a) the length, in m, of  $AC$ , (3)

(b) the size, in degrees, of  $\angle CAB$ . (3)

$D$  is the point on  $AC$  such that  $BD$  is perpendicular to  $AC$ .

(c) Calculate the area, in  $\text{m}^2$  to 2 significant figures, of triangle  $ABD$ . (3)

$$\left[ \begin{array}{l} \text{Cosine rule: } a^2 = b^2 + c^2 - 2bc \cos A \\ \text{Sine rule: } \frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C} \\ \text{Area of triangle} = \frac{1}{2} ab \sin C \end{array} \right]$$

**Question 7 continued**

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

Handwriting practice area consisting of 28 horizontal dotted lines.

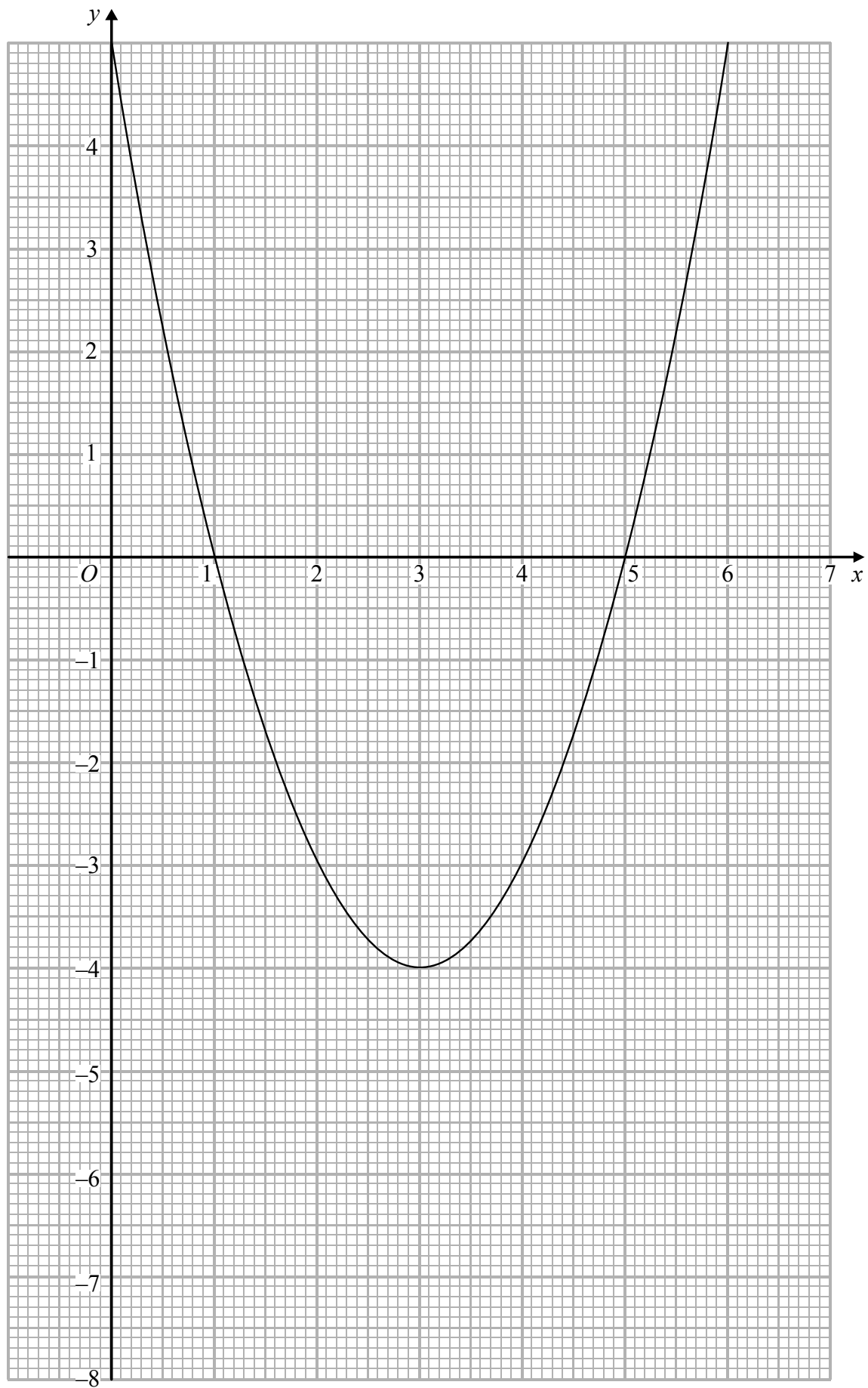
**(Total for Question 7 is 9 marks)**



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



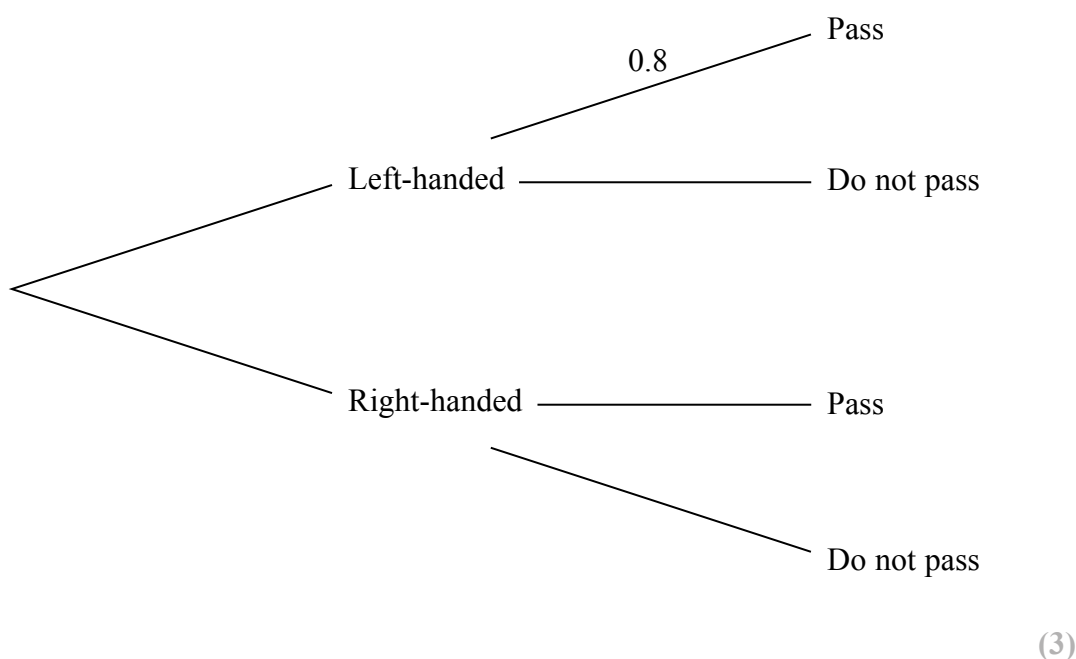
(Total for Question 8 is 11 marks)

- 9 Left-handed and right-handed people do a test. It is found that 80% of left-handed people pass the test and 90% of right-handed people pass the test.

On the island of Sinestra, a fraction  $p$  of the population are left-handed and the remainder are right-handed.

A person on Sinestra is to be chosen at random to take the test.

- (a) Write down the probability, in terms of  $p$ , that the person chosen is right-handed. (1)
- (b) Complete the probability tree diagram to show all the information.



On Sinestra the probability of passing the test is 5 times the probability of not passing the test.

- (c) From your completed probability tree diagram, or otherwise, find the value of  $p$ . (5)

A person on Sinestra is selected at random. Given that this person passed the test, use your answer to part (c) to

- (d) determine the probability that this person is left-handed. (3)

.....

.....

.....

.....

.....

.....

.....

**Question 9 continued**

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

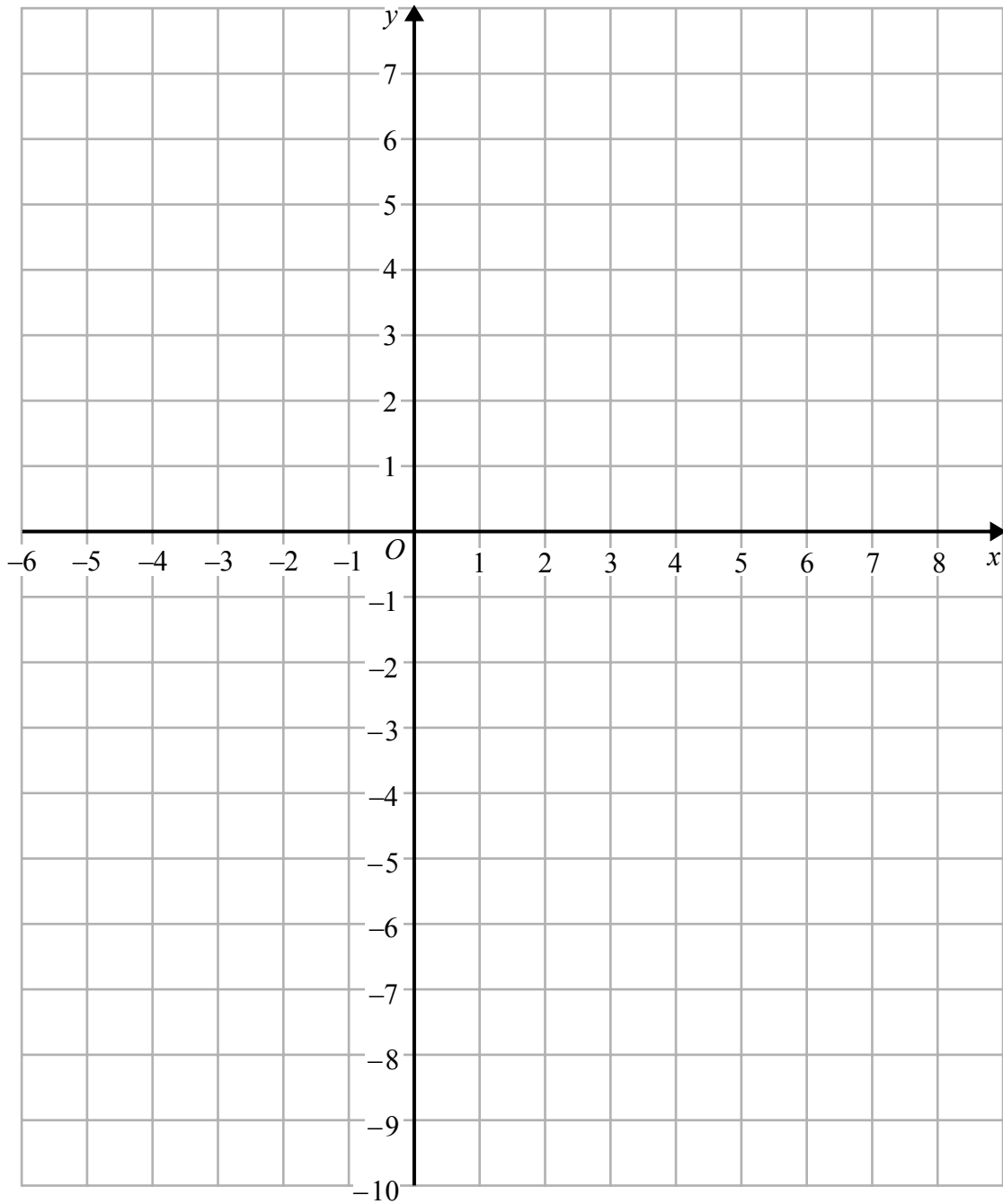
Area with horizontal dotted lines for writing.

**(Total for Question 9 is 12 marks)**





Question 10 continued



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

.....

.....

.....

.....

.....

.....

.....

**(Total for Question 10 is 14 marks)**

11

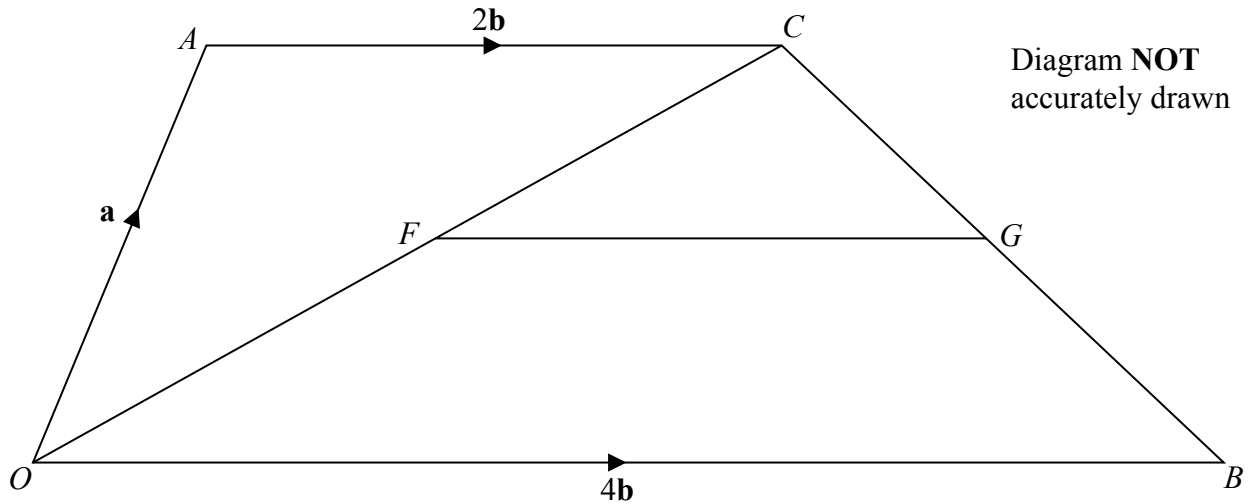


Figure 2

Figure 2 shows a quadrilateral  $OACB$  where  $\vec{OA} = \mathbf{a}$ ,  $\vec{OB} = 4\mathbf{b}$  and  $\vec{AC} = 2\mathbf{b}$   
 The point  $F$  on  $OC$  is such that  $OF:OC = 2:5$   
 The point  $G$  on  $CB$  is such that  $CG:CB = 3:5$

(a) Find, in terms of  $\mathbf{a}$  and  $\mathbf{b}$ ,

(i)  $\vec{OC}$ ,

(ii)  $\vec{CG}$ .

(4)

(b) (i) Show that  $\vec{FG} = \lambda\mathbf{b}$ , where  $\lambda$  is a constant.

(ii) Hence write down the value of  $\lambda$ .

(3)

(c) (i) Explain why  $\triangle OCB$  is similar to  $\triangle FCG$ .

(ii) Find the ratio (area of  $\triangle OCB$ ):(area of  $\triangle FCG$ ) in the form  $m:n$  where  $m$  and  $n$  are integers.

(4)

The area of  $\triangle FCG$  is  $18 \text{ cm}^2$

Calculate, in  $\text{cm}^2$

(d) (i) the area of  $\triangle OCB$ ,

(ii) the area of  $OACB$ .

(5)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

**Question 11 continued**

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

Area for writing the answer to Question 11, consisting of multiple horizontal dotted lines.

