Write your name, centre number and candidate number in the boxes below.

Surname	Other names

Centre number | | | | | |

Candidate number | | | | |

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Angles

Time allowed: 40 minutes

Subject code **0580**

Mathematics

Questions from Paper 1, Paper 2, Paper 3 and Paper 4

You must have: a ruler marked in centimetres and millimetres, a protractor, compasses, a pen, an HB pencil and an eraser.
You may use a calculator.

Total marks

/ 31

Instructions

- Answer every question in the space provided on this paper.
- Write in black or dark blue ink. Pencil may be used for diagrams and graphs.
- Fill in your name, centre number and candidate number above.
- Show your working: a correct method can earn marks even if the answer is wrong.
- Unless a question says otherwise, give answers that are not exact to 3 significant figures, and angles in degrees to 1 decimal place.

Information

- This paper has 10 questions worth 31 marks in total.
- The marks for each question or part are shown in brackets, for example [3].

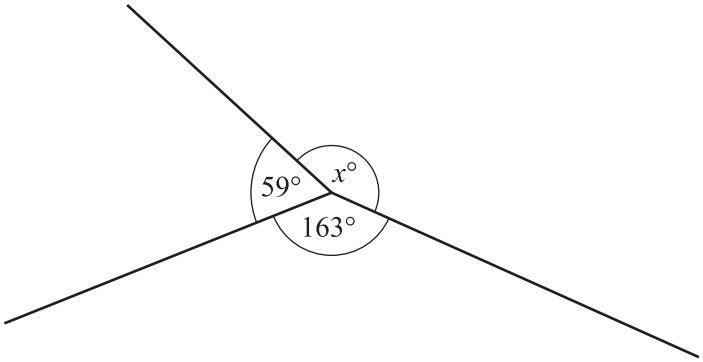
Advice

- Read every question through once before you write anything.
- Use the marks in brackets to judge how long to spend on each part.
- If you finish early, go back and check your working.

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Print at 100% (Actual size) so diagrams keep their real measurements.

1



NOT TO SCALE

(a) Find the value of x.

Answer(a) $x =$ ..... [1]

(b) One of the angles is 163°.

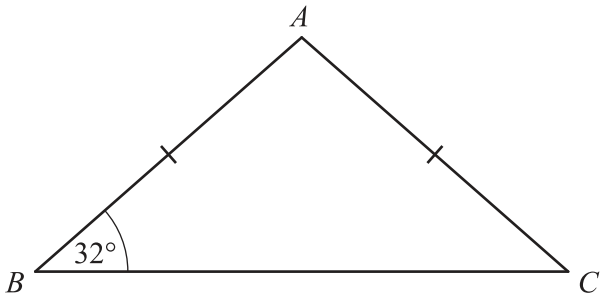
What type of angle is this?

Answer(b) ..... [1]

(a) Basic angle properties (b) Basic angle properties Click for more variations

1	**(a)**	138	**1**	
	(b)	Obtuse	**1**	

2



NOT TO SCALE

Triangle ABC is isosceles.
Angle $ABC = 32°$ and $AB = AC$.

Find angle BAC.

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Angle $BAC =$ ..... [2]

Basic angle properties Click for more variations

2	116	**2**	**M1** for angle $ACB = 32$ soi

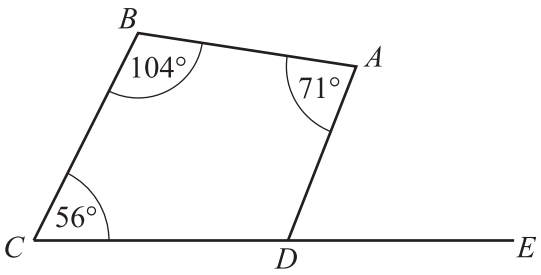
3 Calculate the size of one interior angle of a regular polygon with 40 sides.

..... [2]

Angles in polygons Click for more variations

3	171	**2**	**M1** for $180 - (360 \div 40)$ oe or $\frac{(40-2)\times 180}{40}$ oe

4



NOT TO SCALE

CDE is a straight line.

Find angle *ADE*.

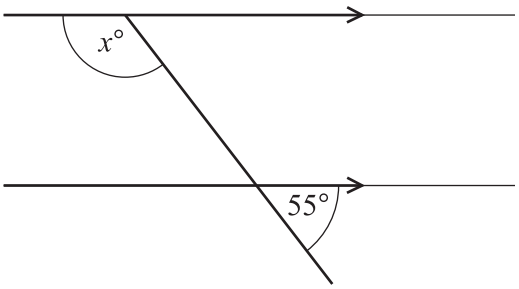
..... [2]

Angles in polygons Click for more variations

4	51	**2**	**M1** for $360 - (56 + 104 + 71)$

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5



NOT TO SCALE

The diagram shows two parallel lines and a straight line.

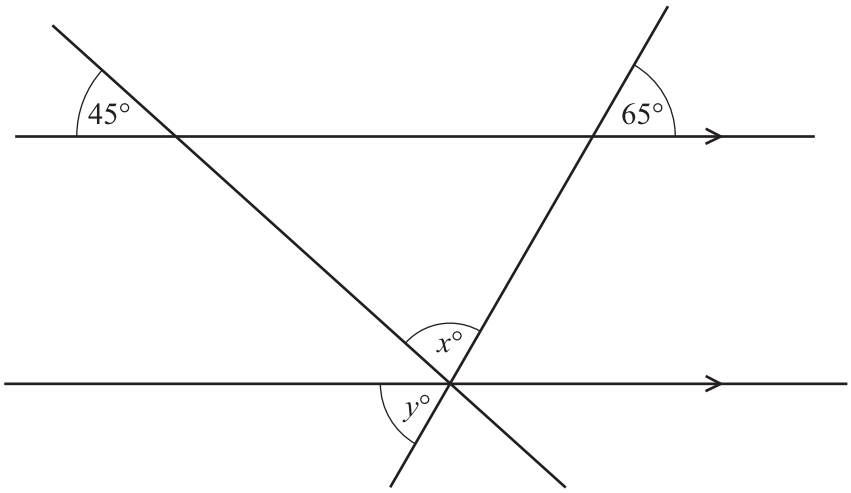
Find the value of x.

$x =$ ..... [2]

Angles in parallel lines Click for more variations

5	125	**2**	**M1** for 125 or 55 correctly placed on diagram

6



NOT TO SCALE

The diagram shows two straight lines intersecting two parallel lines.

Find the value of x and the value of y.

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$x =$ .....

$y =$ .....

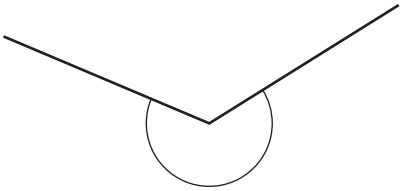
[3]

Angles in parallel lines Click for more variations

6	[x =] 70 and [y =] 65	**3**	**B2** for either correct or **B1** for 45 **and** 65 correctly placed on diagram or **M1** for 180 – 45 – 65 oe

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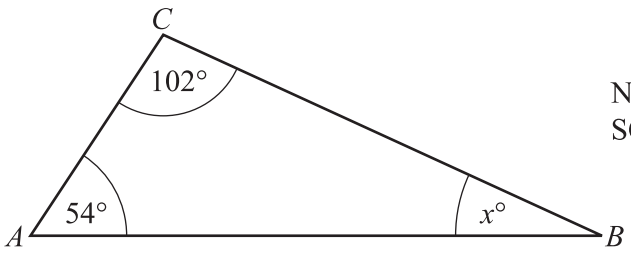
7 **(a)**



Write down the mathematical name for this type of angle.

..... [1]

(b) *ABC* is a triangle.



NOT TO SCALE

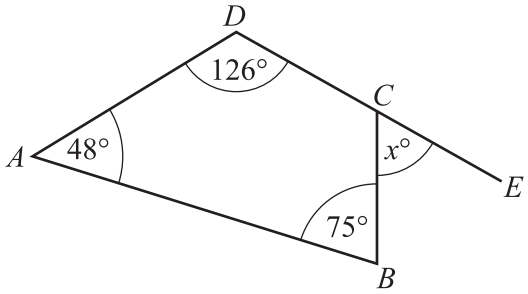
Lily says x is 34.

Give a geometrical reason why Lily is not correct.

.....

..... [1]

(c)



NOT TO SCALE

ABCD is a quadrilateral.
DCE is a straight line.

Calculate the value of x.

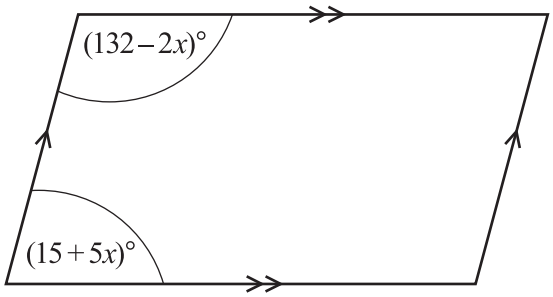
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$x =$ ..... [2]

(a) Basic angle properties (b) Basic angle properties (c) Angles in polygons Click for more variations

7(a)	reflex	**1**	
7(b)	Angles in a triangle add to 180,	**1**	accept angles in a triangle should add up to 180 angles in the/this/Lily's triangle do not add up to 180
7(c)	69	**2**	**M1** for 360 – (126 + 48 + 75) oe

8 The diagram shows a parallelogram.



NOT TO SCALE

Work out the size of the smallest interior angle of the parallelogram.

..... [4]

Basic angle properties Click for more variations

8	70	**4**	**B3** for $x = 11$ OR **M1** for $132 - 2x + 15 + 5x = 180$ oe **M1** for collecting x terms on one side and number terms on the other for *their* equation. **M1** for $15 + 5 \times$ *their* x oe where $-3 <$ *their* $x < 15$ or for $132 - 2 \times$ *their* x oe where $21 <$ *their* $x < 66$

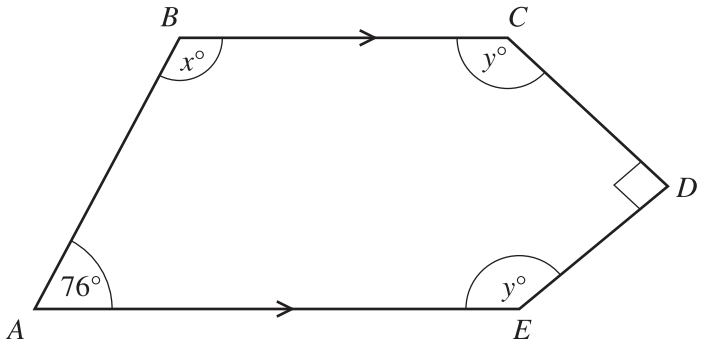
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9 **(a)** Show that the sum of the interior angles of a regular pentagon is 540°.

Answer(a)

[2]

(b)



NOT TO SCALE

The diagram shows a pentagon *ABCDE*.
BC is parallel to *AE* and angle *CDE* is a right angle.

Find the values of x and y.

Answer(b) $x =$ .....

$y =$ ..... [3]

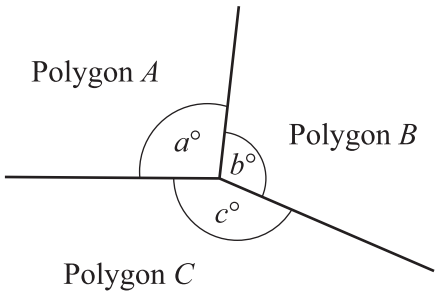
(a) Angles in polygons (b) Angles in polygons Click for more variations

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9 (a)	Exterior angle method [Ext angle =] $360 \div 5$ $5 \times (180 - 72) = 540$	**M1** **E1dep**	
	Formula method $(n-2) \times 180$ or $\frac{(n-2)\times 180}{n}$ $(5-2) \times 180 = 540$ **or** $\frac{(5-2)\times 180}{5} = 108$ **and** $5 \times 108 = 540$	**M1** **E1dep**	
	Triangle methods Explanation or sketch to split pentagon into 3 or 5 triangles. $3 \times 180 = 540$ or $5 \times 180 - 360 = 540$	**M1** **E1dep**	
(b)	[x =] 104 [y =] 135	**3ft**	B1 [x =] 104 M1 for $540 - (90 + 76 +$ their x)

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10



NOT TO SCALE

Three regular polygons A, B and C meet at a point.
The interior angles of the polygons are in the ratio $a : b : c = 3 : 4 : 5$.

Show that polygon C has twice the number of sides as polygon B.

[5]

Angles in polygons Click for more variations

10	Finds number of sides 6 and 12 with appropriate supporting working for each value.	**5**	**B2** for 120 and 150 or **M1** for $360 \div (3 + 4 + 5) \times k$ oe where $k = 1$, 3, 4 or 5 **M1** for $\frac{360}{180 - their120}$ or $\frac{180(n-2)}{n} = their120$ oe **M1** for $\frac{360}{180 - their150}$ or $\frac{180(n-2)}{n} = their150$ oe

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