Planner

Symmetry

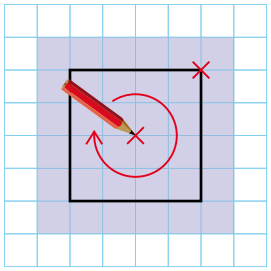
- Recognising and describing rotational symmetry
- Investigating the connection between line symmetry and reflection
- Recognising line symmetry
- Investigating regular shapes

Keywords

You should know

explanation 1a | explanation 1b | online

1 **a** **i** Draw a square and mark the centre.



ii Trace the square onto tracing paper.

iii Mark one corner of the square.

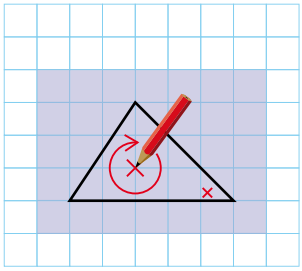
iv Hold the tracing paper at the centre of the square and rotate the tracing paper through one full turn.

v How many times does the square map to itself?

b What is the order of rotational symmetry of a square?

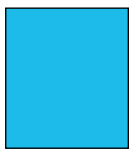
2 If a shape only maps to itself once at the end of the full turn we say that the shape does *not* have rotational symmetry.

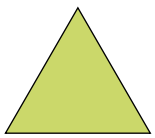
Copy this scalene triangle and use tracing paper to show that it doesn't have rotational symmetry.

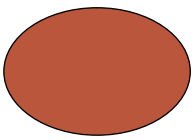


3 Which of these shapes have rotational symmetry?

State the order of each shape with rotational symmetry.

a 

b 

c 

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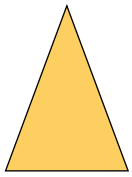
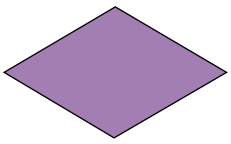
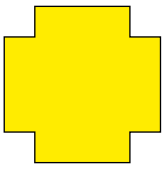
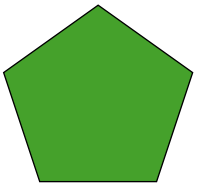
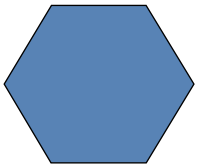
e 

f 

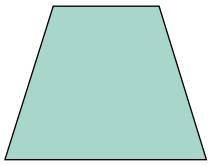
g 

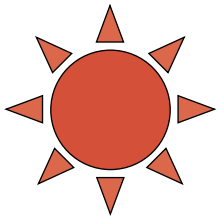
h 

4 Which shapes have rotational symmetry? State the order.

a 

b 

c 

d 

5 A regular shape has equal angles and sides of equal length.

a What is the name of a regular quadrilateral?

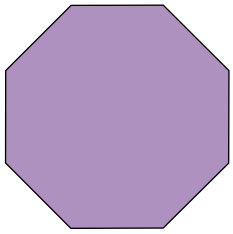
b What is the name of a regular triangle?

6 **a** A pentagon is a five-sided shape.
Which shape from question **3** is a regular pentagon?

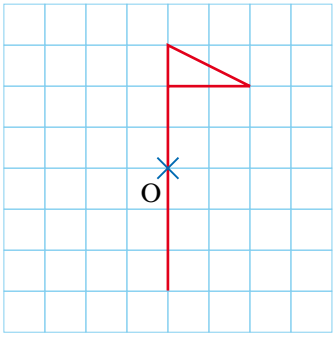
b A hexagon is a six-sided shape.
Which shape from question **4** is a regular hexagon?

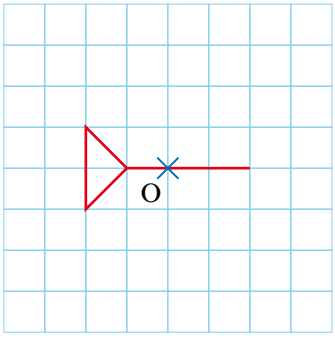
c What do you notice about the order of rotational symmetry of regular shapes?

d The shape shown is a regular octagon.
What is the order of rotational symmetry of a regular octagon?



7 Copy and complete these diagrams so that they have rotational symmetry of order 4 with centre at O.

a 

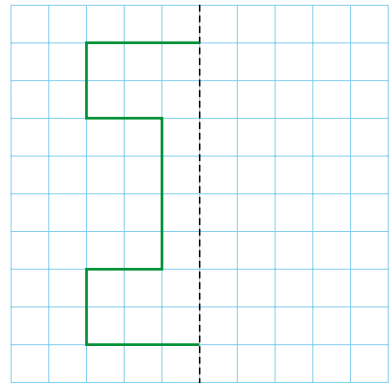
b 

explanation 2 online

8 **a** Copy this diagram and reflect the shape in the dotted line.

b Check that the dotted line is a line of symmetry for the completed diagram.

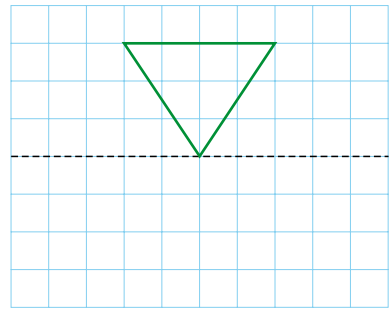
c Draw on the other line of symmetry for the completed diagram



9 **a** Copy this diagram and reflect the shape in the dotted line.

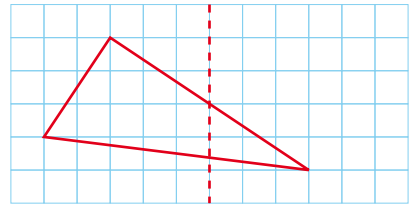
b Check that the dotted line is a line of symmetry for the completed diagram.

c Draw on the other line of symmetry for the completed diagram.



10 **a** Copy this diagram and reflect the triangle in the dotted line.

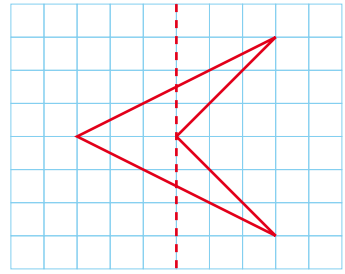
b Check that the dotted line is a line of symmetry for the completed diagram.



11 **a** Copy this diagram and reflect the arrowhead in the dotted line.

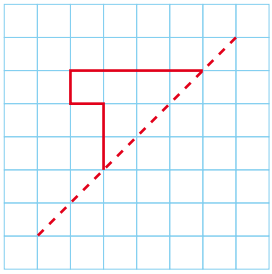
b Check that the dotted line is a line of symmetry for the completed diagram.

c Add any other lines of symmetry to the diagram.



12 **a** Copy this diagram and reflect the shape in the dotted line.

b Check that the dotted line is a line of symmetry for the completed diagram.

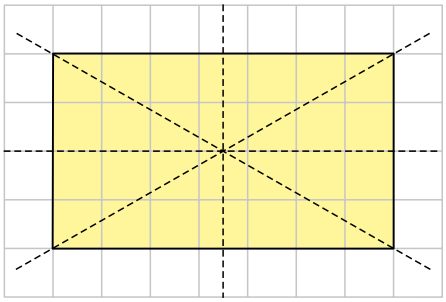


explanation 3

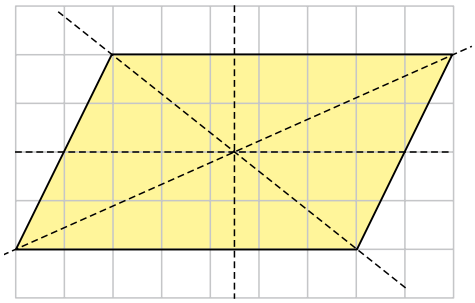
13 **a** Use a mirror to check which of the dotted lines are lines of symmetry for this rectangle.

b Copy the rectangle and mark on the correct lines of symmetry.

c Copy and complete the sentence
A rectangle has ☐ lines of symmetry.

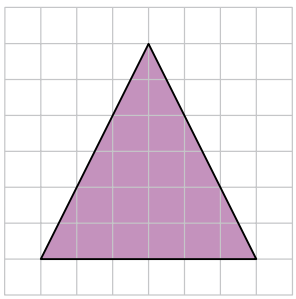


14 Use a mirror to check that none of the dotted lines are lines of symmetry for this parallelogram.

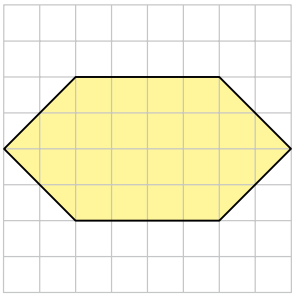


15 Copy these shapes and draw any lines of symmetry.
If no line of symmetry exists then write 'None'.

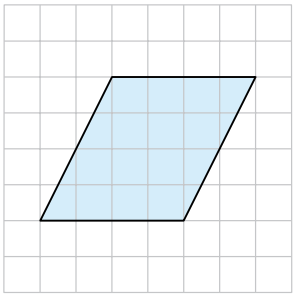
a



b

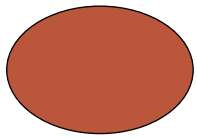


c

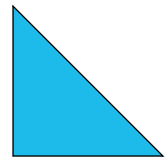


16 Copy these shapes and mark on all of the lines of symmetry.

a



b



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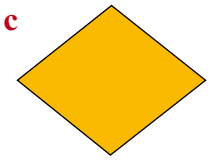

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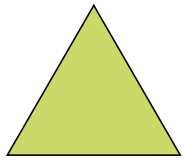

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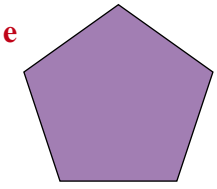

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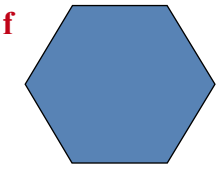

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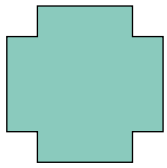

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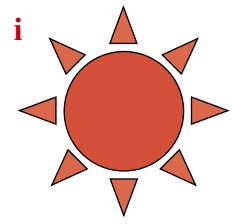
i



17 **a** Which shapes from question **16** are regular?

b What do you notice about the number of lines of symmetry of regular shapes?

c How many lines of symmetry does a regular octagon have?

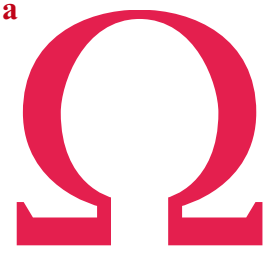
18 Match the statements to the shapes:

i The shape has line symmetry but not rotational symmetry.

ii The shape has rotational symmetry but not line symmetry.

iii The shape has both rotational symmetry and line symmetry.

a



b

c