

## 1MA1 Foundation themed papers: Algebraic proof

Write your name here			
Surname	Other names		
Centre Number		Candidate Number	
Pearson Edexcel Level 1/Level 2 GCSE (9–1)			
<b>Mathematics</b> <b>Algebraic proof</b>			
<b>Foundation Tier</b>		Paper Reference <b>1MA1</b>	
<b>You must have:</b> Ruler graduated in centimetres and millimetres, protractor, pair of 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.*
- You must **show all your working**.
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- If your calculator does not have a  $\pi$  button, take the value of  $\pi$  to be 3.142 unless the question instructs otherwise.

### Information

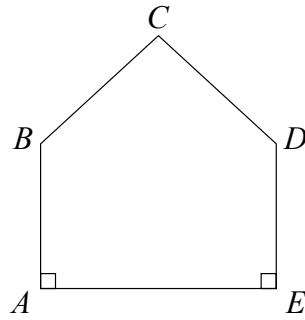
- The total mark for this paper is **15**. There are **4** questions.
- Questions have been arranged in an ascending order of mean difficulty, as found by all students in the June 2017–November 2019 examinations.
- The marks for **each** question are shown in brackets – *use this as a guide as to how much time to spend on each question.*

### Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

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- 1** The diagram shows a pentagon.  
The pentagon has one line of symmetry.



$$AE = 4x$$
$$AB = 2x + 1$$
$$BC = x + 2$$

All these measurements are given in centimetres.

The perimeter of the pentagon is 18 cm.

- (a) Show that  $10x + 6 = 18$

(3)

- (b) Find the value of  $x$ .

$$x = \dots\dots\dots$$

(2)

**(Total for Question 1 is 5 marks)**

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**2**  $a$  and  $b$  are odd numbers.

(a) Give an example to show that the value of  $2(a + b)$  is a multiple of 4.

**(2)**

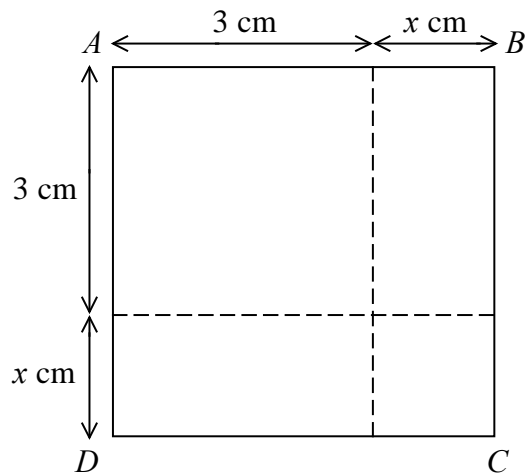
(b) Show that, when  $a$  and  $b$  are both odd numbers, the value of  $2(a + b)$  will always be a multiple of 4.

**(2)**

**(Total for Question 2 is 4 marks)**

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The area of square  $ABCD$  is  $10\text{ cm}^2$ .

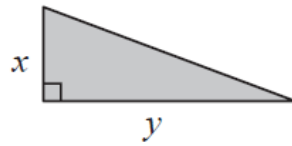
Show that  $x^2 + 6x = 1$

**(Total for Question 3 is 3 marks)**

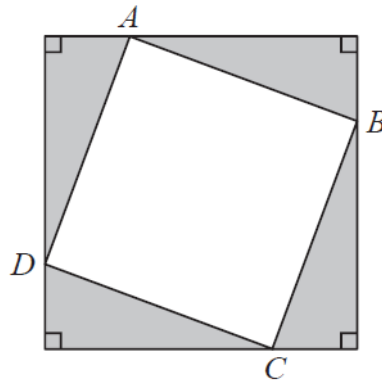
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- 4 Here is a right-angled triangle.



Four of these triangles are joined to enclose the square  $ABCD$  as shown below.



Show that the area of the square  $ABCD$  is  $x^2 + y^2$

**(Total for Question 4 is 3 marks)**

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**TOTAL MARKS FOR PAPER: 15**