

**OXFORD CAMBRIDGE AND RSA EXAMINATIONS  
GCSE**

**A502/01**

**MATHEMATICS A**

**Unit B (Foundation Tier)**

**TUESDAY 11 JUNE 2013: Morning**

**DURATION: 1 hour**

**plus your additional time allowance**

**MODIFIED ENLARGED**

<b>Candidate forename</b>		<b>Candidate surname</b>	
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<b>Centre number</b>						<b>Candidate number</b>				
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**Candidates answer on the Question Paper.**

**OCR SUPPLIED MATERIALS:**

**None**

**OTHER MATERIALS REQUIRED:**

**Geometrical instruments**

**Tracing paper (optional)**

<p><b>WARNING</b> <b>No calculator can be used for this paper</b></p>
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**READ INSTRUCTIONS OVERLEAF**

## **INSTRUCTIONS TO CANDIDATES**

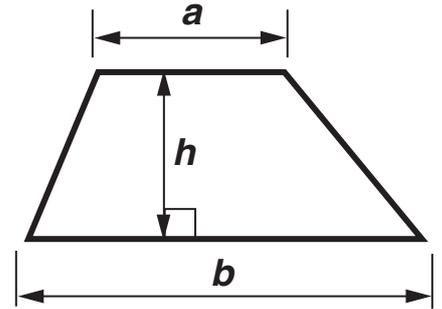
- **Write your name, centre number and candidate number in the boxes on the first page. Please write clearly and in capital letters.**
- **Use black ink. HB pencil may be used for graphs and diagrams only.**
- **Answer ALL the questions.**
- **Read each question carefully. Make sure you know what you have to do before starting your answer.**
- **Your answers should be supported with appropriate working. Marks may be given for a correct method even if the answer is incorrect.**
- **Write your answer to each question in the space provided. Additional paper may be used if necessary but you must clearly show your candidate number, centre number and question number(s).**

## **INFORMATION FOR CANDIDATES**

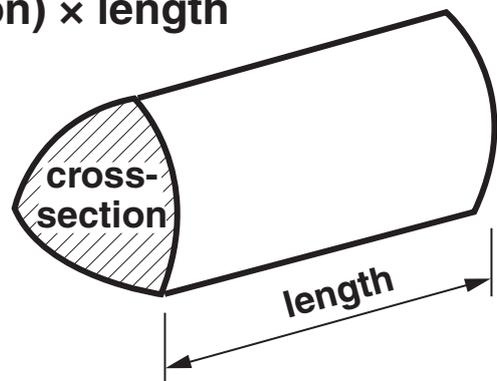
- **The number of marks is given in brackets [ ] at the end of each question or part question.**
- **Your Quality of Written Communication is assessed in questions marked with an asterisk (\*).**
- **The total number of marks for this paper is 60.**

## FORMULAE SHEET: FOUNDATION TIER

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



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



**1 (a) Work out.**

$$142 + 65 - 96$$

**(a) \_\_\_\_\_ [2]**

**(b) Work out.**

$$\frac{1}{5} \text{ of } 25$$

**(b) \_\_\_\_\_ [1]**

**(c) Work out.**

$$10\% \text{ of } \pounds 710$$

**(c) \pounds \_\_\_\_\_ [1]**

**(d) Write  $\frac{25}{40}$  as a fraction in its simplest form.**

**(d) \_\_\_\_\_ [1]**

**(e) Complete this table by filling in the two blank spaces.**

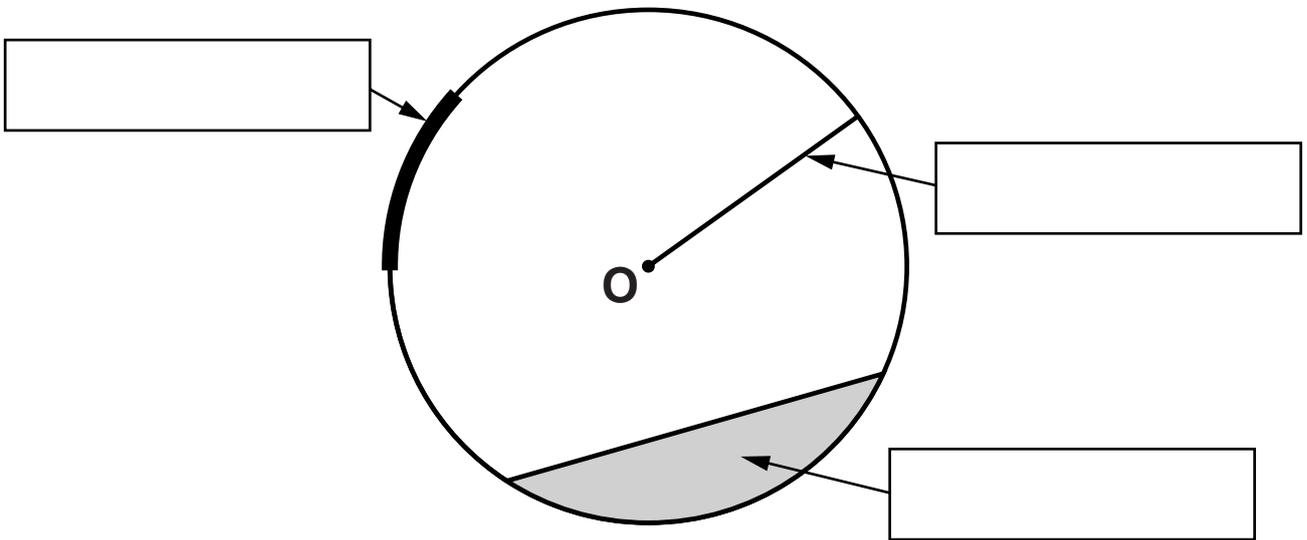
**The first row has been done for you.**

<b>Fraction</b>		<b>Decimal</b>		<b>Percentage</b>
$\frac{1}{4}$	=	0.25	=	25%
$\frac{2}{5}$	=		=	40%
	=	0.07	=	7%

**[2]**

- 2 The circle below has centre O.  
Complete the three labels for parts of the circle.  
Use words from this list.

Diameter  
Radius  
Circumference  
Semicircle  
Segment  
Arc



[3]

- 3 (a) Complete Jenny's shopping bill below.  
There are four blanks to fill in.

Item	Amount	Cost
Crisps at £1.45 a packet	4 packets	£ _____
Bottles of Cola at £2.30 a bottle	3 bottles	£ _____
Boxes of cakes at £2.05 for 2 BOXES	_____ boxes	£ 6.15
Total cost		£ _____

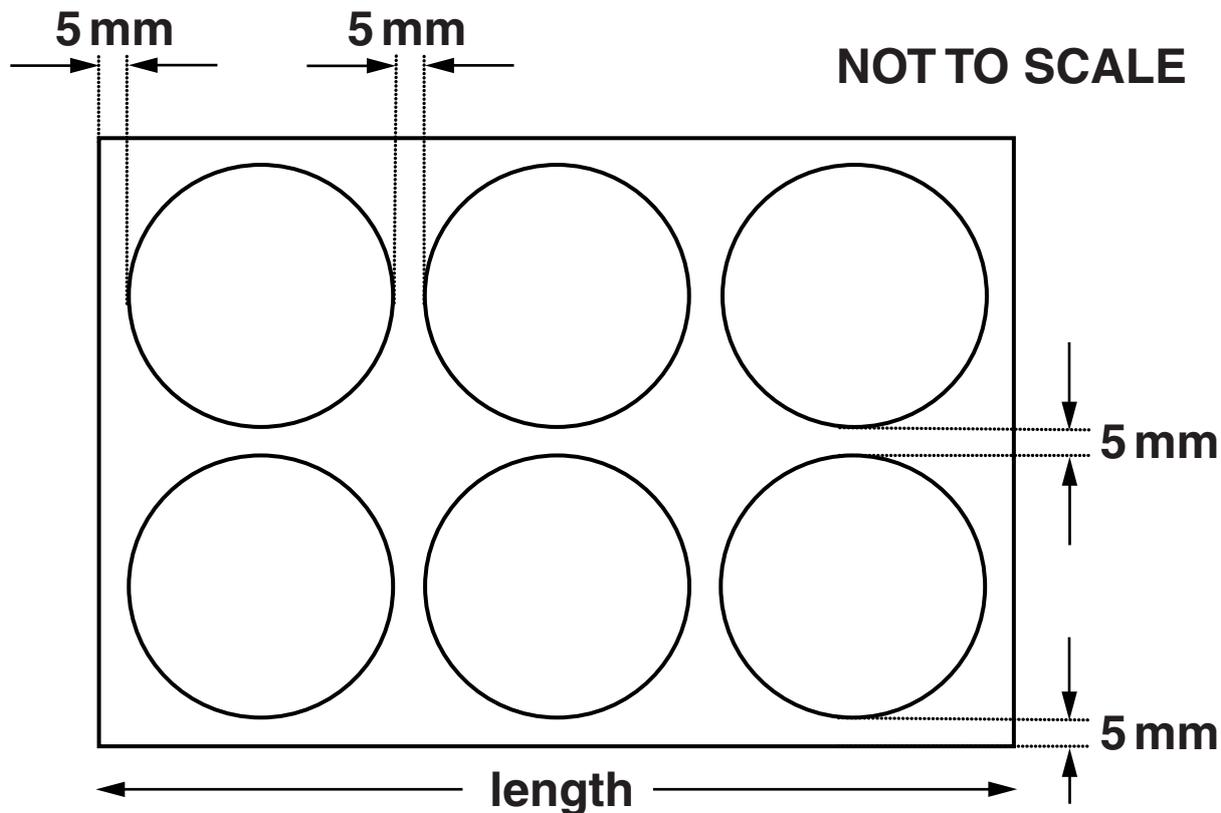
[4]

- (b) Jenny pays for her shopping with a £20 note.

Work out how much change Jenny should receive.

(b) £ \_\_\_\_\_ [1]

- 4 Dionne cuts six identical circles from a rectangle of fabric to make mats.  
This is shown on the following diagram.

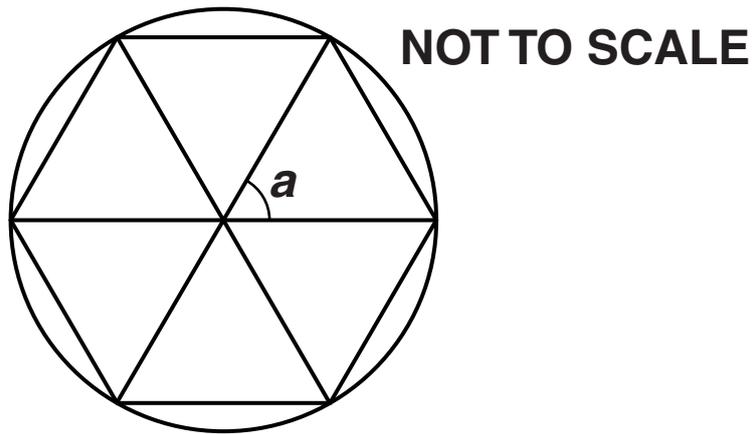


Each circle has a diameter of 10 cm.  
She leaves 5 mm between each circle and 5 mm from each circle to the edge of the fabric.

- (a) What is the length of the rectangle?  
Give your answer in centimetres.

(a) \_\_\_\_\_ cm [3]

(b) Dionne draws this regular pattern onto each circular mat.



(i)\* Without measuring, explain fully why angle  $a$  is  $60^\circ$ .

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[3]

(ii) The diameter of a mat is 10 cm.

Calculate the TOTAL length of the lines that Dionne draws on one mat.

(b)(ii) \_\_\_\_\_ cm [3]

**(c) It costs Dionne £1.60 to make each mat.  
She adds 50% of the cost for her profit.**

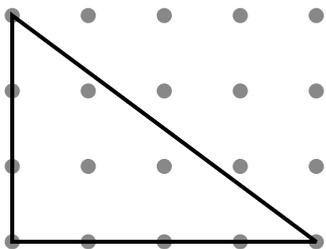
**Calculate the price at which Dionne sells each  
mat.**

**(c) £ \_\_\_\_\_ [2]**

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**TURN OVER FOR QUESTION 5**

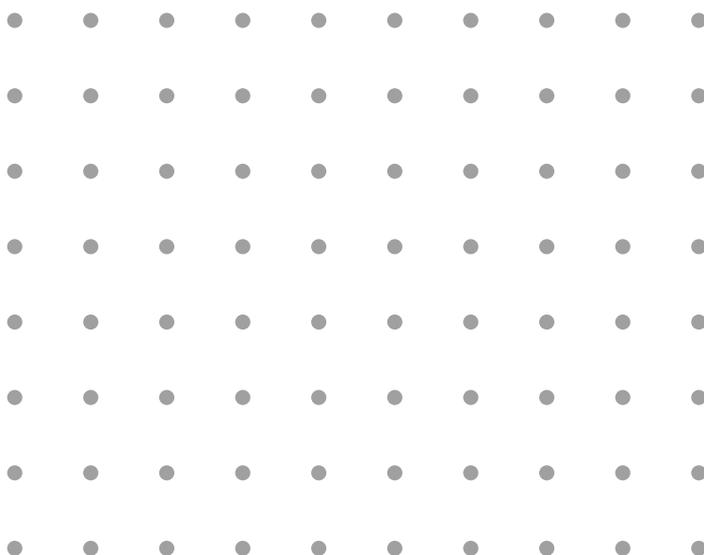
- 5 This right-angled triangle is drawn on a one-centimetre square dotted grid.



**TWO** of these triangles are joined side to side to make a logo.

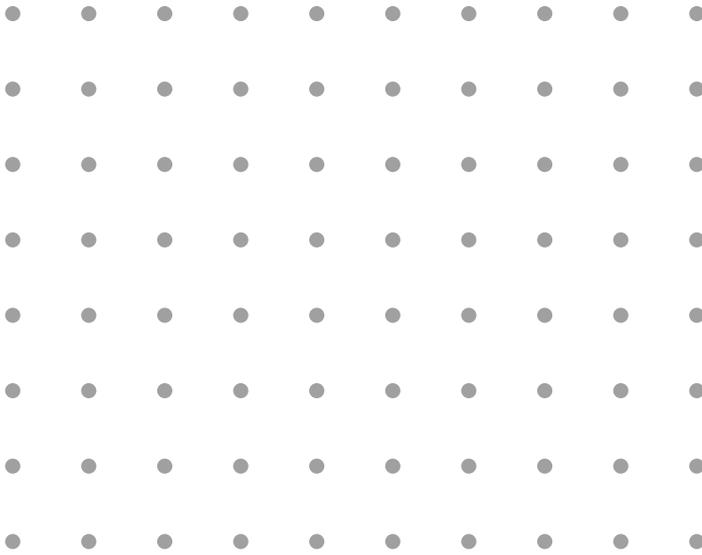
The vertices of the logo must be on dots of the grid.

- (a) On this grid, draw a logo made from two of these triangles so that it has only **ONE** line of symmetry. Draw and label the line of symmetry.



[2]

**(b) On the grid below, draw a logo made from two of these triangles so that it has rotation symmetry order TWO.**



**[2]**

6\* The *SkyHigh* balloon company has one hot air balloon.

Here is some information about their costs.

<b>Monthly loan repayment</b>	<b>£790</b>
<b>Fuel and other costs for one flight</b>	<b>£160</b>
<b>Pilot's wage for one year</b>	<b>£24 000</b>

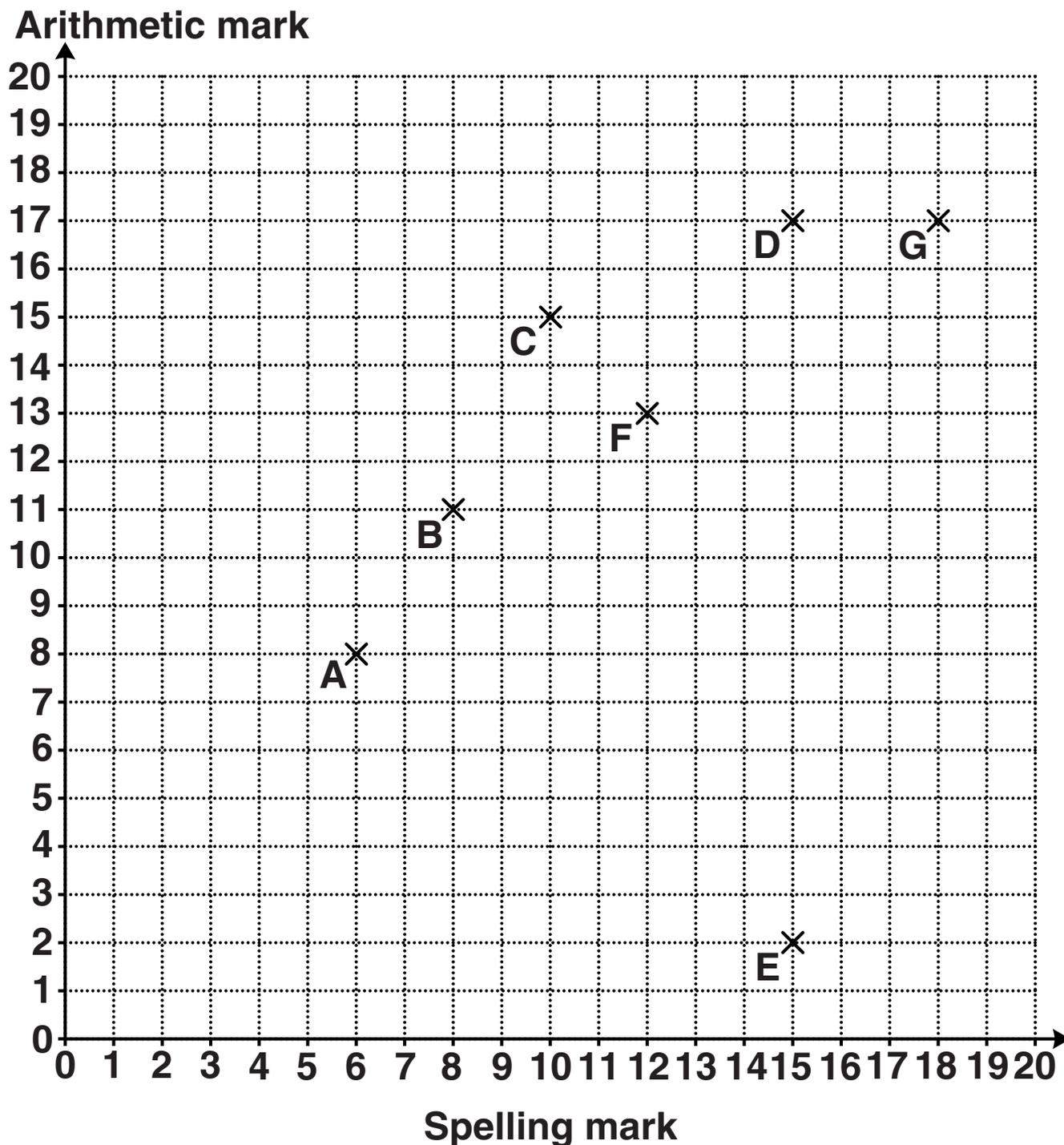
The balloon can carry up to 5 people **INCLUDING THE PILOT.**

The price of a ticket for one person is £140.

**Calculate the smallest number of flights the balloon must make in a month for *SkyHigh* to make a profit. Write down any assumptions that you make.**

**[5]**

- 7 Ten primary school children each did a spelling test and an arithmetic test. Each test was marked out of 20. The marks of seven of the children (A to G) are shown on the following scatter graph.



- (a) The marks of the other three children are given below.

Child	Spelling mark	Arithmetic mark
H	11	14
J	18	19
K	10	12

Plot and label these values on the scatter graph. [2]

- (b) (i) Describe the type of correlation shown in your diagram.

(b)(i) \_\_\_\_\_ [1]

- (ii) Give a reason why it is difficult to be sure of the strength of the correlation.

\_\_\_\_\_ [1]

- (c) Suki scored exactly 50% more marks in her arithmetic test than in her spelling test.

Which letter represents Suki?

(c) \_\_\_\_\_ [1]

**(d) Pedro learnt his spellings but not his arithmetic.  
His arithmetic score was much worse than his  
spelling score.**

**Which letter represents Pedro?**

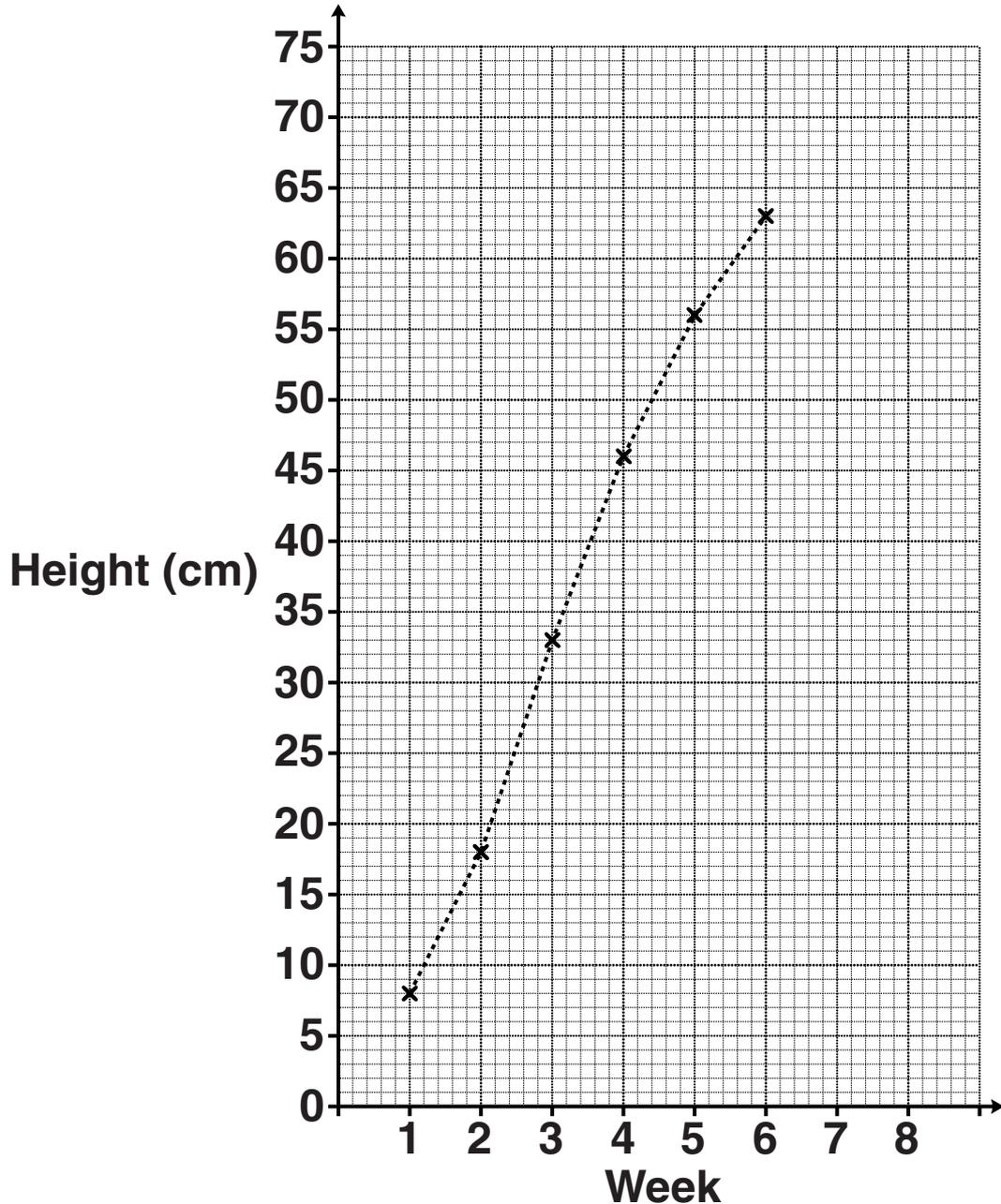
**(d) \_\_\_\_\_ [1]**

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**TURN OVER FOR QUESTION 8**

- 8 Niamh plants a bean.  
 She measures the height of the bean plant at noon  
 every Friday for 8 weeks.  
 These are her results.

Week	1	2	3	4	5	6	7	8
Height (cm)	8	18	33	46	56	63	68	72



- (a) Complete the time series graph above.  
 The first six points have been plotted for you. [2]

**(b) How much has Niamh's plant grown from week 2 to week 4?**

**(b) \_\_\_\_\_ cm [1]**

**(c) The plant grew taller during the 8 weeks.**

**What else does the graph show you about the way the plant grew?**

**Use evidence from the graph to support your answer.**

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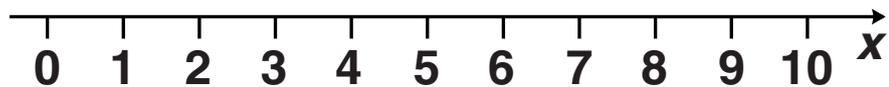
**[2]**

9 (a) Solve this inequality.

$$x - 1 \leq 6$$

(a) \_\_\_\_\_ [1]

(b) Represent the inequality  $x \geq 4$  on this number line.

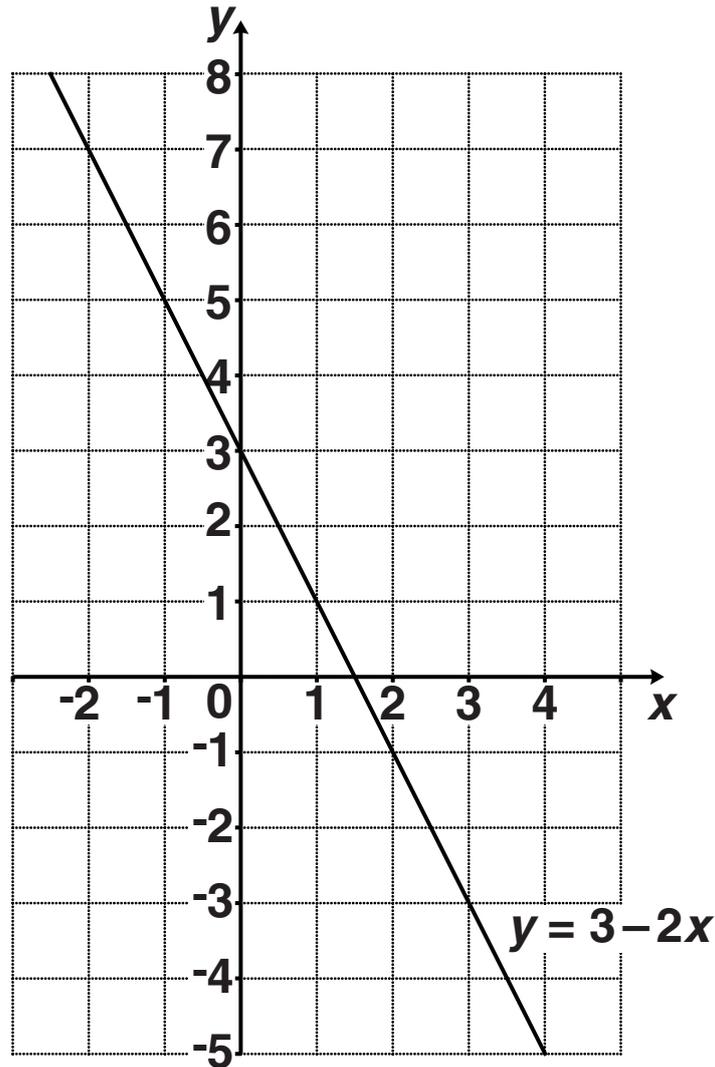


[1]

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**TURN OVER FOR QUESTION 10**

10 The graph of  $y = 3 - 2x$  is drawn on this grid.



(a) Write down

(i) the value of  $y$  where the graph of  $y = 3 - 2x$  crosses the  $y$ -axis,

(a)(i)  $y =$  \_\_\_\_\_ [1]

(ii) the gradient of  $y = 3 - 2x$ .

(ii) \_\_\_\_\_ [1]

- (b) (i) Complete this table of values for  $y = 2x - 1$  by filling in the three missing values.

$x$	-2	-1	0	2	4
$y$	-5			3	

[2]

- (ii) On the grid, draw the graph of  $y = 2x - 1$  for values of  $x$  from -2 to 4.

[2]

- (c) Use the graphs to solve these simultaneous equations.

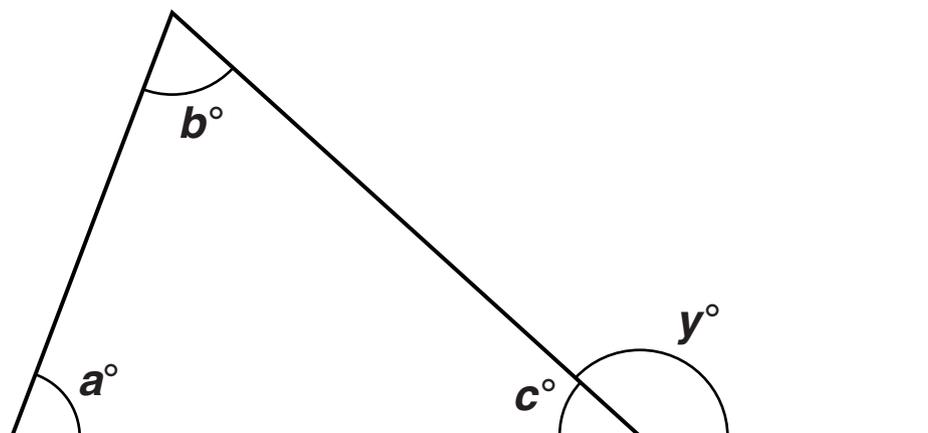
$$y = 3 - 2x$$

$$y = 2x - 1$$

(c)  $x =$  \_\_\_\_\_

$y =$  \_\_\_\_\_ [2]

- 11 The following diagram shows a triangle with one of its sides extended.



Complete these statements to show that  $y = a + b$ .

$a + b + c =$  \_\_\_\_\_ because \_\_\_\_\_

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Therefore  $a + b = 180 - c$ .

Also  $y = 180 - c$  because \_\_\_\_\_

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Therefore  $y = a + b$ .

This proves that the exterior angle of a triangle is equal to the sum of the two \_\_\_\_\_ opposite angles.

[4]

**END OF QUESTION PAPER**

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