MME

GCSE MATHEMATICS
AQA | Edexcel | OCR | WJEC

Symmetry

Please write clearly in block capitals

Forename:
Surname:

Materials

For this paper you must have:
• mathematical instruments

You *can* use a calculator.

Instructions

• Use black ink or black ball-point pen. Draw diagrams in pencil.
• Fill in the boxes at the top of this page.
• Answer all questions.
• You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
• Do all rough work in this book. Cross through any work you do not want to be marked.

Information

• The marks for questions are shown in brackets.
• You may ask for graph paper, tracing paper and more answer paper. These must be tagged securely to this answer book.

Advice

• In all calculations, show clearly how you work out your answer.

1(a) Draw all lines of symmetry on the rectangle below.

[2 marks]

1(b) State the order of rotational symmetry of the shape below.

[1 mark]

Answer _____

Turn over for next question

3
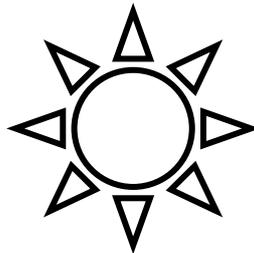
Turn over ▶

2(a)   Circle the shape with the most lines of symmetry.
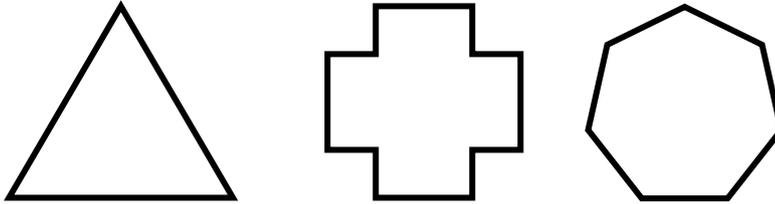
[1 mark]

2(b)   Draw a three sided polygon with rotational symmetry order 1.

[1 mark]

2

Turn over ▶

3(a)   How many lines of symmetry does an octagon have?

[1 mark]

Answer _____

3(b)   List the following rectangular flags in ascending order of lines of symmetry.
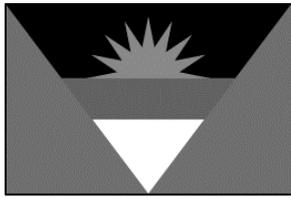
[1 mark]

Antigua and Barbuda   Brazil   Georgia
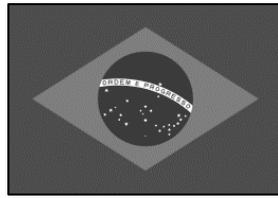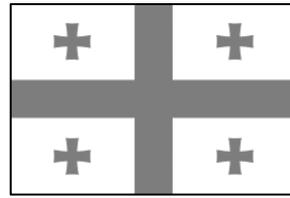
Least   _____, _____, _____   Most

3(c)   State the order of rotational symmetry for the following shape.

[1 mark]

Answer _____

Turn over for next question

3
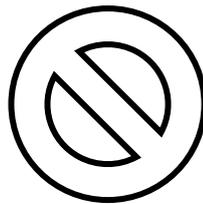
Turn over ►

4(a) How many lines of symmetry does a regular polygon with n sides have?

Give your answer in terms of n.

[1 mark]

Answer _____

4(b) State the order of rotational symmetry of a square.

[1 mark]

Answer _____

4(c) Draw the net of a die, such that the net, has order 2 rotational symmetry and 0 lines of reflectional symmetry.

[2 marks]

Turn over for next question

4
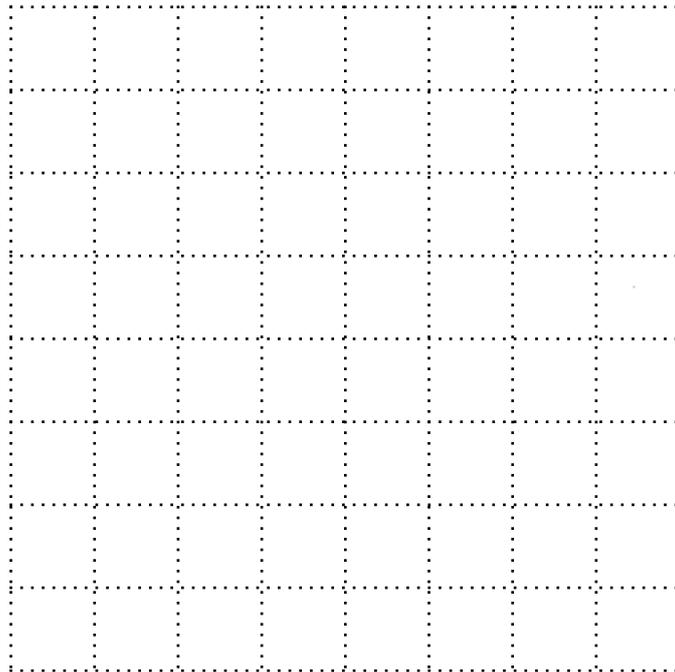
Turn over ▶

5(a) Name the type of triangle that can have one line of reflective symmetry.

[1 mark]

Answer _____

5(b) The descriptions of 4 shapes are shown below.

Match each of the following descriptions to the correct shape it's describing.

[3 marks]
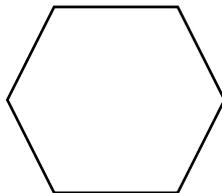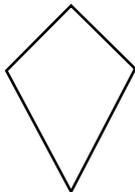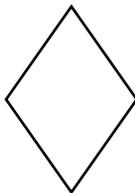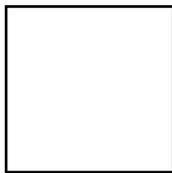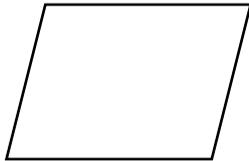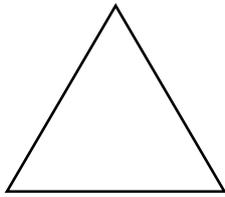
| Rotational Symmetry Order 2 |
| 0 Lines of Symmetry |

| Rotational Symmetry order 1 |
| 1 Line of Symmetry |

| Rotational Symmetry Order 2 |
| 2 Lines of Symmetry |

| Rotational Symmetry Order 4 |
| 4 Lines of Symmetry |

Turn over for next question

4

Turn over ▶

6   Jenn is exploring symmetry. She is drawing a shape. She says:

> *"The shape I am drawing is a regular polygon.*
> *The sum of its interior angles add up to 540 degrees."*

6(a)   What shape is she drawing?

[1 mark]

Answer   _____

6(b)   What is the order or rotational symmetry of Jenn's shape?

[1 mark]

Answer   _____

6(c)   Jenn starts to look at the symmetry of letters.

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

State two letters with at least two lines of symmetry.

[1 mark]

Answer   _____, _____

6(d)   State two letters with order of rotational symmetry 2

[1 mark]

Answer   _____, _____

End of Questions

4

END