

<b>Candidate Forename</b>		<b>Candidate Surname</b>	
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<b>Centre Number</b>						<b>Candidate Number</b>				
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**OXFORD CAMBRIDGE AND RSA EXAMINATIONS  
GENERAL CERTIFICATE OF SECONDARY EDUCATION**

**B292B**

**MATHEMATICS B (MEI)**

**Paper 2 Section B  
(Foundation Tier)**

**MONDAY 1 JUNE 2009: Morning**

**DURATION: 1 hour**

**SUITABLE FOR VISUALLY IMPAIRED CANDIDATES**

Candidates answer on the question paper.

**OCR SUPPLIED MATERIALS:**

None

**OTHER MATERIALS REQUIRED:**

Geometrical instruments  
Scientific or graphical calculator  
Tracing paper (optional)

**READ INSTRUCTIONS OVERLEAF**

## **INSTRUCTIONS TO CANDIDATES**

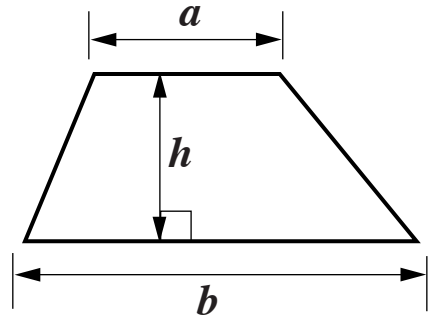
- Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes on the first page.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure that you know what you have to do before starting your answer.
- Show all your working. Marks may be given for a correct method even if the answer is incorrect.
- Answer ALL the questions.
- Write your answer to each question in the space provided, however additional paper may be used if necessary.

## **INFORMATION FOR CANDIDATES**

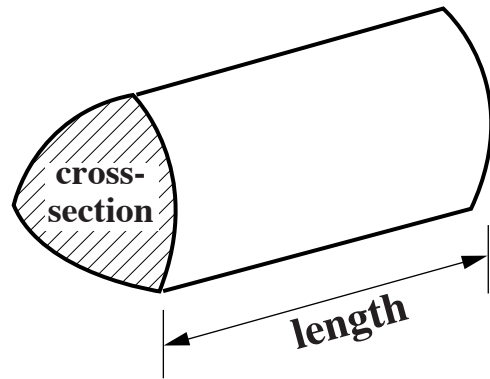
- The number of marks is given in brackets [ ] at the end of each question or part question.
- Section B starts with question 11.
- You are expected to use a calculator in Section B of this paper.
- Use the  $\pi$  button on your calculator or take  $\pi$  to be 3.142 unless the question says otherwise.
- The total number of marks for this Section is 50.

## FORMULAE SHEET: FOUNDATION TIER

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

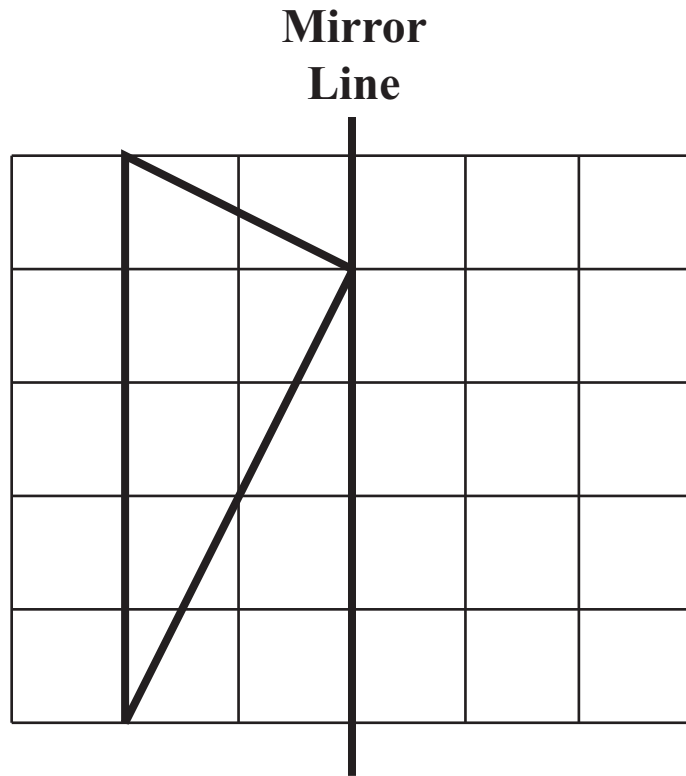


Volume of prism =  
(area of cross-section)  $\times$  length



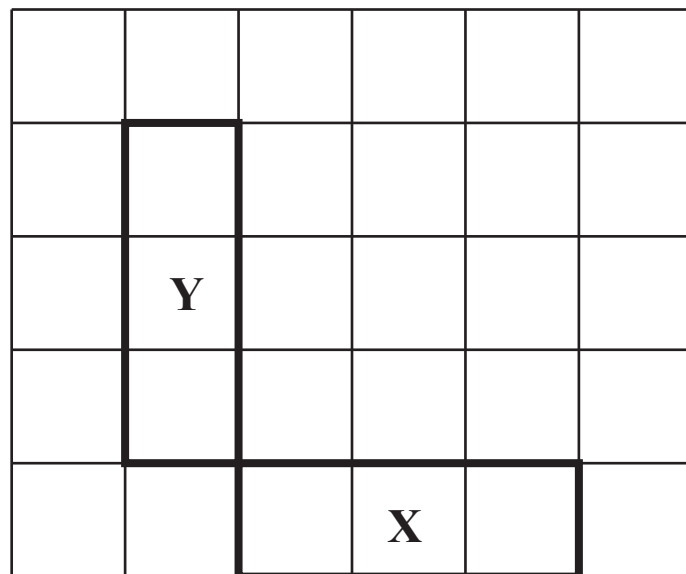
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**11 (a) A triangle is drawn on the grid below.**



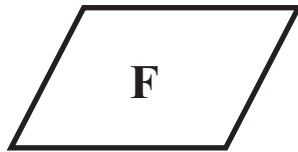
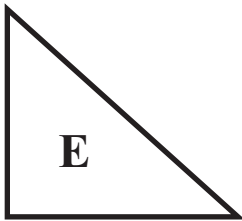
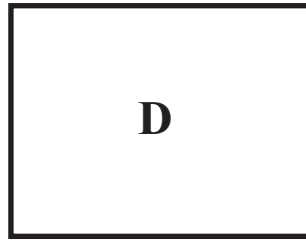
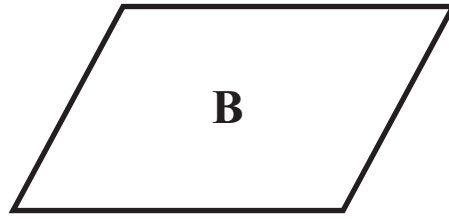
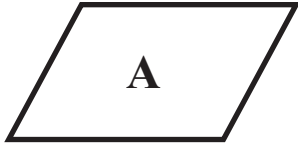
**Draw the reflection of the triangle in the mirror line. [2 marks]**

**(b) Look at the diagram below.  
Rectangle X is the reflection of rectangle Y.**



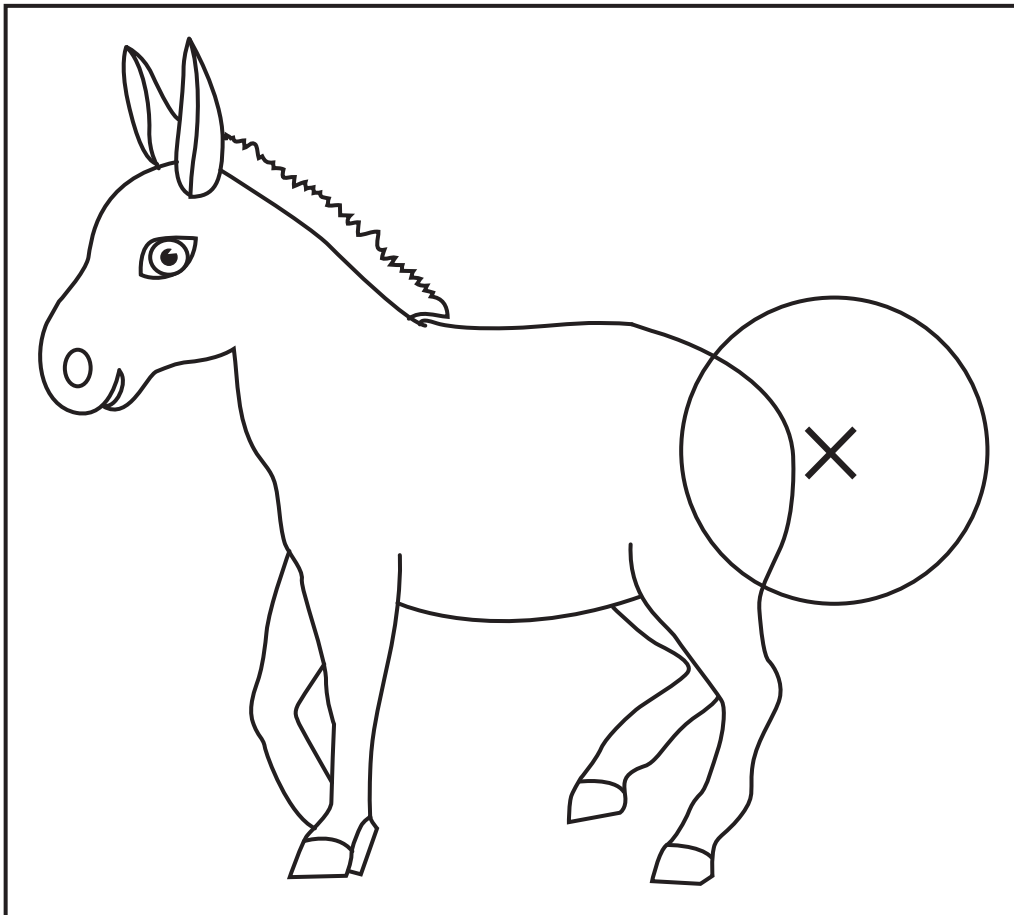
**Draw the mirror line. [1 mark]**

**(c) Which two shapes below are congruent? [1 mark]**



**(c) \_\_\_\_\_ and \_\_\_\_\_**

**12 Look at the picture of a donkey below.**



**In a game a blindfolded child sticks a pin into the picture at random.**

**Draw an arrow on the probability line below to show the probability of each of these outcomes.**

- (a) The pin goes into the donkey.  
Label this arrow A. [1 mark]**
- (b) The pin goes outside the circle.  
Label this arrow B. [1 mark]**
- (c) The pin goes into the cross.  
Label this arrow C. [1 mark]**



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**QUESTION 13 STARTS ON PAGE 8**

**13** For this question, **SHOW YOUR WORKING** clearly in each part.

The table below shows ticket prices for Deep Cave.

<b>Adult</b>	<b>£6.75</b>
<b>Child</b>	<b>£4.75</b>
<b>Group ticket (2 Adult and 2 Child) plus for each additional child</b>	<b>£20  £4</b>

A party of 3 adults and 4 children visit Deep Cave.

(a) Which of these is it cheaper to buy?

- 3 adult tickets and 4 child tickets
- 2 group tickets

[3 marks]

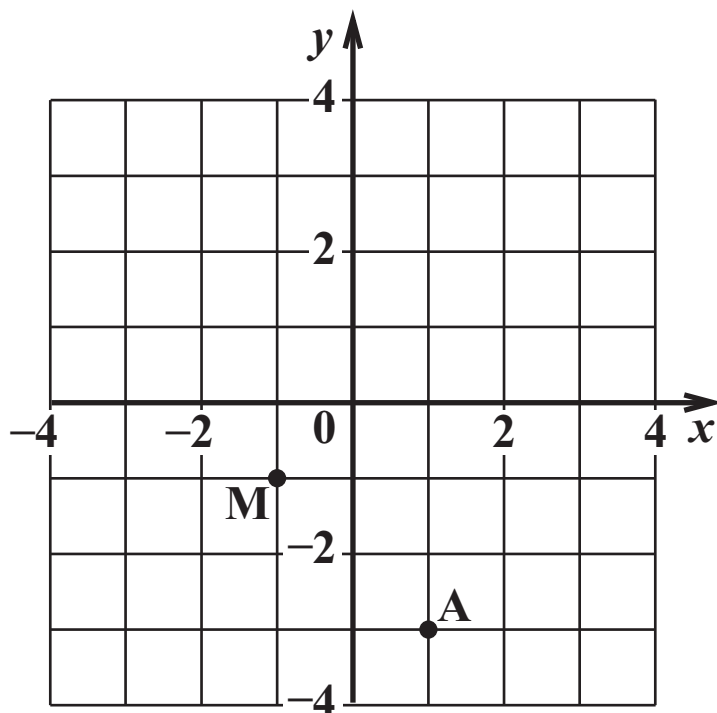
\_\_\_\_\_ is cheaper.



**(b) Find a cheaper way of buying tickets for the party. [2 marks]**

**It would be cheaper to buy \_\_\_\_\_**

**14 Look at the grid below.**



**(a) Write down the coordinates of point A and point M. [2 marks]**

**(a) A(\_\_\_\_\_, \_\_\_\_\_)**

**M(\_\_\_\_\_, \_\_\_\_\_)**

**M is the midpoint of the line that joins A to another point, B.**

**(b) On the grid, mark the point B. [1 mark]**

**15 In a school each class selects a class representative.**

- (a) A student is chosen at random from a class of 12 girls and 17 boys.**

**What is the probability that a girl is chosen? [2 marks]**

**(a)** \_\_\_\_\_

- (b) In another class the probability that a girl is chosen is  $\frac{18}{31}$**

**What is the probability that a boy is chosen? [1 mark]**

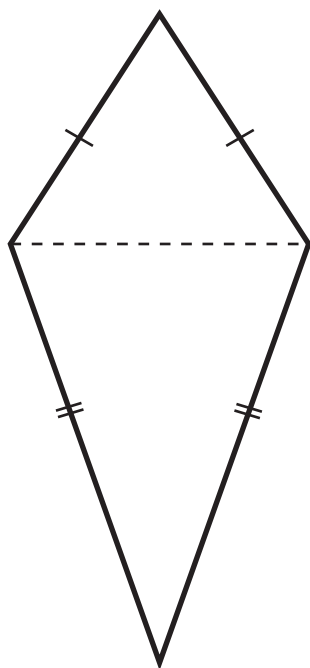
**(b)** \_\_\_\_\_

- (c) Describe a way of choosing a student at random from a class. [2 marks]**

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**16 Look at the diagram below.**



**(a) Write down the mathematical name of this quadrilateral. [1 mark]**

**(a)** \_\_\_\_\_

**One diagonal of the quadrilateral is shown.**

**(b) Draw the other diagonal.**

**Tick the correct statement about the diagonals from the three statements below. [1 mark]**

**The diagonals cross at right angles.**

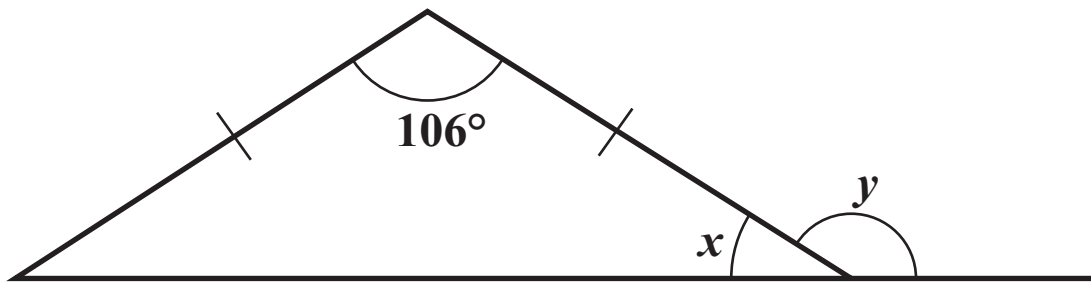
**The diagonals bisect each other.**

**The diagonals are of equal length.**

(c) Write down the mathematical name of a quadrilateral for which all three statements in part (b) are correct. [1 mark]

(c) \_\_\_\_\_

17 Look at the triangle below.  
It is not to scale.



Calculate the following.

(a) angle  $x$   
[2 marks]

(a) \_\_\_\_\_ $^\circ$

(b) angle  $y$   
[1 mark]

(b) \_\_\_\_\_ $^\circ$

**18 (a) (i)  $M$  represents a whole number.**

**What type of number is  $2M + 1$ ?  
[1 mark]**

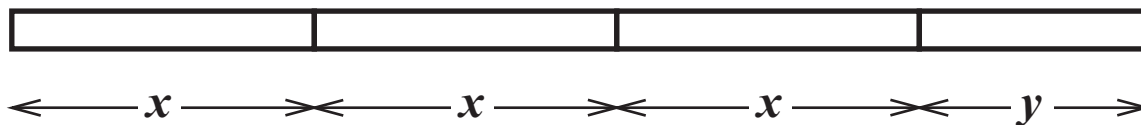
**(a)(i) \_\_\_\_\_**

**(ii)  $N$  represents a positive number.**

**What type of number is  $-N$ ?  
[1 mark]**

**(ii) \_\_\_\_\_**

**(b) Look at the diagram below.**



**It shows a long stick.**

**The stick is made by joining shorter sticks together.  
Write down an expression for the total length of the  
stick. [2 marks]**

**(b) \_\_\_\_\_**

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**QUESTION 19 STARTS ON PAGE 16**

**19 (a) 2, 3 and 5 are prime numbers.**

**Write down two more prime numbers, each less than 20**

**[2 marks]**

**(a) \_\_\_\_\_**

**(b) Kurt notices that  $2 + 3 = 5$**

**He has a theory.**

**If you add two prime numbers together,  
you always get another prime number.**

**Give an example to show that Kurt's theory is false. [1 mark]**

**(b) \_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_ which is not**

**prime, so Kurt's theory is false.**



**(c) Janice has a different theory.**

**If you add any two prime numbers greater than 2 you will never get another prime number.**

**Complete the proof of Janice's theory below by filling in the gaps.**

**Use the words**

**prime            odd            even**

**All prime numbers greater than 2 are \_\_\_\_\_**

**When you add two \_\_\_\_\_ numbers your**

**result is always \_\_\_\_\_**

**\_\_\_\_\_ numbers are divisible by 2 so this**

**result is not \_\_\_\_\_**

**[2 marks]**

**20 (a) Factorise  $a^2 - 6a$**   
**[1 mark]**

(a) \_\_\_\_\_

**(b) Solve  $5x - 2 = 3x + 7$**   
**[3 marks]**

(b) \_\_\_\_\_

**(c) Simplify  $p^5 \times p^3$**   
**[1 mark]**

(c) \_\_\_\_\_

**21 John is arranging a rugby finals day.  
He asks two companies for their prices to print the programmes.**

**The total price is £ $y$  and the number of programmes printed is  $x$ .**

**(a) Company A charges a basic fee of £200 plus an amount for each programme printed.**

**The formula for Company A is**

$$y = 200 + 0.6x$$

**What is the amount charged for each programme printed? [1 mark]**

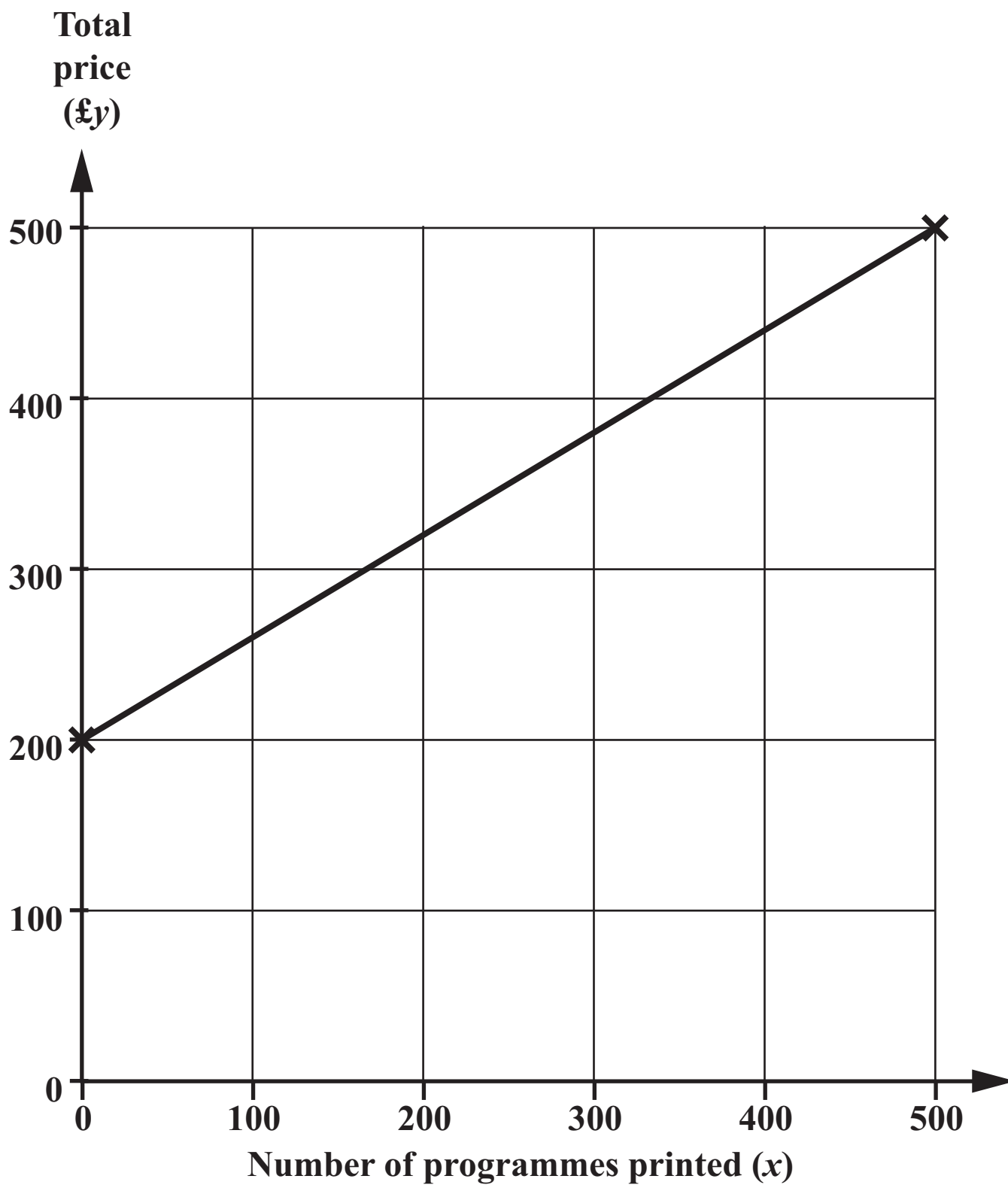
**(a) \_\_\_\_\_**

**(b) Company B does not charge a basic fee, but charges £1.10 for each programme printed.**

**Write down a formula for  $y$  in terms of  $x$  for Company B. [1 mark]**

**(b) \_\_\_\_\_**

(c) The graph is for  $y = 200 + 0.6x$



- (i) Draw a line on the grid to represent Company B's total price. [2 marks]
- (ii) Use your graph to find the number of programmes for which the total price for the two companies is the same. [2 marks]
- (c)(ii) \_\_\_\_\_

**TURN OVER FOR QUESTION 22**

**22 Two shops sell the same tiles.**

**At 'Discount Tiles' they cost £24.35 per m<sup>2</sup> + VAT.**

**At 'Total Tiles' they cost £27.73 per m<sup>2</sup> including VAT.**

**VAT on tiles is charged at 17.5%.**

**Which shop is cheaper for the tiles after VAT is included?**

**How much cheaper per m<sup>2</sup> are the tiles from this shop?**

**[4 marks]**

**(a) \_\_\_\_\_ by £ \_\_\_\_\_**

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