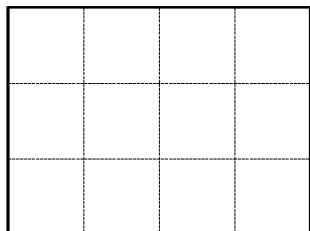
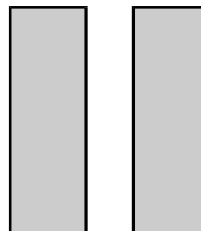


# SYMMETRY

1. I have a square grid and two rectangles.

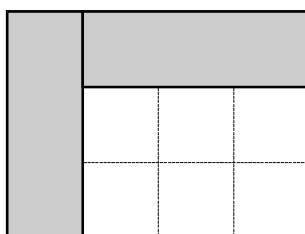


grid



two rectangles

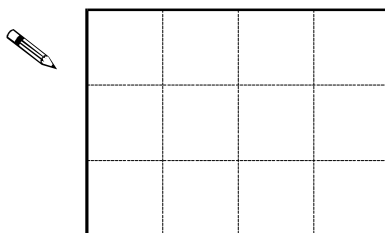
I make a pattern with the grid and the two rectangles:



The pattern has **no** lines of symmetry.

(a) Put both rectangles on the grid to make a pattern with **two** lines of symmetry.

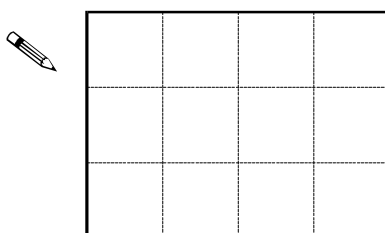
You must **shade** the rectangles.



1 mark

(b) Put both rectangles on the grid to make a pattern with **only one** line of symmetry.

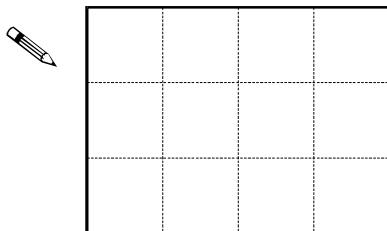
You must **shade** the rectangles.



1 mark

- (c) Put both rectangles on the grid to make a pattern with **rotation** symmetry of **order 2**

You must **shade** the rectangles.



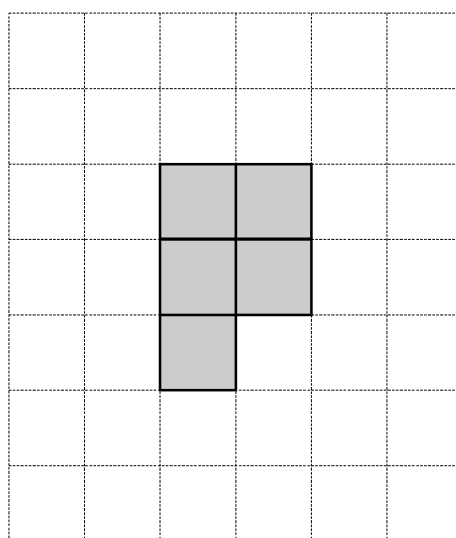
1 mark

**2. Five tiles**

Look at the square grid.

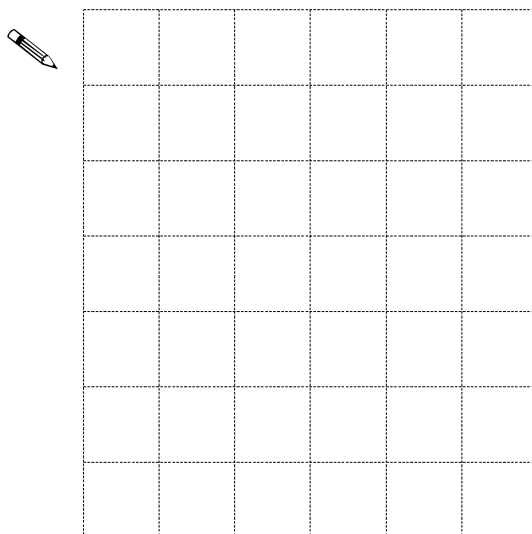
**Five squares** are shaded to make a shape.

The shape has **no** lines of symmetry.



On the grid below, **shade five squares** to make a different shape.

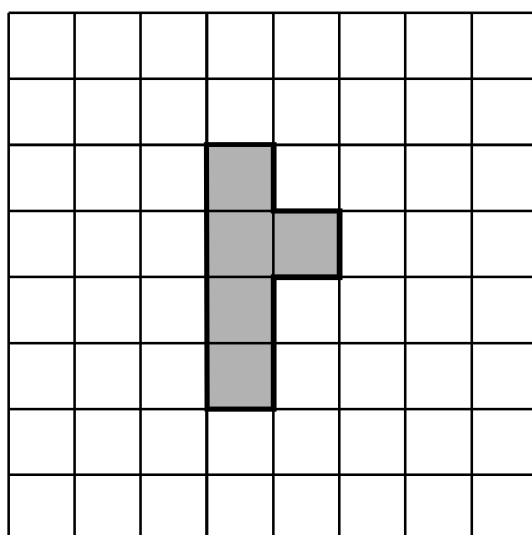
The shape must have exactly **one line of symmetry**.



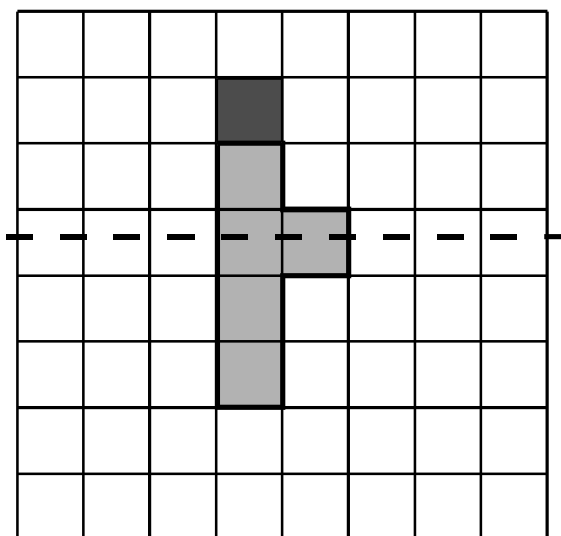
1 mark

3.

Catrin shades in a shape made of five squares on a grid:

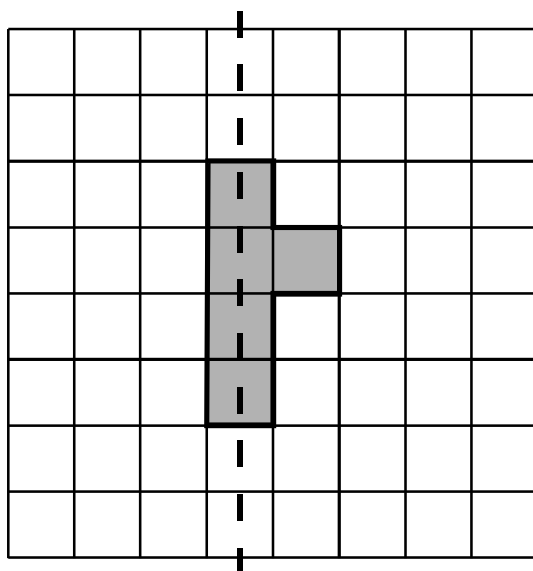


She shades in **1 more square** to make a shape which has the dashed line as a **line of symmetry**:



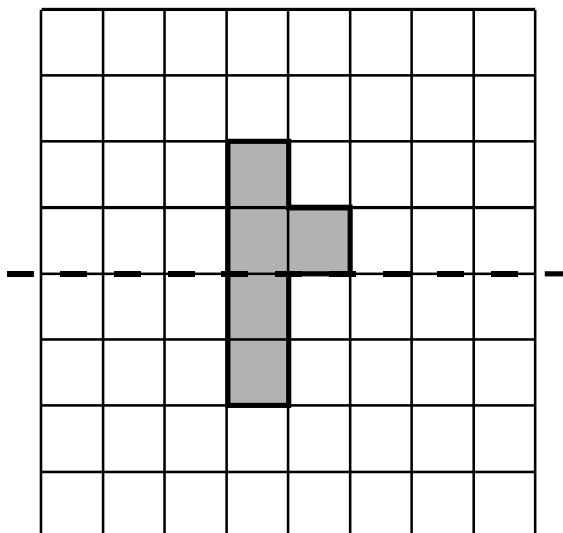
- (a) Shade in **1 more square** to make a shape which has the dashed line as a **line of symmetry**.

You may use a mirror or tracing paper to help you.



- (b) Shade in **1 more square** to make a shape which has the dashed line as a **line of symmetry**.

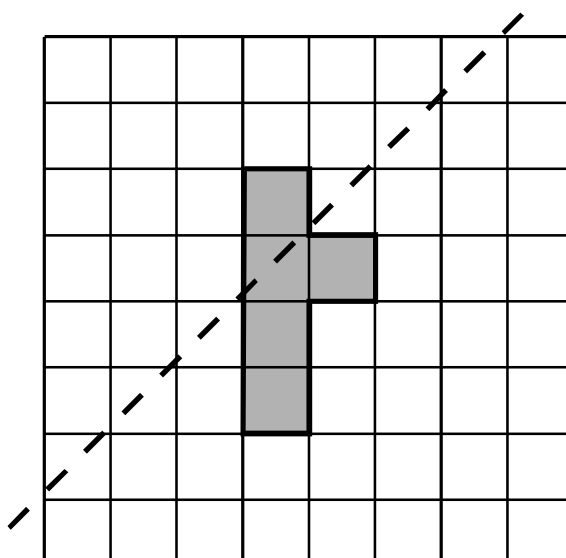
You may use a mirror or tracing paper to help you.



1 mark

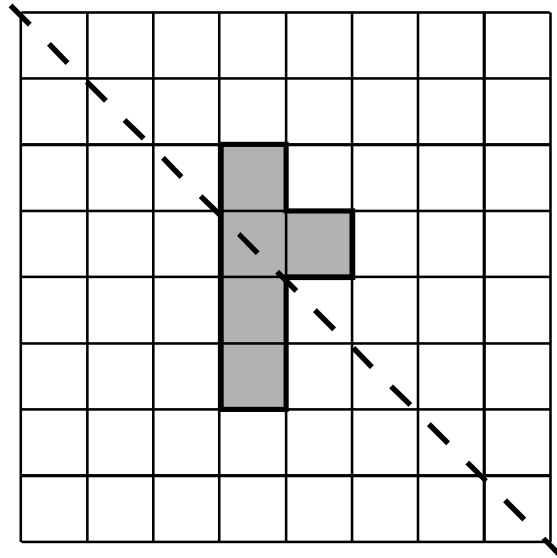
- (c) Shade in **2 more squares** to make a shape which has the dashed line as a **line of symmetry**.

You may use a mirror or tracing paper to help you.



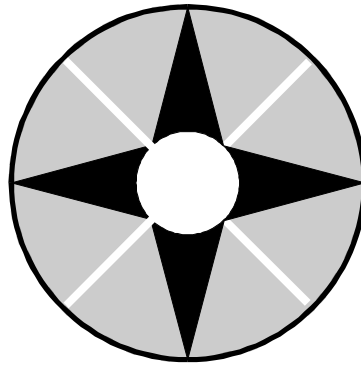
- (d) Shade in **2 more squares** to make a shape which has the dashed line as a **line of symmetry**.

You may use a mirror or tracing paper to help you.



2 marks

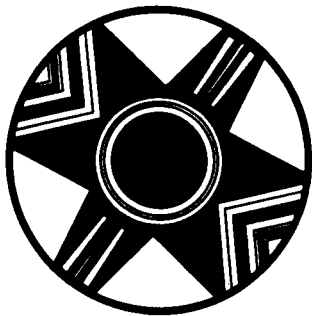
4. These patterns come from Egypt.  
The first pattern looks the same after **part** of a turn.



It will look the same in 4 different positions. ....**4**.....

In how many positions will each of these patterns look the same?  
Write the number below each pattern.

(a)

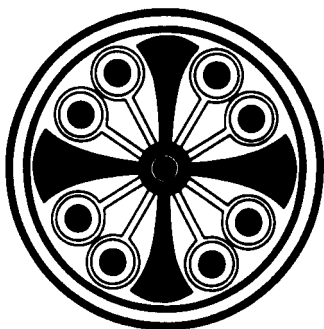


(b)

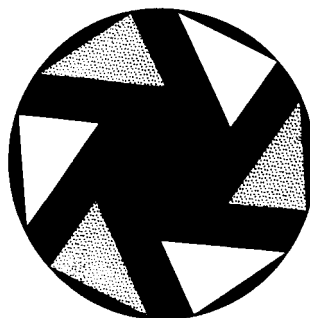


2 marks

(c)



(d)

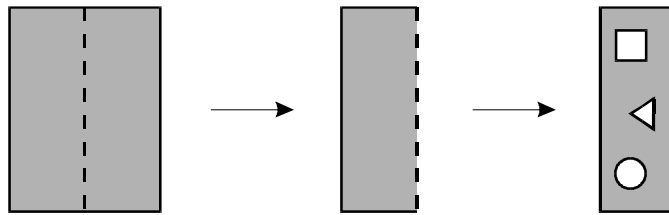


2 marks

### 5. Folding and Cutting

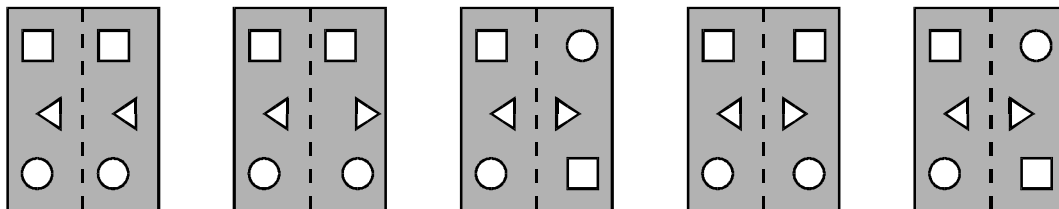
(a) I start with a rectangle of paper.

I fold it in half, then I cut out three shapes.



Then I unfold my paper.

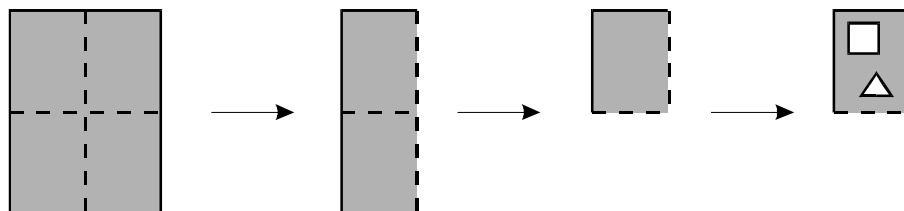
Circle the diagram below that shows what my paper looks like now.



1 mark

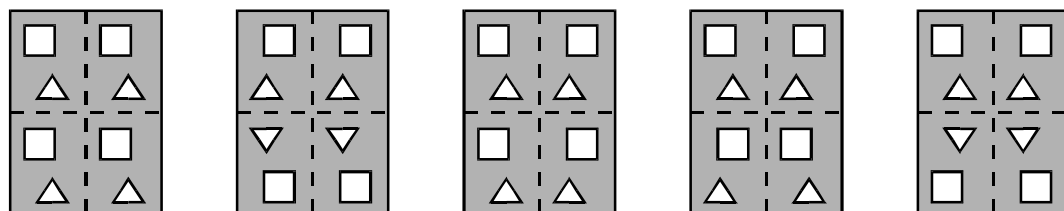
(b) I start again with a different rectangle of paper.

I fold it in half, then in half again, then I cut out two shapes.



Then I unfold my paper.

Circle the diagram below that shows what my paper looks like now.

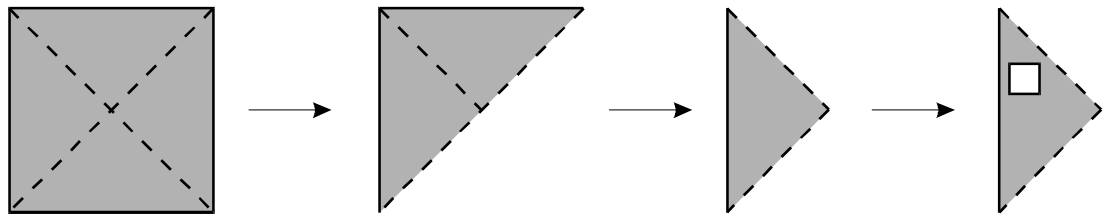


1 mark



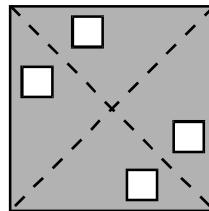
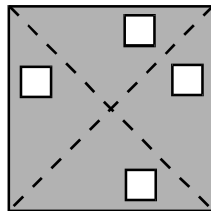
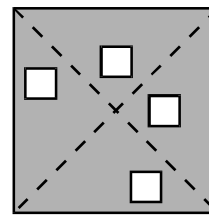
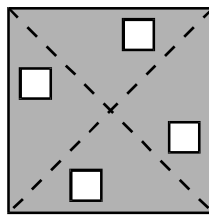
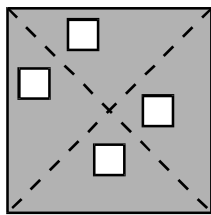
(c) I start with a square of paper.

I fold it in half, then in half again, then I cut out one shape.



Then I unfold my paper.

Circle the diagram below that shows what my paper looks like now.



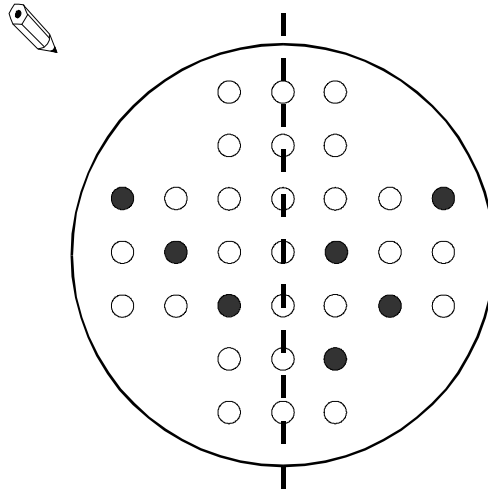
1 mark

## 6. Symmetry

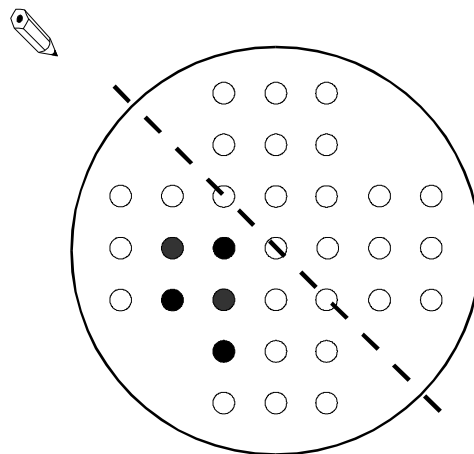
Some board games have pegs in holes.

- (a) On each board below, shade **5 more** pegs so that the dashed line is a **line of symmetry**.

You may use a mirror or tracing paper to help.

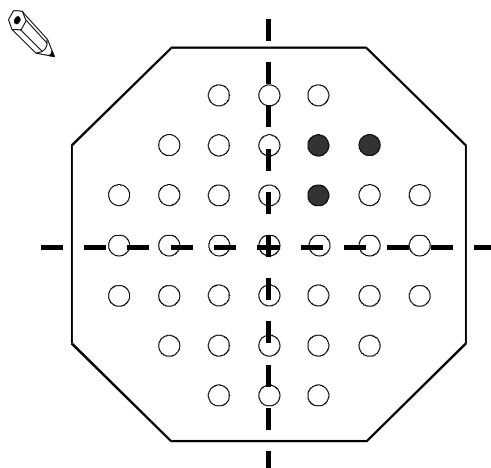


1 mark



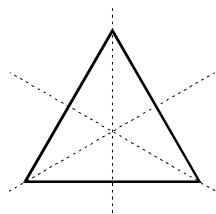
1 mark

- (b) Shade **9 more** pegs so that **both** dashed lines are **lines of symmetry**.

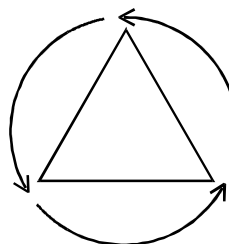


7. Symmetry

An equilateral triangle has **3 lines of symmetry**.



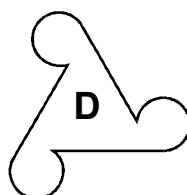
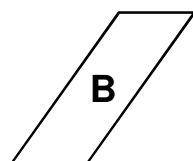
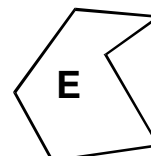
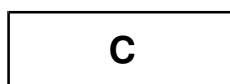
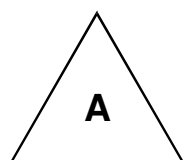
It has **rotational symmetry of order 3**



Write the letter of each shape in the correct space in the table below.

You may use a mirror or tracing paper to help you.

The letters for the first two shapes have been written for you.



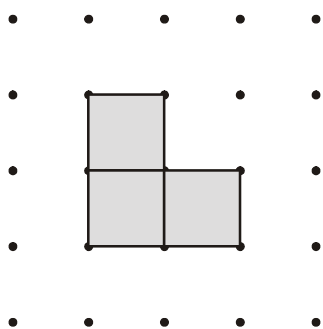
Number of lines of Symmetry

	0	1	2	3
1				
2	<b>B</b>			
3				<b>A</b>

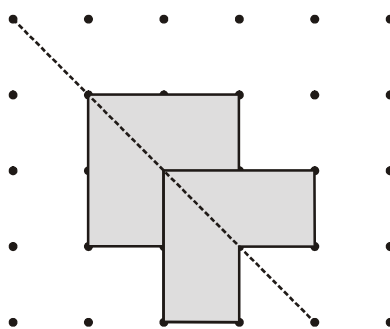
Total 4 marks

8. L-triominos

This shape is called an  
**L-triomino**.  
It is made from three squares.

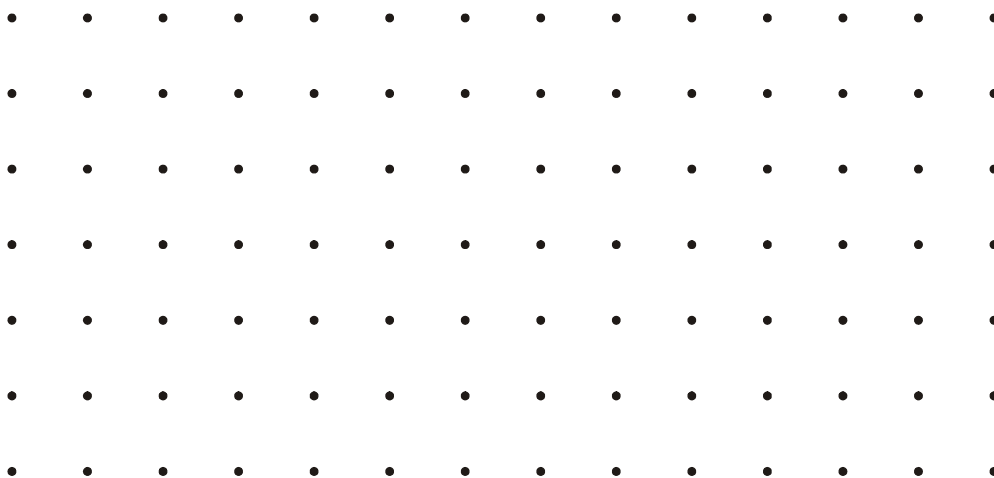


This shape is made from two  
L-triominos. They do not overlap.  
It has only **one line** of symmetry.



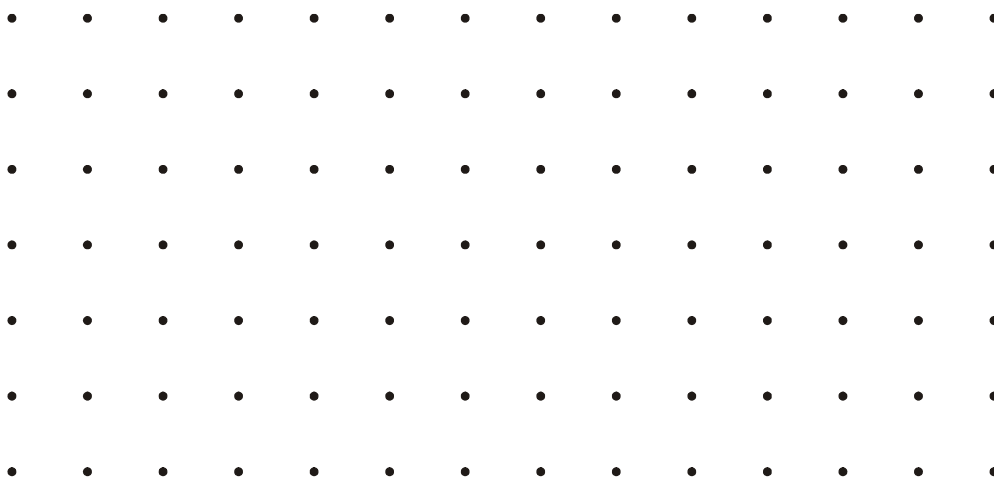
You may use a mirror or tracing paper to help you in this question.

- (a) Draw a **different** shape made from two L-triominoes which do not overlap. It must have only **one line** of symmetry.



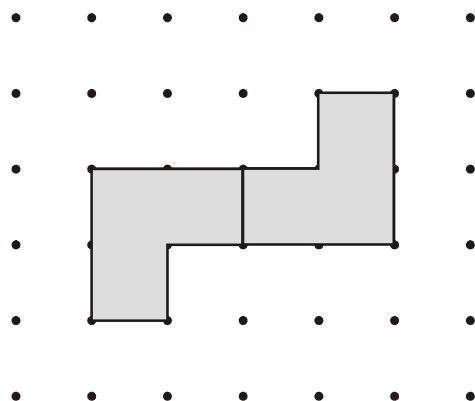
1 mark

- (b) Draw a shape made from two L-triominoes which do not overlap. It must have **two lines** of symmetry.

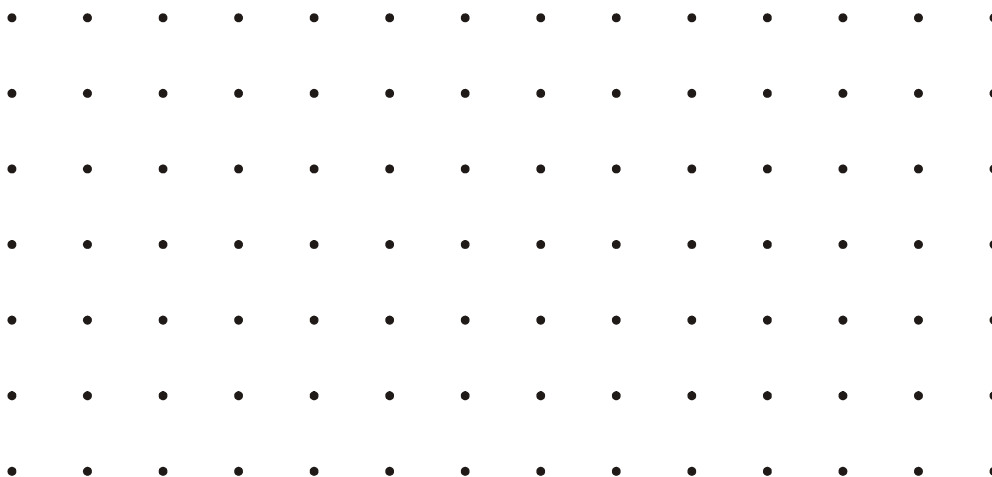


1 mark

This shape is made from two L-triominos which do not overlap. It has **rotational** symmetry of order **two**.

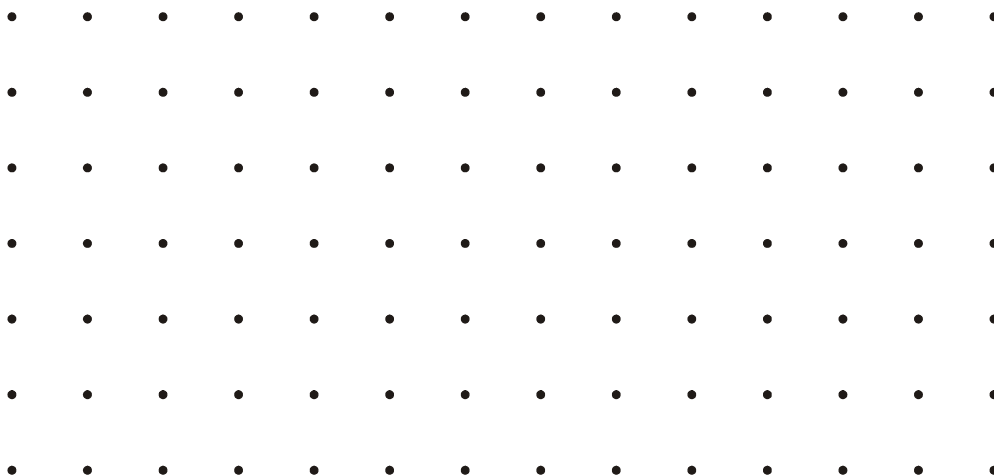


- (c) Draw a **different** shape made from two L-triominos which do not overlap. It must have **rotational** symmetry of order **two**.



1 mark

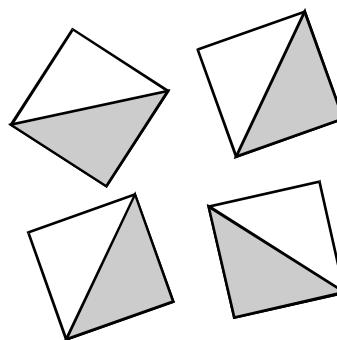
- (d) Draw a shape made from two L-triominoes which do not overlap.  
It must have **two** lines of symmetry **and rotational** symmetry of order **two**.



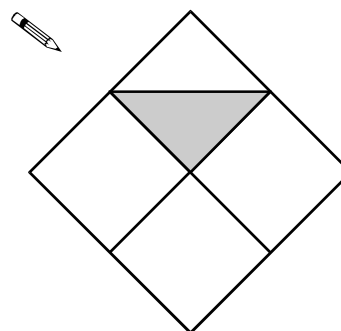
1 mark

## 9. Making patterns

I have four identical square tiles.

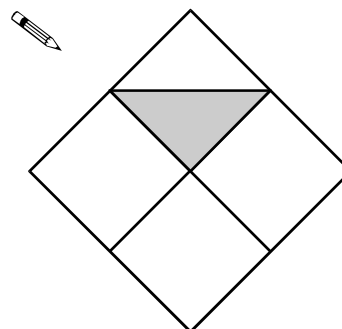


- (a) Show how the four tiles can fit together to make a pattern with **4 lines of symmetry**.



1 mark

- (b) Now show how the four tiles can fit together to make a pattern with **no lines of symmetry**.



1 mark

- (c) Show how the four tiles can fit together to make a pattern with **rotation symmetry of order 2**

