

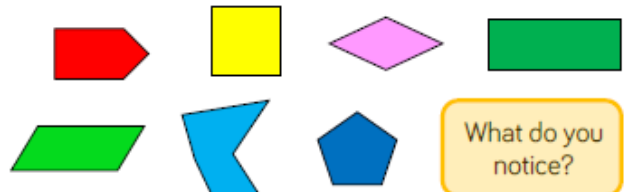
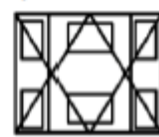
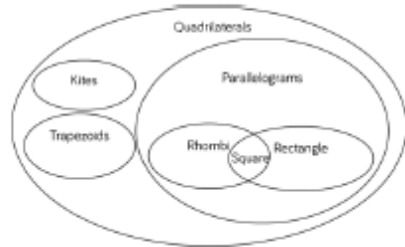
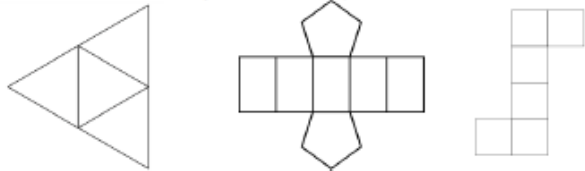


Properties of regular and irregular shapes

Fluency lesson 1	Reasoning lesson 1	Problem solving lesson 1									
<p>Sort the shapes in to irregular and regular polygons.</p>  <p>What's the same? What's different?</p> <p>Draw a regular polygon and an irregular polygon on the grids.</p>  <p>Look at the 2D shapes. Decide whether the shape is a regular or irregular polygon. Measure the angles in each one.</p>  <p>What do you notice?</p>	<p>Decide which statements are true, sometimes true or false.</p> <ul style="list-style-type: none"> • A regular polygon has equal sides but not equal angles. • A triangle is a regular polygon. • A rhombus and square are regular polygons. • The number of angles is the same as the number of sides in any polygon. <p>Prove it!</p> <hr/> <p>How many regular and irregular polygons can you find in this picture?</p> 	<p>Cut out lots of different regular and irregular shapes. Ask children to work in pairs and sort them into groups. Once they have sorted them, can they find a different way to sort them again? Children could use Venn diagrams and Carroll diagrams to deepen their understanding, for example:</p>  <table border="1"> <thead> <tr> <th></th> <th>Regular polygon</th> <th>Irregular polygon</th> </tr> </thead> <tbody> <tr> <th>Has right angles</th> <td></td> <td></td> </tr> <tr> <th>Doesn't have any right angles</th> <td></td> <td></td> </tr> </tbody> </table>		Regular polygon	Irregular polygon	Has right angles			Doesn't have any right angles		
	Regular polygon	Irregular polygon									
Has right angles											
Doesn't have any right angles											

Fluency lesson 2

Look at the different nets. Describe the 2D shapes used to make them and identify the 3D shape.

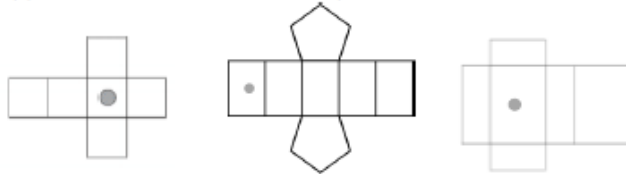


Use equipment, such as Polydron, or 2D shapes to build the 3D solids being described.

- My faces are made up of a square and four triangles.
- My faces are made up of rectangles and triangles.

Can the descriptions make more than one shape?

Draw another dot on the nets so they have a dot on the opposite face when the 3D shape is constructed.



Reasoning lesson 2

Albie says,



If two 3D shapes have the same number of edges, then they also have the same number of vertices.

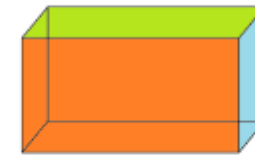
Do you agree?
Explain why.

Create cubes and cuboids by using multilink.
Can you draw these on isometric paper?
Which part is difficult?
Would it be harder if you had to draw something other than squares or rectangles?

Problem solving lesson 2

Using different 3D solids, can you represent them from different views?
Can your partner work out which representation goes with which solid?

For example,



Front view



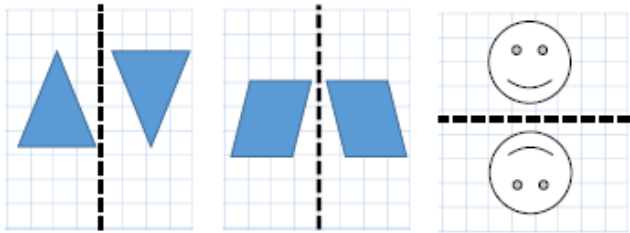
Side view



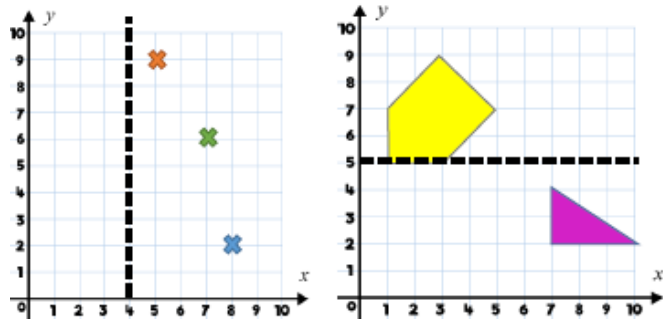
Plan view

Fluency lesson 3

Which of the images have been reflected in the mirror line?



Reflect the shapes and coordinates in the mirror line.



Reasoning lesson 3

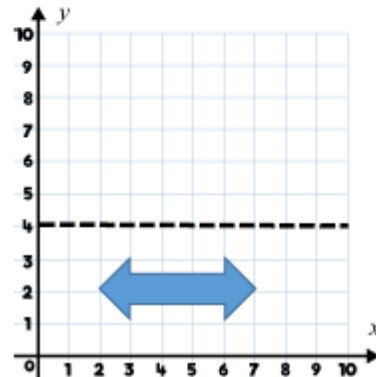


Amina

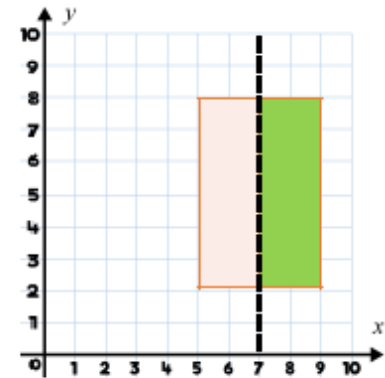
When you reflect a shape, its dimensions change.

Do you agree with Amina?
Explain your thinking.

Reflect the shape in the mirror line.



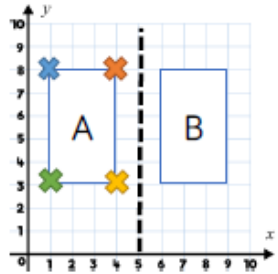
Problem solving lesson 3



The rectangle is pink and green.
The rectangle is reflected in the mirror line.
What would its reflection look like?

Fluency lesson 4

Shape A is reflected in the mirror line to position B.
Write the coordinates of the vertices for each shape.



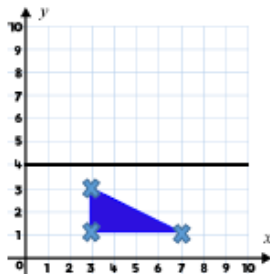
	Original Coordinate	Reflected Coordinate

Write the coordinates of the shape after it has been reflected in the mirror line.

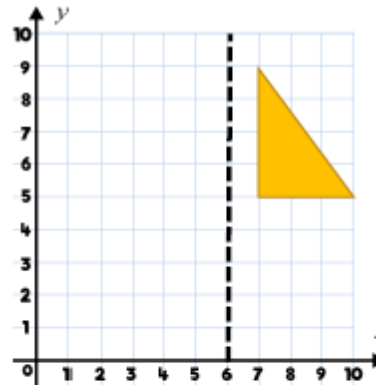
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Reasoning lesson 4



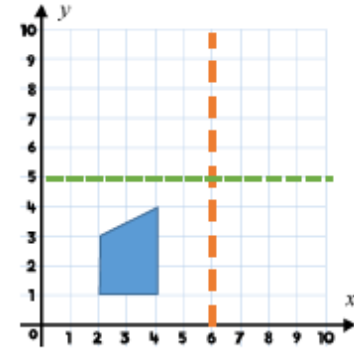
Maggie reflects the shape in the mirror line.

She calculates the coordinates for the vertices of the reflected shape as:

(5, 5) (2, 5) (2, 9)

Is Maggie correct?
Explain why.

Problem solving lesson 4



This is a shape after it has been reflected.



Kate

The green mirror line is correct.



Xander

The orange mirror line is correct.

Who is correct? Explain and prove it.
What would the coordinates be of the original shape?