

Reasoning and Problem Solving

Step 5: Lines of Symmetry

National Curriculum Objectives:

Mathematics Year 4: (4G2b) [Identify lines of symmetry in 2-D shapes presented in different orientations](#)

Differentiation:

Questions 1, 4 and 7 (Reasoning)

Developing Find and explain the mistake that has been made when sorting shapes into a Venn diagram. 3 simple regular polygons with up to 2 lines of symmetry used. All shapes in 'standard' orientation.

Expected Find and explain the mistake that has been made when sorting shapes into a Venn diagram. 4 regular polygons with up to 8 lines of symmetry used. All shapes in the same 'non-standard' orientation in each question.

Greater Depth Find and explain the mistake that has been made when sorting shapes into a Venn diagram. 5 irregular polygons with any number of lines of symmetry used. All shapes in unique orientations.

Questions 2, 5 and 8 (Problem Solving)

Developing Find all the lines of symmetry (up to 2) in an image made up of multiple shapes. Up to 4 simple regular polygons used, all in 'standard' orientation.

Expected Find all the lines of symmetry (up to 8) in an image made up of multiple shapes. Up to 8 regular polygons used, in a mix of 'standard' and 'non-standard' orientations.

Greater Depth Find all the lines of symmetry (any number) in an image made up of multiple shapes. Up to 12 irregular polygons used, all in 'non-standard' orientations.

Questions 3, 6 and 9 (Reasoning)

Developing Find the symmetrical shape from a set of 2 shapes and explain what makes it symmetrical. Simple shapes with up to 4 sides used, with one obviously asymmetrical.

Expected Find the 2 asymmetrical shapes from a set of 3 shapes and explain what makes each of them asymmetrical. More complex shapes with up to 8 sides used, with more subtle reasons for asymmetry.

Greater Depth Find the 3 asymmetrical shapes from a set of 4 shapes and explain what makes each of them asymmetrical. Very complex shapes with any number of sides used, with very subtle reasons for asymmetry.

More [Year 4 Properties of Shape](#) resources.

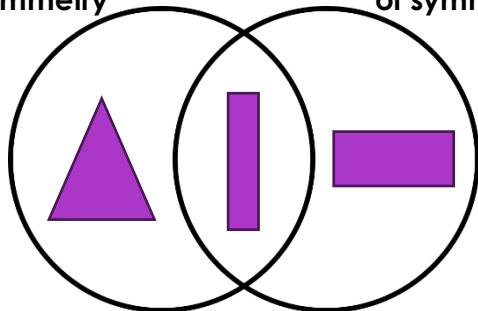
Did you like this resource? Don't forget to [review](#) it on our website.

Lines of Symmetry

1a. Alex has filled in this Venn diagram with shapes.

Vertical line
of symmetry

Horizontal line
of symmetry



Find and explain his mistake.



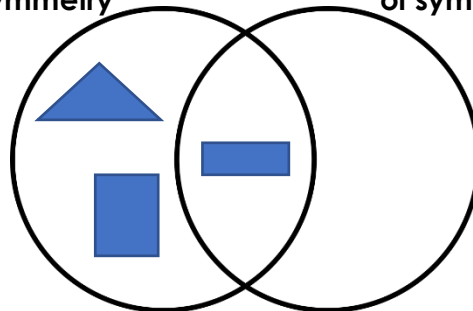
R

Lines of Symmetry

1b. Bryce has filled in this Venn diagram with shapes.

Vertical line
of symmetry

Horizontal line
of symmetry

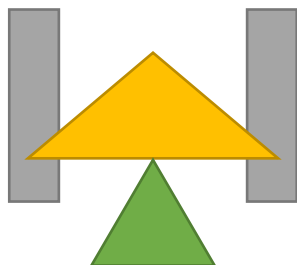


Find and explain her mistake.



R

2a. Here is an image made up of several shapes.

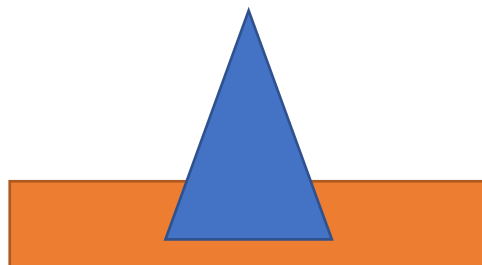


How many lines of symmetry does the image (not the individual shapes) have?



PS

2b. Here is an image made up of several shapes.

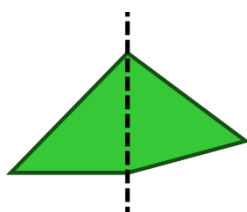


How many lines of symmetry does the image (not the individual shapes) have?

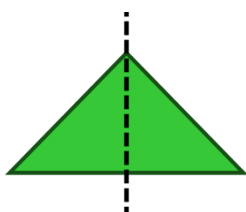


PS

3a. Here are 2 attempts at drawing reflections.



A



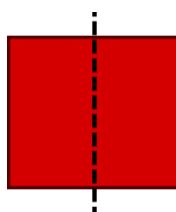
B

Find the reflection that is not symmetrical. Explain why.

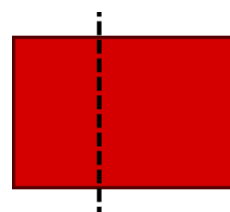


R

3b. Here are 2 attempts at drawing reflections.



A



B

Find the reflection that is not symmetrical. Explain why.



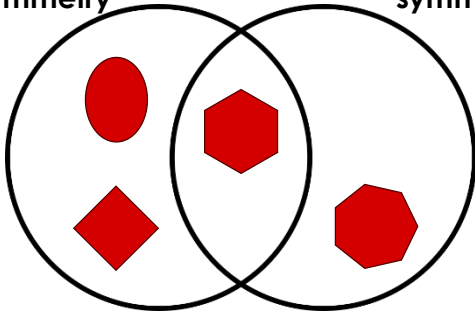
R

Lines of Symmetry

4a. Pauline has filled in this Venn diagram with shapes.

Vertical line of symmetry

> 3 lines of symmetry



Find and explain her mistake.



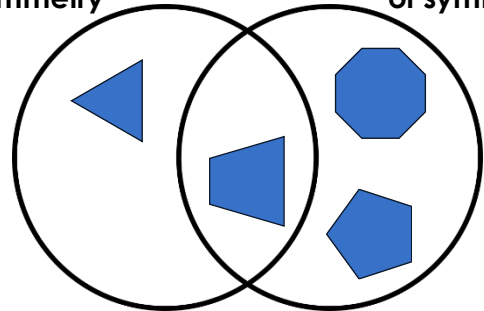
R

Lines of Symmetry

4b. Abdalla has filled in this Venn diagram with shapes.

< 4 lines of symmetry

Horizontal line of symmetry

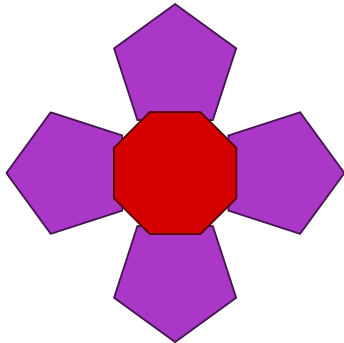


Find and explain his mistake.



R

5a. Here is an image made up of several shapes.

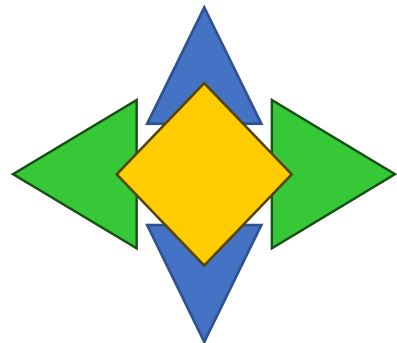


How many lines of symmetry does the image (not the individual shapes) have?



PS

5b. Here is an image made up of several shapes.

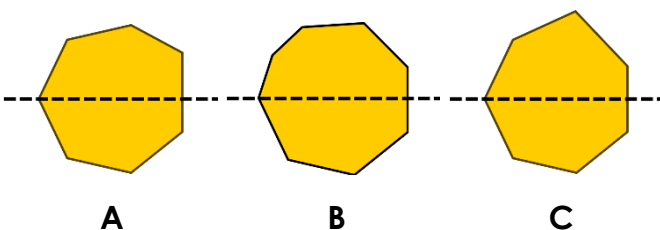


How many lines of symmetry does the image (not the individual shapes) have?



PS

6a. Here are 3 attempts at drawing reflections.

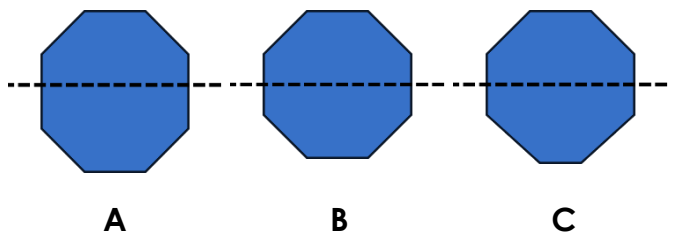


Find the reflections that are not symmetrical. Explain why.



R

6b. Here are 3 attempts at drawing reflections.



Find the reflections that are not symmetrical. Explain why.



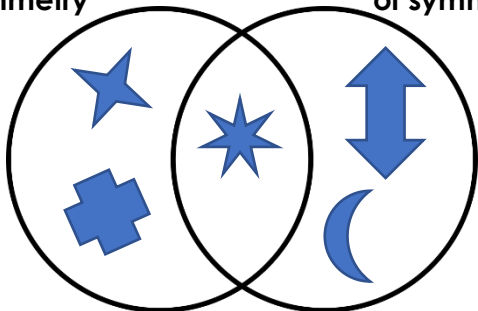
R

Lines of Symmetry

7a. Ollie has filled in this Venn diagram with shapes.

> 5 lines of symmetry

Horizontal line of symmetry



Find and explain his mistake.



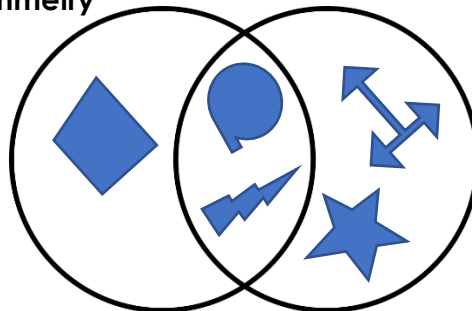
R

Lines of Symmetry

7b. Justine has filled in this Venn diagram with shapes.

No lines of symmetry

> 4 sides

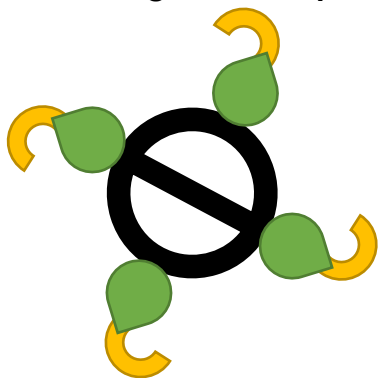


Find and explain her mistake.



R

8a. Here is an image made up of several shapes.

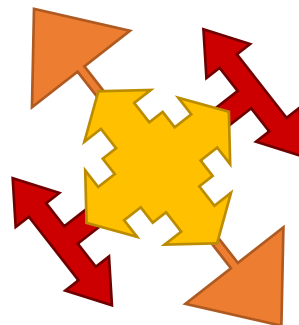


How many lines of symmetry does the image (not the individual shapes) have?



PS

8b. Here is an image made up of several shapes.

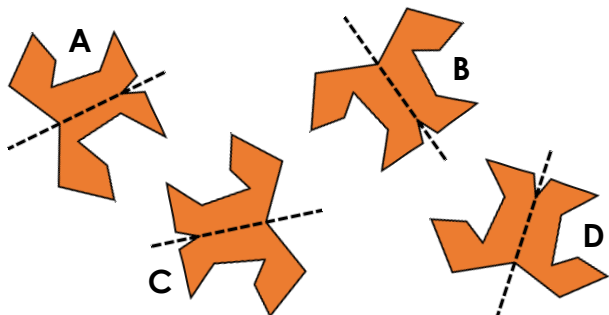


How many lines of symmetry does the image (not the individual shapes) have?



PS

9a. Here are 4 attempts at drawing reflections.

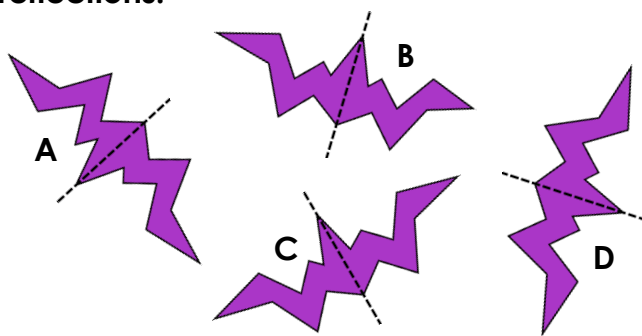


Find the reflections that are not symmetrical. Explain why.



R

9b. Here are 4 attempts at drawing reflections.



Find the reflections that are not symmetrical. Explain why.



R

Reasoning and Problem Solving Lines of Symmetry

Developing

- 1a. Alex has put a rectangle in the 'Horizontal line of symmetry' section when it also has a vertical line of symmetry. It should be in the central section instead.
- 2a. The image has 1 line of symmetry.
- 3a. Shape A is not symmetrical. The right-hand corner is higher than the left-hand corner.

Expected

- 4a. Pauline has put the rhombus in the 'Vertical line of symmetry' section when it also has more than 3 lines of symmetry in total. It should be in the central section instead.
- 5a. The image has 4 lines of symmetry.
- 6a. Shapes A, B and C are not symmetrical. The right-hand side of shape A is longer above the line of symmetry than below it. Shape B has 5 sides above the line of symmetry and only 4 below it. Shape C's most central top corner is further from the line of symmetry than the corresponding corner on the lower part of the shape.

Greater Depth

- 7a. Ollie has put the 7-pointed star in the central section when it does not have a horizontal line of symmetry. It should be in the '> 5 lines of symmetry' section instead.
- 8a. The image has 0 lines of symmetry.
- 9a. Shapes A and D are not symmetrical. Shape A has 2 sides which run almost parallel to the line of symmetry; the side below the line is closer to the line of symmetry than the one above. The protrusion at the bottom of shape D is slightly smaller on the right-hand side of the line of symmetry than the left.

Reasoning and Problem Solving Lines of Symmetry

Developing

- 1b. Bryce has put a rectangle in the 'Vertical line of symmetry' section when it also has a horizontal line of symmetry. It should be in the central section instead.
- 2b. The image has 1 line of symmetry.
- 3b. Shape B is not symmetrical. The top and bottom sides are much longer on the right-hand part of the shape.

Expected

- 4b. Abdalla has put the triangle in the '< 4 lines of symmetry' section when it also has a horizontal line of symmetry. It should be in the central section instead.
- 5b. The image has 2 lines of symmetry.
- 6b. Shapes A and C are not symmetrical. The right and left-hand sides of shape A are longer below the line of symmetry than above it. The bottom side of shape C is narrower than the top side.

Greater Depth

- 7b. Justine has put the star in the '> 4 sides' section when it also has no lines of symmetry. It should be in the central section instead.
- 8b. The image has 2 lines of symmetry.
- 9b. Shapes A, B and C are not symmetrical. The first complete 'zig-zags' on each side of the line of symmetry in shape A do not match. The sides which make up the rightmost angle in shape B are smaller than their leftmost equivalents. The topmost angle split by the line of symmetry in shape C is not equal on both sides of the line.