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

Surname	Other names

Centre number | | | | | |

Candidate number | | | | |

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Symmetry

Time allowed: 35 minutes

Subject code **0580**

Mathematics

Questions from Paper 1 and Paper 2

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

/ 27

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 27 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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Turn over ►

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

1 T R I G O N O M E T R Y

From the above word, write down the letters which have

(a) exactly two lines of symmetry,

Answer(a) ..... [1]

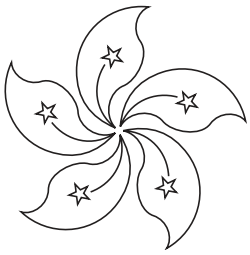
(b) rotational symmetry of order 2.

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

(a) Lines of symmetry (b) Rotational symmetry Click for more variations

1	**(a)**	I cao	**1**	
	(b)	I N cao	**1**	

2



For the diagram, write down

(a) the order of rotational symmetry,

Answer(a) ..... [1]

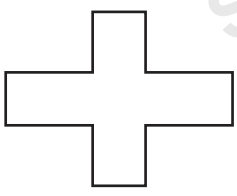
(b) the number of lines of symmetry.

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

(a) Rotational symmetry (b) Lines of symmetry Click for more variations

2	**(a)** 5	1	
	(b) 0	1	

3



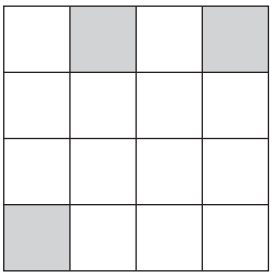
On the shape, draw all the lines of symmetry. [2]

Lines of symmetry Click for more variations

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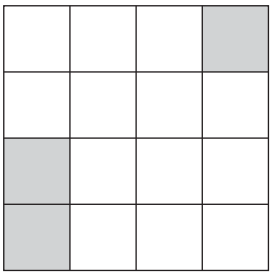
3	Both lines of symmetry only drawn	**2**	**B1** each correct line Penalise 1 for each incorrect line

4 **(a)**



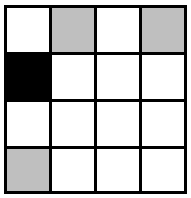
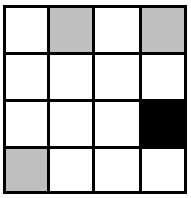
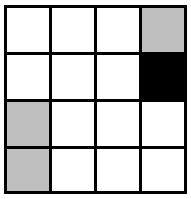
Shade **one** more small square so that the diagram has one line of symmetry. [1]

(b)



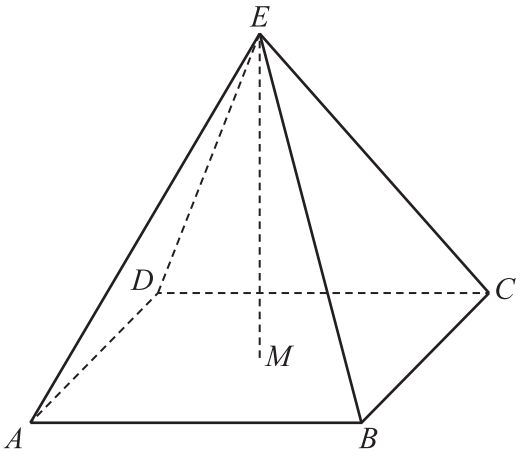
Shade **one** more small square so that the diagram has rotational symmetry of order 2. [1]

(a) Lines of symmetry (b) Rotational symmetry Click for more variations

4(a)	 or 	**1**	
4(b)		**1**	

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5



NOT TO SCALE

The diagram shows a pyramid $ABCDE$ with a square base.
M is the centre of the square base.
E is vertically above M.

(a) Write down the number of planes of symmetry of this pyramid.

..... [1]

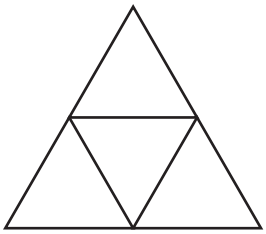
(b) Using two of the letters from A, B, C, D, E and M, complete the statement about the pyramid.

The axis of rotational symmetry passes through the points ..... and ..... [1]

(a) Planes of symmetry (b) Planes of symmetry Click for more variations

5(a)	4	**1**	
5(b)	E and M	**1**	

6 The diagram is made from equilateral triangles.



(a) On the diagram, draw all the lines of symmetry. [2]

(b) Write down the order of rotational symmetry.

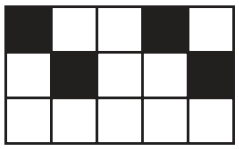
..... [1]

(a) Lines of symmetry (b) Rotational symmetry Click for more variations

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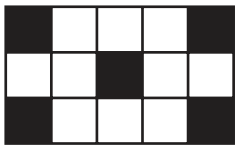
6(a)	3 correct lines	**2**	**B1** for two correct lines and no extras or 3 correct lines and one extra
6(b)	3	**1**	

7 **(a)** Write down the number of lines of symmetry for the diagram below.



Answer(a) ..... [1]

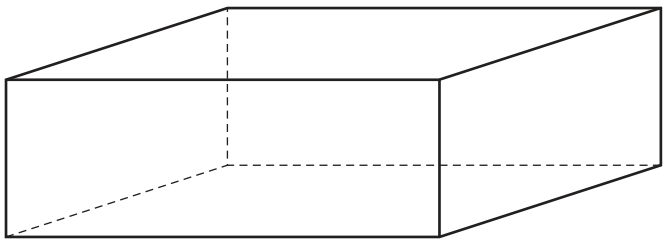
(b) Write down the order of rotational symmetry for the diagram below.



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

(c) The diagram shows a cuboid which has no square faces.

Draw one of the **planes** of symmetry of the cuboid on the diagram.



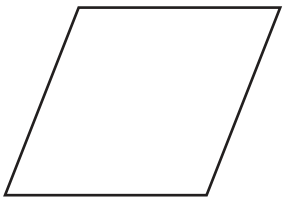
[1]

(a) Lines of symmetry (b) Rotational symmetry (c) Planes of symmetry Click for more variations

7	**(a)** 0	1	
	(b) 2	1	
	(c) plane across centre of shape	1	Three possibilities

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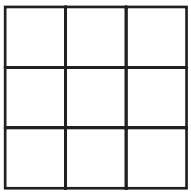
8 **(a)**



The diagram shows a rhombus.

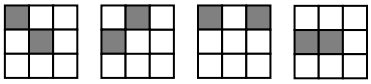
Draw all the lines of symmetry. [2]

(b)



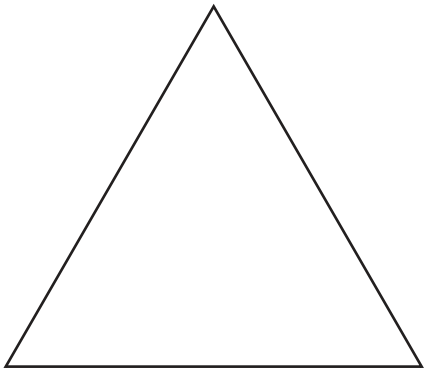
Shade **two** squares in the diagram above so that the figure has **one** line of symmetry and **no** rotational symmetry. [1]

(a) Lines of symmetry (b) Lines of symmetry Click for more variations

8	**(a)** 2 lines joining opposite vertices	1, 1	Independent Accept reasonable freehand
	(b) Centre square and any other **or** 2 adjacent corner squares **or** 2 centre squares on adjacent edges	1	Any of these diagrams:  May be rotated through 90, 180, 270 degrees

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9 **(a)** The diagram shows an equilateral triangle.



On the diagram, draw all the lines of symmetry. [2]

(b) **(i)** In the space below, draw a quadrilateral that has 2 lines of symmetry and rotational symmetry of order 2.

[1]

(ii) Write down the mathematical name of your quadrilateral.

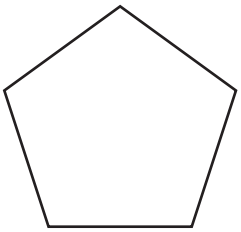
..... [1]

(a) Lines of symmetry (b)(i) 2D shapes (b)(ii) 2D shapes Click for more variations

9	**(a)**	Three correct, ruled lines	**2**	**B1** for two correct lines
	(b) **(i)**	Drawing a rectangle or rhombus	**1**	
	(ii)	FT their quadrilateral in **(b)(i)**	**1**	

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10 The diagram shows a regular polygon.



(a) Write down the mathematical name for this polygon.

..... [1]

(b) On the diagram, draw all the lines of symmetry. [2]

(c) Write down the order of rotational symmetry.

..... [1]

(a) 2D shapes (b) Lines of symmetry (c) Rotational symmetry Click for more variations

10(a)	Pentagon	**1**	
10(b)	all 5 lines of symmetry drawn	**2**	**B1** for 3 lines of symmetry and no extras or all 5 lines and 1 extra line
10(c)	5	**1**	

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