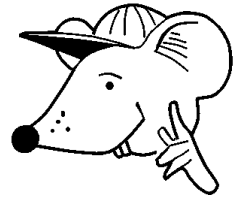


# MATHEMATICS



## Y4 Geometry

4640

Reflective symmetry in 2-D shapes.  
Reflections and translations.

## Equipment

Paper, squared or patterned paper, pencil, ruler, circle drawing tool.

# MathSphere

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### Concepts

Children should know and be able to read, write and use the following words:

***Mirror line, line of symmetry, line symmetry, symmetrical, reflect, reflection, translation.***

Children should be able to draw lines of symmetry on shapes and say if a shape has no lines of symmetry.

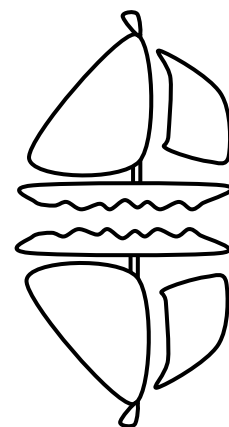
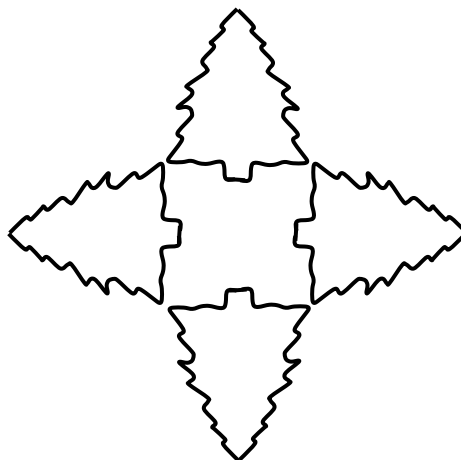
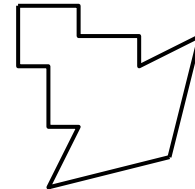
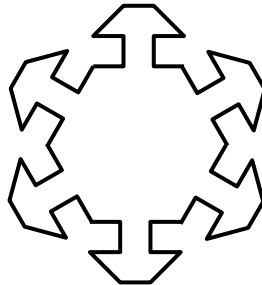
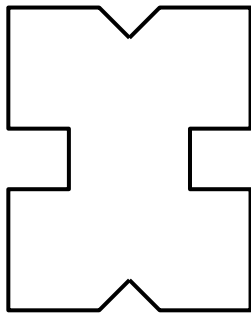
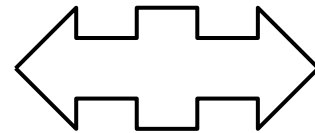
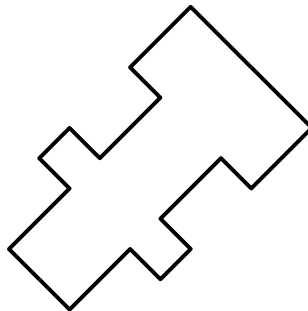
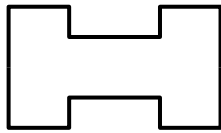
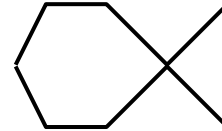
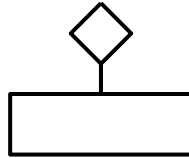
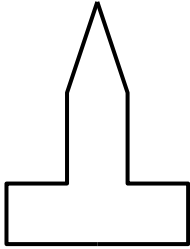
They should look at everyday designs on advertising posters, in magazines etc and see if these have reflective symmetry, being careful not to mix this up with rotational symmetry.

They should be able to classify shapes according to the number of lines of symmetry they have (rectangle has two, square has four etc).

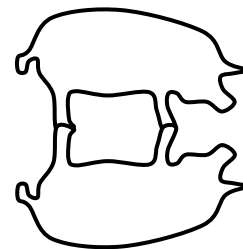
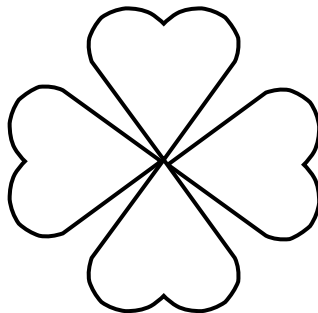
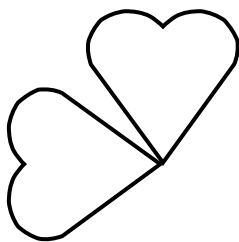
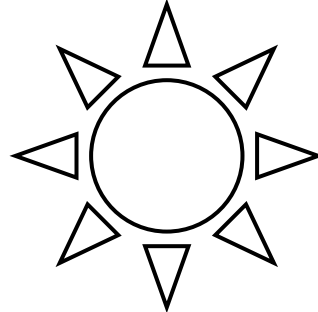
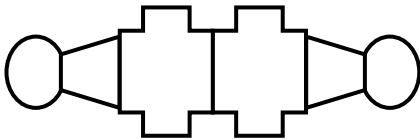
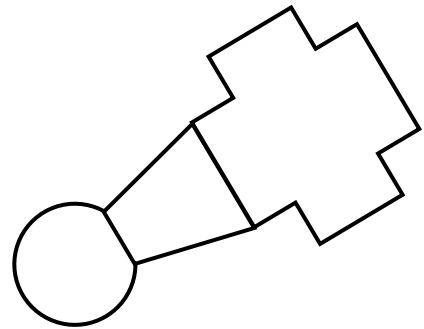
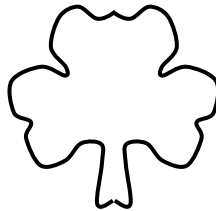
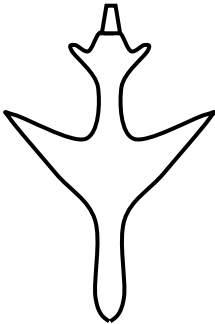
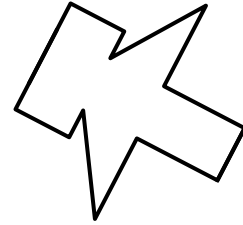
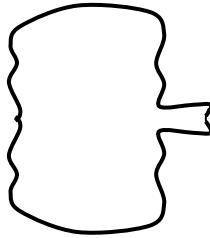
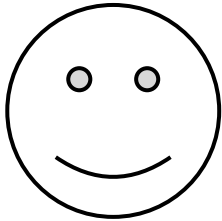
Children should be able to draw the reflection of a simple shape in a mirror line using tracing paper if necessary, but increasingly doing so by looking at the distances of points from the mirror line.

They should understand the concept of a translation (a simple slide) and be able to construct patterns using translation. They should be able to try to predict the patterns they will make using this idea and be able to talk about their discoveries.

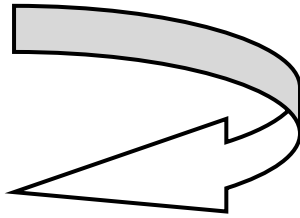
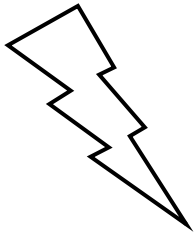
1. Draw the lines of symmetry in these shapes. Some have just one line of symmetry, some have more.



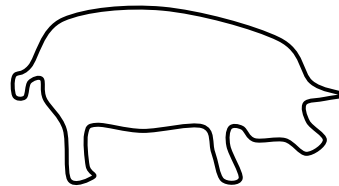
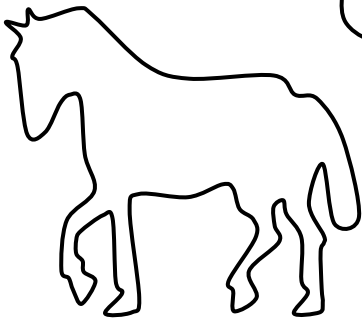
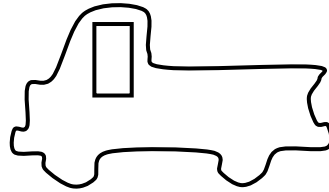
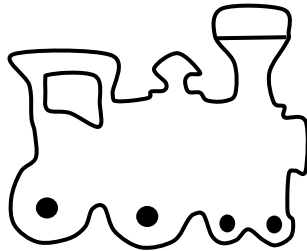
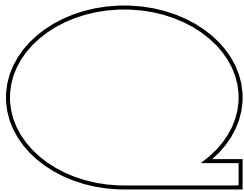
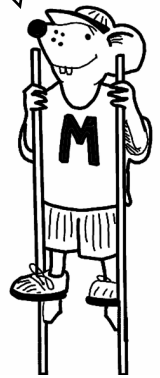
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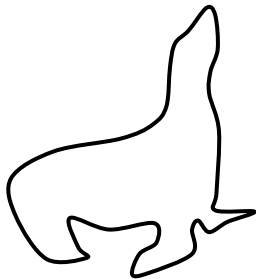
1. What do all these shapes have in common?



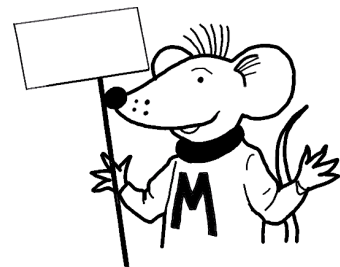
Don't forget, guys, we're talking symmetry here!



What are you doing here Multy?



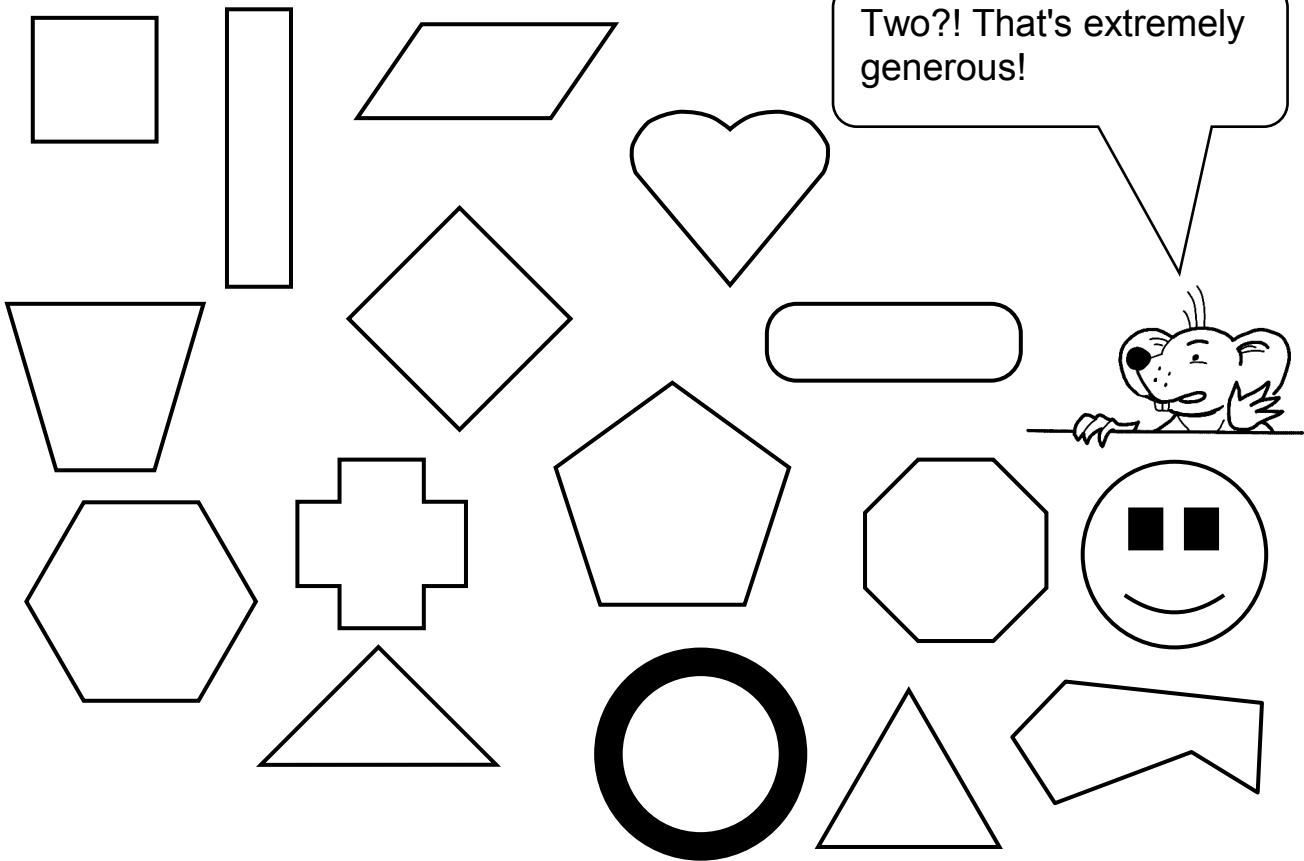
I'm part of this question, like you!



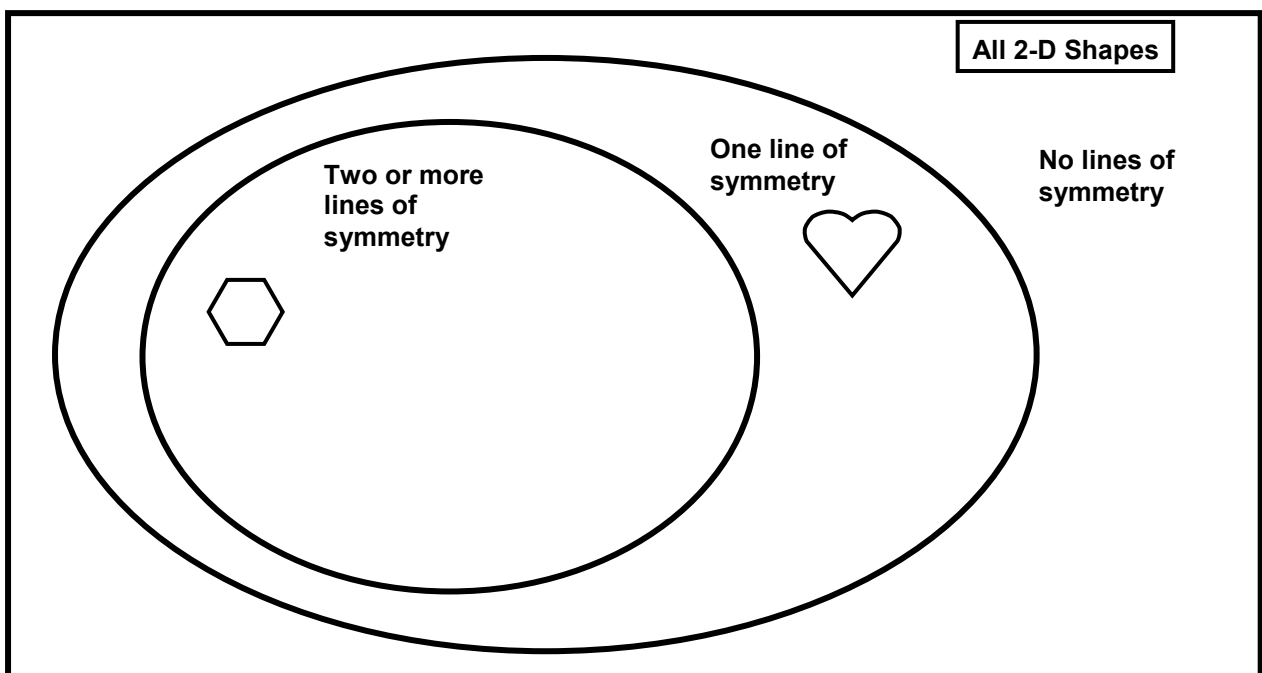
2. Look in magazines and on advertising posters for shapes (logos etc) that have reflective symmetry. Draw some of them below.

1. Think about these shapes. Which have no lines of symmetry, which have just one line, which have two or more? You may like to draw them on the shapes.

Draw the shapes in the correct places in the Venn Diagram. Two have been done for you.

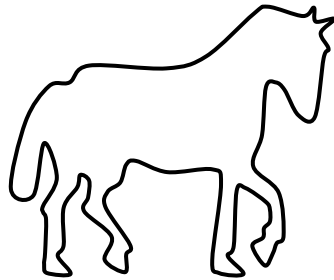
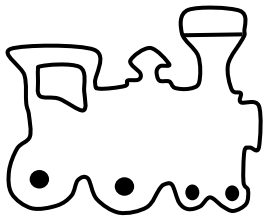


Two?! That's extremely generous!

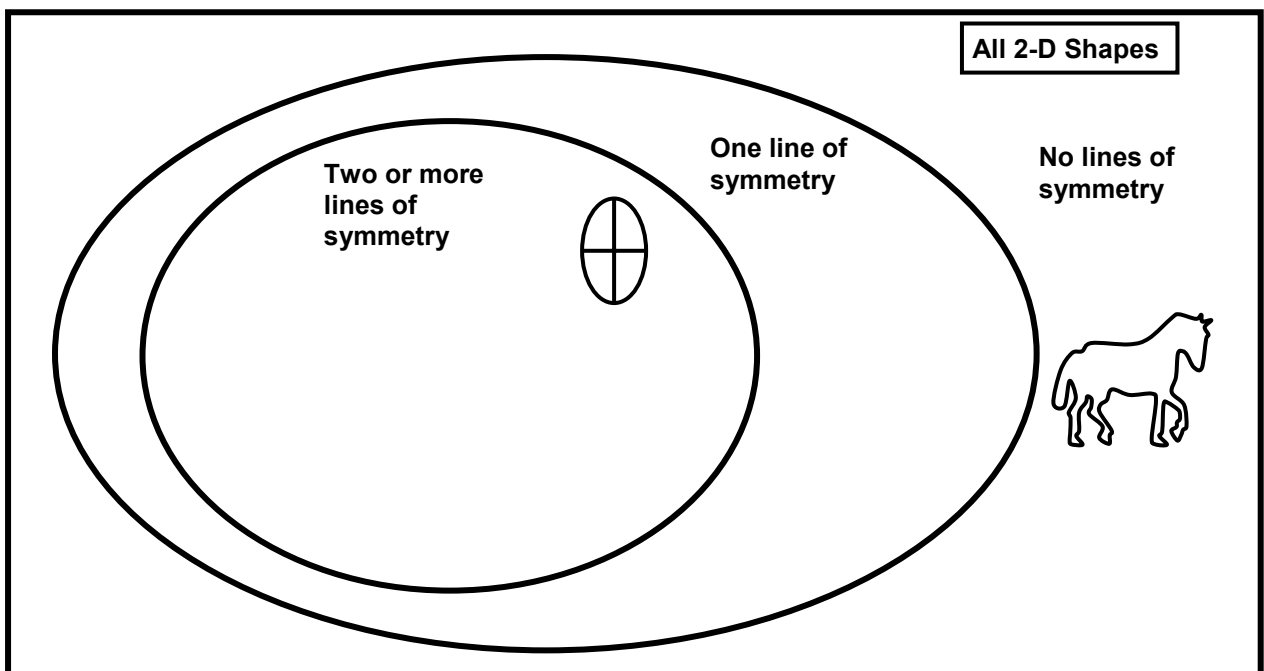
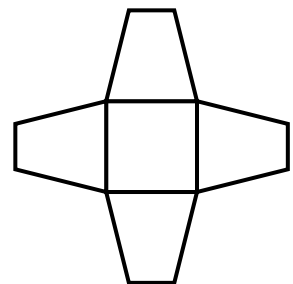
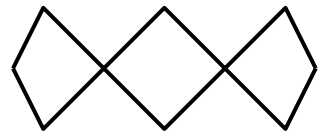
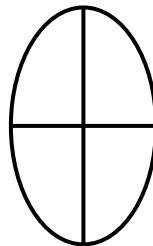
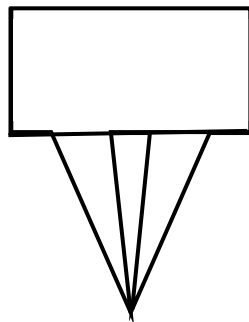
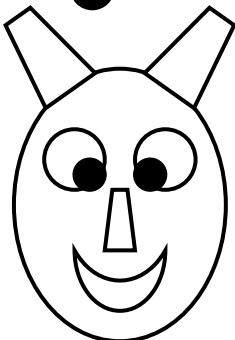
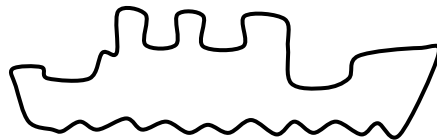
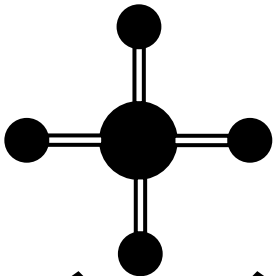


1. Think about these shapes. Which have no lines of symmetry, which have just one line, which have two or more? You may like to draw them on the shapes.

Draw the shapes in the correct places in the Venn Diagram. Two have been done for you.

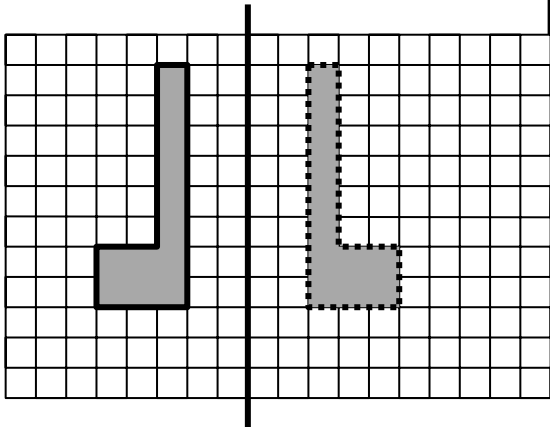


Some very strange shapes here!





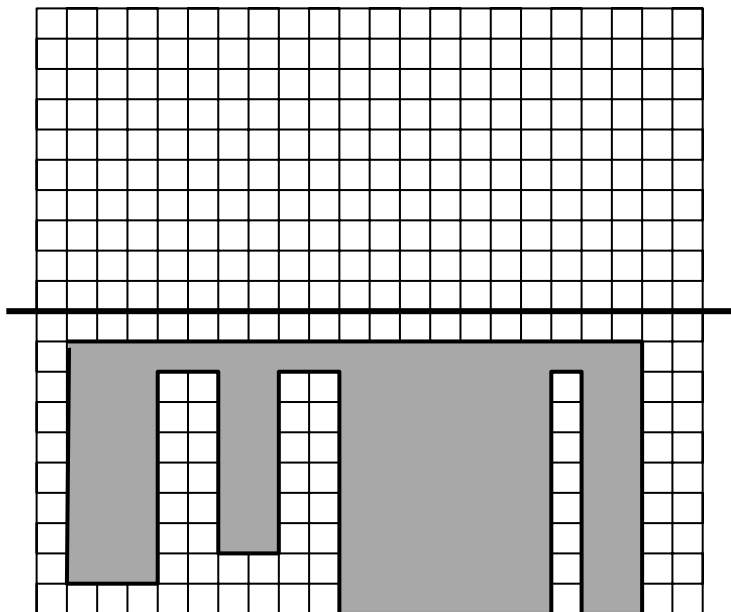
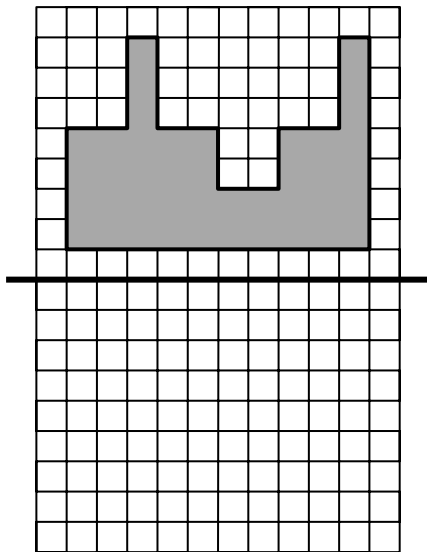
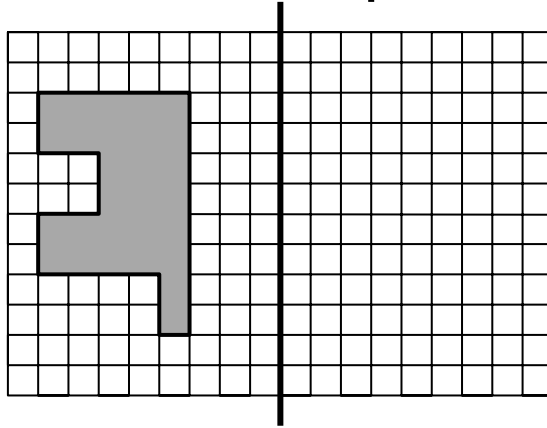
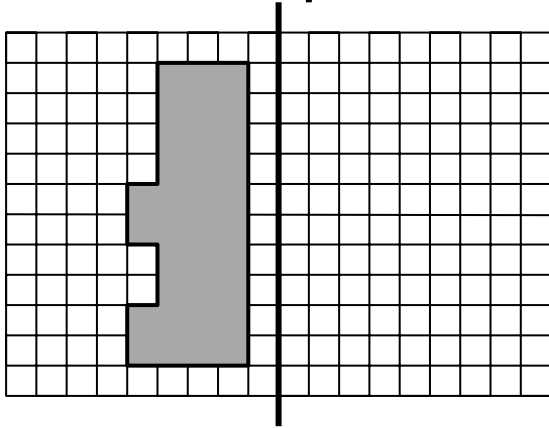
1. Draw the reflection of each shape in the mirror line. The first one has been done for you.



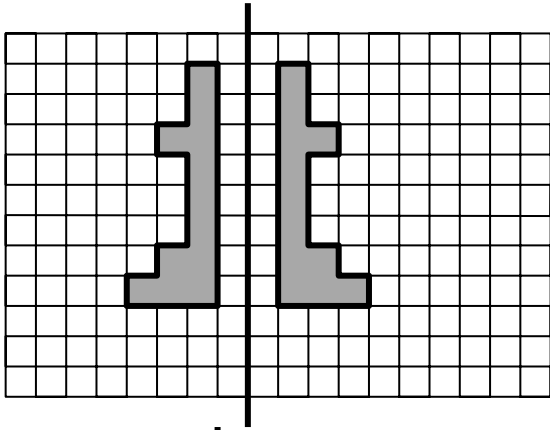
Hey, guys, look at my reflection!



Hey, guys, look at my reflection!

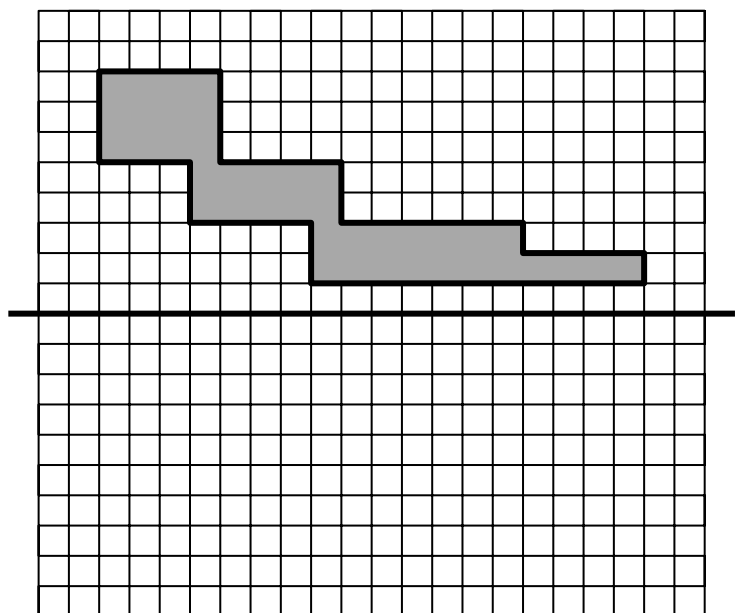
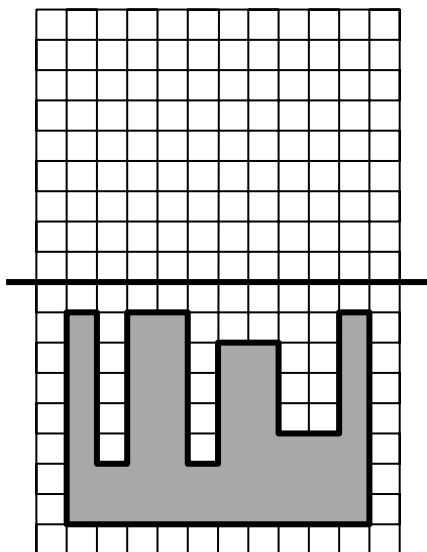
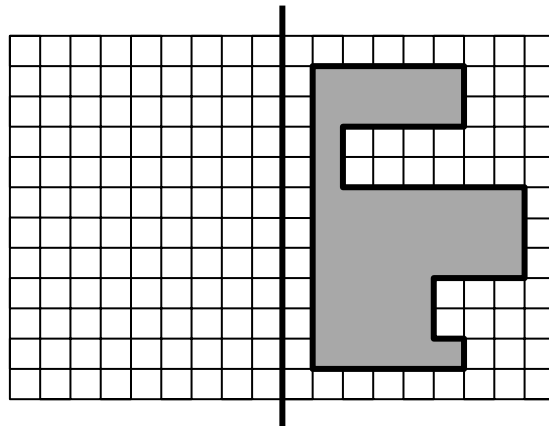
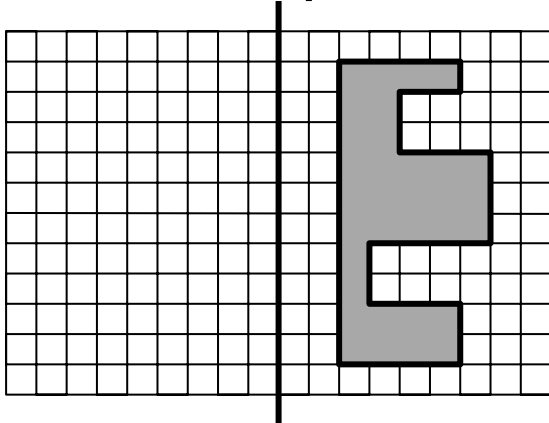
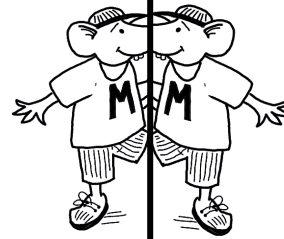


1. Draw the reflection of each shape in the mirror line. The first one has been done for you.



Never stand too close to a mirror, guys!

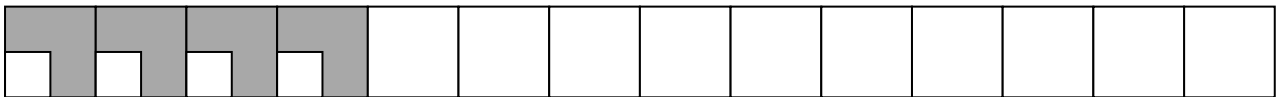
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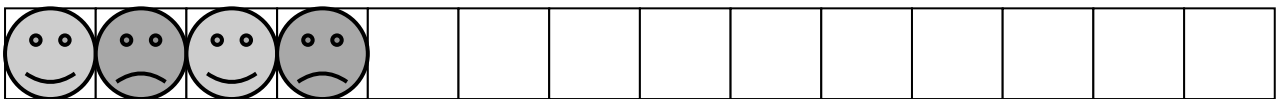
1. Continue these patterns using translations and then make up some of your own:

Translation just means slide the shape along a little.

Thanks, Divvy, but we already knew that!



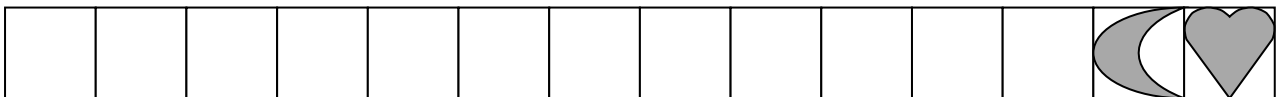
Translate **one** square at a time to the right.



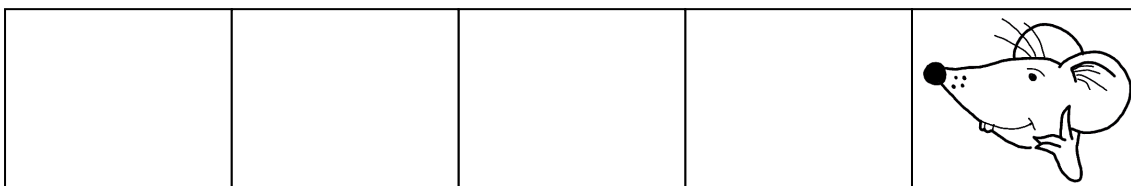
Translate the happy face and the sad face **two** squares at a time to the right.



Translate the diamond **one** square at a time to the left.

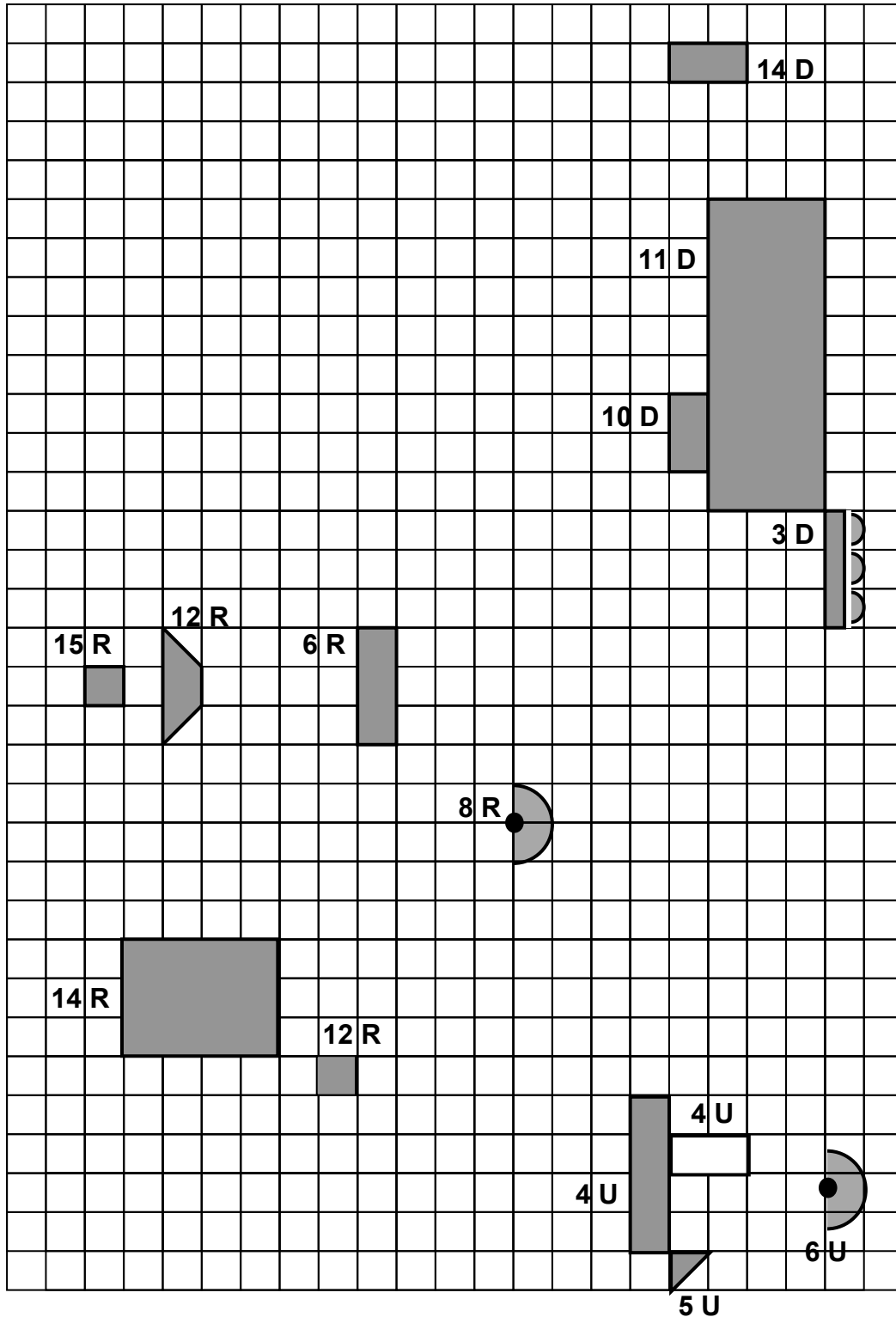


Translate the heart and the moon **two** squares at a time to the left.



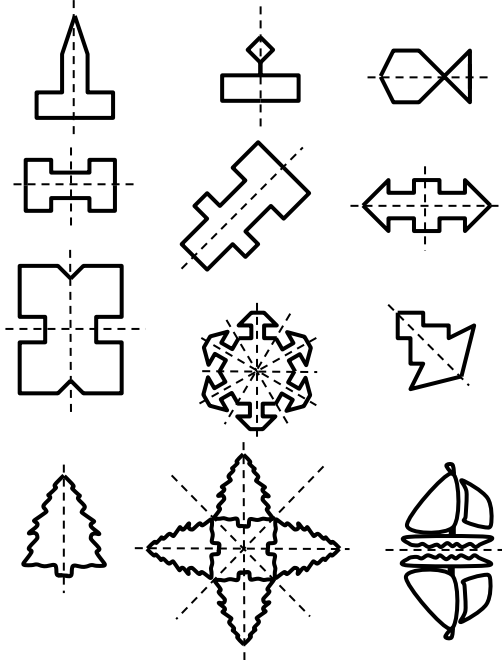
Translate Subby one square at a time to the left.

1. Here is a drawing in parts. By translating each part by the number of squares shown, you can make the drawing.  
 U means 'UP', D means 'DOWN' and R means 'RIGHT'. Good luck!

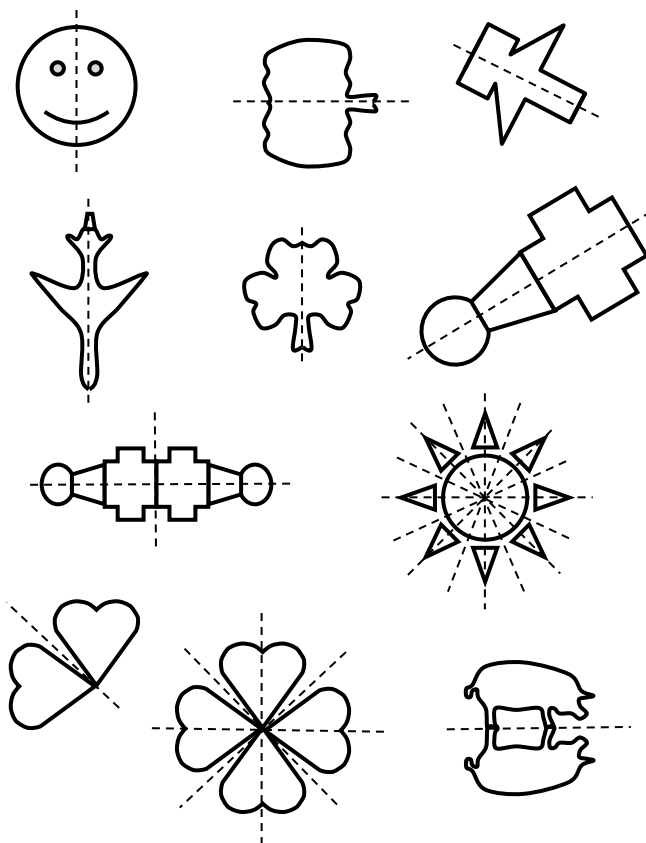


**Answers**

**Page 3**



**Page 4**



### Answers (Contd)

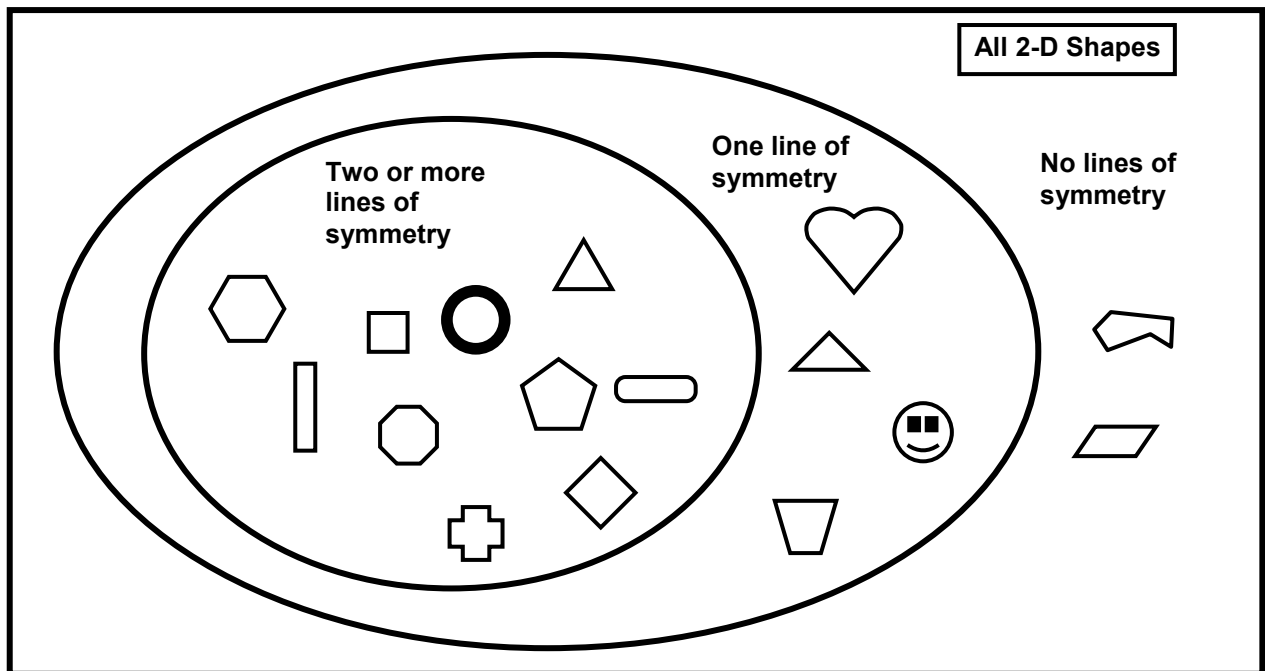
#### Page 5

None of the shapes is symmetrical.

#### Page 6

Children draw in their own discoveries.

#### Page 7



**Answers (Contd)**

Page 8

All 2-D Shapes

Two or more lines of symmetry

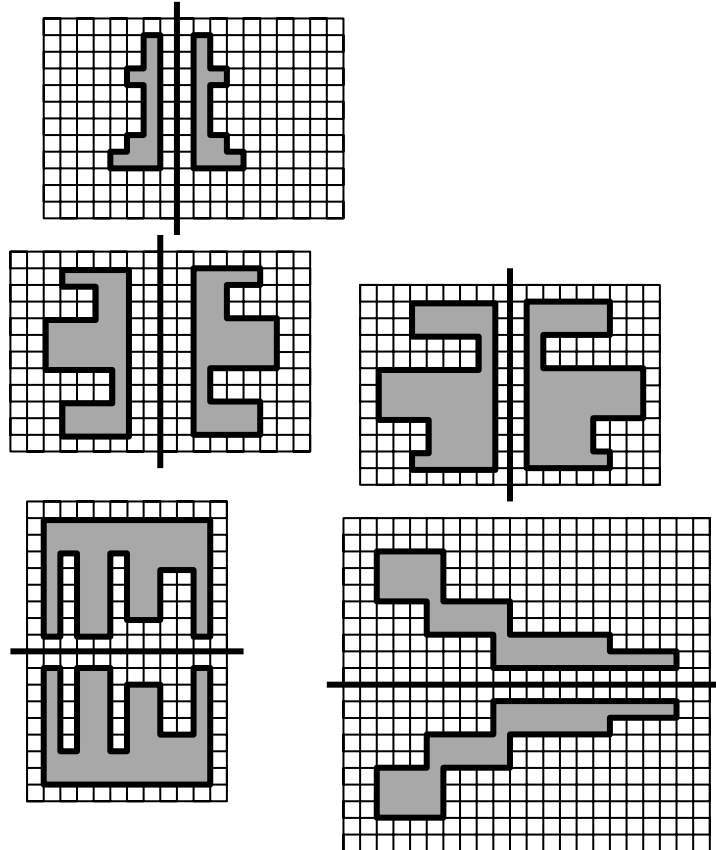
One line of symmetry

No lines of symmetry

Page 9

**Answers (Contd)**

**Page 10**



**Page 11**

Continue the simple translations.

**Page 12**

The shape is a train engine on its side.

