EXAM PAPERS PRACTICE

Symmetry

Model Answer

(a) Write down the order of rotational symmetry of the diagram.

The order of rotational symmetry is 3. [1]

(b) Draw the lines of symmetry on the diagram. [1]

The figure above has 3 lines of symmetry, represented in the figure above.

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, [1]

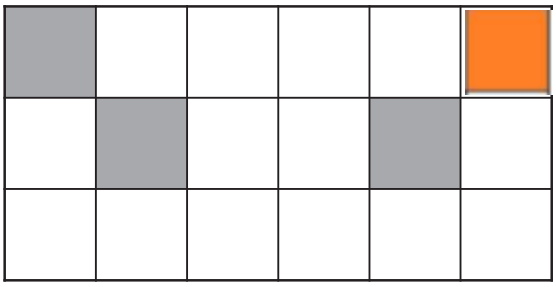
I

(b) rotational symmetry of order 2. [1]

I, N

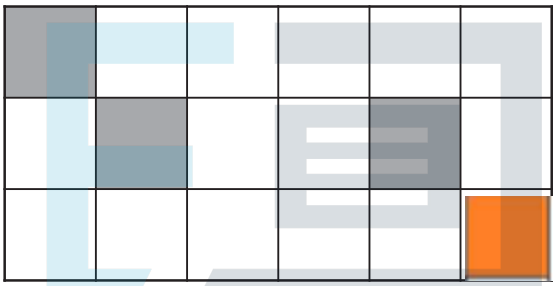
(a) Shade **one** square in each diagram so that there is

(i) one line of symmetry,



[1]

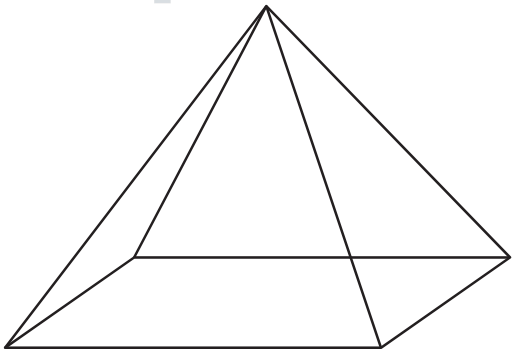
(ii) rotational symmetry of order 2.



[1]

(b) The pyramid below has a rectangular base.
The vertex of the pyramid is vertically above the centre of the base.

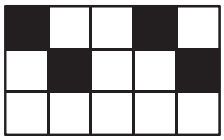
Write down the number of **planes** of symmetry for the pyramid.



[1]

Rectangular base $\rightarrow$ 2 planes of symmetry

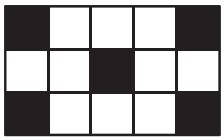
(a) Write down the number of lines of symmetry for the diagram below.



0

[1]

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

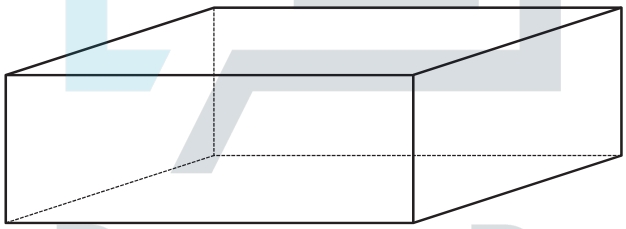


2

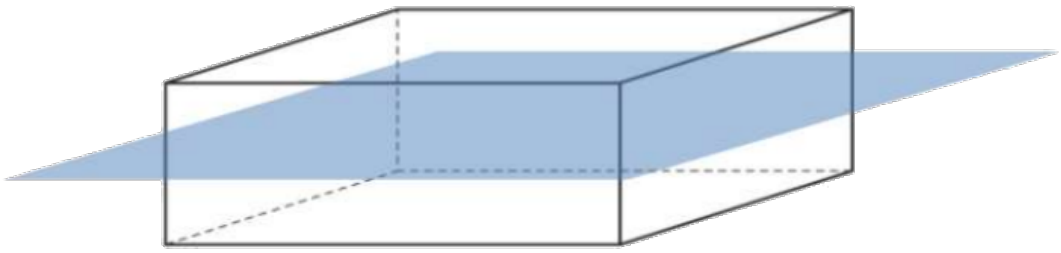
[1]

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

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

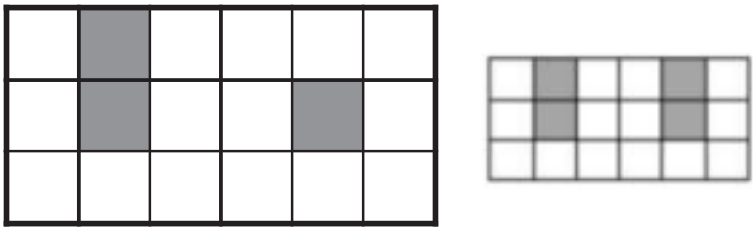


[1]



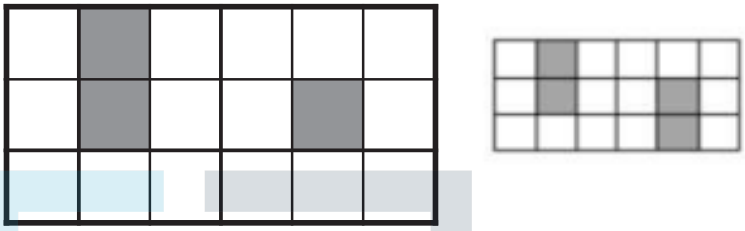
(a) Shade one square in each diagram so that there is

(i) one line of symmetry, [1]



The line of symmetry is a line over which the figure can be reflected and it will appear unchanged.

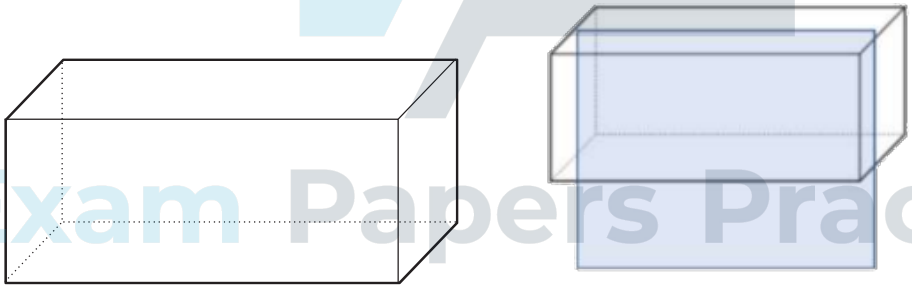
(ii) rotational symmetry of order 2. [1]



The order of rotational symmetry is the number of times the figure matches its initial shape while rotating it once 360°

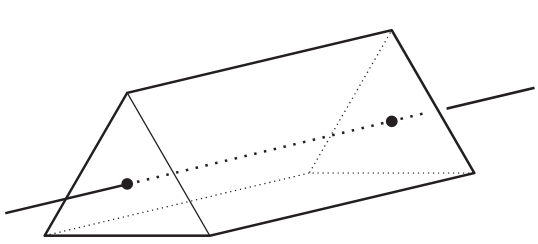
(b) On the diagram below, sketch one of the planes of symmetry of the cuboid. [1]

The shape can be cut exactly in half either vertically or horizontally.

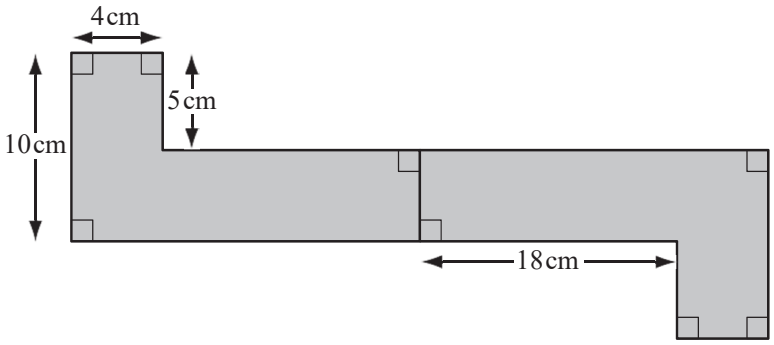


A plane of symmetry separates a shape in half so that each side of the plane is a mirror image of the other side.

(c) Write down the order of rotational symmetry of the equilateral triangular prism about the axis shown. [1]



The order of rotational symmetry around the axis is 3.



NOT TO SCALE

The shaded shape has rotational symmetry of order 2.

Work out the shaded area. [3]

$$10 \times 4 + 5 \times 18 = 130 \text{ cm}^2$$
$$2 \times 130 = 260 \text{ cm}^2$$
$$= 260 \text{ cm}^2$$

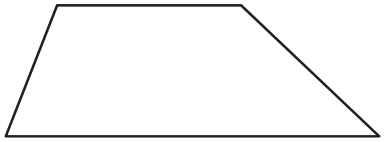
(a) Draw a quadrilateral which has rotational symmetry of order 2 and whose diagonals are equal in length.

[2]

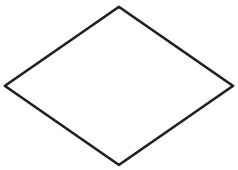
(b) Write down the special name of this quadrilateral. [1]

This quadrilateral is a rectangle.
The rotational symmetry represents how many times the shape overlaps with the original one if we rotate it one around.

Parallelogram



Trapezium



Rhombus

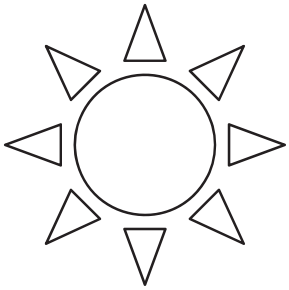
Write down which one of these shapes has

- rotational symmetry of order 2

and

- no line symmetry.

Parallelogram [1]



Write down the order of rotational symmetry of this shape. [1]

The order of rotational symmetry is infinite.

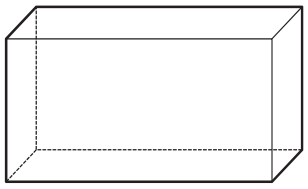
(a) Add **one** line to the diagram so that it has two lines of symmetry. [1]

(b) Add **two** lines to the diagram so that it has rotational symmetry of order 2. [1]

(a) 

(b) Some possible answers:

(a) The diagram shows a cuboid.



How many planes of symmetry does this cuboid have?

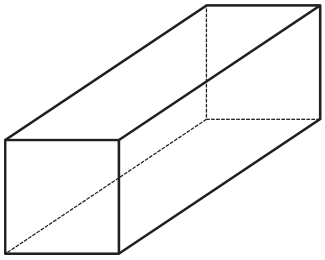
(a) 3
(b) 4

[1]

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

[1]

(a)



This cuboid has a **square** cross-section.

Write down the number of planes of symmetry.

5

[1]

(b)

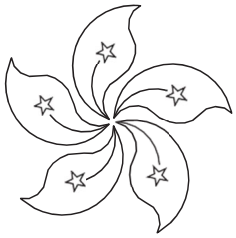
This cuboid has a **rectangular** cross-section.

The axis shown passes through the centre of two opposite faces.

Write down the order of rotational symmetry of the cuboid about this axis.

2

[1]



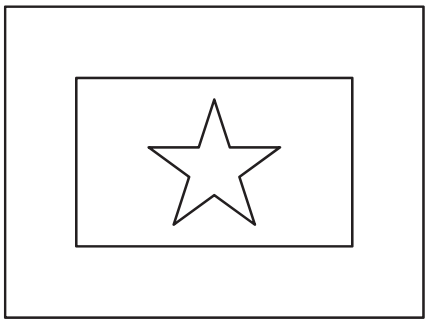
For the diagram, write down

(a) the order of rotational symmetry,

[1]

(b) the number of lines of symmetry.

[1]



(a) 1

(b) 1

For the **diagram**, write down

(a) the order of rotational symmetry,

[1]

(b) the number of lines of symmetry.

[1]

(a) 6
(b) 0

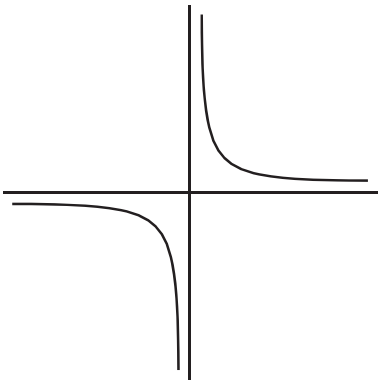
For the diagram above write down

(a) the order of rotational symmetry,

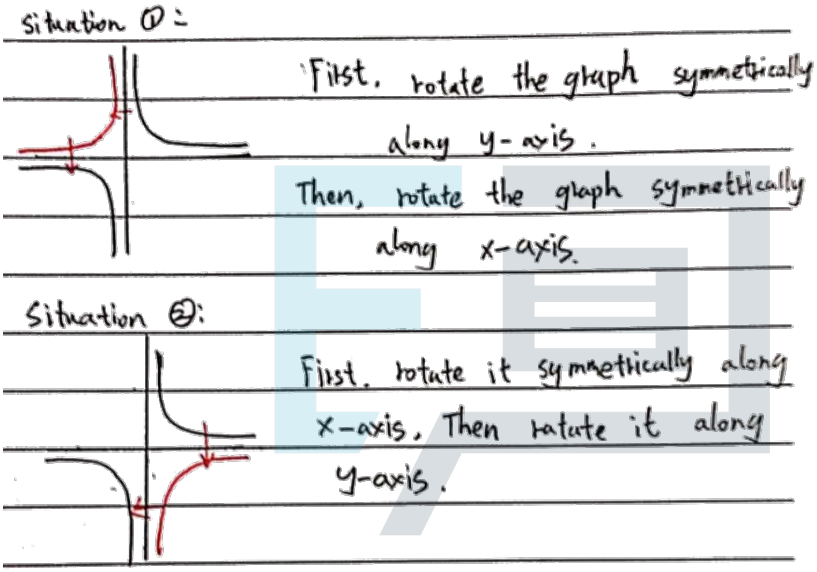
[1]

(b) the number of lines of symmetry.

[1]

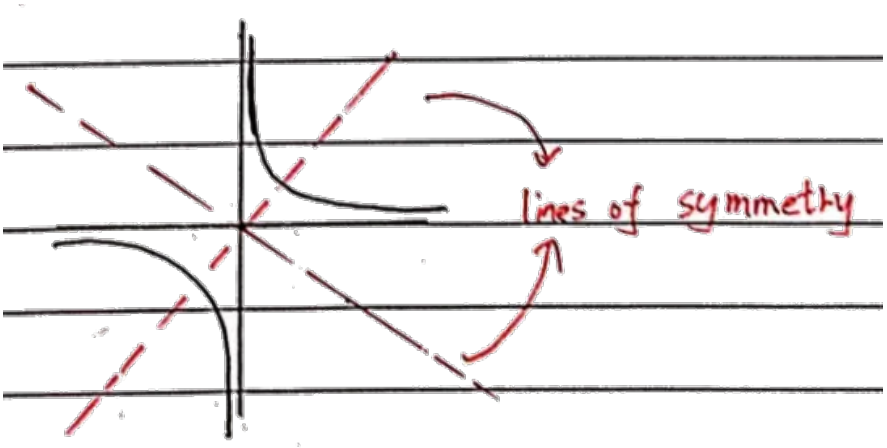


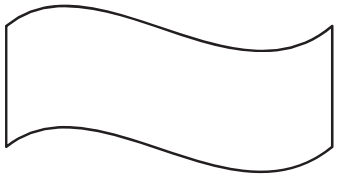
(a) Write down the order of rotational symmetry of the diagram.



[1]

(b) Draw all the lines of symmetry on the diagram. [1]





For this diagram, write down

(a) the order of rotational symmetry, [1]

The order of rotational symmetry of the diagram is 8.

(b) the number of lines of symmetry. [1]

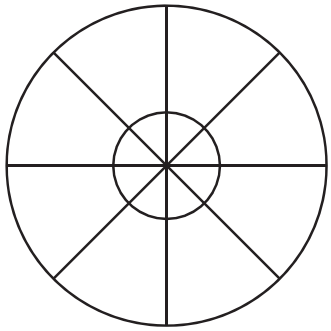
The diagram also has 8 lines of symmetry.
A line of symmetry is a line that divides the diagram into two identical halves.
Here are the 8 lines of symmetry of the diagram:
- A vertical line through the center of the diagram
- A horizontal line through the center of the diagram
- 4 diagonal lines through the center of the diagram

For the diagram, write down

(a) the order of rotational symmetry, [1]

(b) the number of lines of symmetry. [1]

(a) The order of rotational symmetry is 8 .
(b) The number of lines of symmetry is 8 .



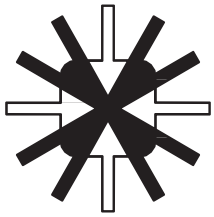
For the diagram above write down

(a) the order of rotational symmetry, [1]

(b) the number of lines of symmetry. [1]

(a) The order of rotational symmetry is 8 .

(b) The number of lines of symmetry is 8 .



For the shape above, write down

(a) the number of lines of symmetry,

[1]

(b) the order of rotational symmetry.

[1]

(a) The number of lines of symmetry is 8 .
(b) The order of rotational symmetry is 8.