

## 1MA1 Higher themed papers: Angles 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>Angles Proof</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 **21**. There are **5** 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.*

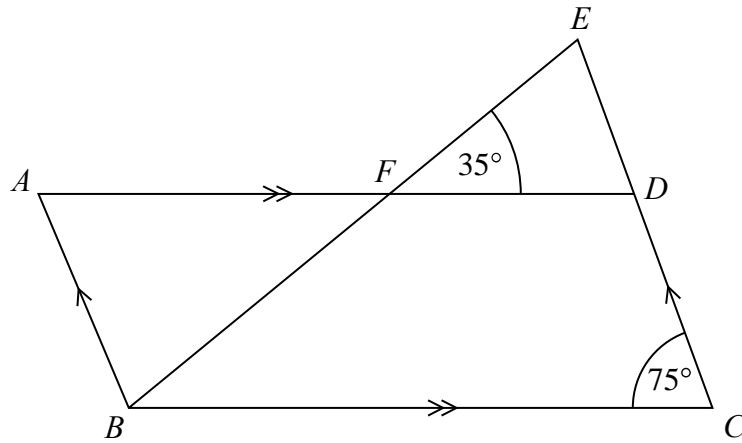
### Advice

- 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



$ABCD$  is a parallelogram.

$EDC$  is a straight line.

$F$  is the point on  $AD$  so that  $BFE$  is a straight line.

Angle  $EFD = 35^\circ$

Angle  $DCB = 75^\circ$

Show that angle  $ABF = 70^\circ$

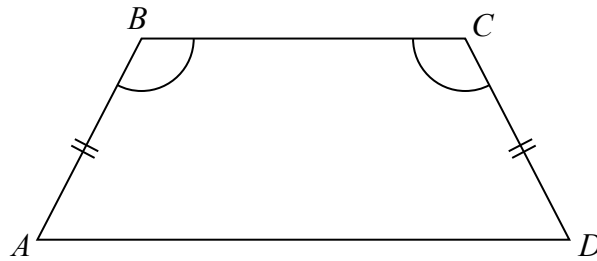
Give a reason for each stage of your working.

(Total for Question 1 is 4 marks)

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2  $ABCD$  is a quadrilateral.



$AB = CD$ .

Angle  $ABC =$  angle  $BCD$ .

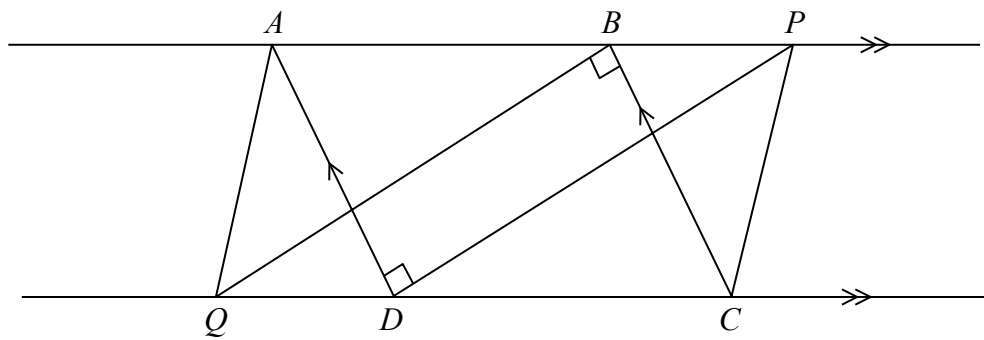
Prove that  $AC = BD$ .

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

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3



$ABCD$  is a parallelogram.  
 $ABP$  and  $QDC$  are straight lines.  
Angle  $ADP = \text{angle } CBQ = 90^\circ$

(a) Prove that triangle  $ADP$  is congruent to triangle  $CBQ$ .

(3)

(b) Explain why  $AQ$  is parallel to  $PC$ .

(2)

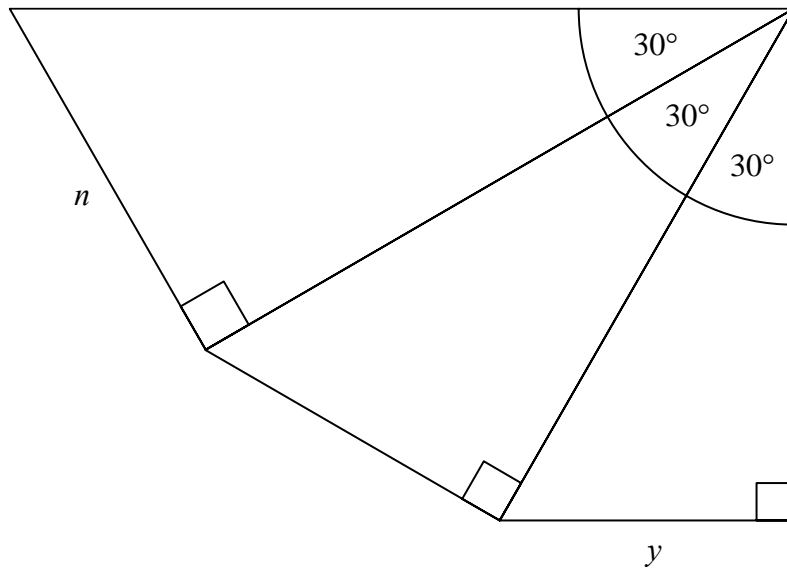
(Total for Question 3 is 5 marks)

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4



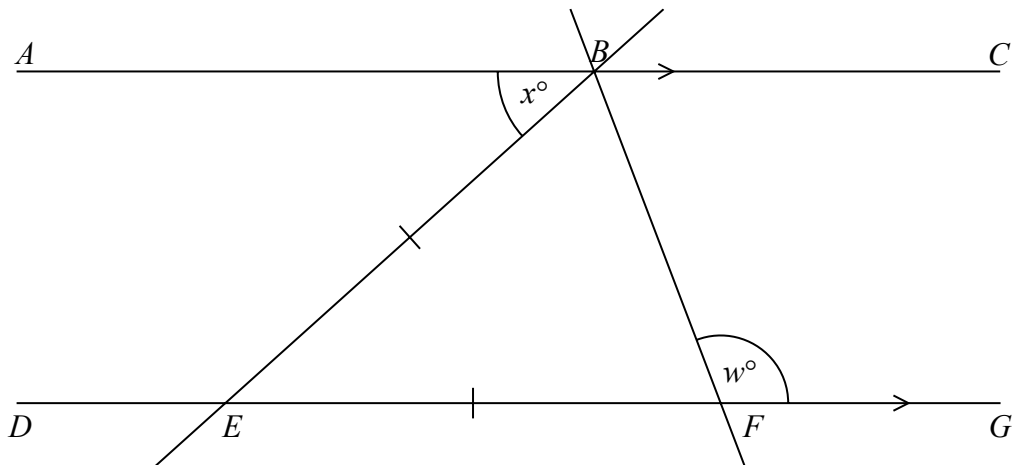
The diagram shows three right-angled triangles.

Prove that  $y = \frac{3}{4}n$

(Total for Question 4 is 4 marks)

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5



In the diagram  $ABC$  and  $DEFG$  are parallel lines.

Angle  $ABE = x^\circ$

$EB = EF$

Show that  $w = 90 + \frac{1}{2}x$

Give a reason for each stage of your working.

(Total for Question 5 is 4 marks)

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TOTAL MARKS FOR PAPER: 21