

**Tuesday 11 June 2013 – Morning**

**GCSE MATHEMATICS A**

**A502/01** Unit B (Foundation Tier)

Candidates answer on the Question Paper.

**OCR supplied materials:**  
None

**Other materials required:**

- Geometrical instruments
- Tracing paper (optional)

**Duration:** 1 hour



|                    |  |                   |  |
|--------------------|--|-------------------|--|
| Candidate forename |  | Candidate surname |  |
|--------------------|--|-------------------|--|

|               |  |  |  |  |  |  |                  |  |  |  |  |
|---------------|--|--|--|--|--|--|------------------|--|--|--|--|
| Centre number |  |  |  |  |  |  | Candidate number |  |  |  |  |
|---------------|--|--|--|--|--|--|------------------|--|--|--|--|

**INSTRUCTIONS TO CANDIDATES**

- Write your name, centre number and candidate number in the boxes above. 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).
- Do **not** write in the bar codes.

**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**.
- This document consists of **16** pages. Any blank pages are indicated.



This paper has been pre modified for carrier language

## Formulae Sheet: Foundation Tier

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



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



**PLEASE DO NOT WRITE ON THIS PAGE**

1 (a) Work out.

$$142 + 65 - 96$$

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

(b) Work out.

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

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

(c) Work out.

$$10\% \text{ of } \text{£}710$$

(c) £ \_\_\_\_\_ [1]

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

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

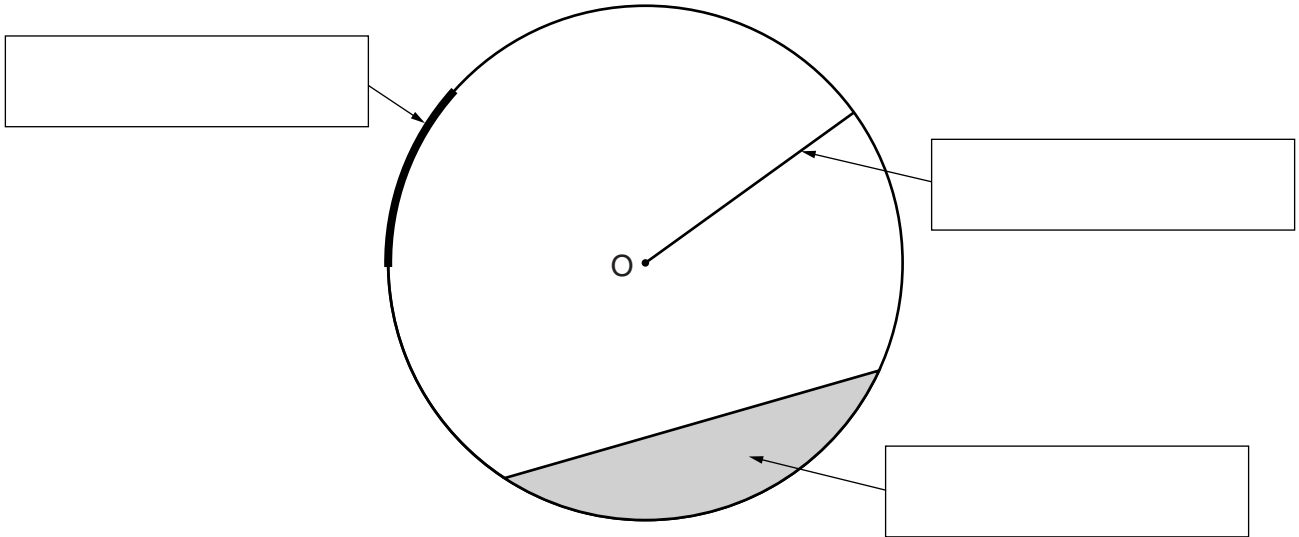
(e) Complete this table.  
The first row has been done for you.

| Fraction      |   | Decimal |   | Percentage |
|---------------|---|---------|---|------------|
| $\frac{1}{4}$ | = | 0.25    | = | 25%        |
| $\frac{2}{5}$ | = |         | = | 40%        |
|               | = | 0.07    | = | 7%         |

[2]

- 2 This circle 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.

| 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 <b>2 boxes</b> | _____ boxes | £ 6.15  |
| Total cost                                 |             | £ _____ |

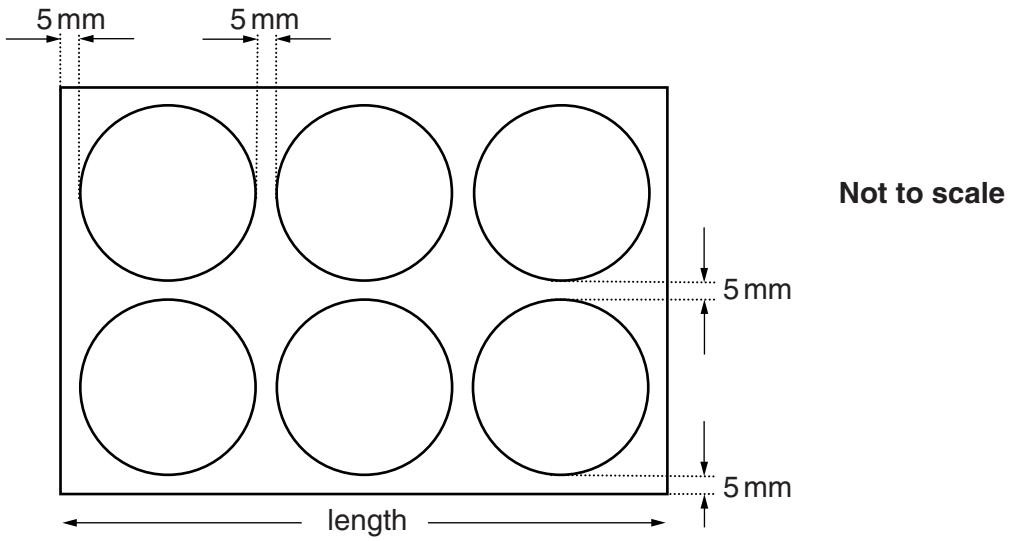
[4]

(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.

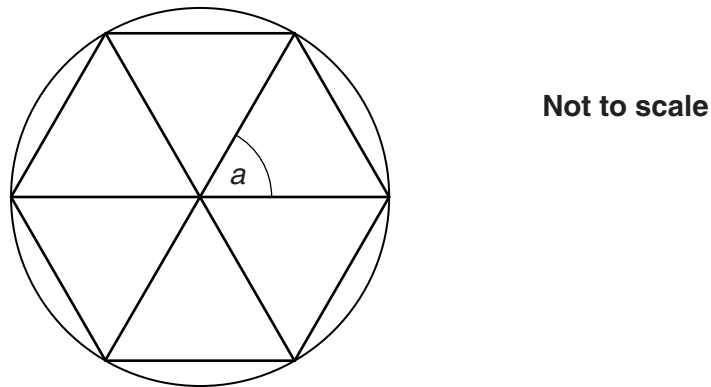


Each circle has a diameter of 10 cm.  
 She leaves 5 mm between each circle and 5 mm from each circle to the edge of the fabric.

(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.

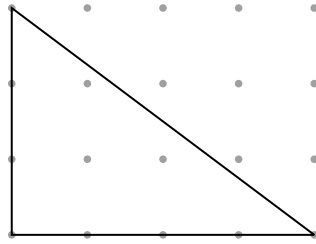
(b)(ii) \_\_\_\_\_ cm [3]

- (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.

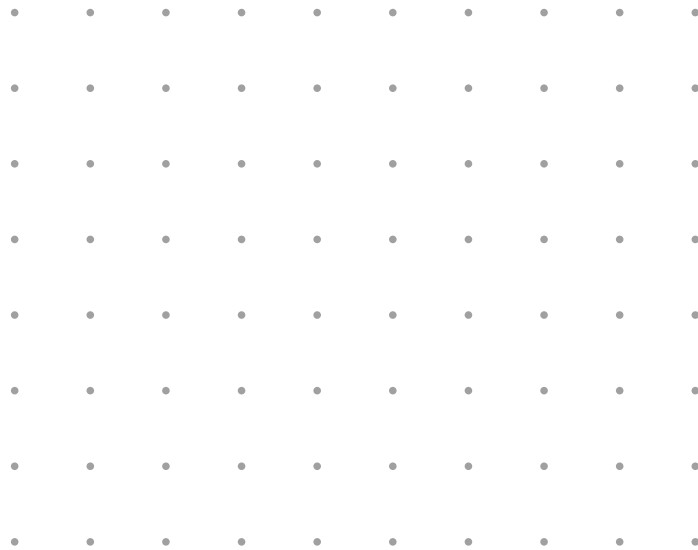
(c) £ \_\_\_\_\_ [2]

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



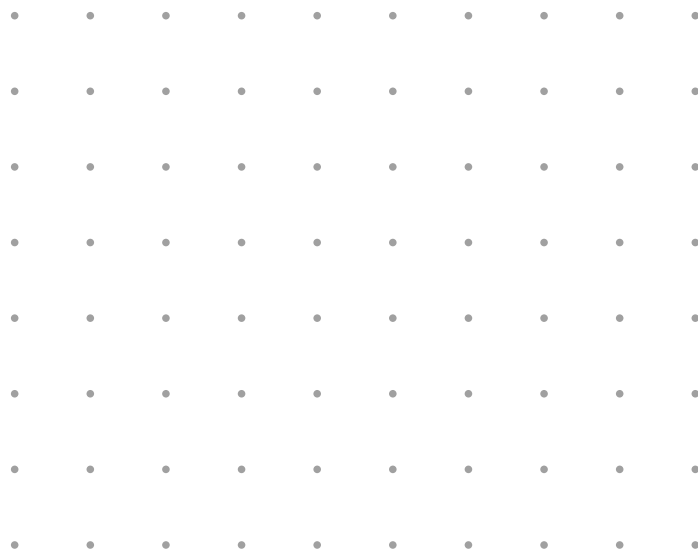
**Two** of these triangles are joined side to side to make a logo.  
The vertices of the logo must be on dots of the grid.

- (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.

|                                     |         |
|-------------------------------------|---------|
| Monthly loan repayment              | £790    |
| Fuel and other costs for one flight | £160    |
| Pilot's wage for one year           | £24 000 |

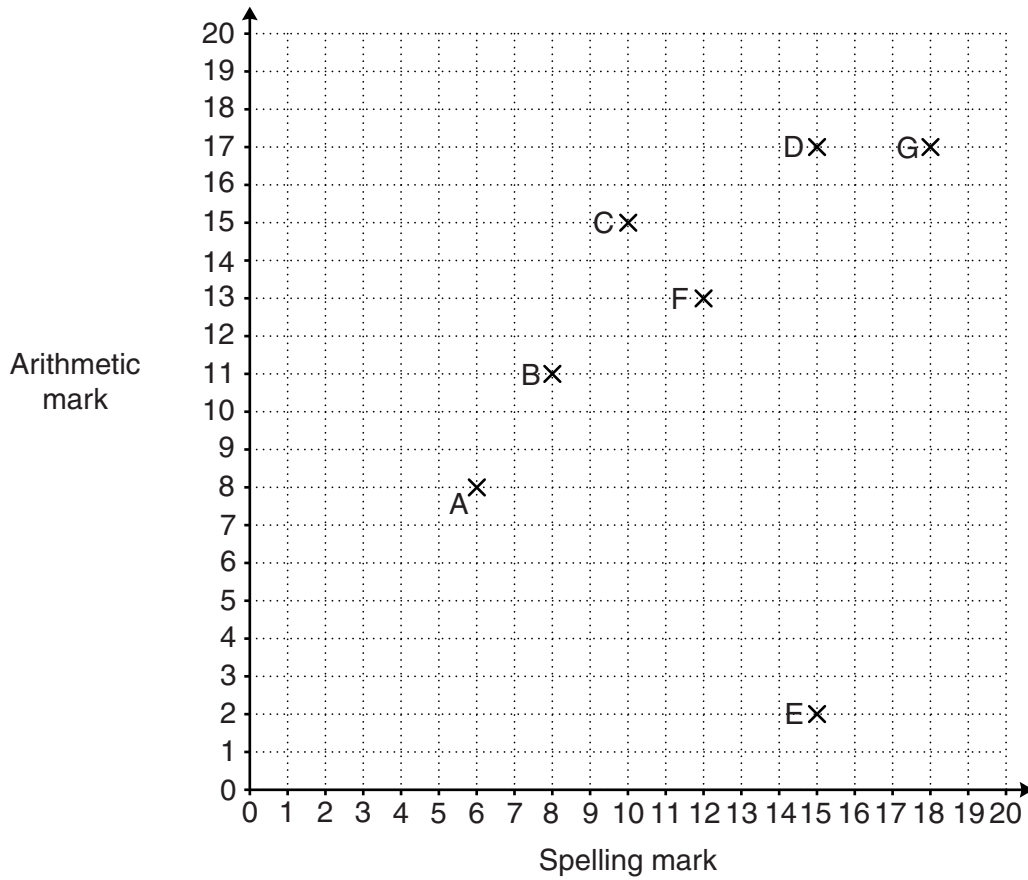
The balloon can carry up to 5 people **including the pilot**.  
The price of a ticket for one person is £140.

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 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]

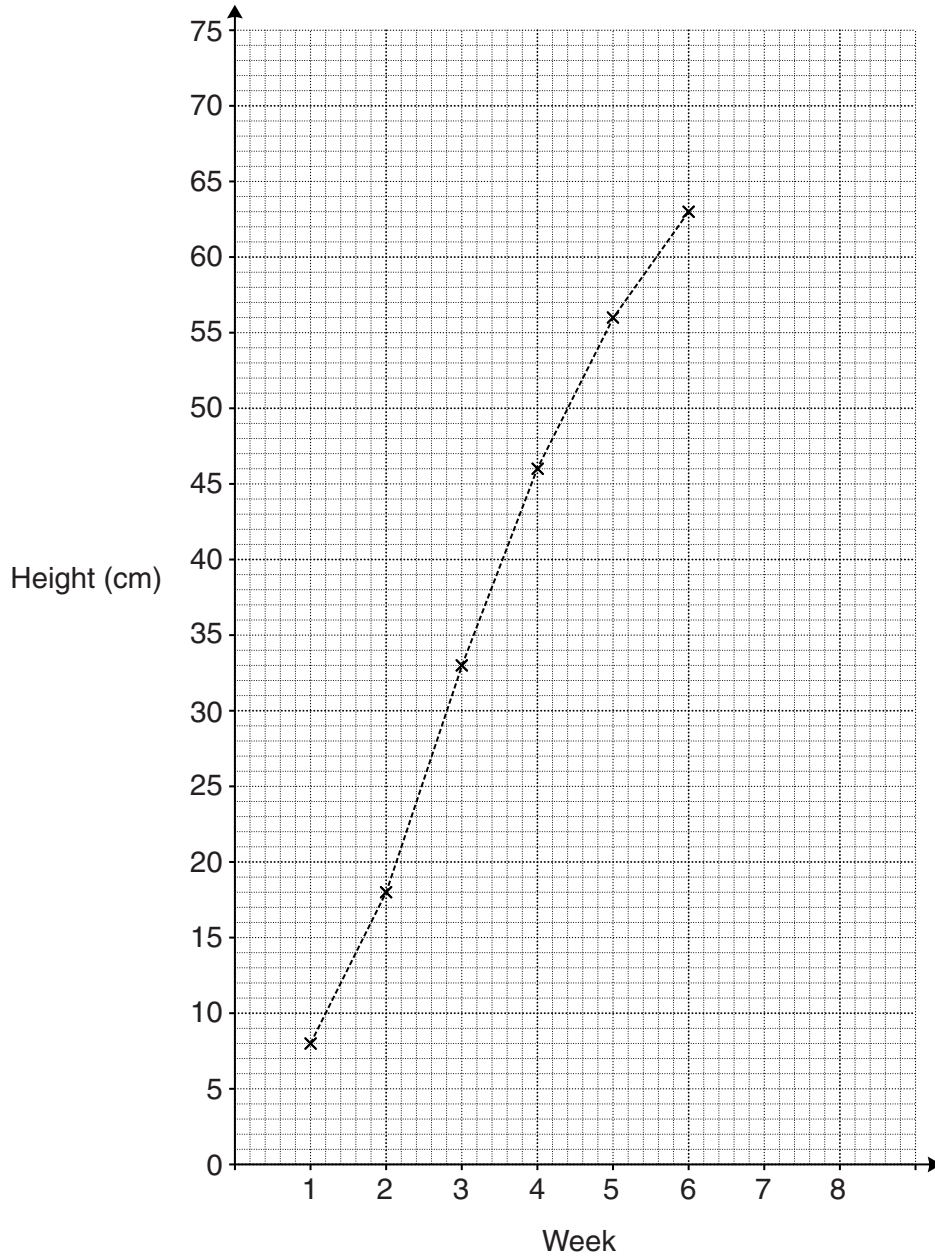
- (d) Pedro learnt his spellings but not his arithmetic.  
His arithmetic score was much worse than his spelling score.

Which letter represents Pedro?

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

- 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.  
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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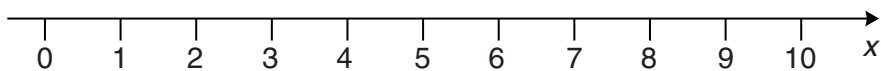
[2]

9 (a) Solve this inequality.

$$x - 1 \leq 6$$

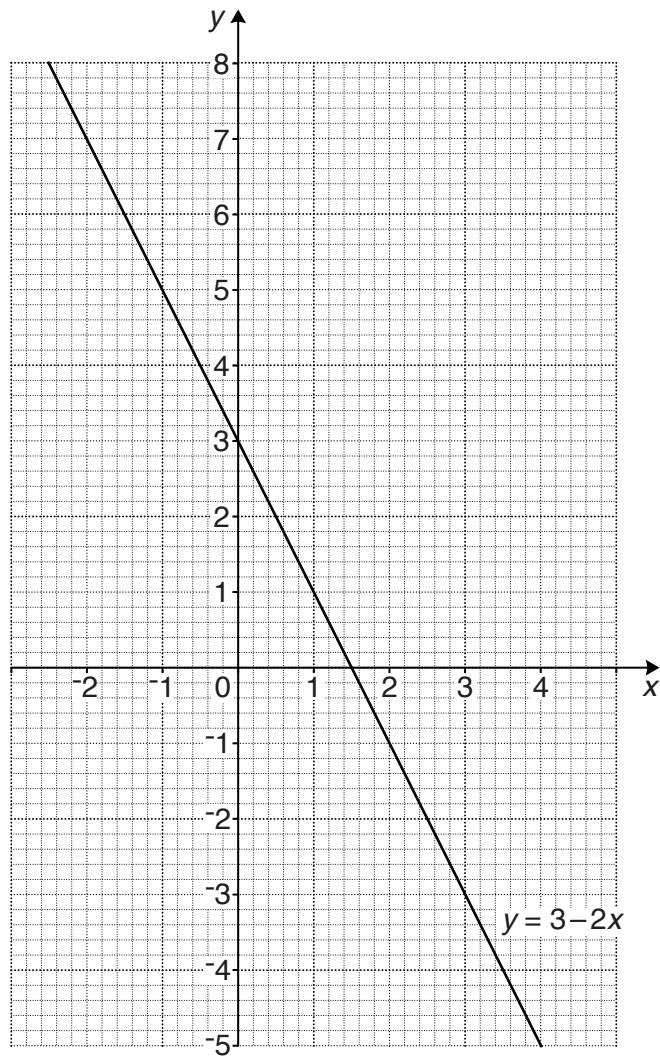
(a) \_\_\_\_\_ [1]

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



[1]

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  $y = 2x - 1$ .

|     |    |    |   |   |   |
|-----|----|----|---|---|---|
| $x$ | -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.

$$y = 3 - 2x$$

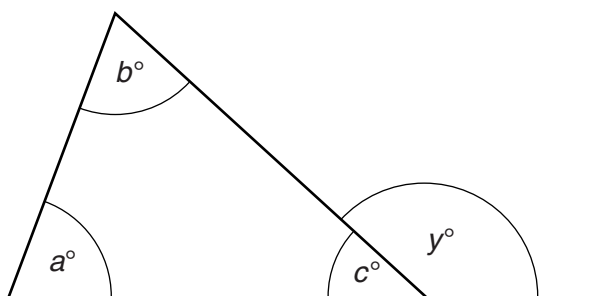
$$y = 2x - 1$$

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

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

**TURN OVER FOR QUESTION 11**

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



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

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

\_\_\_\_\_

Therefore  $a + b = 180 - c$ .

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

\_\_\_\_\_

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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