Properties of Shape

Master The Curriculum

2

Fluency & Reasoning Teaching Slides

Recognise 2-D and 3-D Shapes

2

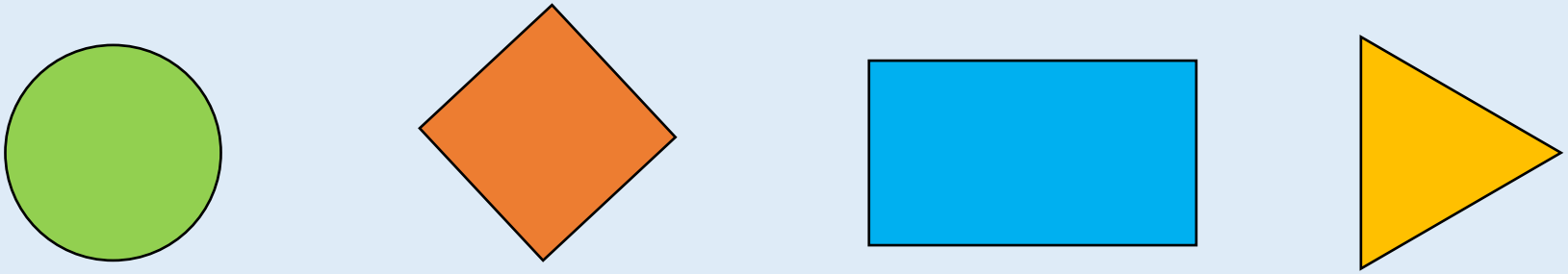
Fluency & Reasoning Teaching Slides

www.masterthecurriculum.co.uk

Activity 1 Recognise 2-D and 3-D Shapes

Match the names of the shapes to the pictures.

Square Triangle Rectangle Circle

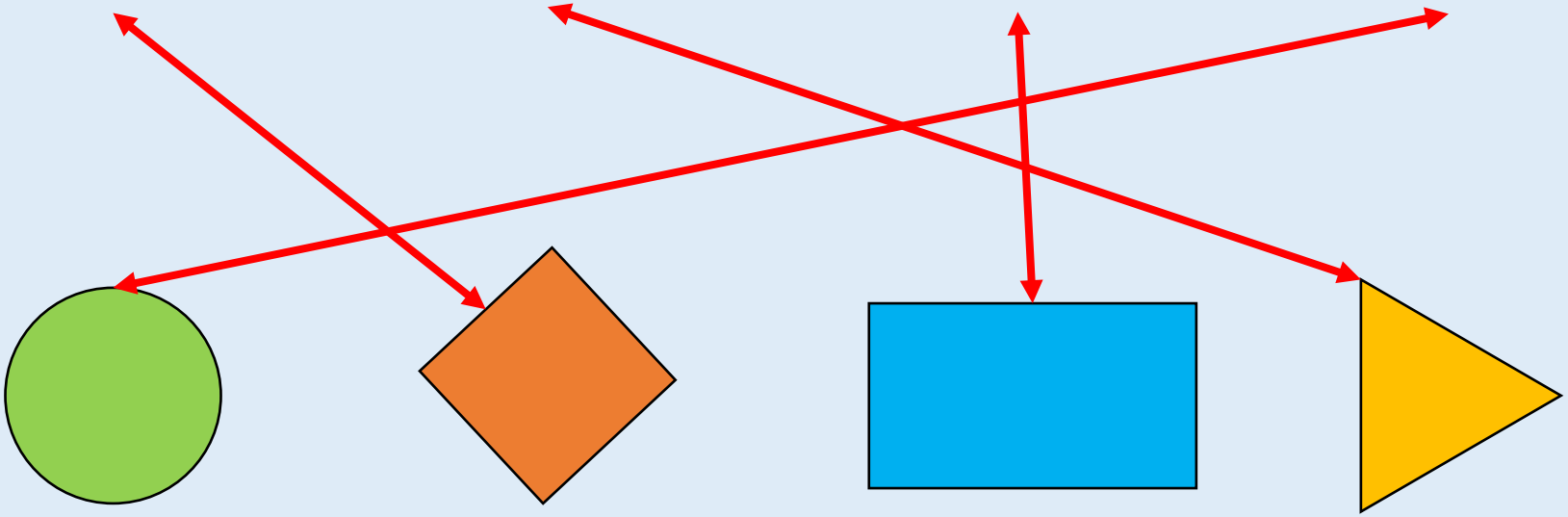


What shape is this?

Activity 1 Recognise 2-D and 3-D Shapes

Match the names of the shapes to the pictures.

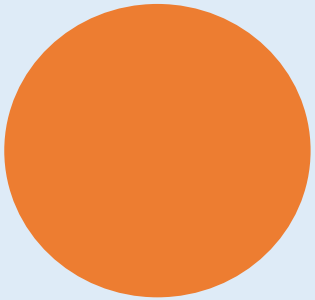
Square Triangle Rectangle Circle

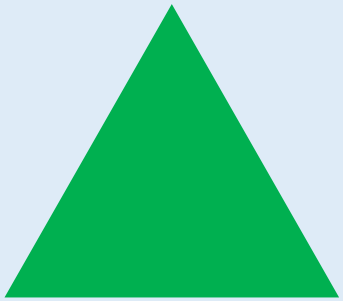


Activity 1 Recognise 2-D and 3-D Shapes

Match the names of the shapes to the pictures.

Triangle Square Rectangle Circle

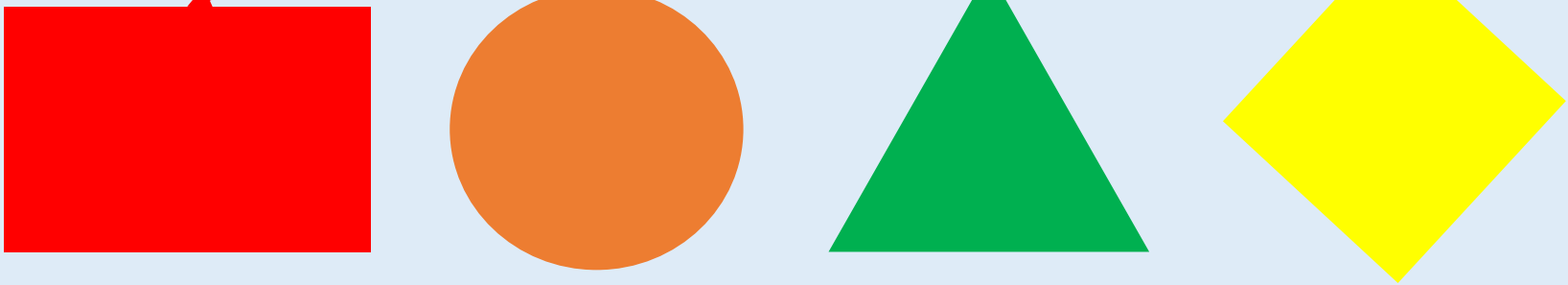




Activity 1 Recognise 2-D and 3-D Shapes

Match the names of the shapes to the pictures.

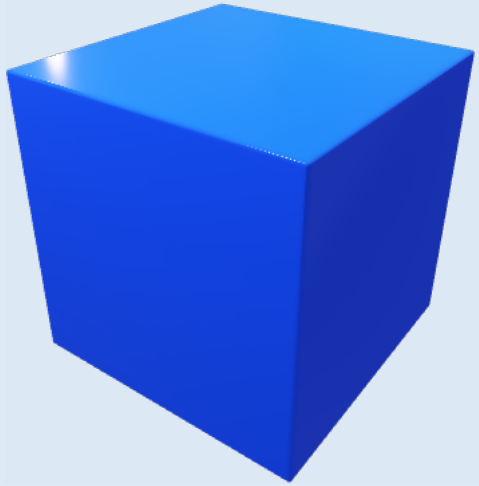
Triangle Square Rectangle Circle



Activity 2 Recognise 2-D and 3-D Shapes

Put a combination of 3-D shapes in a feely bag.
Can you find the cube, the cone, the cylinder?
What do you notice about each shape?

How did you know that was the right shape?
What were you feeling for?



What is the difference between a 2-D and 3-D shapes?

Activity 2 Recognise 2-D and 3-D Shapes

Put a combination of 3-D shapes in a feely bag.
Can you find the cube, the cone, the cylinder?
What do you notice about each shape?

How did you know that was the right shape?

By touching the shape's edges and faces.

What were you feeling for?

For a cube, the edge is slightly pointed.

Activity 3

Recognise 2-D and 3-D Shapes

Go on a shape hunt around school.
Create a tally of the shapes you see.
Can you see any pentagons? Can you see any octagons?
Can you see any hexagons? What was the most common shape?

Can you draw around any of the faces on your 3-D shapes?

Activity 3 Recognise 2-D and 3-D Shapes

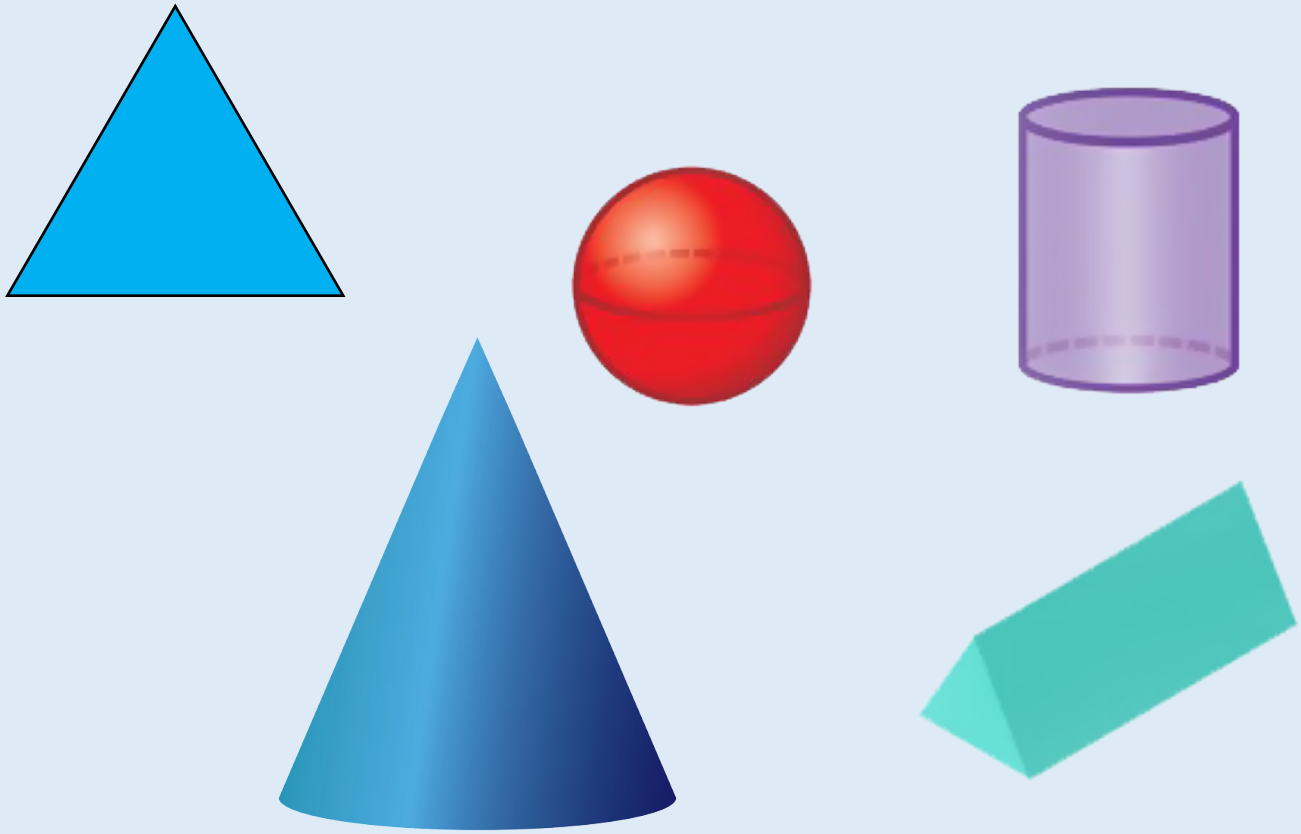
Go on a shape hunt around school.
Create a tally of the shapes you see.
Can you see any pentagons? Can you see any octagons?
Can you see any hexagons? What was the most common shape?

There are different shapes that can be found around school.
The most common would be rectangular or rectangular shape classroom/buildings.

Reasoning - 1

Recognise 2-D and 3-D Shapes

Which shape is the odd one out?
Explain why.



Reasoning - 1 Recognise 2-D and 3-D Shapes

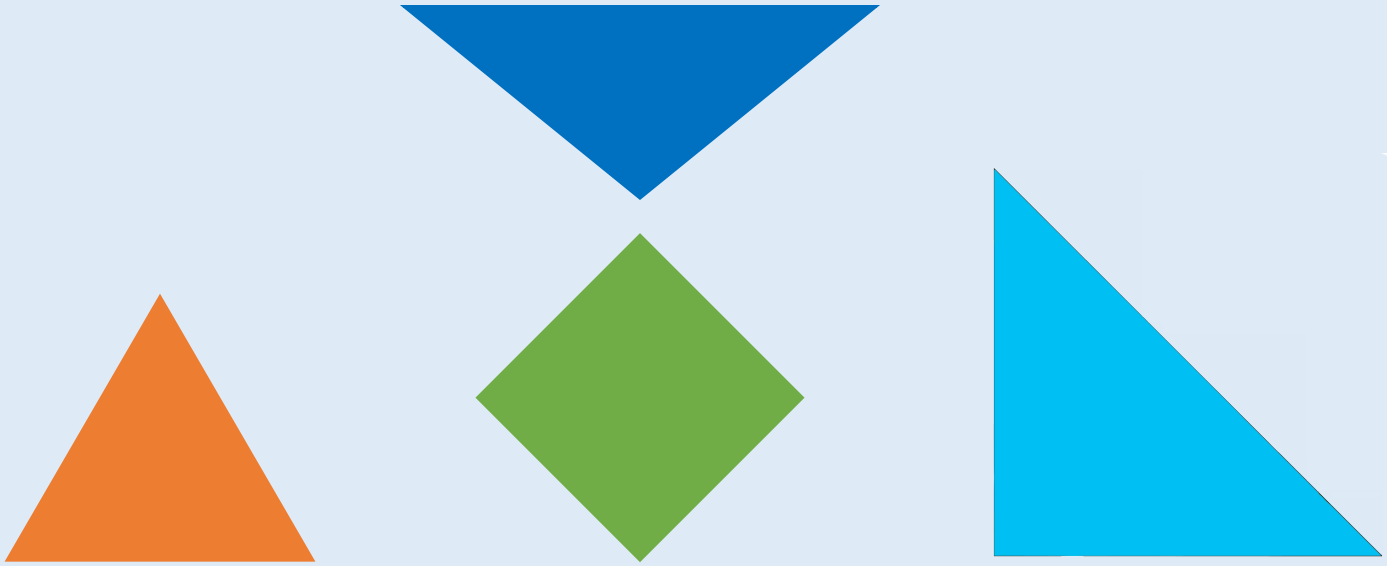
**Which shape is the odd one out?
Explain why.**

The triangle is the odd one because
it is the only 2-D shape or flat shape.

Reasoning - 2

Recognise 2-D and 3-D Shapes

Which shape is the odd one out?
Explain your reasoning.



Reasoning - 2

Recognise 2-D and 3-D Shapes

Which shape is the odd one out?
Explain your reasoning.

Three of the shapes are triangles, one is not.
Three of them have three sides, one has four.

Other answers can be accepted with a clear explanation.

Reasoning - 3

Recognise 2-D and 3-D Shapes

I'm thinking of a 2-D shape with more than 4 sides.

Tia

What shape could Tia be thinking of?
Are there any other shapes it could be?
What shape is Tia definitely not thinking about?
How do you know?

Reasoning - 3

Recognise 2-D and 3-D Shapes

I'm thinking of a 2-D shape with more than 4 sides.

Tia

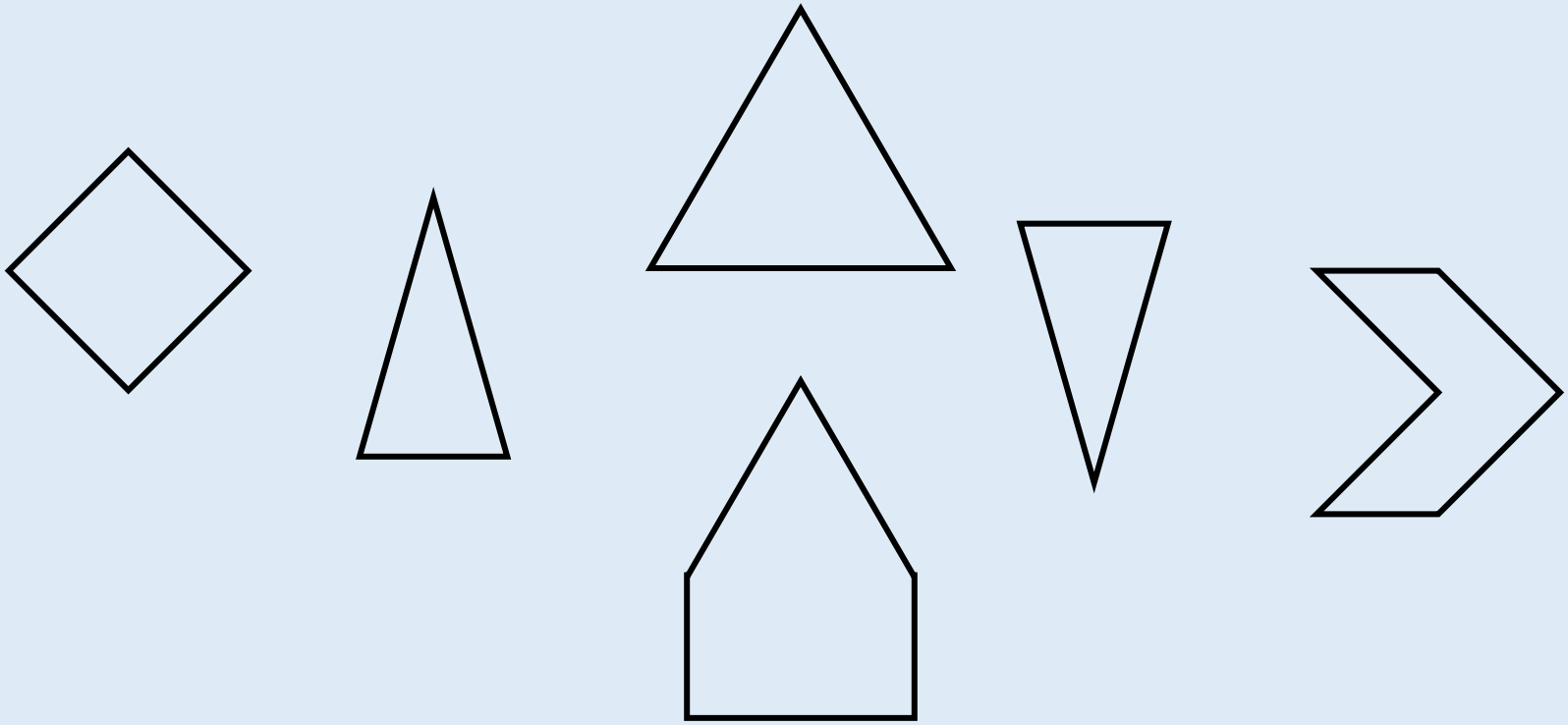
Possible examples:
Pentagon, hexagon, octagon

Tia is not thinking of a rectangle or square because they only has 4 sides.

Reasoning - 4

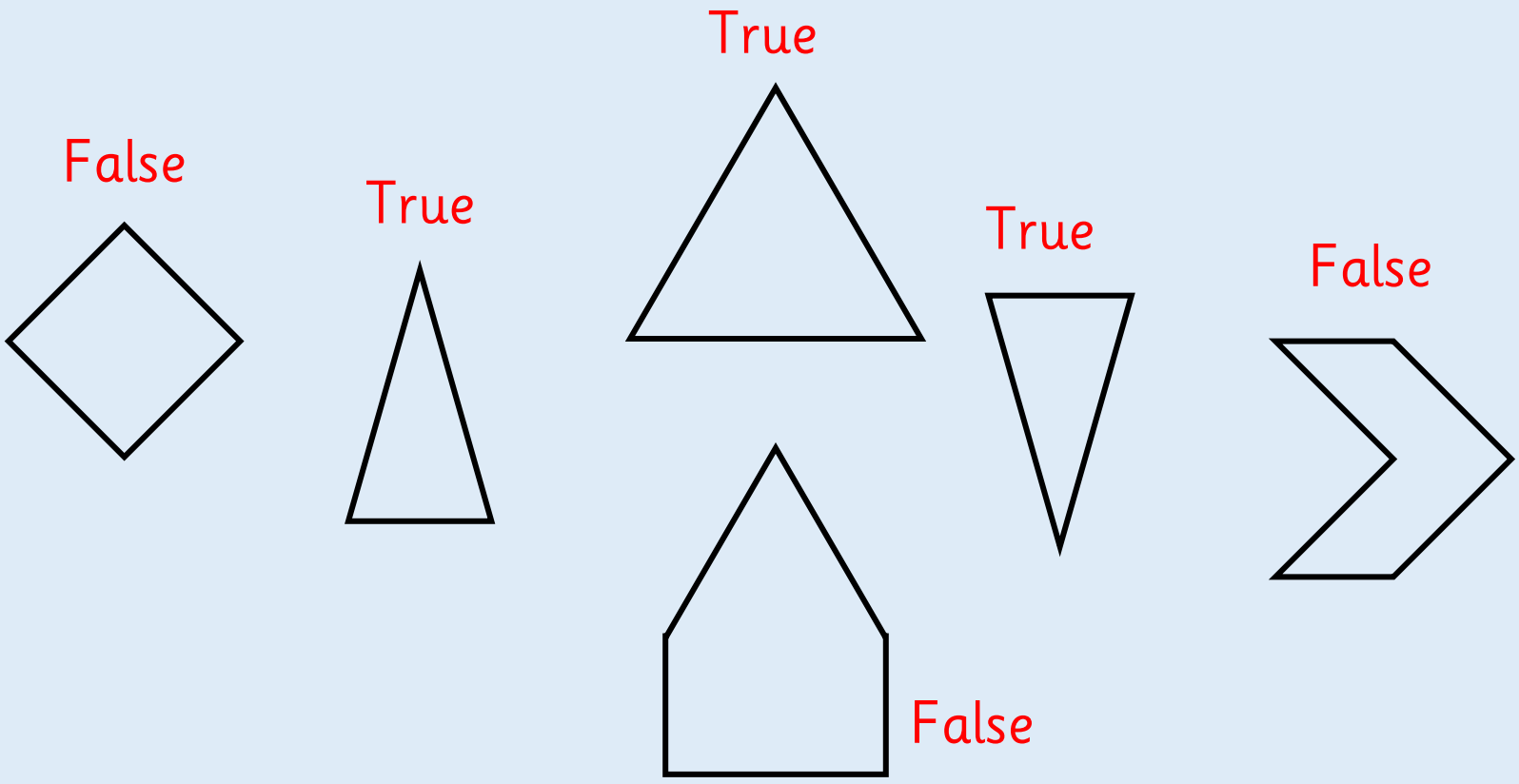
Recognise 2-D and 3-D Shapes

Use true or false to say which shapes are triangles.



Reasoning - 4 Recognise 2-D and 3-D Shapes

Use true or false to say which shapes are triangles.



Discussion

Recognise 2-D and 3-D Shapes

What is the difference between a 2-D and 3-D shape?

What shape is this? If I turn it around, what shape is it now?

Can you draw around any of the faces on your 3-D shapes?
Which 2-D shapes can you make?

Count Sides on 2-D Shapes

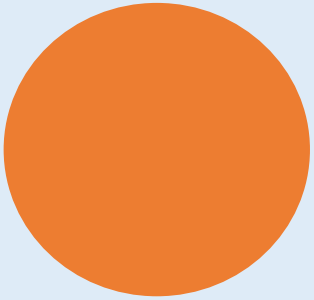
2

Fluency & Reasoning Teaching Slides

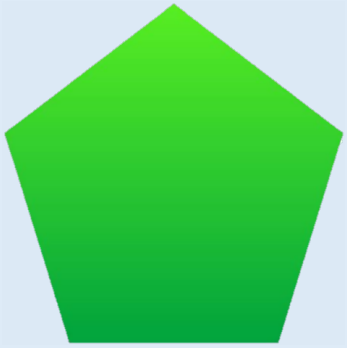
Activity 1 Count Sides on 2-D Shapes

Match the shapes to the number of sides.

Four



One



Five

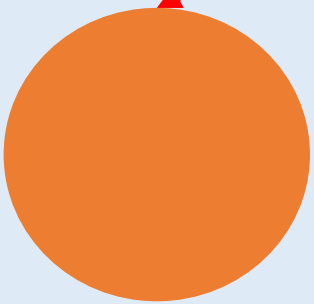
Activity 1 Count Sides on 2-D Shapes

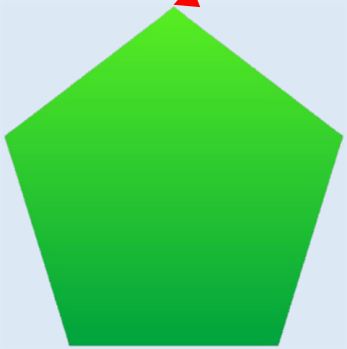
Match the shapes to the number of sides.

Four

One

Five

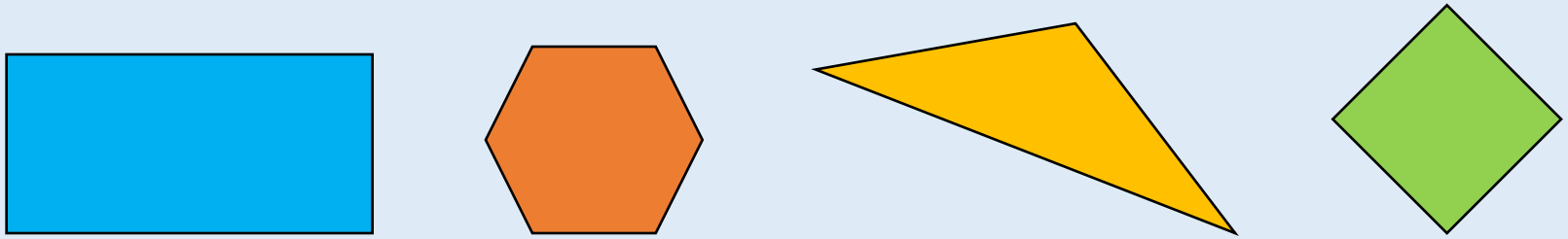




Activity 1 Count Sides on 2-D Shapes

Match the shapes to the number of sides.

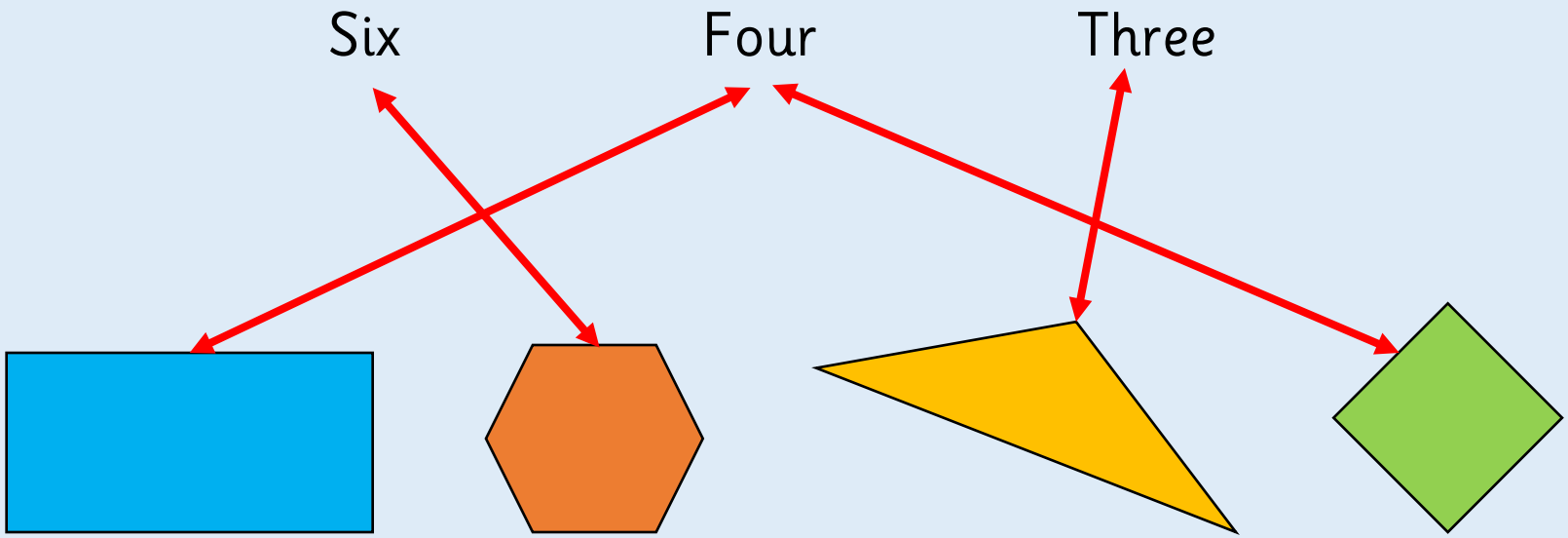
Six Four Three



What is a side?

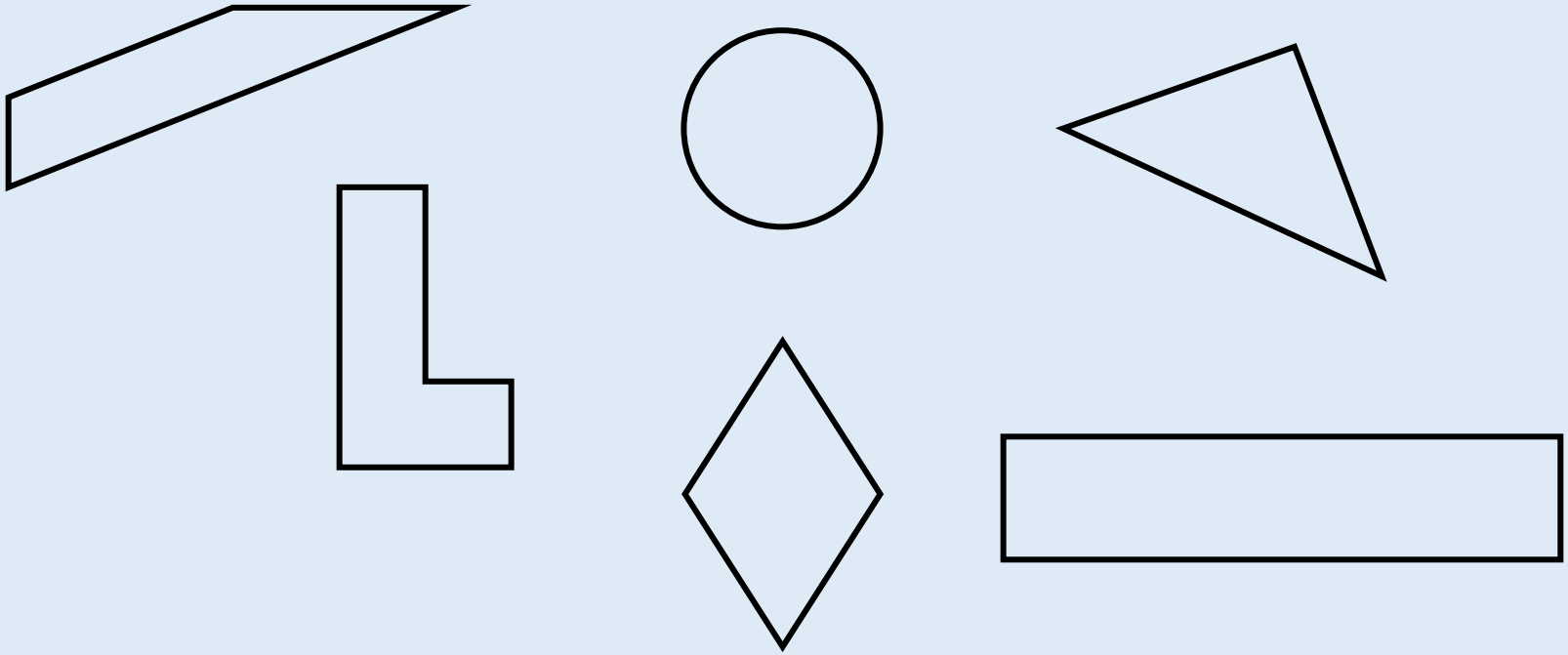
Activity 1 Count Sides on 2-D Shapes

Match the shapes to the number of sides.



Activity 2 Count Sides on 2-D Shapes

Colour the four-sided shapes.

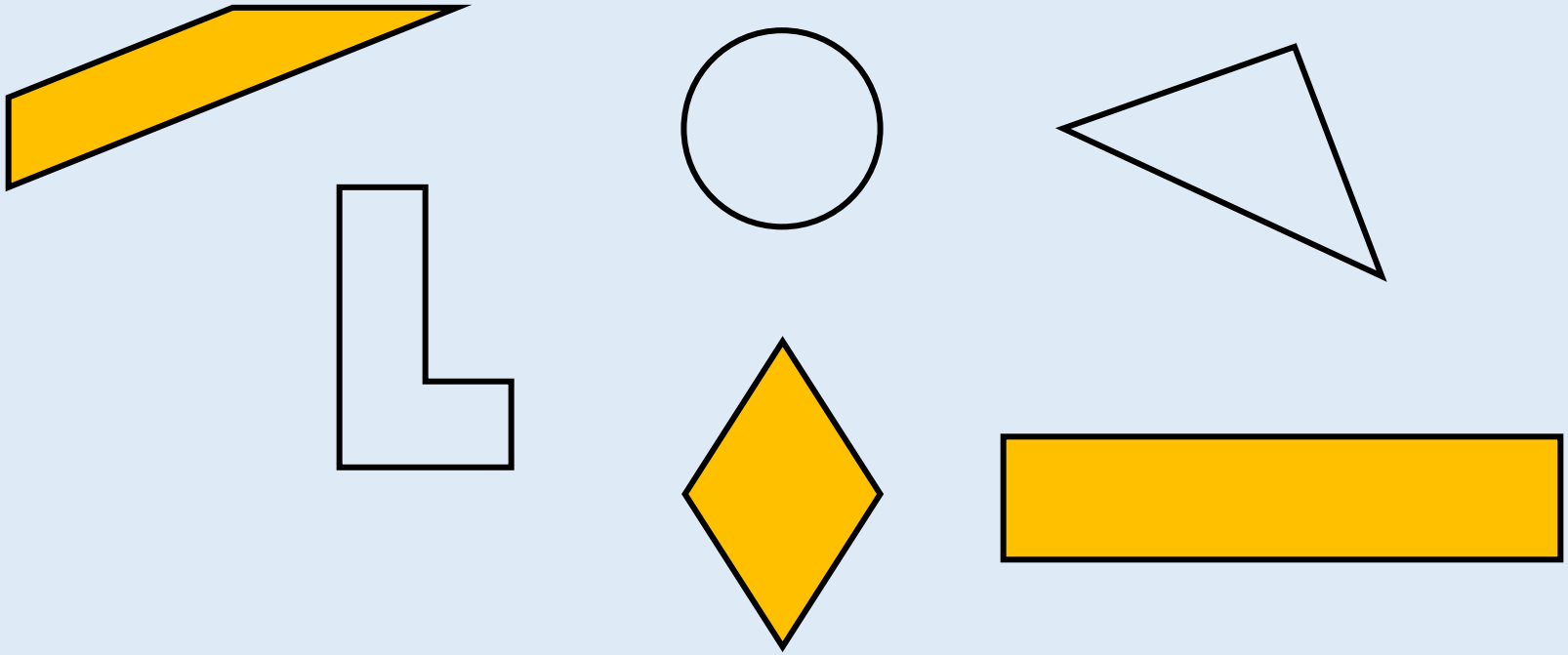


Do all four-sided shapes look the same?

Activity 2

Count Sides on 2-D Shapes

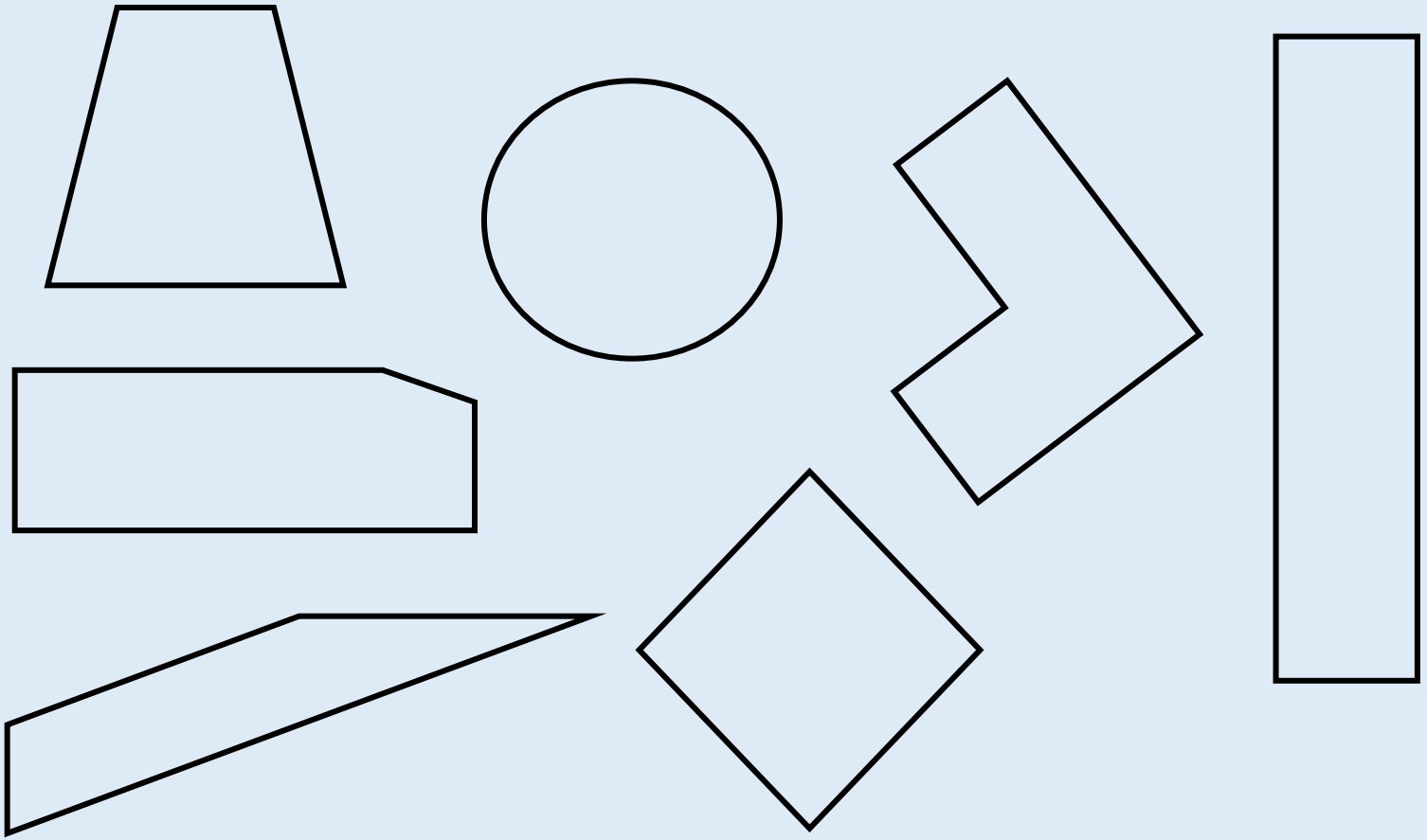
Colour the four-sided shapes.



Activity 2

Count Sides on 2-D Shapes

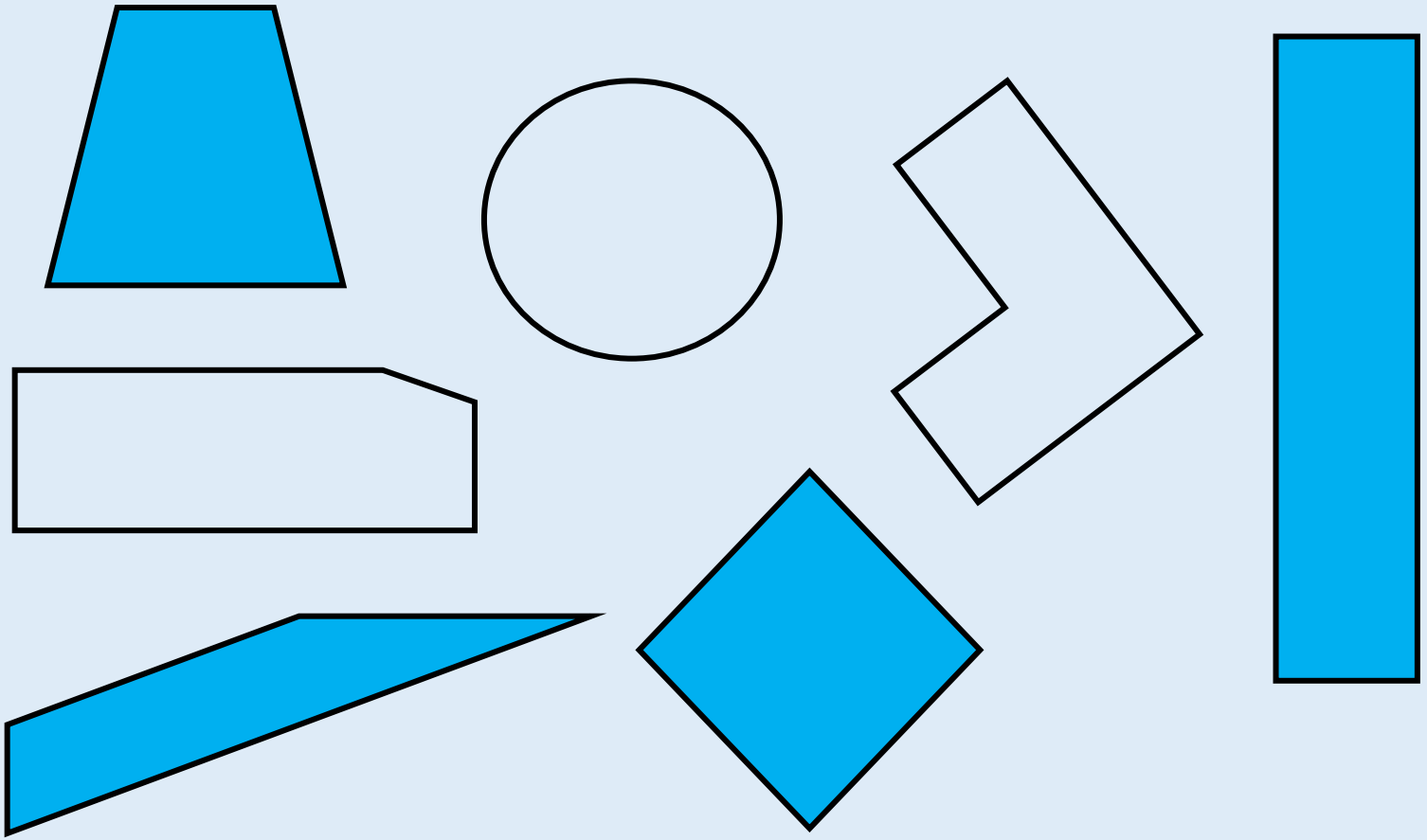
Colour the four-sided shapes.



Activity 2

Count Sides on 2-D Shapes

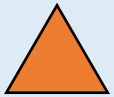
Colour the four-sided shapes.



Activity 3

Count Sides on 2-D Shapes

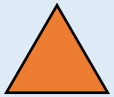
Complete the table.

Name	Shape	Number of Sides
Pentagon		
Rectangle		
Square		
Triangle		
Hexagon		

How can you check that you have counted all the sides?

Activity 3 Count Sides on 2-D Shapes

Complete the table.

Name	Shape	Number of Sides
Pentagon		5
Rectangle		4
Square		4
Triangle		3
Hexagon		6

Activity 3 Count Sides on 2-D Shapes

Complete the table.

Name	Shape	Number of Sides
Rectangle		
Triangle		
Hexagon		
Square		
Pentagon		

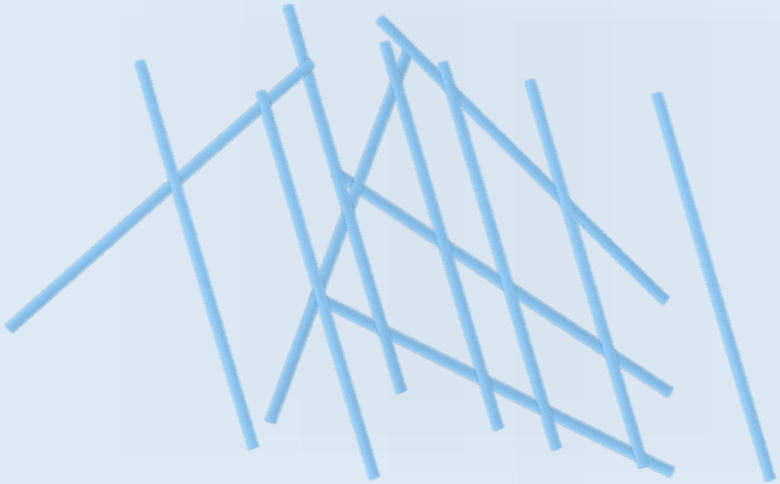
Activity 3 Count Sides on 2-D Shapes

Complete the table.

Name	Shape	Number of Sides
Rectangle		4
Triangle		3
Hexagon		6
Square		4
Pentagon		5

Reasoning - 1 Count Sides on 2-D Shapes

Here are 12 sticks.
How many hexagons can you make?



How many octagons can you make?
What other shapes can you make with 12 sticks?

Reasoning - 1 Count Sides on 2-D Shapes

Here are 12 sticks.
How many hexagons can you make?

Using one stick per side:
2 hexagons, 1 octagon with 4 sticks spare, 4 triangles,
3 squares or 2 pentagons with 2 sticks spare.

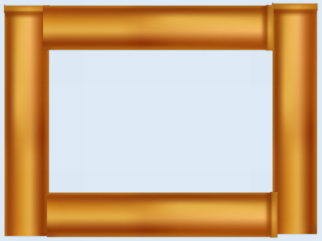
Children may also create shapes with more than one stick on each side.

Reasoning - 2

Count Sides on 2-D Shapes

Malachi makes a rectangle using the bamboo sticks.

Malachi



How many identical rectangles could he make with 12 sticks?
Make your own rectangle. How many sticks did you use?
Is your rectangle the same as your friend's?

Reasoning - 2 Count Sides on 2-D Shapes

Malachi makes a rectangle using the bamboo sticks.

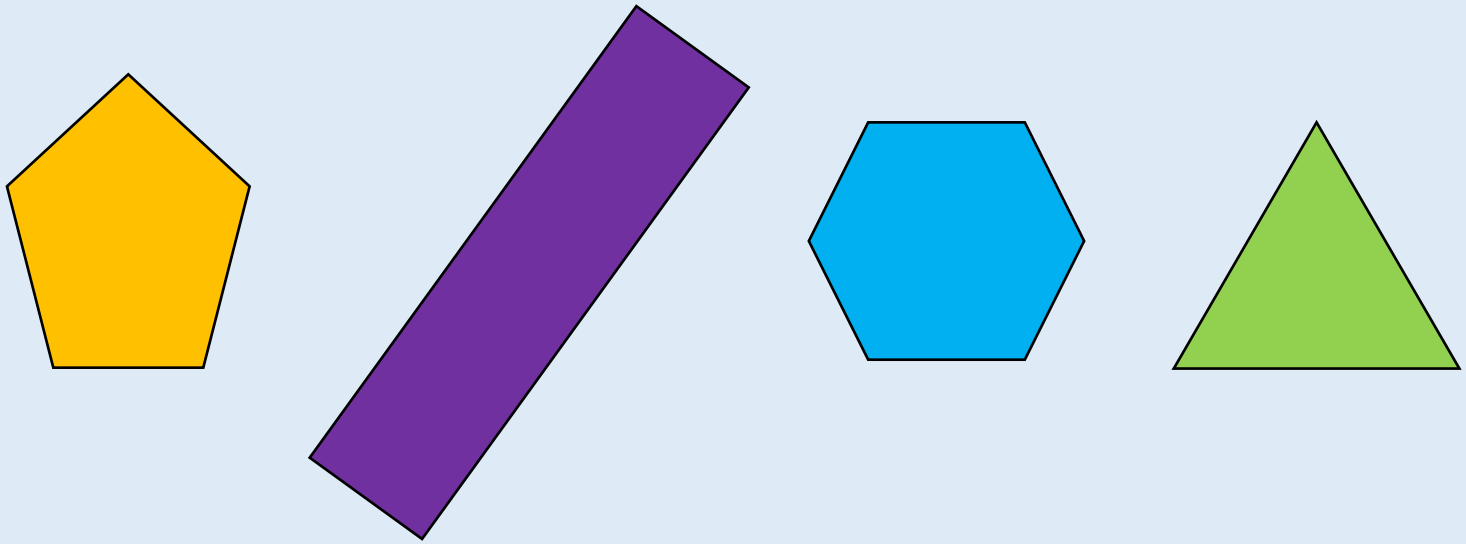
Malachi could make 3 rectangles with 12 bamboo sticks.

Children can create 2 rectangles using 8 sticks.

Talk about how rectangles can look different.

Reasoning - 3 Count Sides on 2-D Shapes

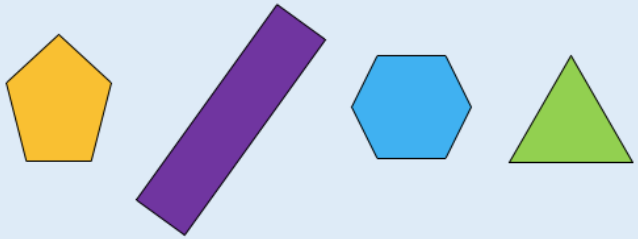
If I put these shapes into order from the largest number of sides to the smallest, which shape would come second?

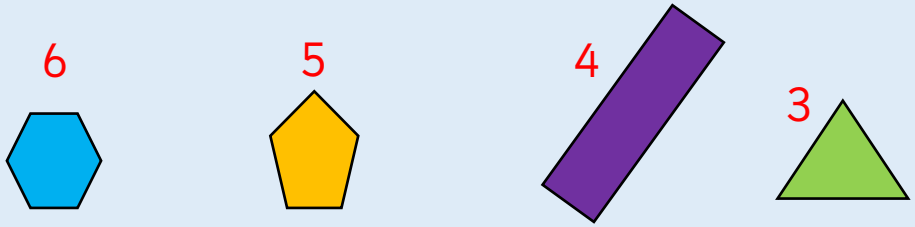


Where would a hexagon come in the list? Why?

Reasoning - 3 Count Sides on 2-D Shapes

If I put these shapes into order from the largest number of sides to the smallest, which shape would come second?





Hexagon, pentagon, rectangle, triangle.

The hexagon would be first. A hexagon would come first because it has the largest number of sides among the 4 shapes.

Discussion

Count Sides on 2-D Shapes

What is a side?

How can you check that you have counted all the sides?

Do all four-sided shapes look the same?

Why do you think the shapes have the same names that they do?

Count Vertices on 2-D Shapes

2

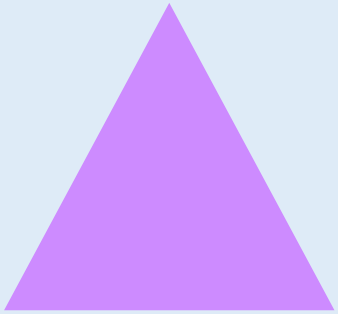
Fluency & Reasoning Teaching Slides

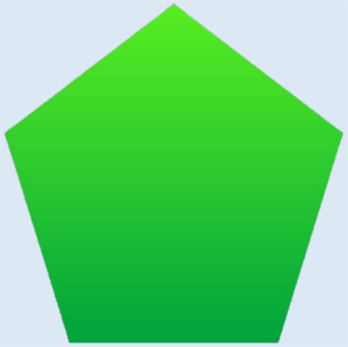
www.masterthecurriculum.co.uk

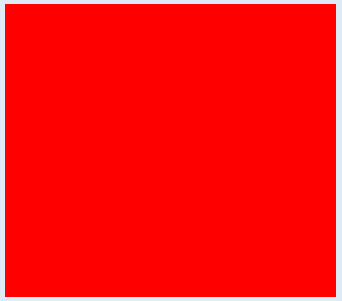
Activity 1 Count Vertices on 2-D Shapes

Match the shapes to the number of vertices.

Five Four Three



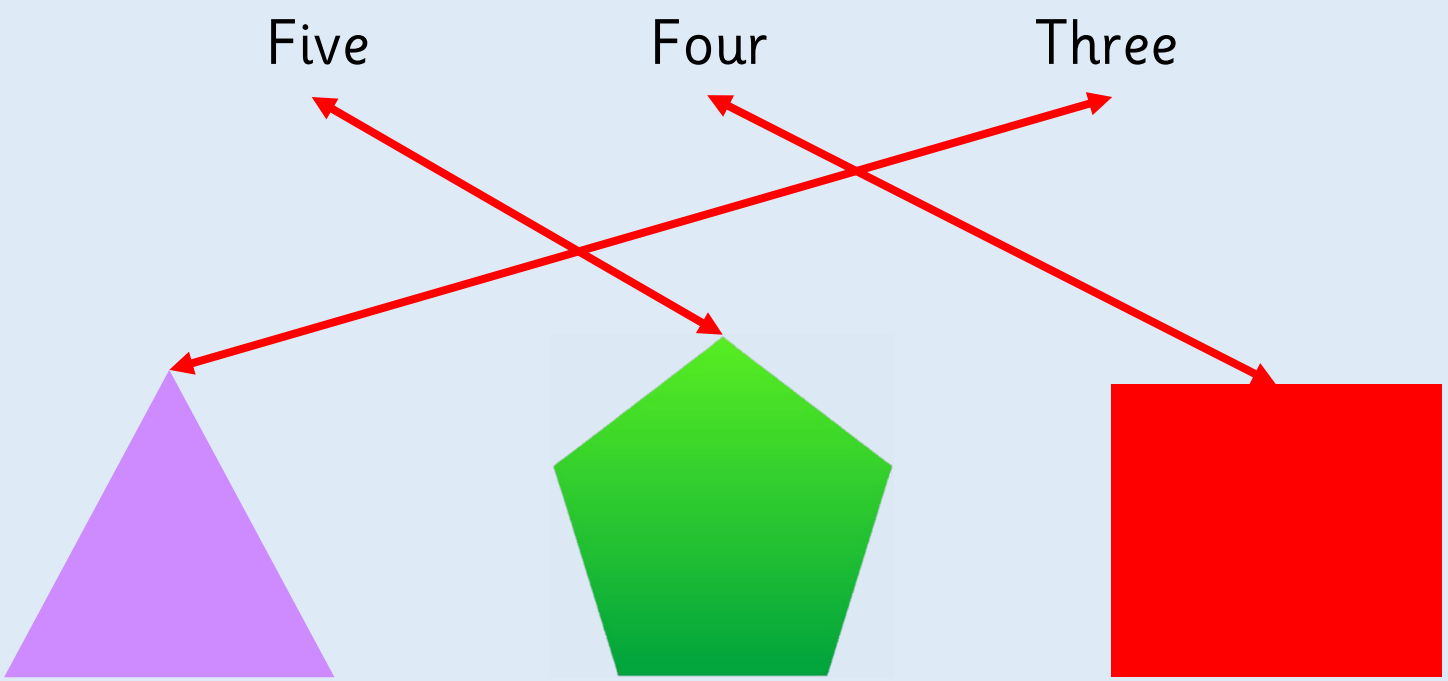




Activity 1 Count Vertices on 2-D Shapes

Match the shapes to the number of vertices.

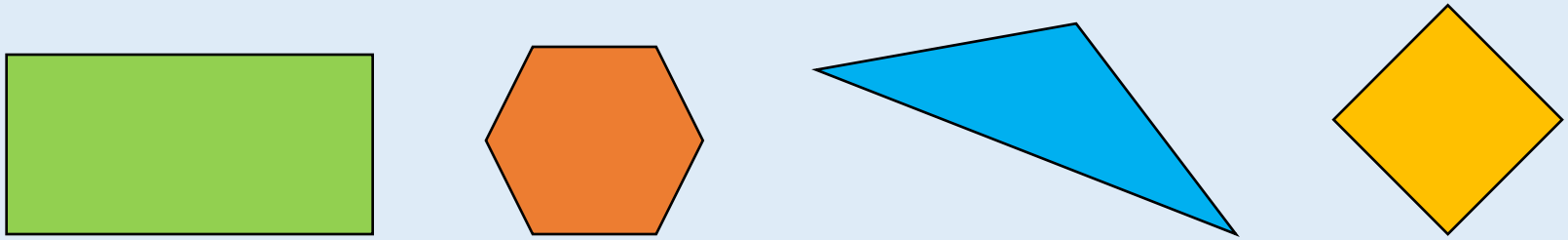
Five Four Three



Activity 1 Count Vertices on 2-D Shapes

Match the shapes to the number of vertices.

Six Four Three

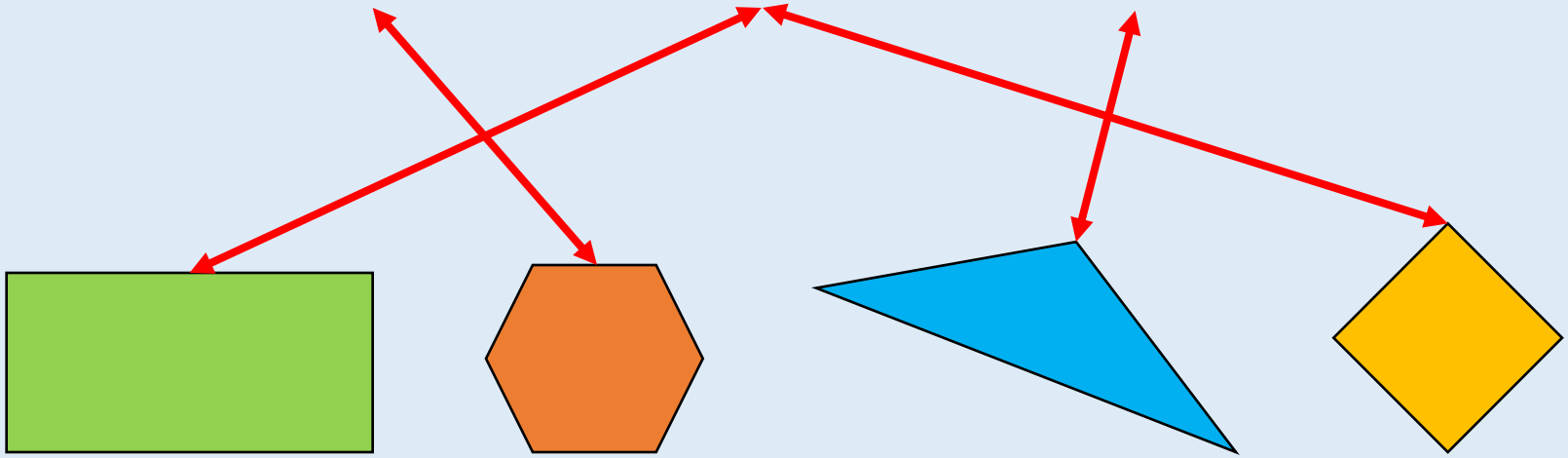


Can you identify vertices on this shape?

Activity 1 Count Vertices on 2-D Shapes

Match the shapes to the number of vertices.

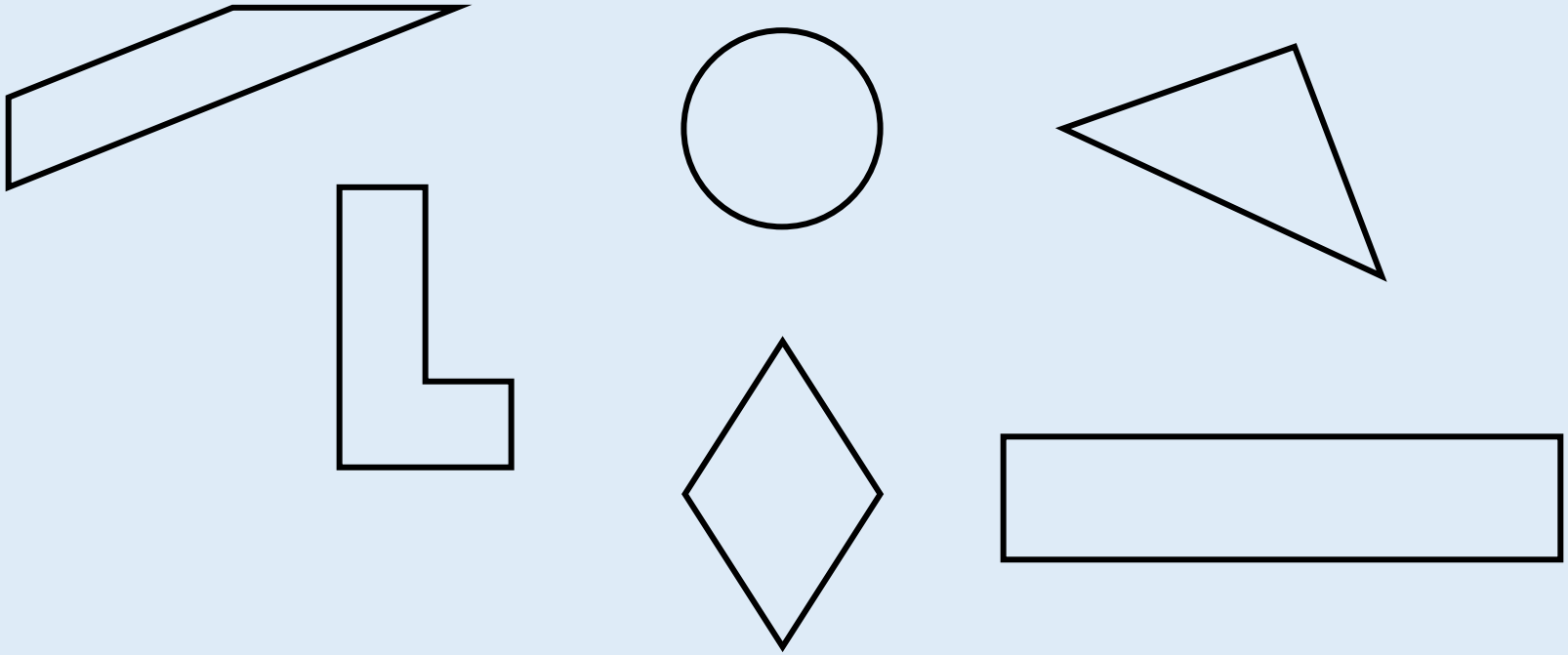
Six Four Three



Activity 2

Count Vertices on 2-D Shapes

Colour the shapes with 4 vertices.

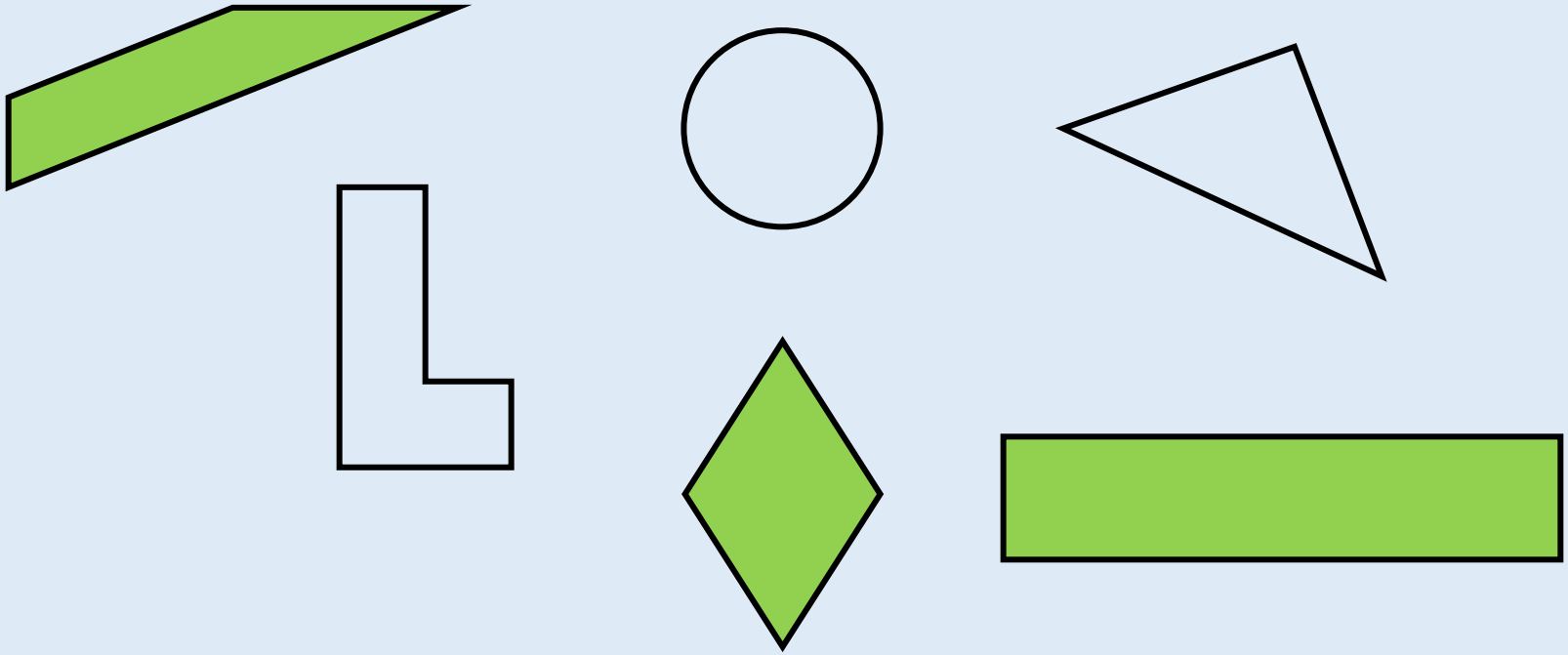


Show me a vertex.

Activity 2

Count Vertices on 2-D Shapes

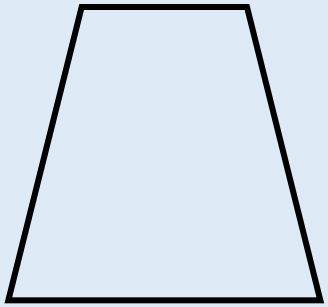
Colour the shapes with 4 vertices.

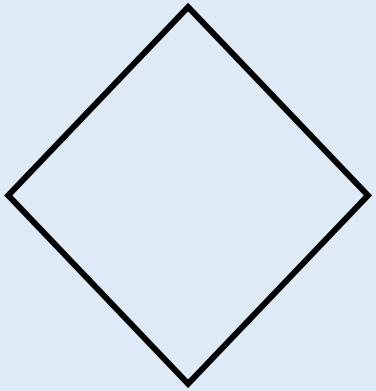


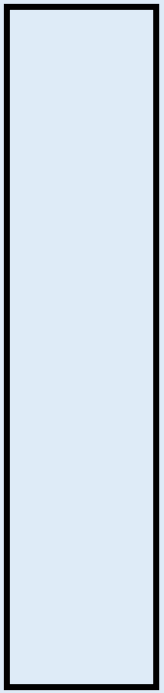
Activity 2

Count Vertices on 2-D Shapes

Colour the shapes with 4 vertices.



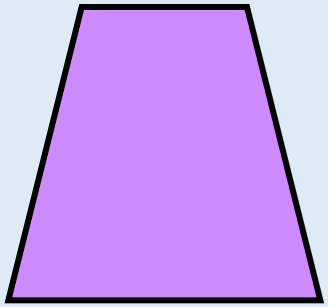


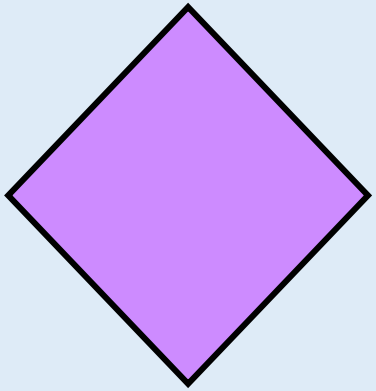


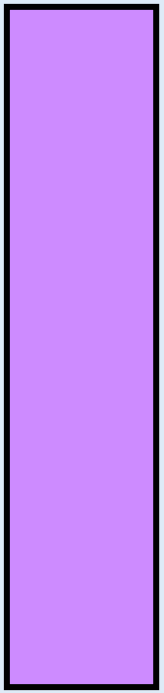
Activity 2

Count Vertices on 2-D Shapes

Colour the shapes with 4 vertices.



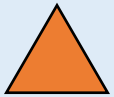
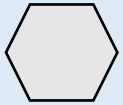




Activity 3

Count Vertices on 2-D Shapes

Complete the table.

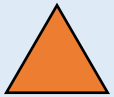
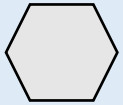
Name	Shape	Number of Vertices
Pentagon		
Rectangle		
Square		
Triangle		
Hexagon		

If my shape has __ vertices, what could my shape be?

Activity 3

Count Vertices on 2-D Shapes

Complete the table.

Name	Shape	Number of Vertices
Pentagon		5
Rectangle		4
Square		4
Triangle		3
Hexagon		6

Activity 4

Count Vertices on 2-D Shapes

Rosie

My shape has 4 vertices.

What shape could she have?

Activity 4 Count Vertices on 2-D Shapes

Rosie

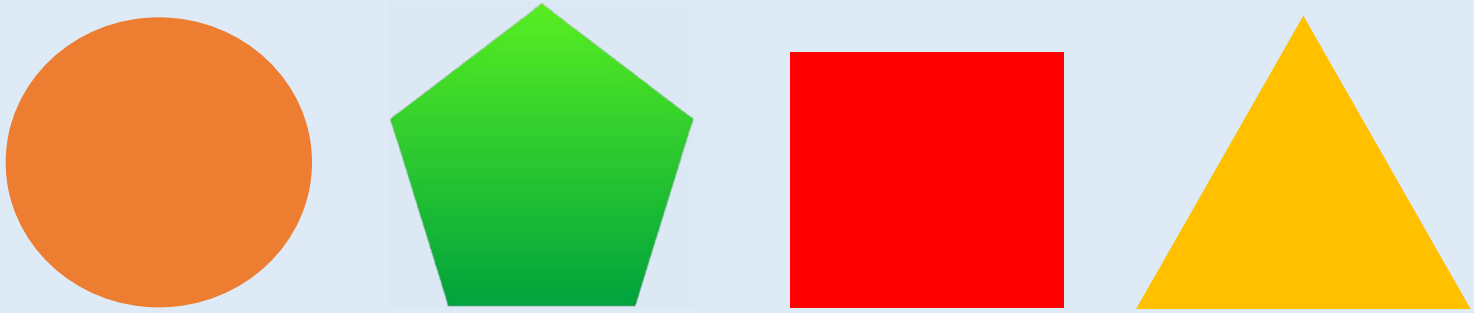
My shape has 4 vertices.

Rosie could have a rectangle or a square.

Activity 5

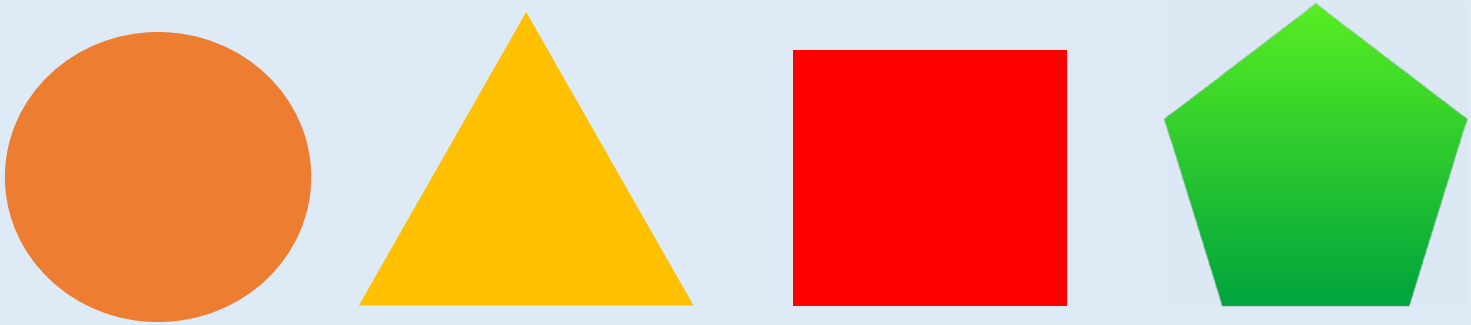
Count Vertices on 2-D Shapes

Put these shapes in order based on the number of vertices they have.



Activity 5 Count Vertices on 2-D Shapes

Put these shapes in order based on the number of vertices they have.



0 3 4 5

From the smallest number of vertices to the largest.

Reasoning - 1 Count Vertices on 2-D Shapes

Zach's shape has half the number of vertices as an octagon.

What shape could he have?

Reasoning - 1 Count Vertices on 2-D Shapes

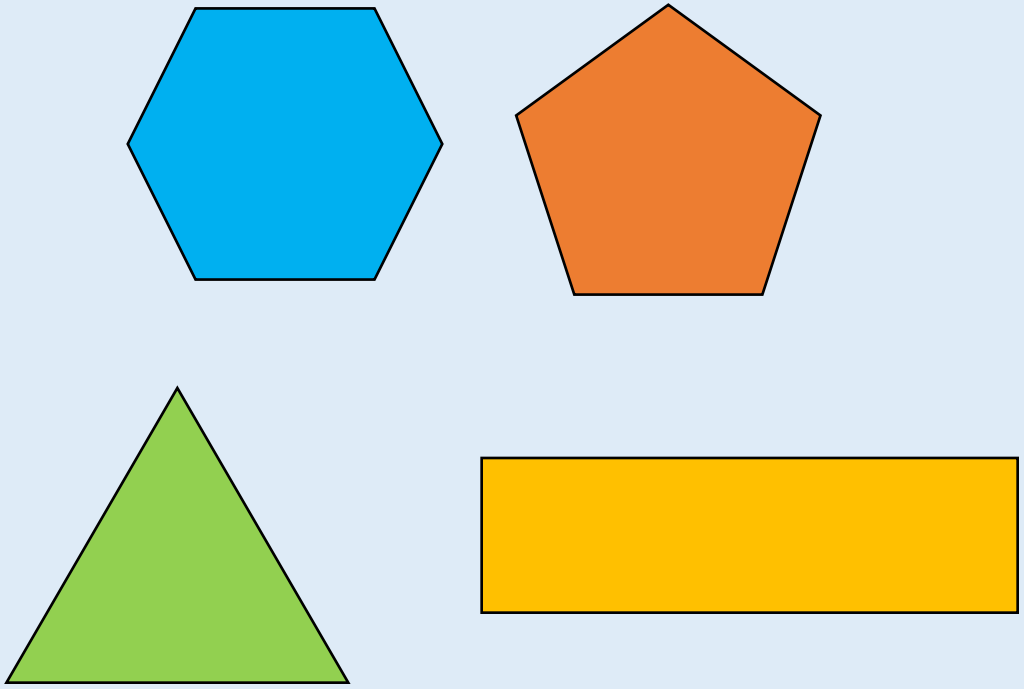
Zach's shape has half the number of vertices as an octagon.

Zach could have a square or rectangle.

Reasoning - 2

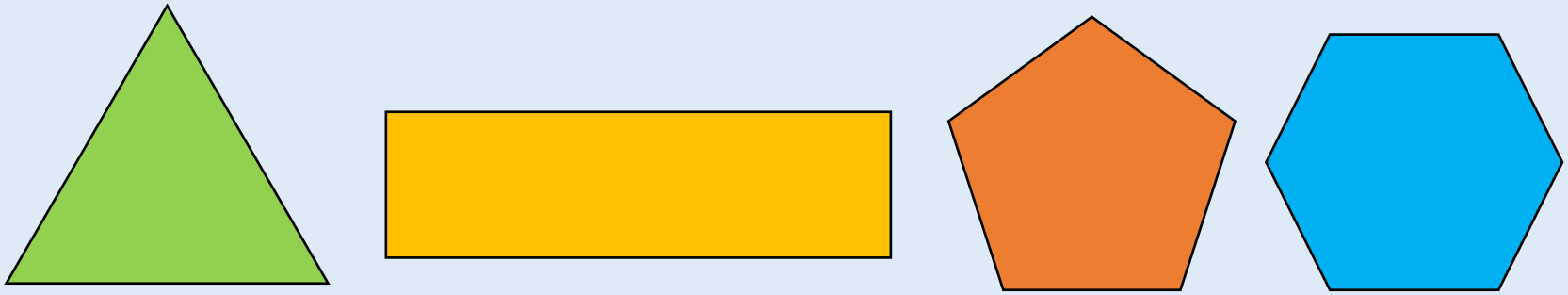
Count Vertices on 2-D Shapes

Put these shapes in order based upon the number of vertices they have.



Reasoning - 2 Count Vertices on 2-D Shapes

Put these shapes in order based upon the number of vertices they have.

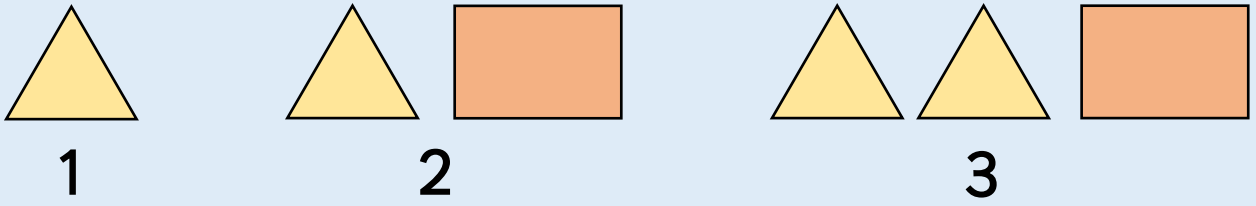


3 4 5 6

Triangle, rectangle, pentagon, hexagon

Reasoning - 3 Count Vertices on 2-D Shapes

Leanna has created a pattern using shapes.



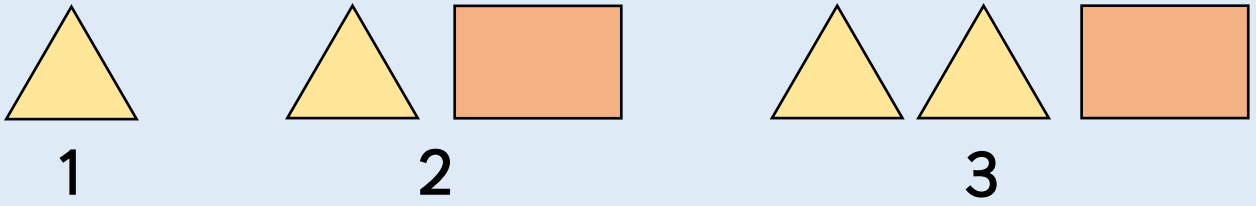
How many vertices does each step in the pattern have? What do you notice?

Can you predict how many vertices the next step in the pattern will have? Is there more than one way to continue the pattern?

Can you create your own pattern and explore the vertices change?

Reasoning - 3 Count Vertices on 2-D Shapes

Leanna has created a pattern using shapes.



Answer:
3, 7, 10

The next step could have another triangle (13 vertices) or another rectangle (14 vertices).

Discussion

Count Vertices on 2-D Shapes

Show me a vertex.

Can you identify the vertices in this shape?

Would this be a vertex? Explain why.

If my shape has ___ vertices, what could my shape be?

What couldn't it be?

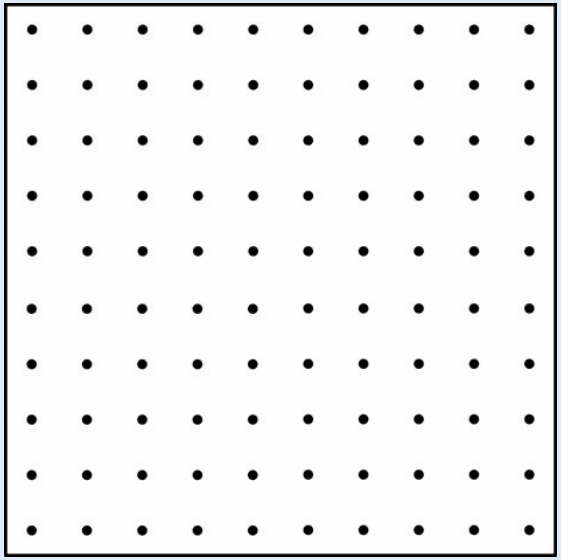
Draw 2-D Shapes

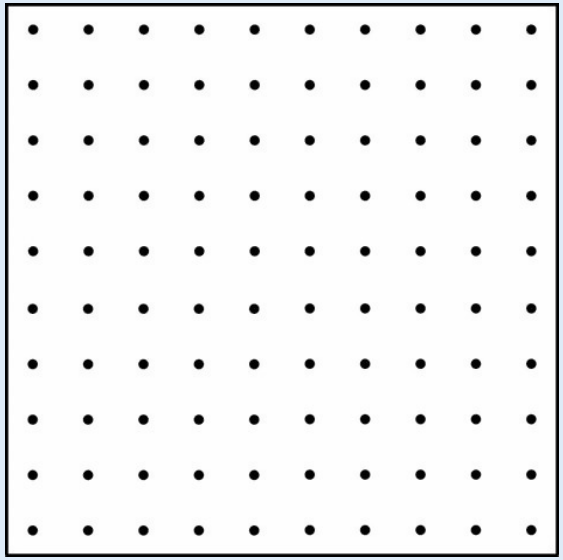
2

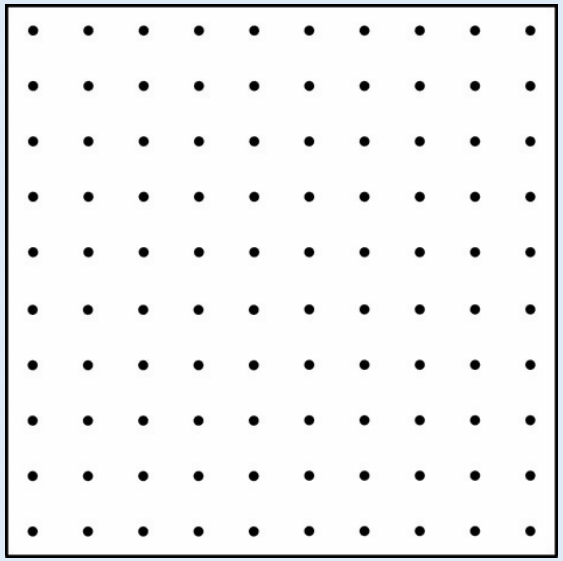
Fluency & Reasoning Teaching Slides

Activity 1 Draw 2-D Shapes

Use a geoboard to make different 2-D shapes. Can you make a rectangle? Can you make a square? Can you make a triangle?



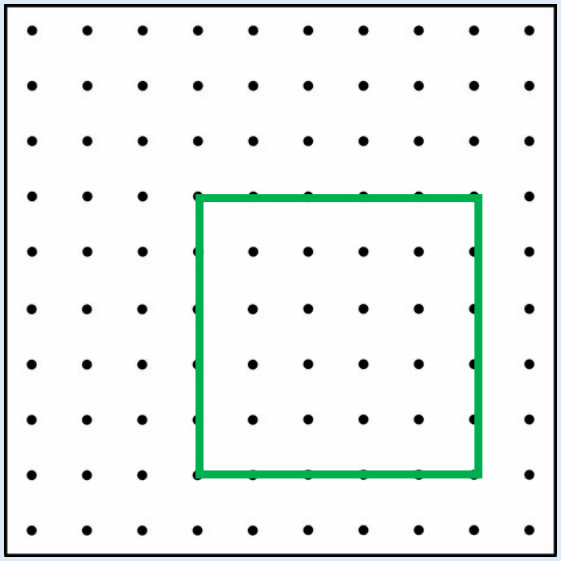


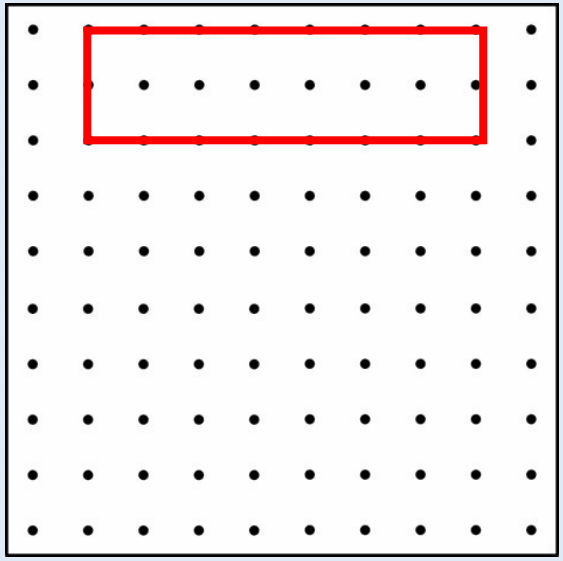


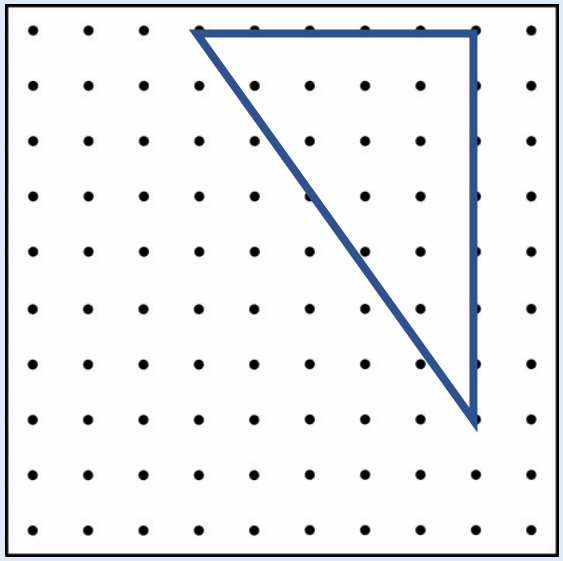
Where are you going to start drawing the shape?

Activity 1 Draw 2-D Shapes

Use a geoboard to make different 2-D shapes. Can you make a rectangle? Can you make a square? Can you make a triangle?



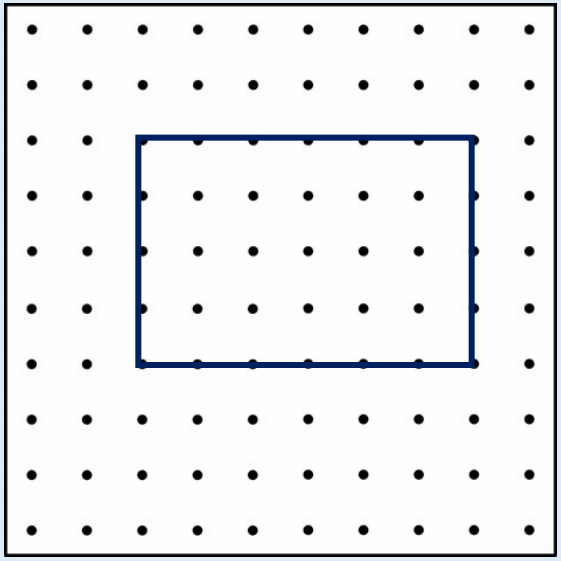




Activity 2 Draw 2-D Shapes

Can you draw a rectangle on dotted paper?
Start at a vertex and use a ruler to draw your first straight side.
How many straight sides will you need?

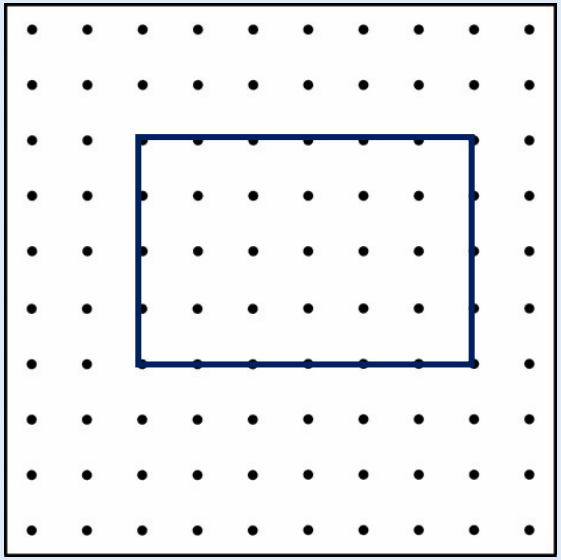
Rotate the paper to help you draw the shape more accurately. Try drawing other shapes in the same way.

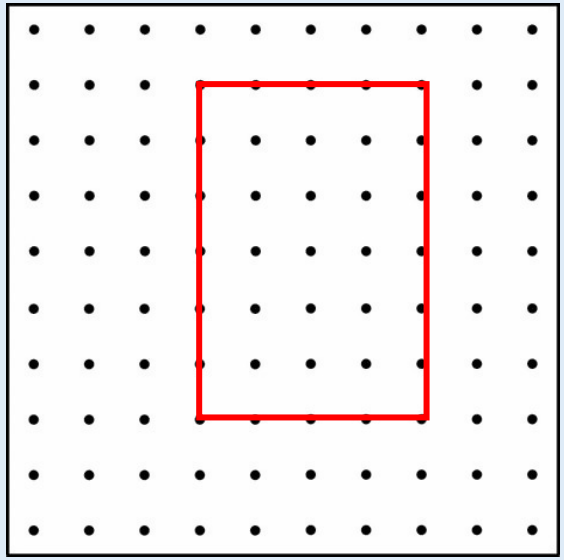


Activity 2 Draw 2-D Shapes

Can you draw a rectangle on dotted paper?
Start at a vertex and use a ruler to draw your first straight side.
How many straight sides will you need?

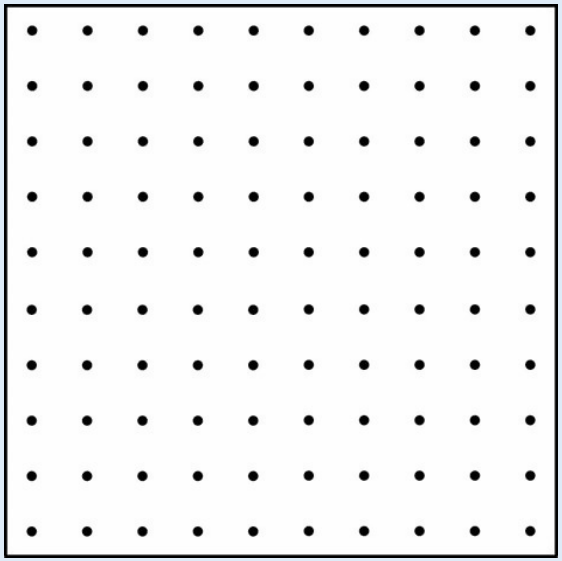
Rotate the paper to help you draw the shape more accurately. Try drawing other shapes in the same way.





Activity 3 Draw 2-D Shapes

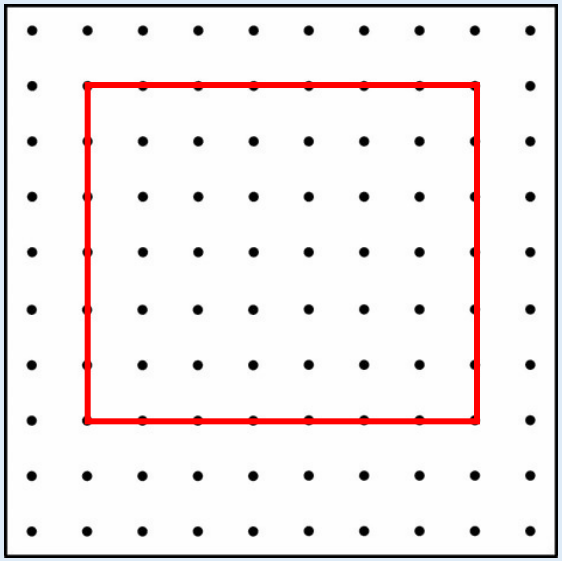
Choose a 2-D shape. Build it on a geoboard.
Can you copy the shape onto dotted paper and squared paper?



Is your shape an exact copy? How do you know?

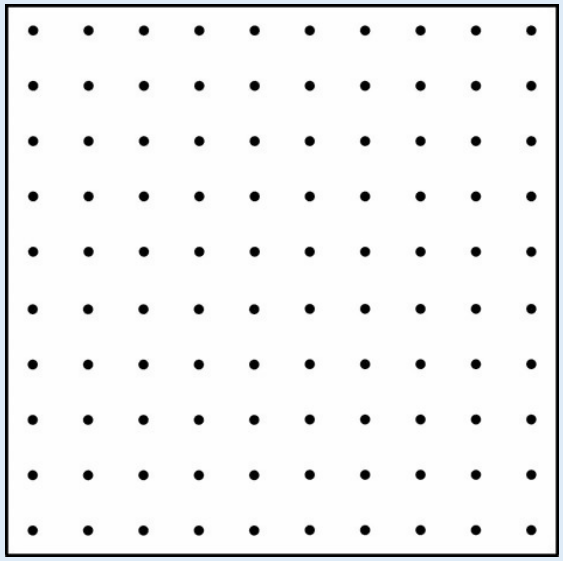
Activity 3 Draw 2-D Shapes

Choose a 2-D shape. Build it on a geoboard.
Can you copy the shape onto dotted paper and squared paper?



Reasoning - 1 Draw 2-D Shapes

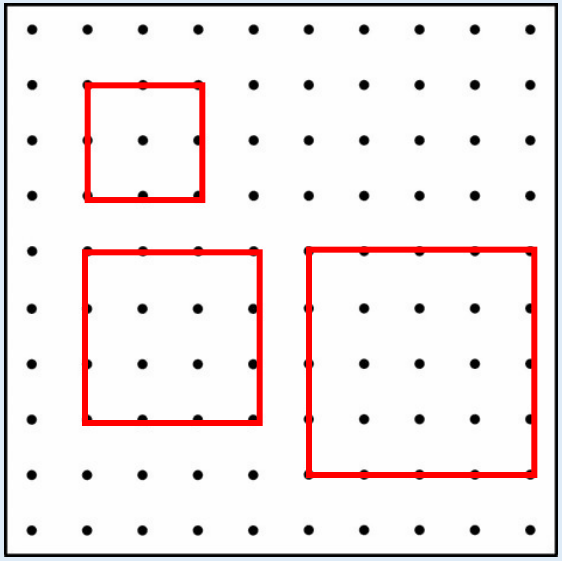
Using geoboards, how many different squares can you make?



What's the same about the squares? What's different?
Has your friend made any different squares?

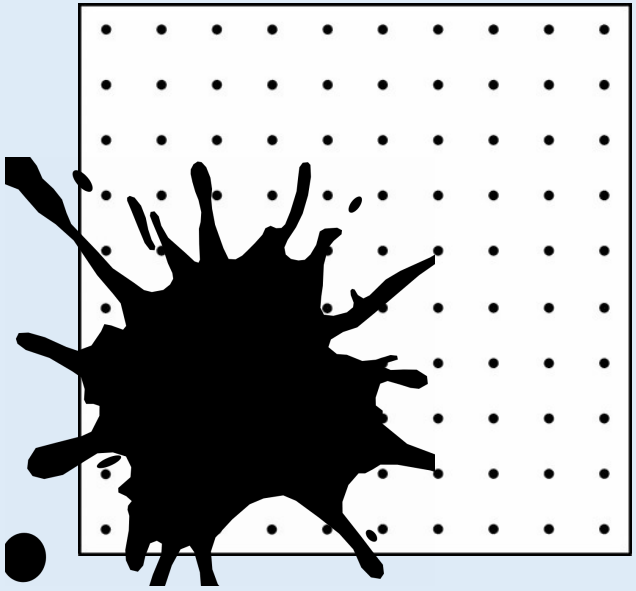
Reasoning - 1 Draw 2-D Shapes

Using geoboards, how many different squares can you make?



Reasoning - 2 Draw 2-D Shapes

What shape could be hiding under the spilt paint?



Prove your answer by drawing it.

Reasoning - 2 Draw 2-D Shapes

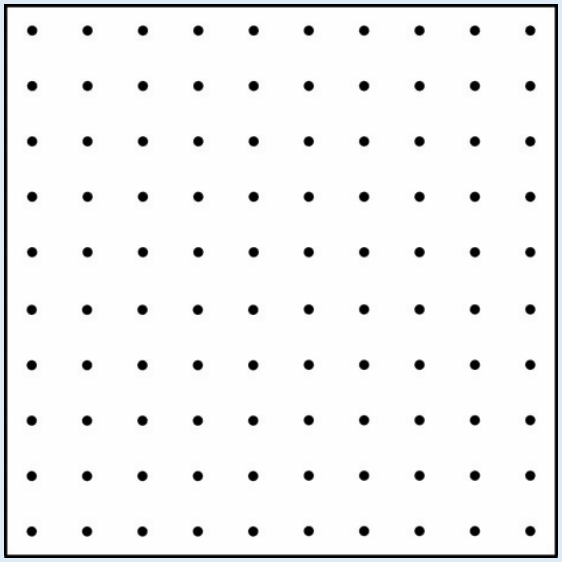
What shape could be hiding under the spilt paint?

Could be any 2-D shape.

Encourage children to think about irregular pentagons, hexagon, etc.

Reasoning - 3 Draw 2-D Shapes

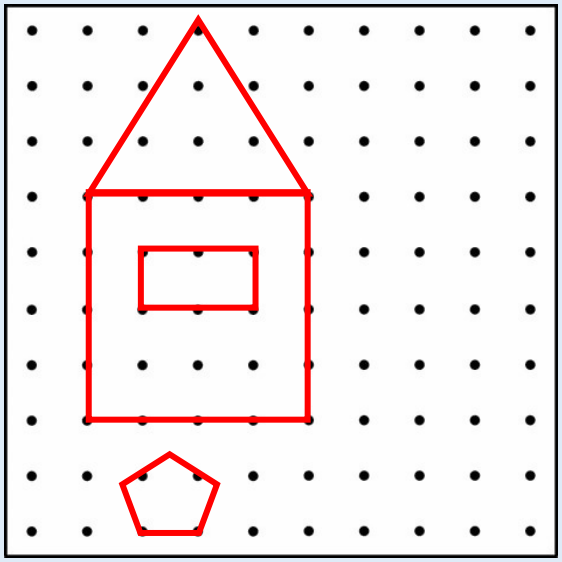
Draw a large square on squared paper or dotted paper.
Draw a rectangle inside the square.
Draw a pentagon below the square.
Draw a triangle that is bigger than the rectangle.



Can you give instructions to your partner to help them draw different shapes?

Reasoning - 3 Draw 2-D Shapes

Draw a large square on squared paper or dotted paper.
Draw a rectangle inside the square.
Draw a pentagon below the square.
Draw a triangle that is bigger than the rectangle.



Children may end up with a different picture from above however they should have four shapes drawn.

Discussion

Draw 2-D Shapes

Compare your shape with a friend's shape. Is it in the same position? Is it the same size?

Where are you going to start drawing the shape? In the middle of a side? At a vertex? Which is the most efficient way?

Why is it important to use a ruler?

Is your shape an exact copy? How do you know?

Lines of Symmetry

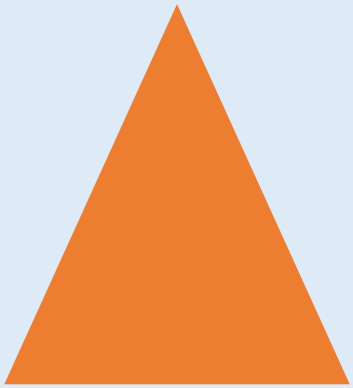
2

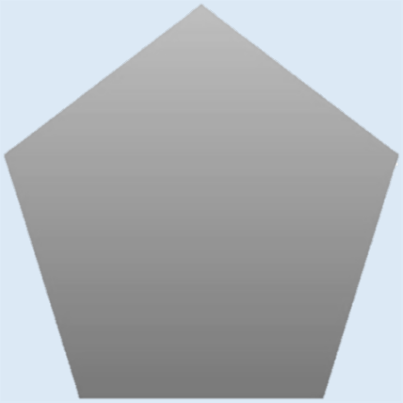
Fluency & Reasoning Teaching Slides

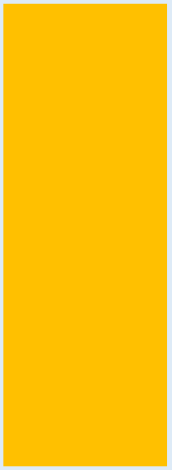
www.masterthecurriculum.co.uk

Activity 1 Lines of Symmetry

Can you fold these shapes to find a vertical line of symmetry?



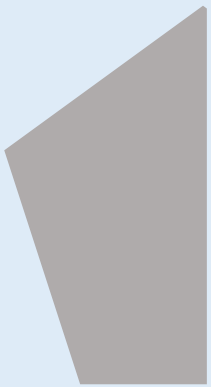




What does vertical mean?

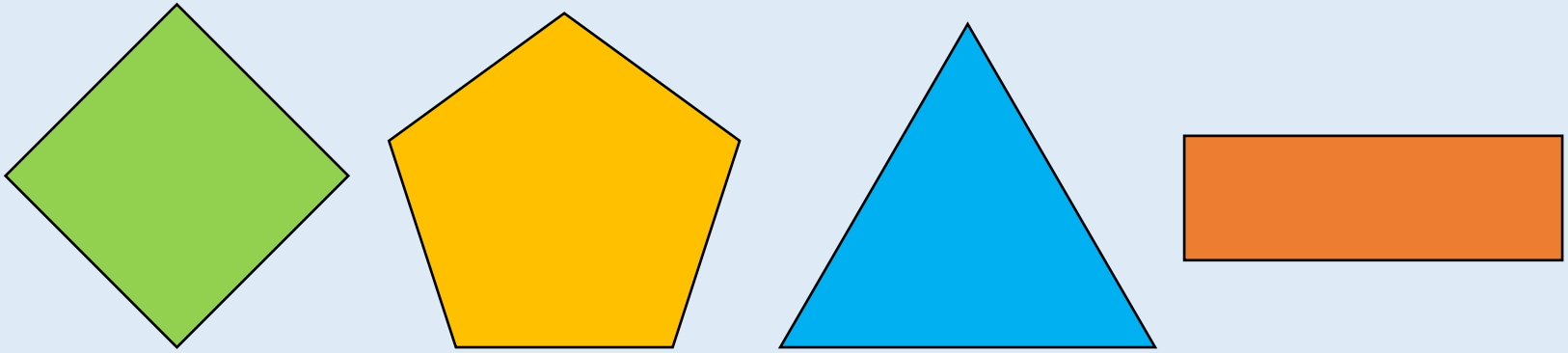
Activity 1 Lines of Symmetry

Can you fold these shapes to find a vertical line of symmetry?



Activity 2 Lines of Symmetry

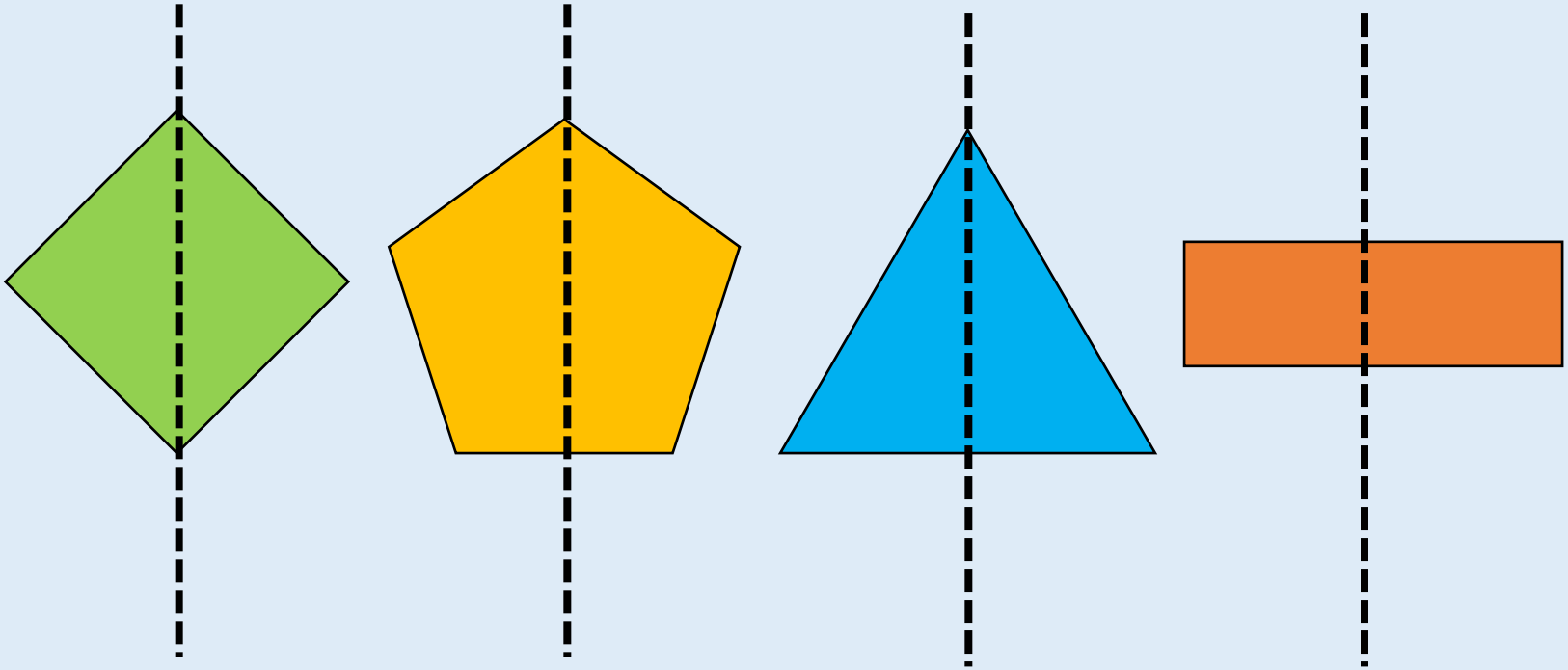
Draw the vertical lines of symmetry on these shapes.



Where is the vertical line of symmetry?

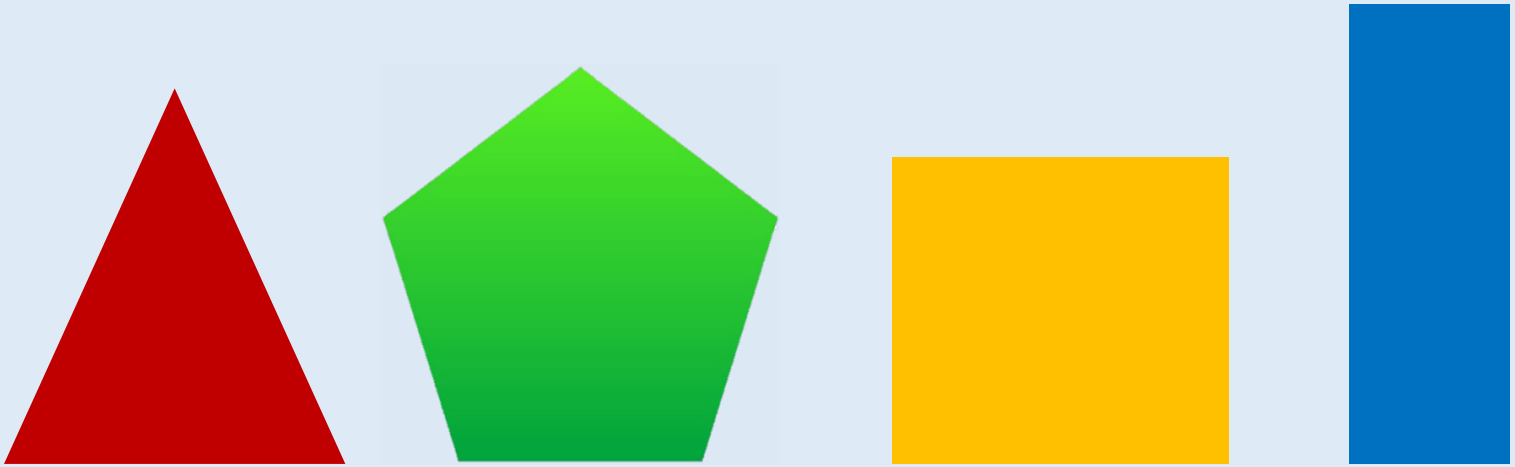
Activity 2 Lines of Symmetry

Draw the vertical lines of symmetry on these shapes.



Activity 2 Lines of Symmetry

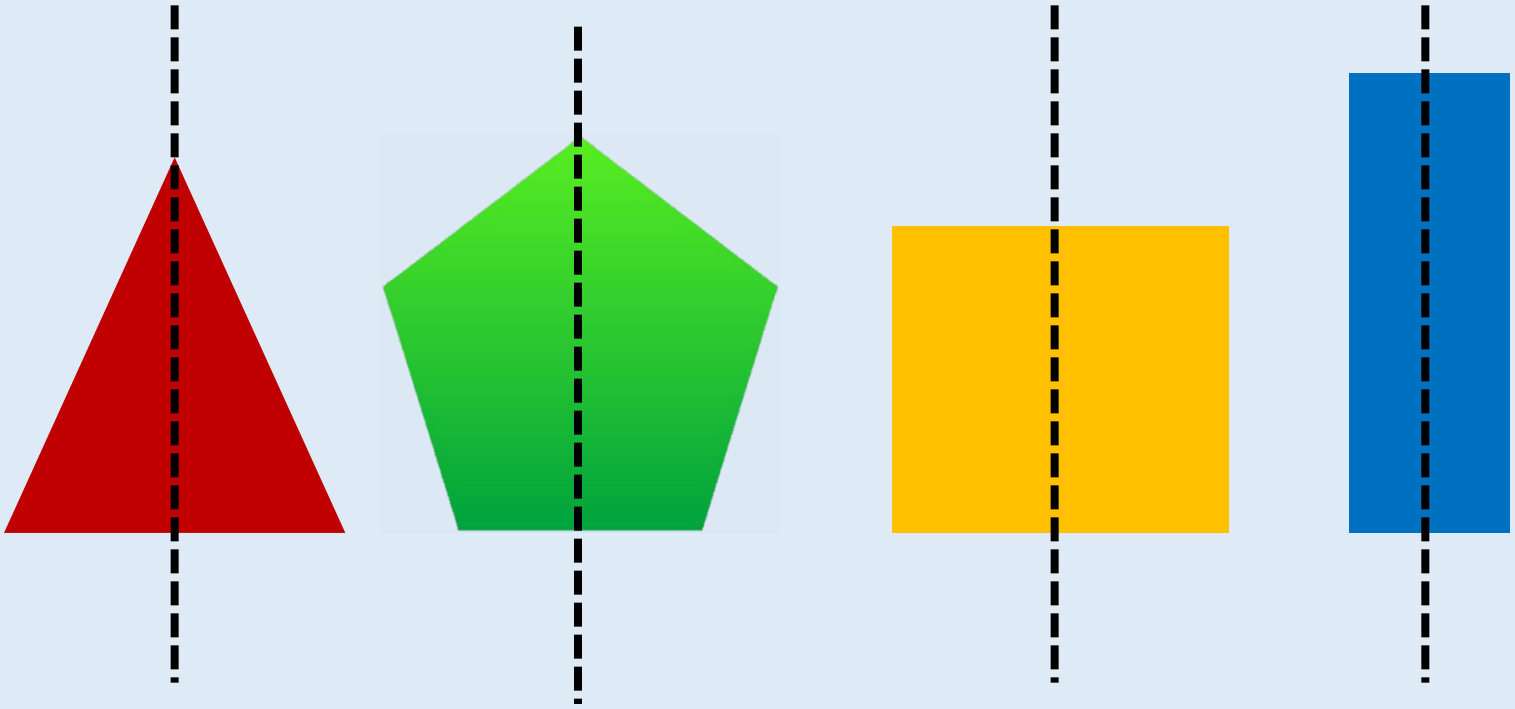
Draw the vertical lines of symmetry on these shapes.



Activity 2

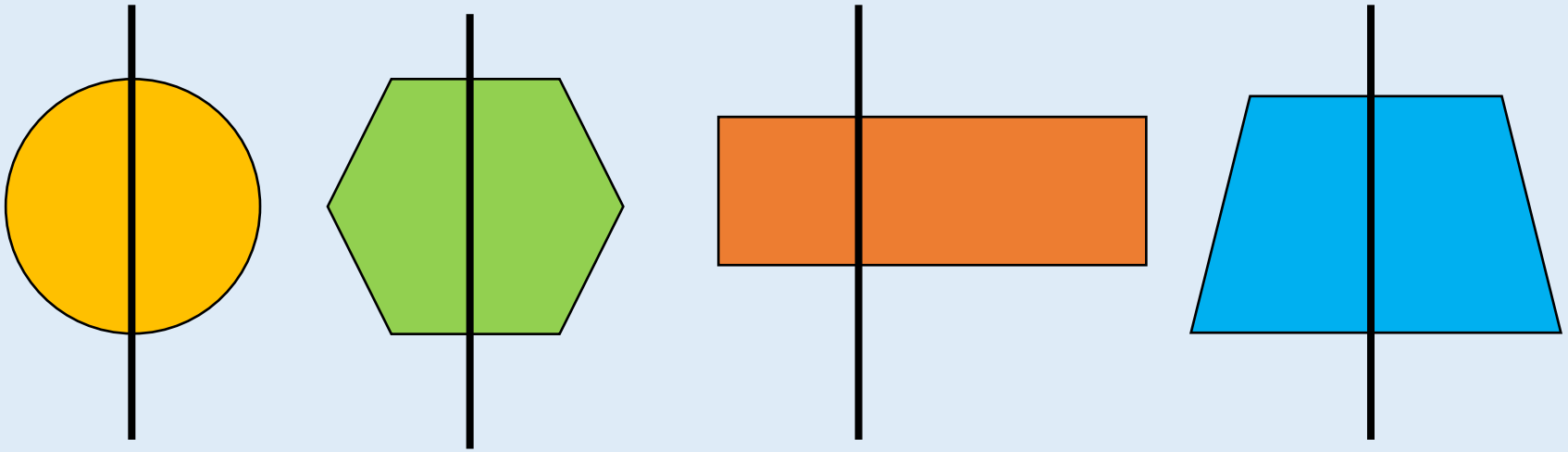
Lines of Symmetry

Draw the vertical lines of symmetry on these shapes.



Activity 3 Lines of Symmetry

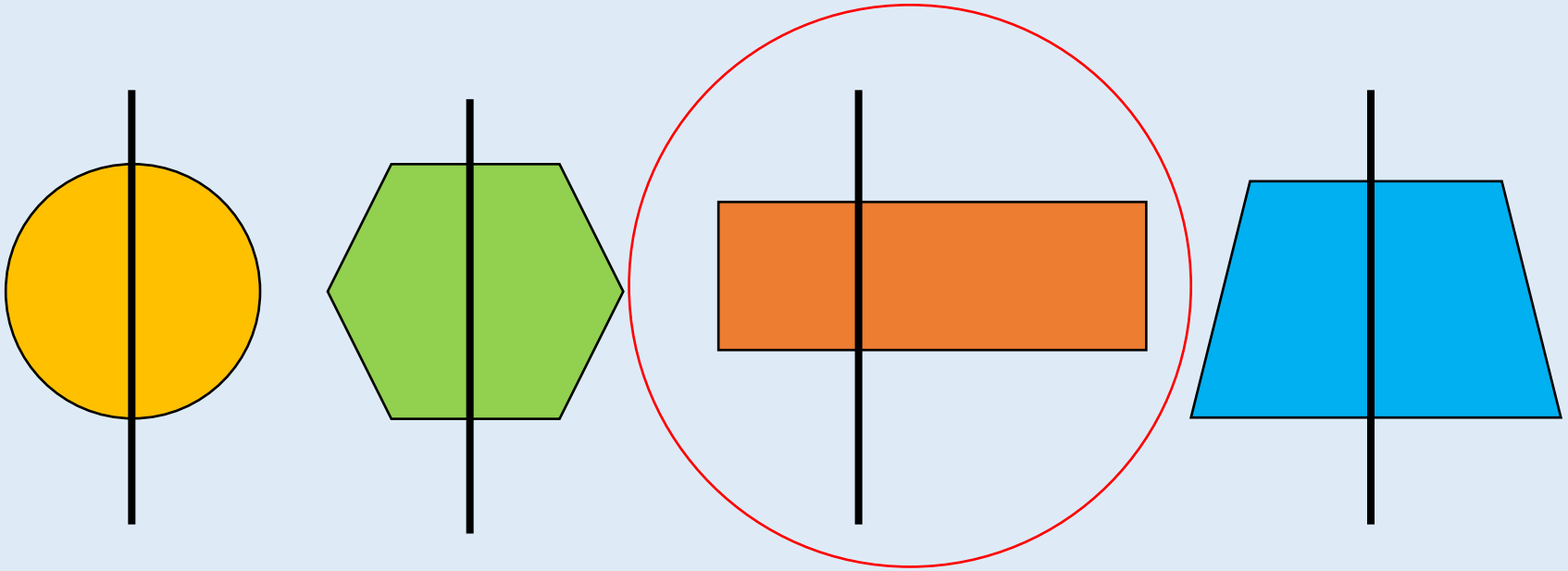
Circle the shape with an incorrect line of symmetry.
Can folding help you prove your answers?



What resources could you use to check if a shape has a vertical line of symmetry?

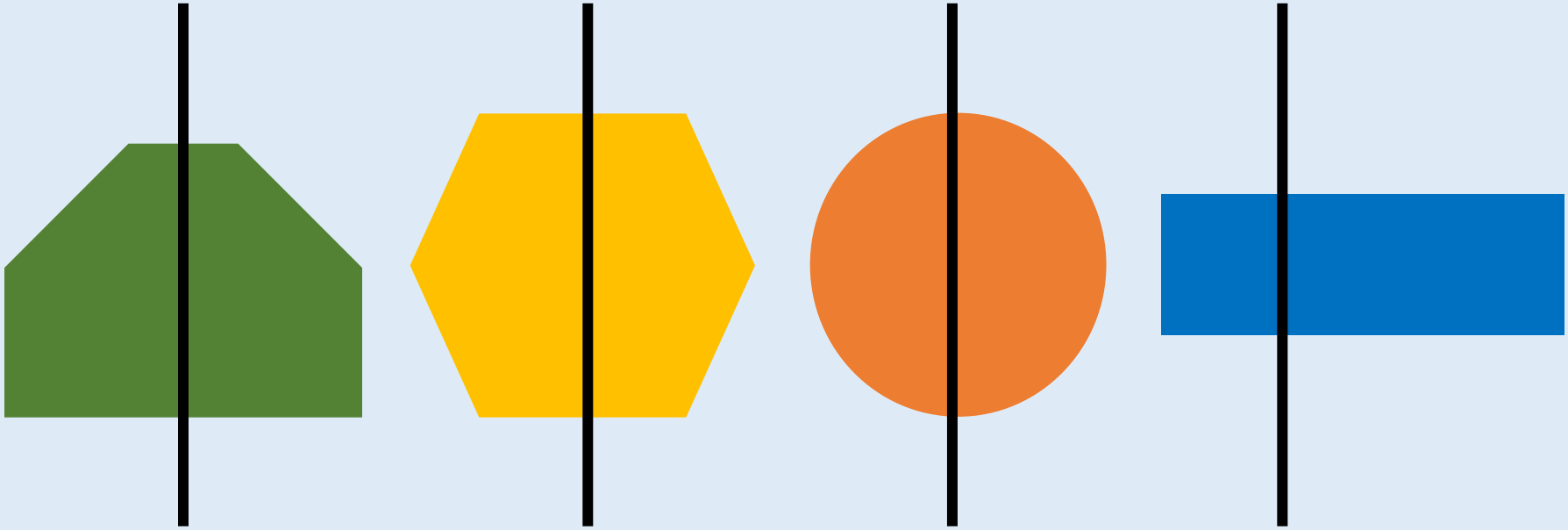
Activity 3 Lines of Symmetry

Circle the shape with an incorrect line of symmetry.
Can folding help you prove your answers?



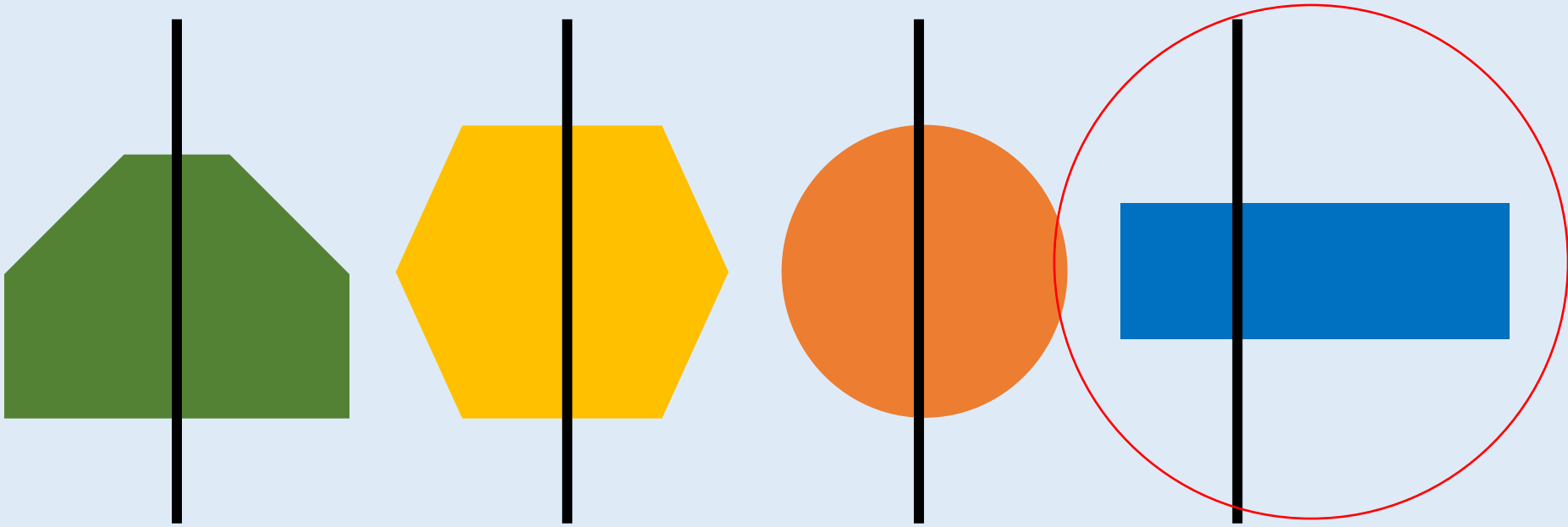
Activity 3 Lines of Symmetry

Circle the shape with an incorrect line of symmetry.
Can folding help you prove your answers?



Activity 3 Lines of Symmetry

Circle the shape with an incorrect line of symmetry.
Can folding help you prove your answers?



Reasoning - 1 Line of Symmetry

Can you draw a four sided shape that has a vertical line of symmetry?

Reasoning - 1 Line of Symmetry

Can you draw a four sided shape that has a vertical line of symmetry?

Possible answers:
Square, rectangle, kite

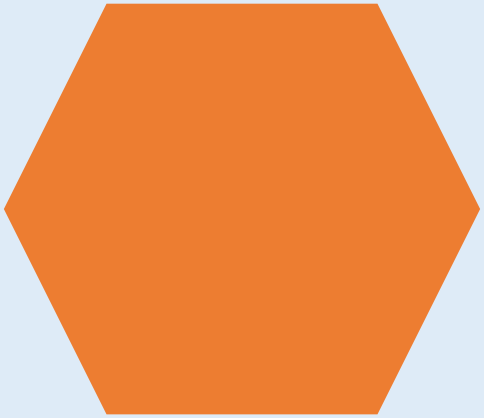
Reasoning - 2 Line of Symmetry

Zach has placed a mirror on the vertical line of symmetry.
This is what he sees.

Can you complete the other half of the shape?

Reasoning - 2 Line of Symmetry

Zach has placed a mirror on the vertical line of symmetry.
This is what he sees.



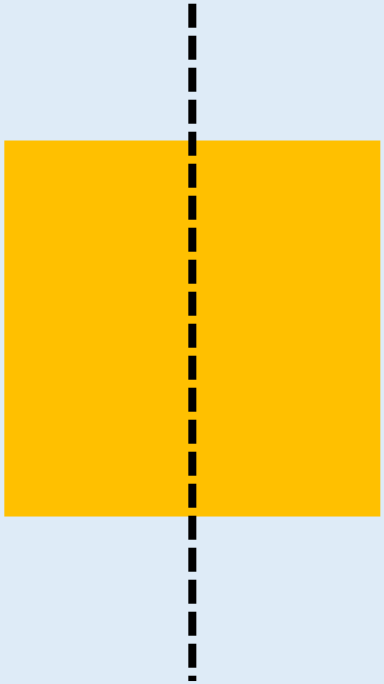
Reasoning - 3 Line of Symmetry

Which 2-D shapes can be made when a vertical line of symmetry is drawn on a square?

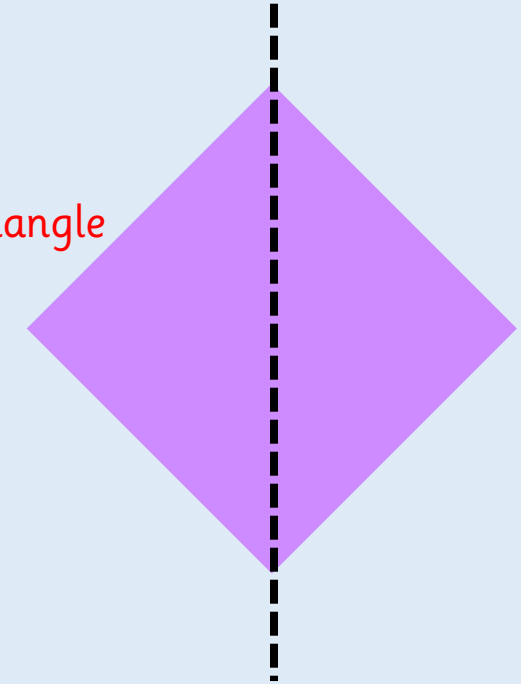
Reasoning - 3 Line of Symmetry

Which 2-D shapes can be made when a vertical line of symmetry is drawn on a square?

Rectangle



Triangle



Discussion

Line of Symmetry

Where is the vertical line of symmetry?

What does vertical mean?

Which is the odd shape out? How do you know?

What resources could you use to check if a shape has a vertical line of symmetry?

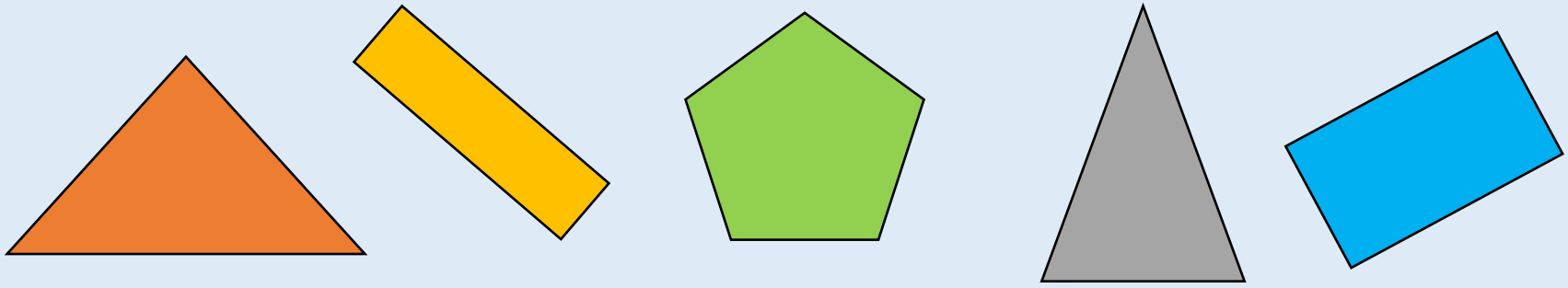
Sort 2-D Shapes

2

Fluency & Reasoning Teaching Slides

Activity 1 Sort 2-D Shapes

Sort the 2-D shapes into the correct group.



Rectangle

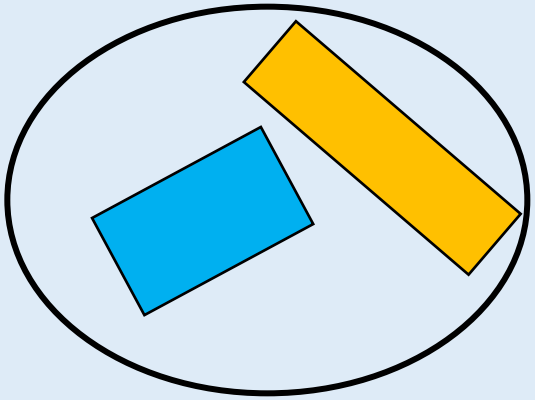
Triangle

Pentagon

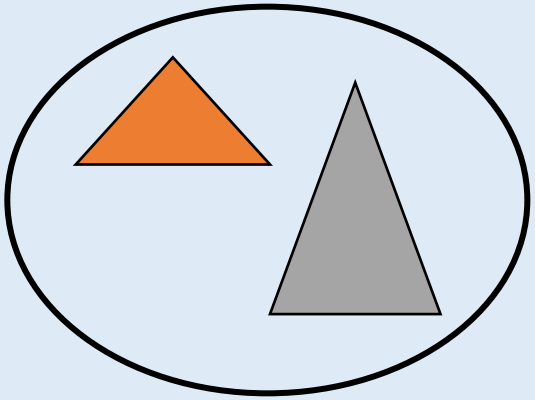
How have you sorted your shapes?

Activity 1 Sort 2-D Shapes

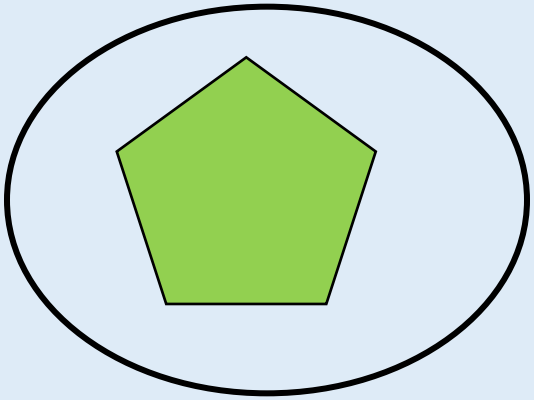
Sort the 2-D shapes into the correct group.



Rectangle



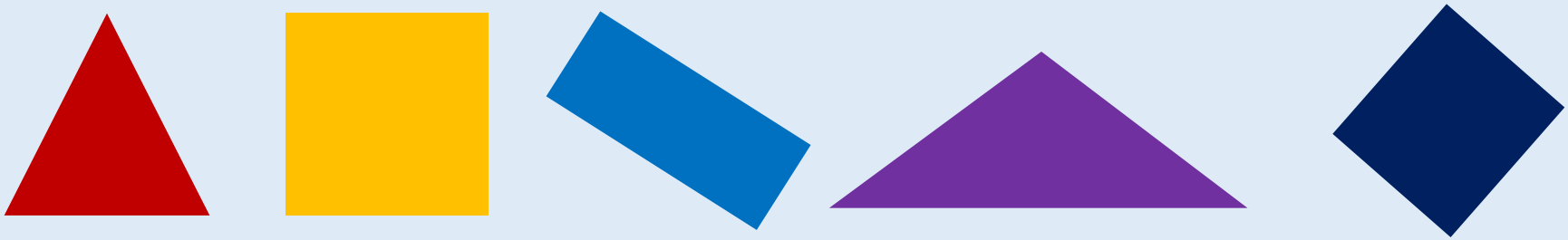
Triangle



Pentagon

Activity 1 Sort 2-D Shapes

Sort the 2-D shapes into the correct group.



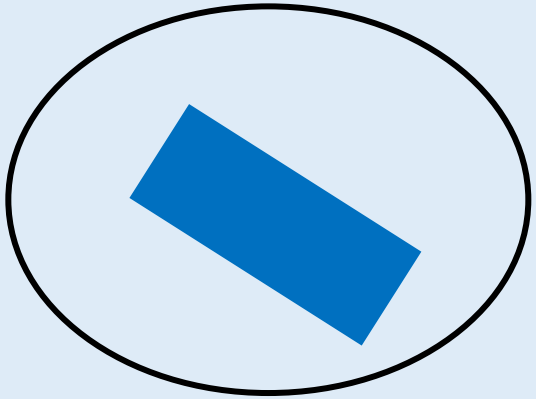
Rectangle

Square

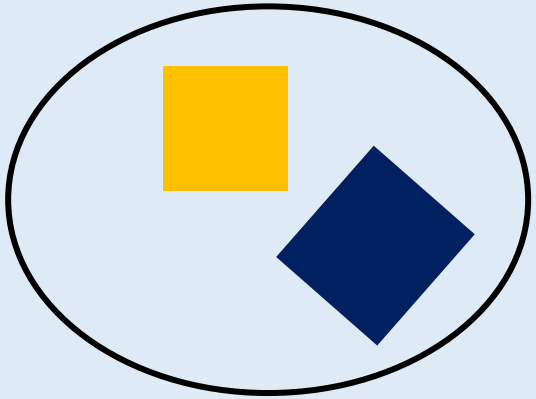
Triangle

Activity 1 Sort 2-D Shapes

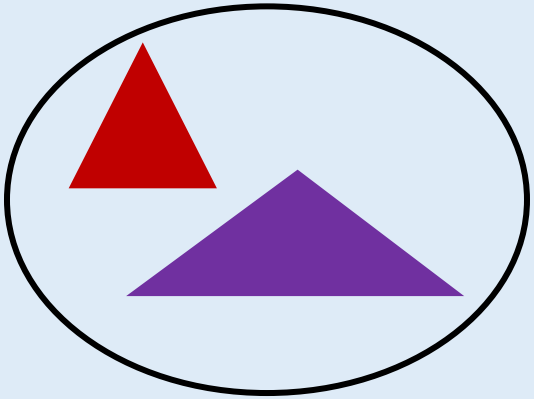
Sort the 2-D shapes into the correct group.



Rectangle



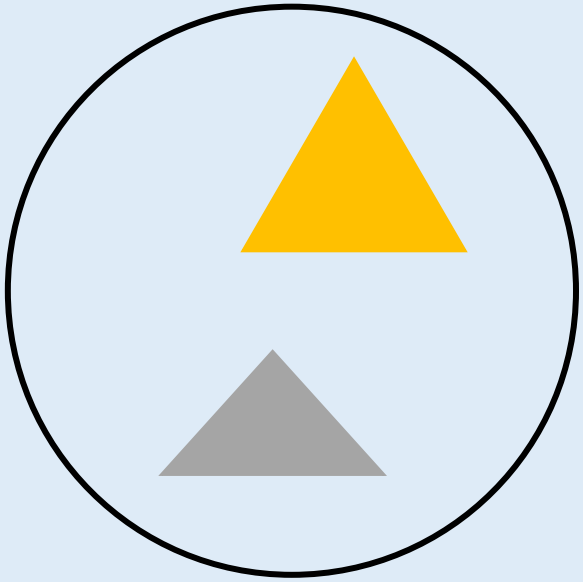
Square

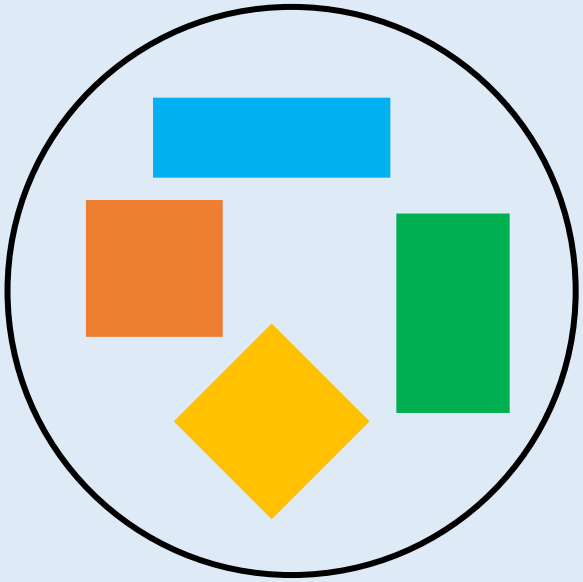


Triangle

Activity 2 Sort 2-D Shapes

How have the shapes been sorted?

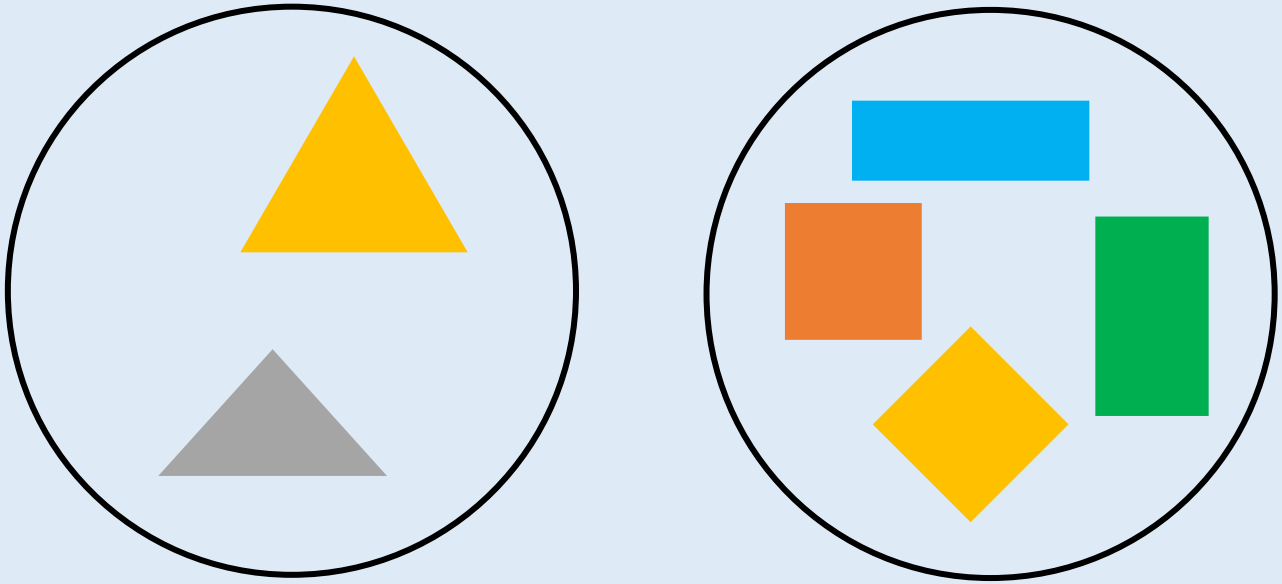




Can you sort the shapes in a different way?

Activity 2 Sort 2-D Shapes

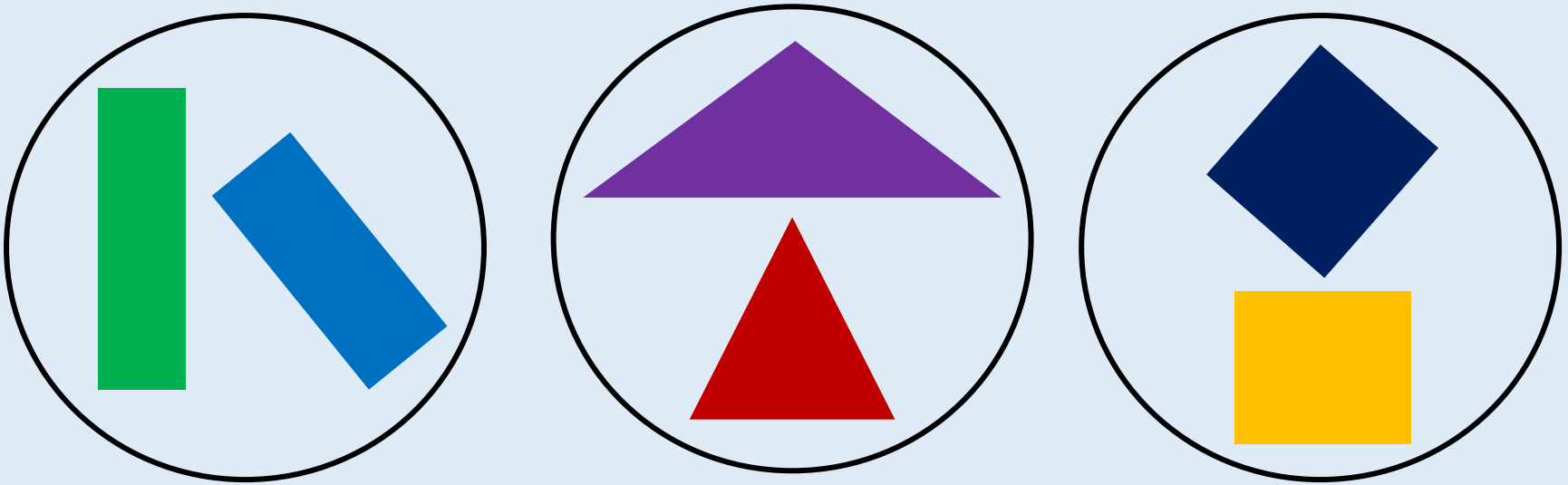
How have the shapes been sorted?



The shapes have been sorted according to its number of sides.

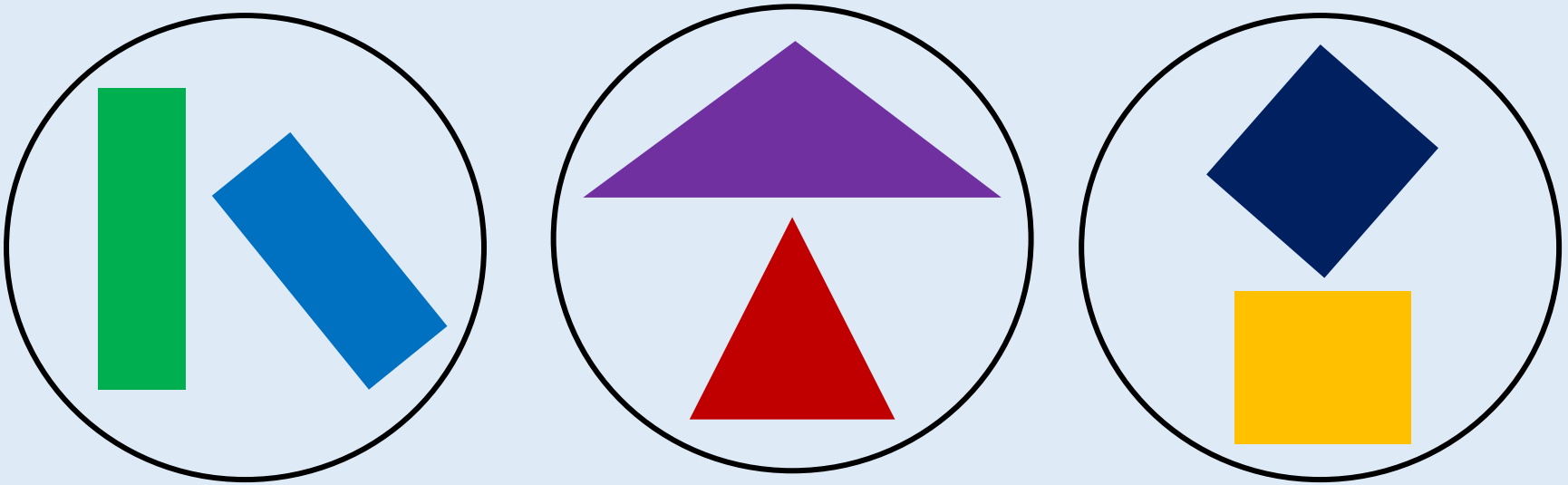
Activity 2 Sort 2-D Shapes

How have the shapes been sorted?



Activity 2 Sort 2-D Shapes

How have the shapes been sorted?



The shapes have been sorted according to its number of sides and what type.

Activity 3 Sort 2-D Shapes

Tia sorted her shapes by the number of sides.
What shapes could belong to each group?

4 sides	Not 4 sides

Can you sort the shapes in a different way?

Activity 3 Sort 2-D Shapes

Tia sorted her shapes by the number of sides.
What shapes could belong to each group?

4 sides	Not 4 sides
Rectangle, square, kite etc.	Triangle, circle, pentagon, hexagon, etc.

Activity 3 Sort 2-D Shapes

Malachi sorted his shapes by the number of vertices. What shapes could belong to each group?

4 vertices	More than 4 vertices

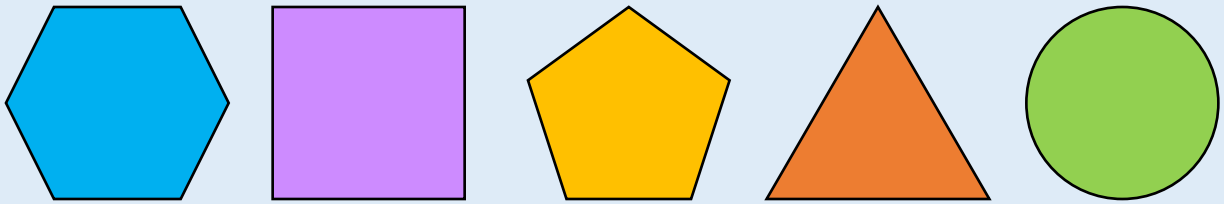
Activity 3 Sort 2-D Shapes

Malachi sorted his shapes by the number of vertices. What shapes could belong to each group?

4 vertices	More than 4 vertices
Rectangle, square, kite etc.	Triangle, circle, pentagon, hexagon, etc.

Reasoning - 1 Sort 2-D Shapes

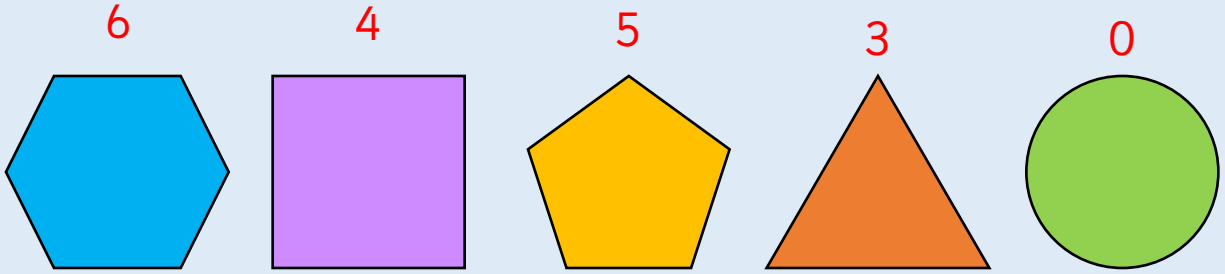
Rosie sorted the shapes in order of the number of vertices.
Has she ordered them correctly?



Explain why.

Reasoning - 1 Sort 2-D Shapes

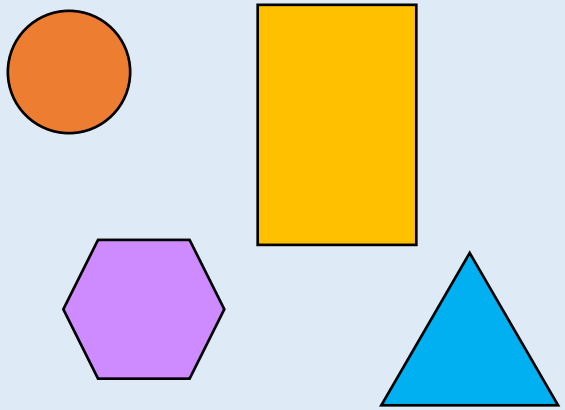
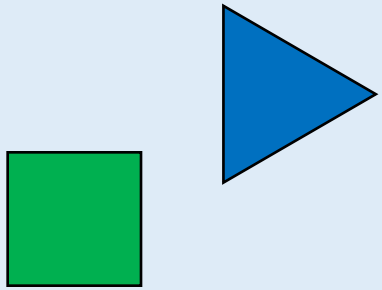
Rosie sorted the shapes in order of the number of vertices. Has she ordered them correctly?



No, because the square should be after the pentagon.

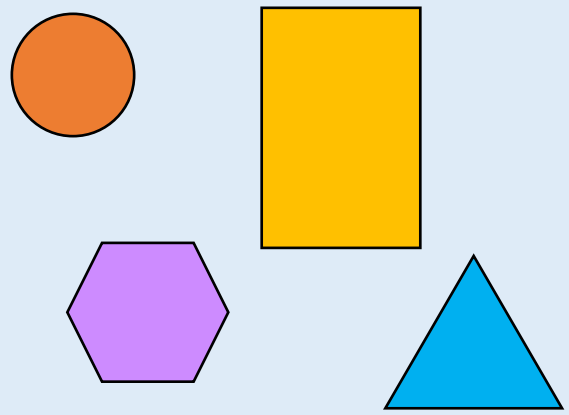
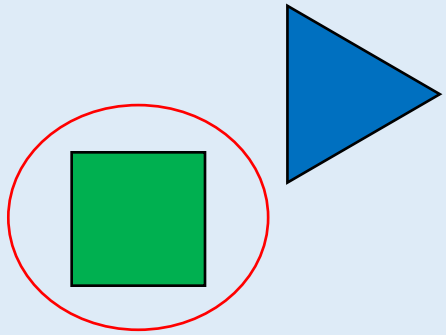
Reasoning - 2 Sort 2-D Shapes

Which shape is in the wrong set? Explain why.

Vertical line of symmetry	No vertical line of symmetry
	

Reasoning - 2 Sort 2-D Shapes

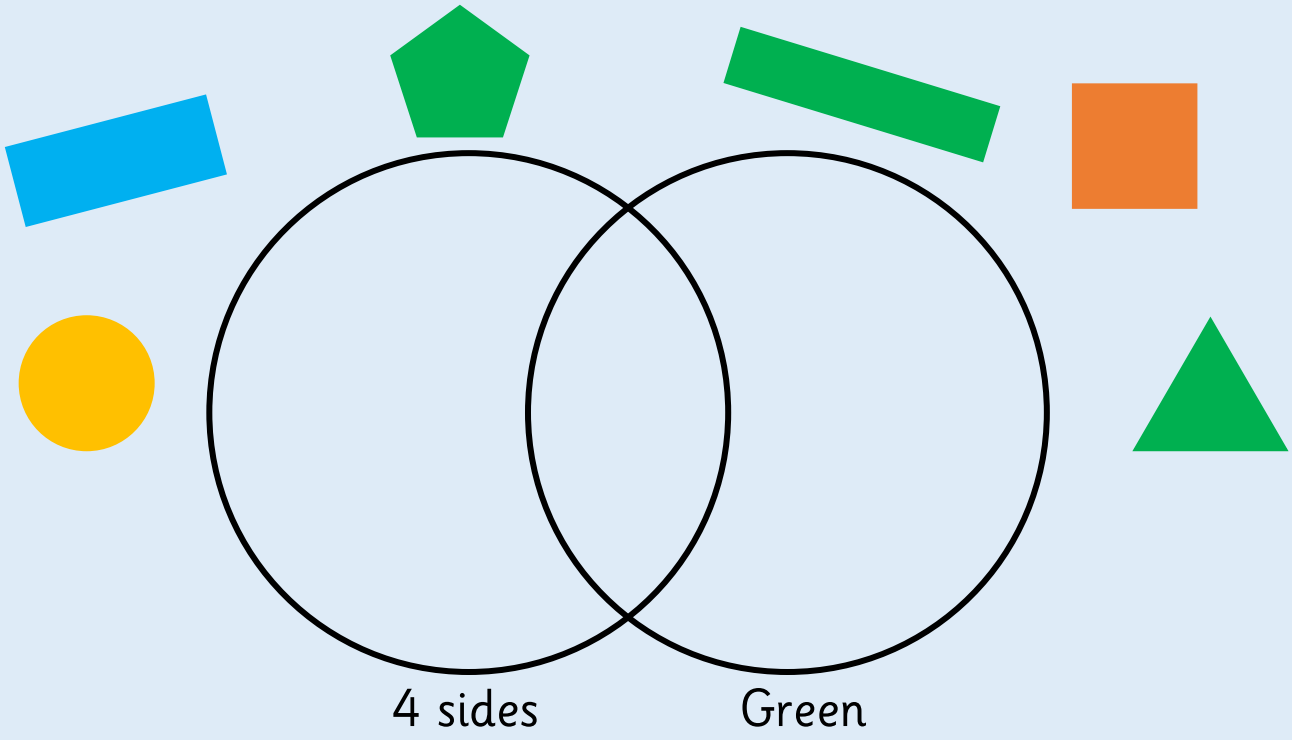
Which shape is in the wrong set? Explain why.

Vertical line of symmetry	No vertical line of symmetry
	

The square is in the wrong set because it does have a vertical line of symmetry.

Reasoning - 3 Sort 2-D Shapes

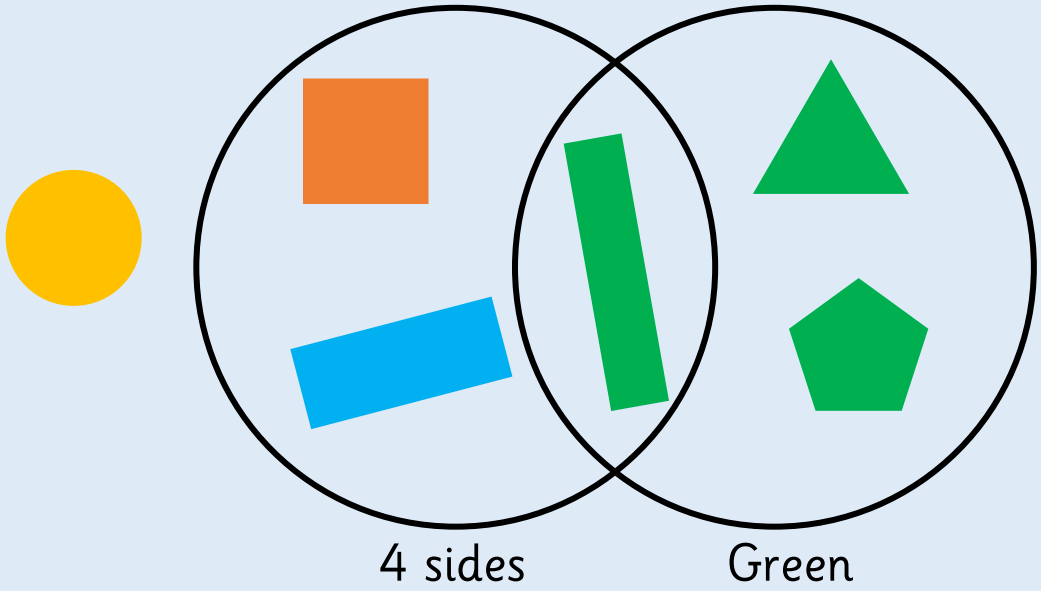
Where should these shapes go in the Venn diagram?



Create your own labels and sort the shapes in a different way.

Reasoning - 3 Sort 2-D Shapes

Where should these shapes go in the Venn diagram?



Possible labels:
Yellow
Less than 4 vertices

Discussion

Sort 2-D Shapes

How have you sorted your shapes?

How do you know you have sorted your shapes correctly?

Can you sort the shapes in a different way?

Can you find a shape which is in the wrong place?

Can you see how these shapes have been sorted?

Make Patterns with 2-D Shapes

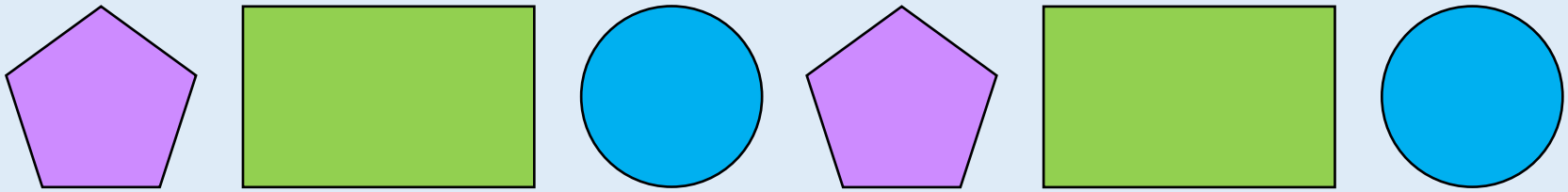
2

Fluency & Reasoning Teaching Slides

www.masterthecurriculum.co.uk

Activity 1 Make Patterns with 2-D Shapes

Continue this pattern:

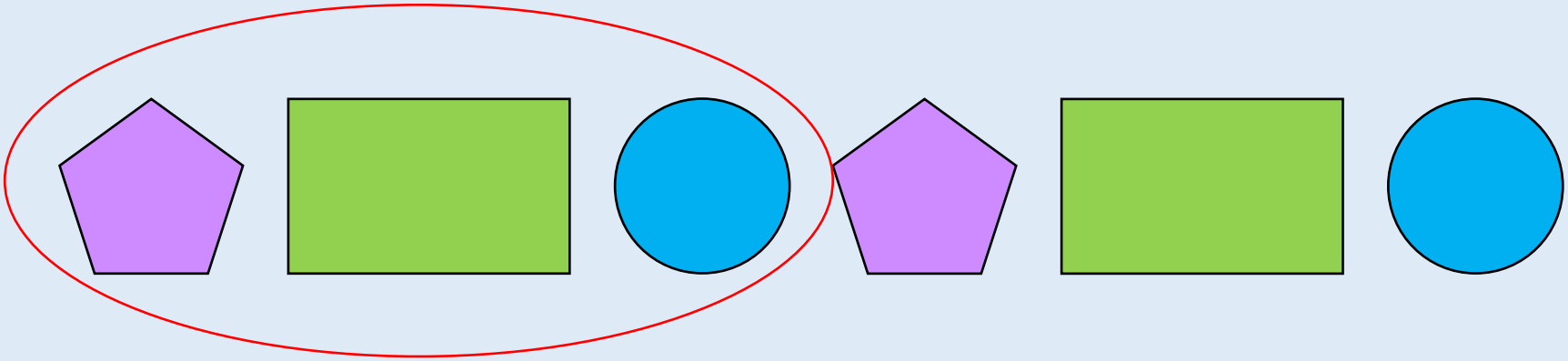


Can you circle the set of shapes that repeat?
What is the next shape in the pattern?
What is the 9th shape in this pattern?

Can you explain the pattern?

Activity 1 Make Patterns with 2-D Shapes

Continue this pattern:



Can you circle the set of shapes that repeat?

What is the next shape in the pattern?

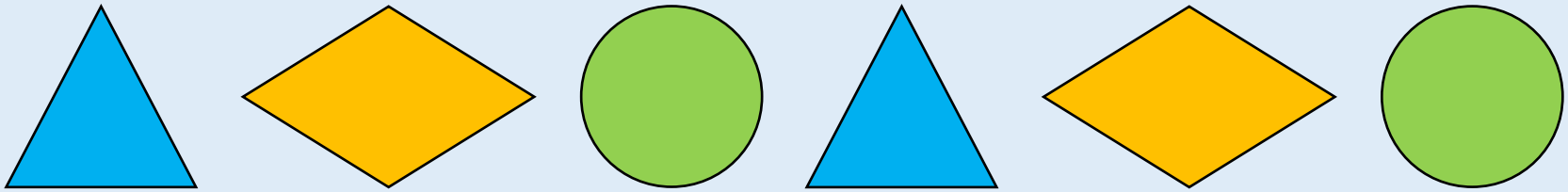
The next shape is a pentagon.

What is the 9th shape in this pattern?

The 9th shape in this pattern would be a circle.

Activity 1 Make Patterns with 2-D Shapes

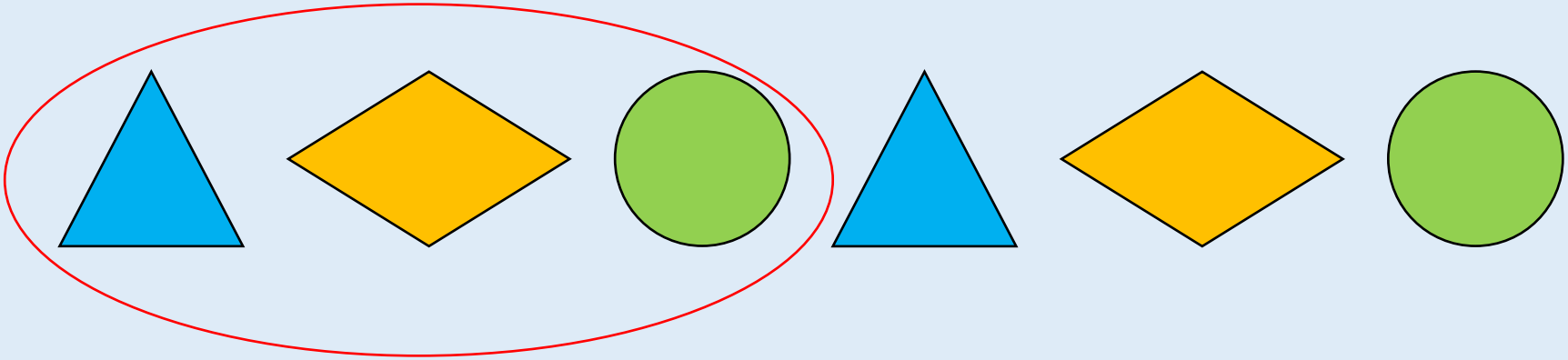
Continue this pattern:



Can you circle the set of shapes that repeat?
What is the next shape in the pattern?
What is the 8th shape in this pattern?

Activity 1 Make Patterns with 2-D Shapes

Continue this pattern:



Can you circle the set of shapes that repeat?

What is the next shape in the pattern?

The next shape in the pattern is triangle.

What is the 8th shape in this pattern?

The 8th shape in this pattern is the kite/parallelogram.

Activity 2 Make Patterns with 2-D Shapes

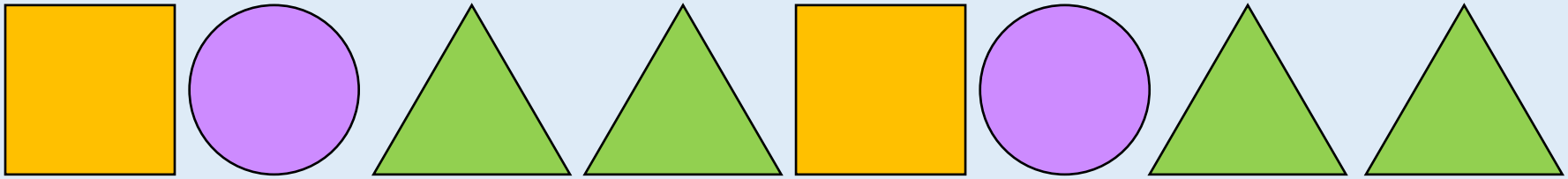
Draw pictures to represent this pattern:
Square, circle, triangle, triangle,
square, circle, triangle, triangle

Which shape will be next?

Activity 2

Make Patterns with 2-D Shapes

Draw pictures to represent this pattern:
Square, circle, triangle, triangle,
square, circle, triangle, triangle

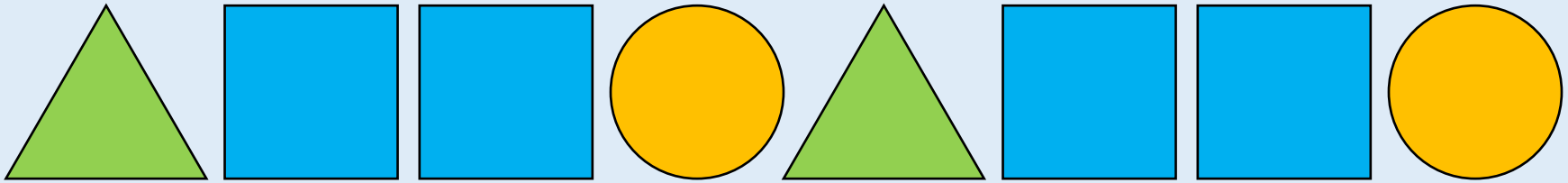


Activity 2 Make Patterns with 2-D Shapes

Draw pictures to represent this pattern:
Triangle, square, square, circle,
triangle, square, square, circle

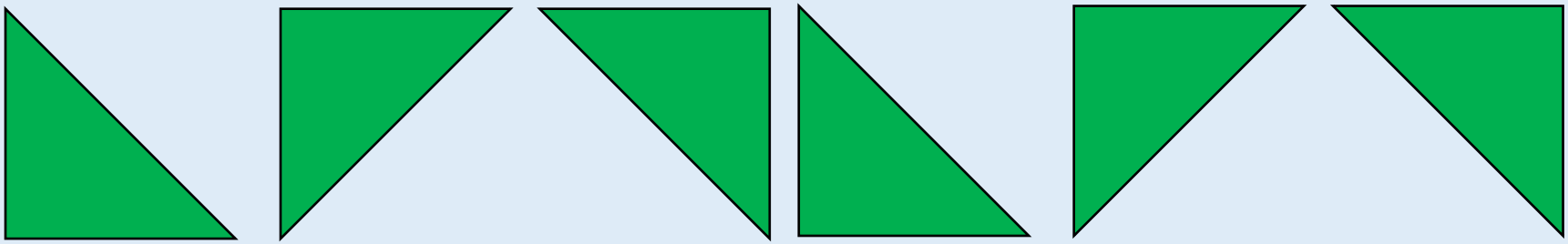
Activity 2 Make Patterns with 2-D Shapes

Draw pictures to represent this pattern:
Triangle, square, square, circle,
triangle, square, square, circle



Activity 3 Make Patterns with 2-D Shapes

How many times does the pattern repeat?
Which shape would be 10th?

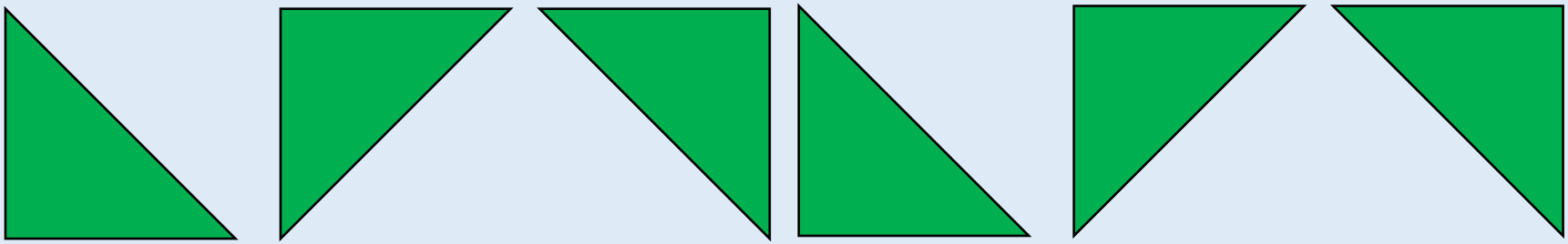


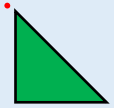
Can you make your own repeating patterns using only one shape?

How are these patterns similar? How are these patterns different?

Activity 3 Make Patterns with 2-D Shapes

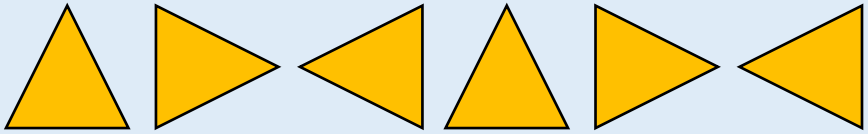
How many times does the pattern repeat?
Which shape would be 10th?



The pattern repeats twice.
The 10th shape would be 

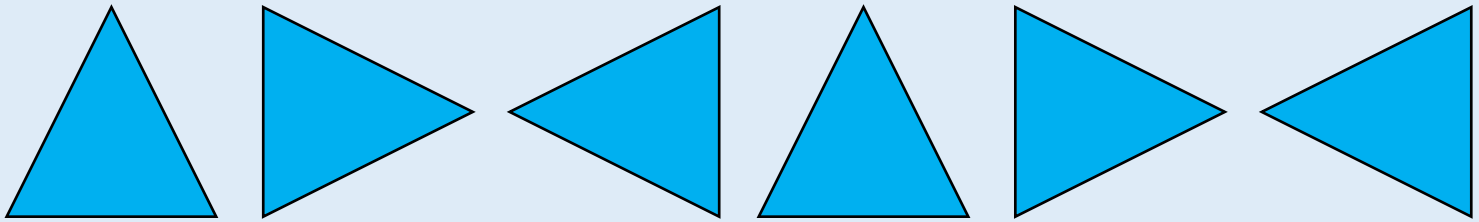
Can you make your own repeating patterns using only one shape?

Yes.



Activity 3 Make Patterns with 2-D Shapes

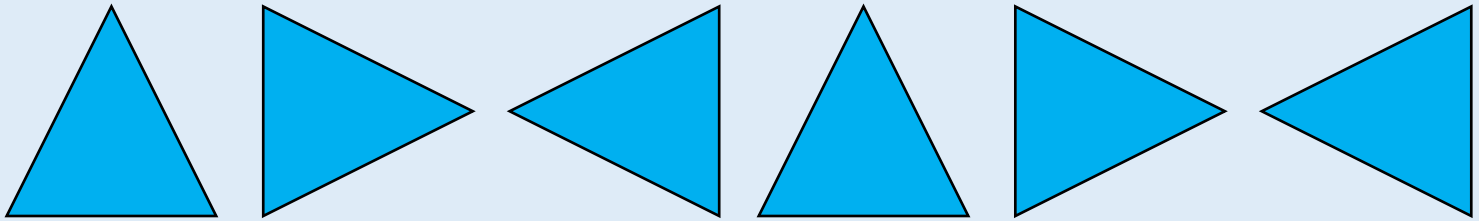
How many times does the pattern repeat?
Which shape would be 10th?



Can you make your own repeating patterns using only one shape?

Activity 3 Make Patterns with 2-D Shapes

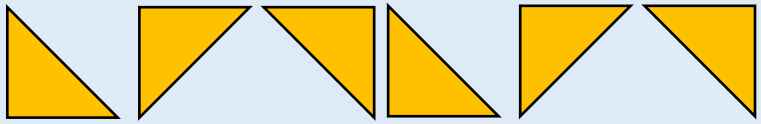
How many times does the pattern repeat?
Which shape would be 10th?



The pattern repeats twice.
The 10th shape would be 

Can you make your own repeating patterns using only one shape?

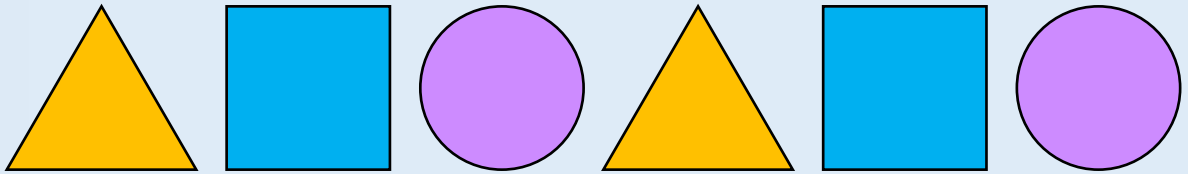
Yes.



Reasoning - 1

Make Patterns with 2-D Shapes

Esin says that the 12th shape in this pattern will be a circle.

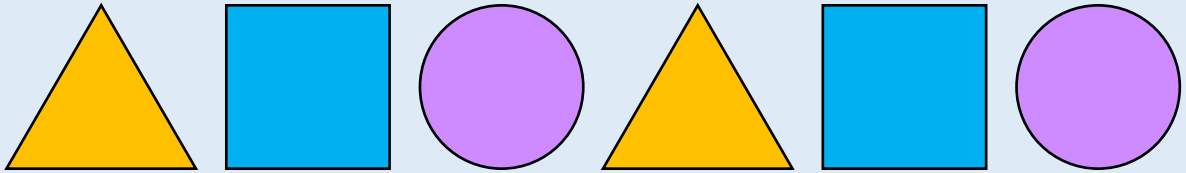


Is she correct? How do you know?

Reasoning - 1

Make Patterns with 2-D Shapes

Esin says that the 12th shape in this pattern will be a circle.



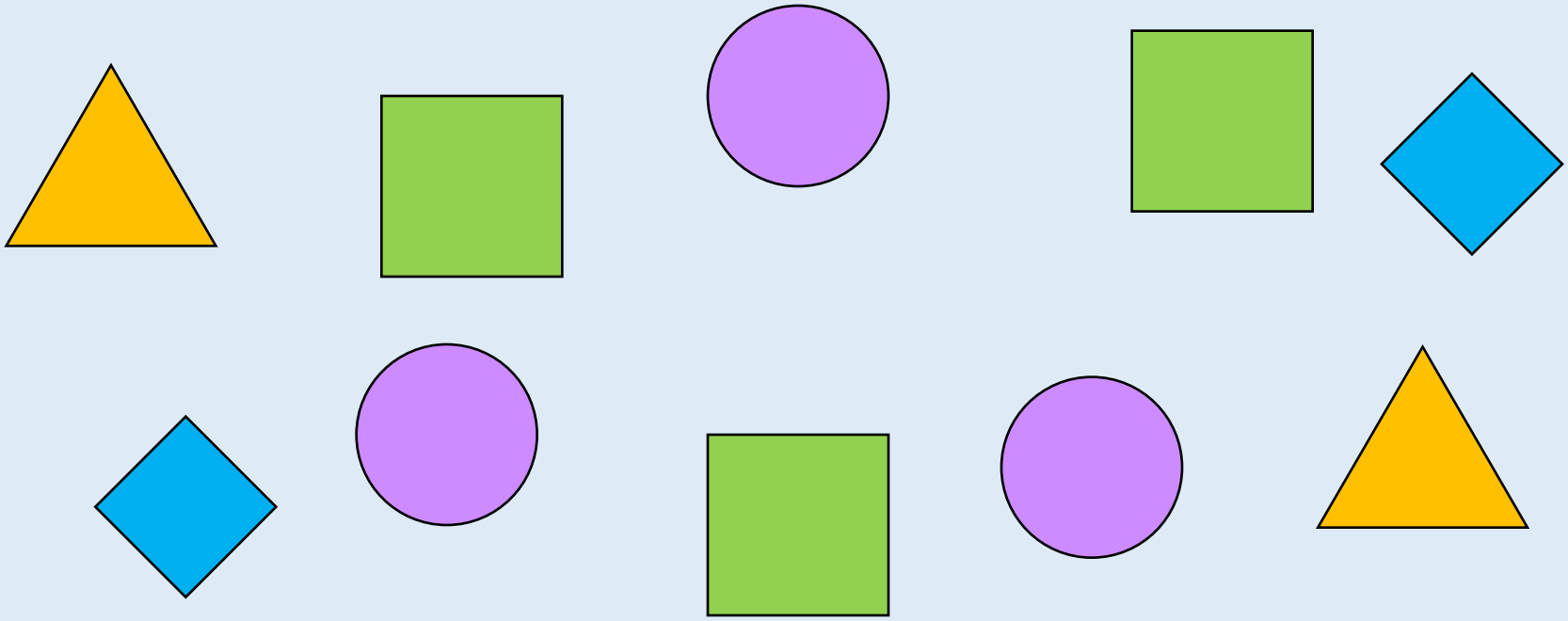
She is correct. The 12th shape will be a circle.

Children may physically continue the pattern to find the answer or recognise that the circle is the 3rd and count in 3s.

Reasoning - 2

Make Patterns with 2-D Shapes

How many different ways can you arrange these shapes to make a repeating pattern?



Reasoning - 2 Make Patterns with 2-D Shapes

How many different ways can you arrange these shapes to make a repeating pattern?

There are many ways to make different repeating patterns. Encourage children to orally describe the pattern they have created.

Reasoning - 3

Make Patterns with 2-D Shapes

Can you translate this pattern using shapes?

Snap, snap, clap, snap, snap, clap, snap, snap ...

Reasoning - 3 Make Patterns with 2-D Shapes

Can you translate this pattern using shapes?

Possible answer:
Square, square, triangle or
Pentagon, pentagon, circle

Discussion

Make Patterns with 2-D Shapes

Can you explain the pattern? How does circling the set of shapes that repeat help you see the pattern?

Continue the pattern. Which shape will be next?

How are these patterns similar? How are these patterns different?

How can you work out which shape will come ___th?

Count Faces on 3-D Shapes

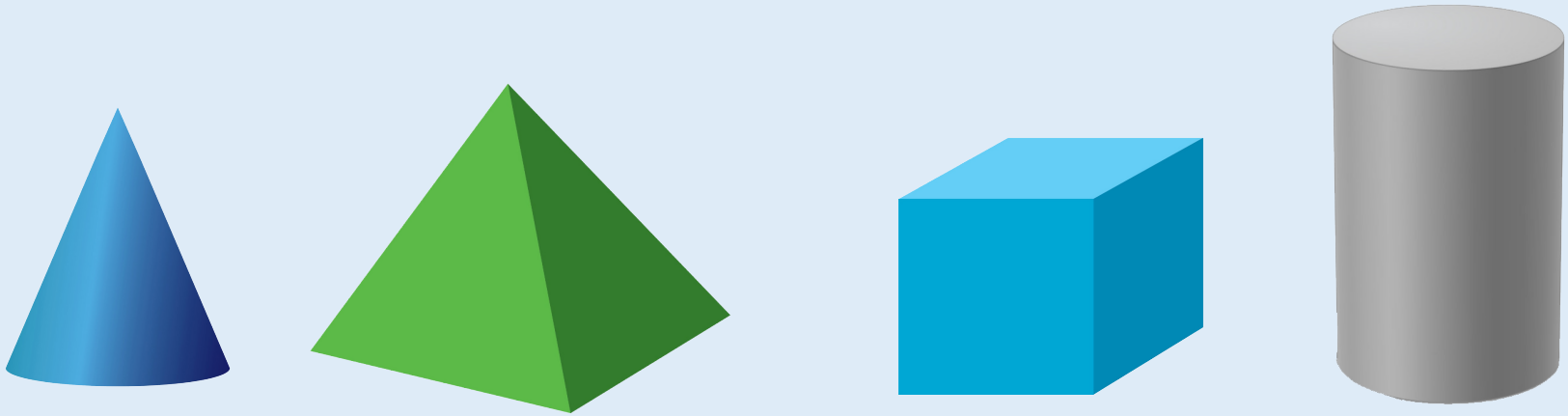
2

Fluency & Reasoning Teaching Slides

www.masterthecurriculum.co.uk

Activity 1 Count Faces on 3-D Shapes

Look at these 3-D shapes:

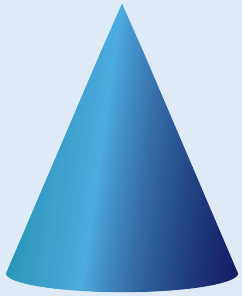


Which 2-D shapes can you see on the surface of each one?

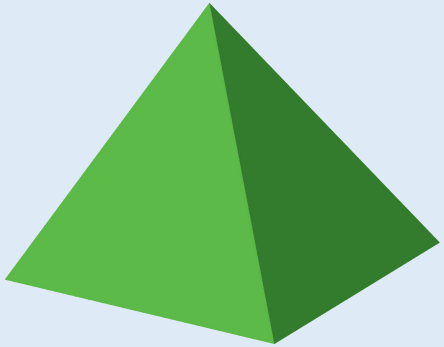
What do we mean by the 'face' of a shape?

Activity 1 Count Faces on 3-D Shapes

Look at these 3-D shapes:

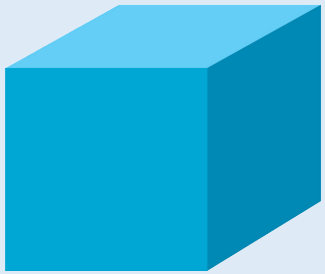


circle

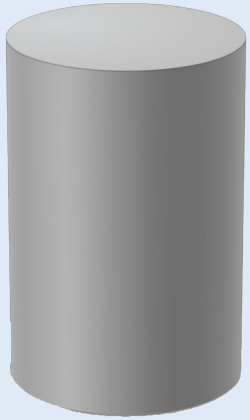


triangle

square



square

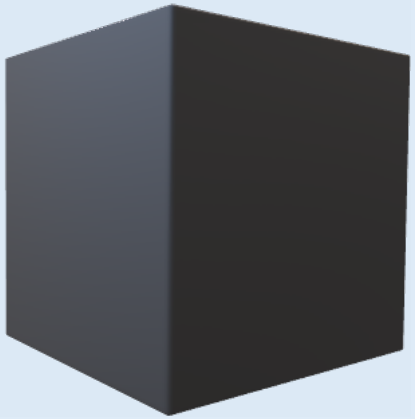


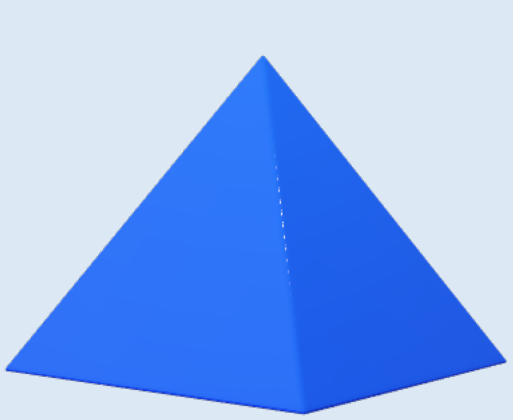
circle

Which 2-D shapes can you see on the surface of each one?

Activity 1 Count Faces on 3-D Shapes

Look at these 3-D shapes:





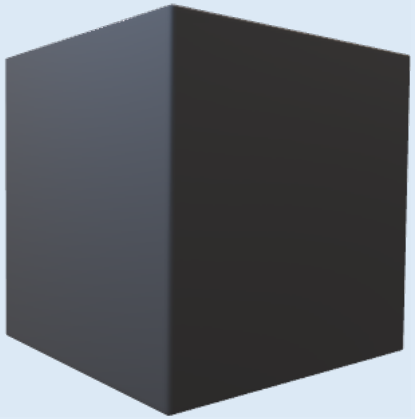
Which 2-D shapes can you see on the surface of each one?

Activity 1 Count Faces on 3-D Shapes

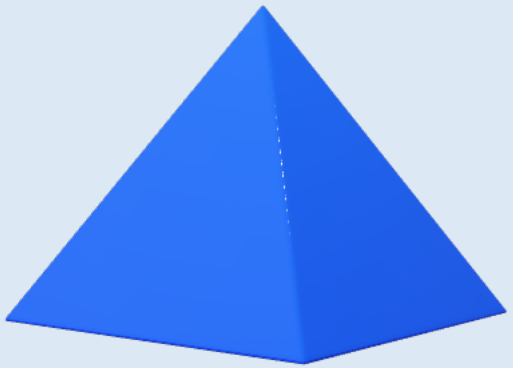
Look at these 3-D shapes:

circle

circle



square/rectangle



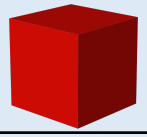
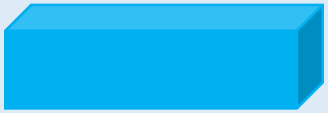
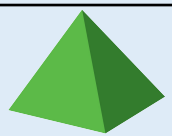
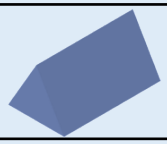
triangle

square

Which 2-D shapes can you see on the surface of each one?

Activity 2 Count Faces on 3-D Shapes

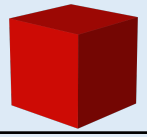
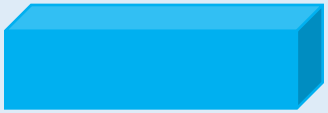
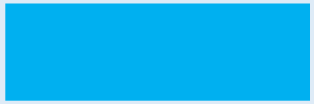
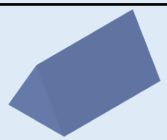
Complete the table:

Shape	Name of shape	Number of flat faces	Draw the faces
			
			
			
			

Which 2-D shapes can you see on different 3-D shapes?

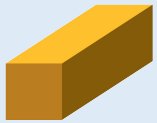
Activity 2 Count Faces on 3-D Shapes

Complete the table:

Shape	Name of shape	Number of flat faces	Draw the faces
	Cube	6	
	Cuboid	6	
	Pyramid	5	
	Triangular prism	5	

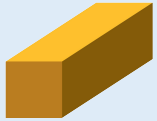
Activity 2 Count Faces on 3-D Shapes

Complete the table:

Shape	Name of shape	Number of flat faces	Draw the faces
			
			
			
			

Activity 2 Count Faces on 3-D Shapes

Complete the table:

Shape	Name of shape	Number of flat faces	Draw the faces
	cuboid	6	
	cone	1	
	cylinder	2	
	sphere	0	

Activity 3

Count Faces on 3-D Shapes

What shape is Leanna thinking of?

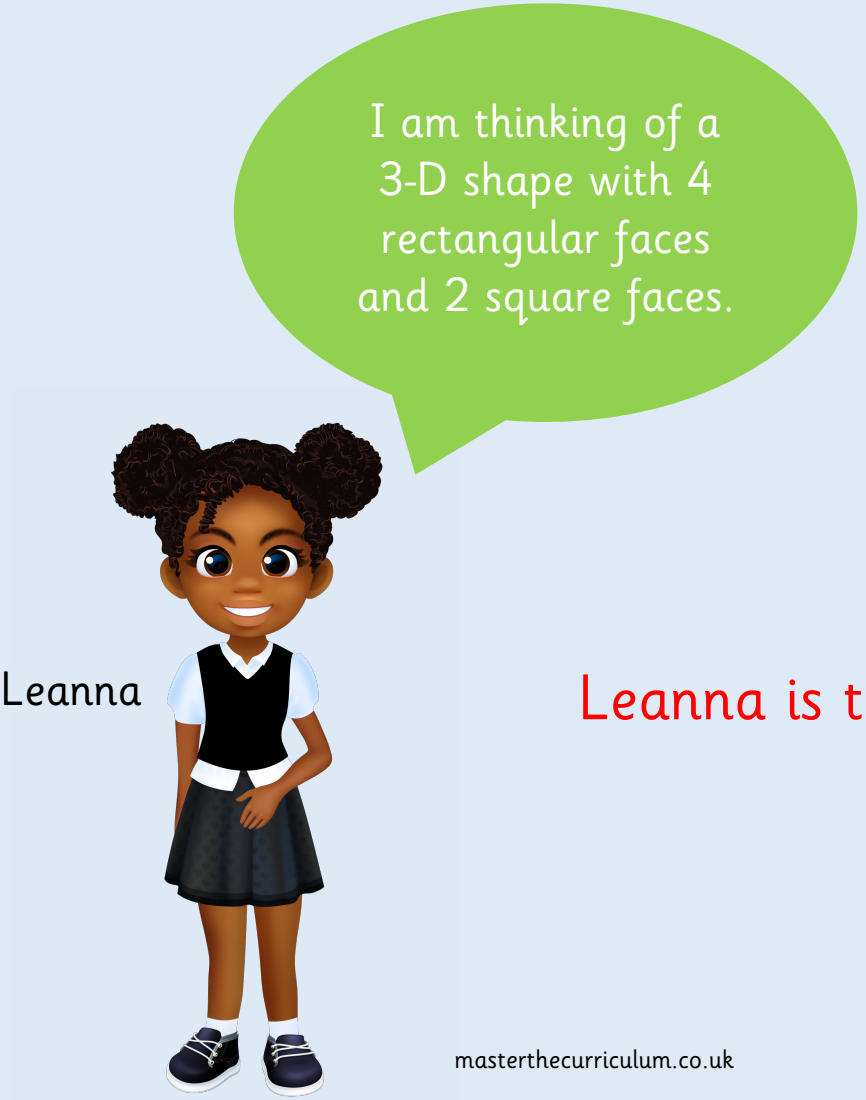
I am thinking of a 3-D shape with 4 rectangular faces and 2 square faces.

Leanna

Activity 3

Count Faces on 3-D Shapes

What shape is Leanna thinking of?



Leanna is thinking of a cuboid.

Reasoning - 1

Count Faces on 3-D Shapes

Rosie says her 3-D shape has 5 faces.
Malachi says she must have a cube.

Is Malachi correct?
Explain your answer.

Reasoning - 1

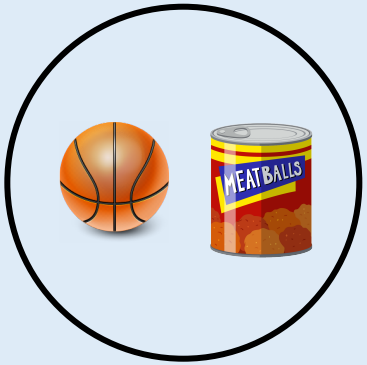
Count Faces on 3-D Shapes

Rosie says her 3-D shape has 6 faces.
Malachi says she must have a cube.

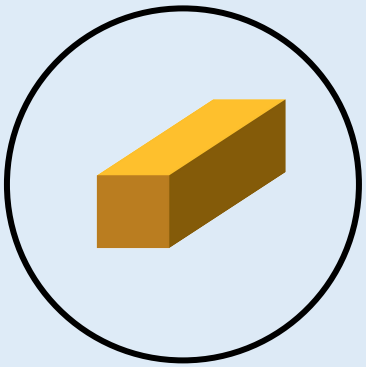
No, because Rosie could have a cube or a cuboid as they have 6 faces.

Reasoning - 2 Count Faces on 3-D Shapes

Tia has sorted these 3-D shapes.



Curved surfaces



Flat faces

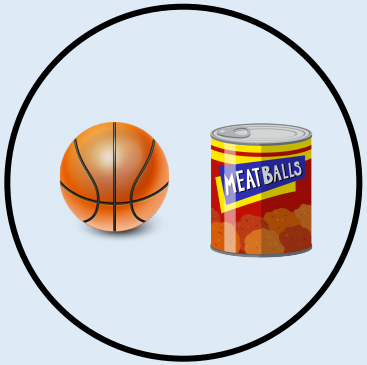
Both

Tia

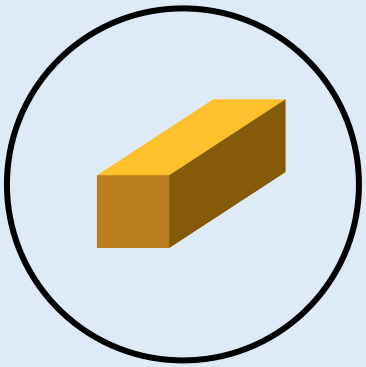
Can you spot her mistake?
Can you add another shape to each set?

Reasoning - 2 Count Faces on 3-D Shapes

Tia has sorted these 3-D shapes.



Curved surfaces



Flat faces

Both

The can should be in the 'both' set because it has flat faces and a curved surface.

Reasoning - 3

Count Faces on 3-D Shapes

What shape does Malachi have?

Play this game with a friend.
Describe the faces of a 3-D shape and they need to guess what it is.

Reasoning - 3

Count Faces on 3-D Shapes

Malachi

I have 3-D shape with 2 rectangular faces and 4 square faces.

Malachi has a cuboid.

Discussion

Count Faces on 3-D Shapes

What do we mean by the 'face' of a shape?
What is the difference between a face and a curved surface?

What real life objects have 6 faces like a cube?

Does a cuboid always have 2 square faces and 4 rectangular faces?

Which 2-D shapes can you see on different 3-D shapes?

How can you make sure that you don't count the faces more than once?

Count Edges on 3-D Shapes

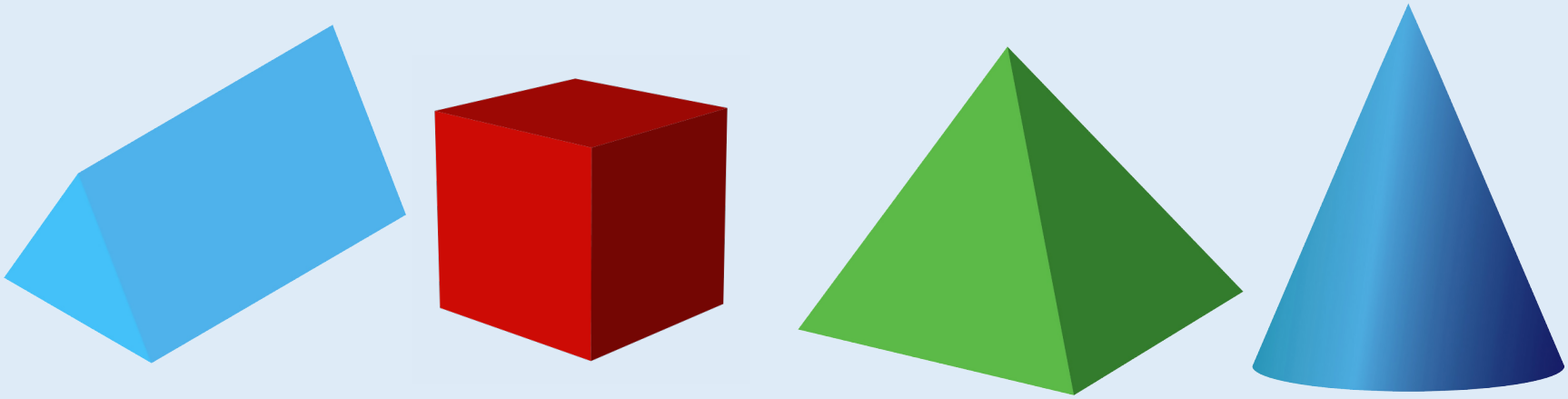
2

Fluency & Reasoning Teaching Slides

www.masterthecurriculum.co.uk

Activity 1 Count Edges on 3-D Shapes

Look at these 3-D shapes:

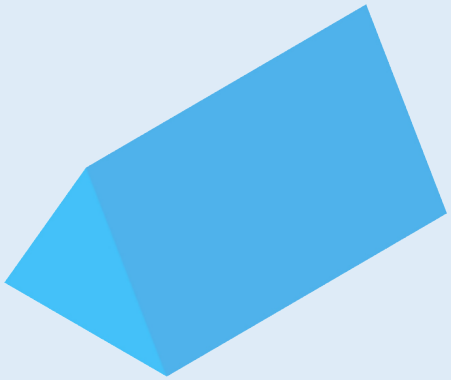


How many edges does each shape have?

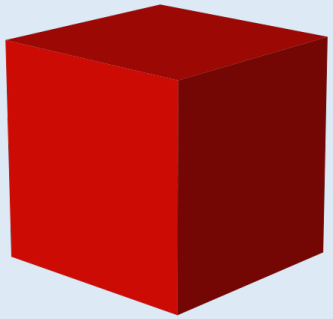
What do mean by the 'edge' of a shape?

Activity 1 Count Edges on 3-D Shapes

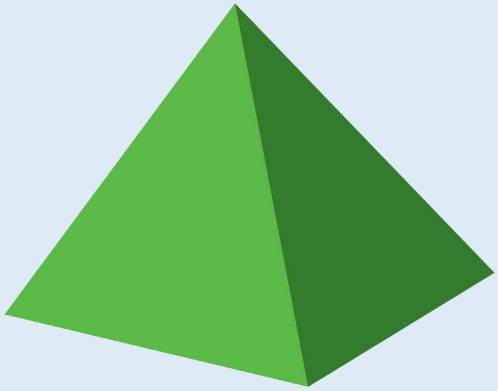
Look at these 3-D shapes:



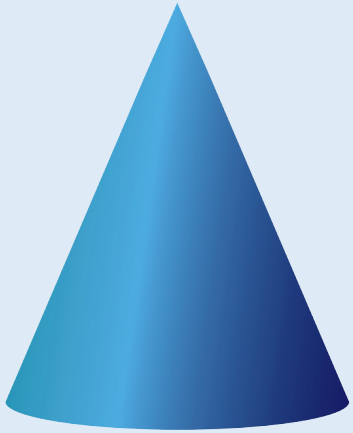
9 edges



12 edges



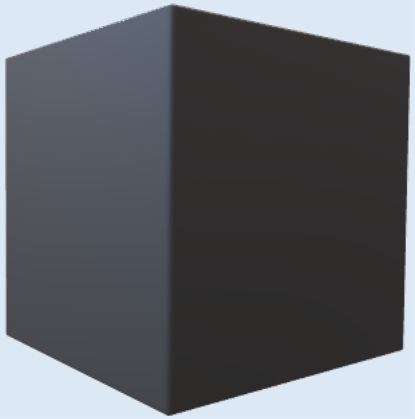
8 edges

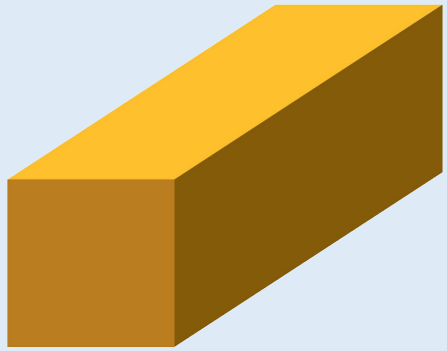


No edge

Activity 1 Count Edges on 3-D Shapes

Look at these 3-D shapes:





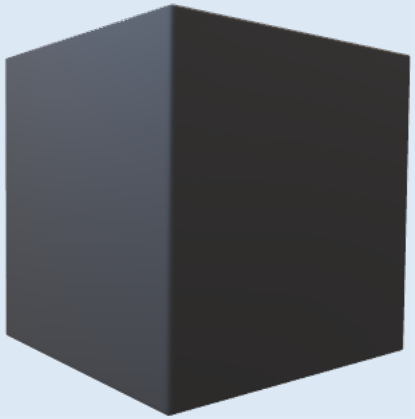
How many edges does each shape have?

Activity 1 Count Edges on 3-D Shapes

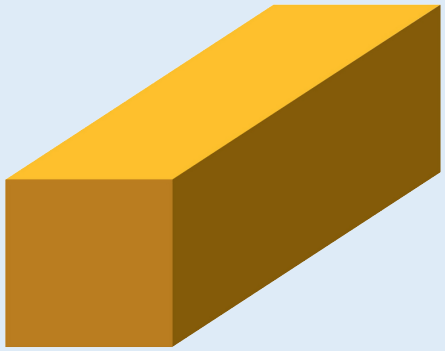
Look at these 3-D shapes:

No edge

No edge



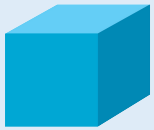
12 edges



12 edges

Activity 2 Count Edges on 3-D Shapes

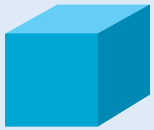
Complete the table:

Shape	Name	Edges	Faces
			
			
			

How can you make sure that you don't count the edges more than once?

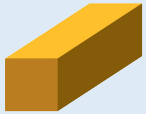
Activity 2 Count Edges on 3-D Shapes

Complete the table:

Shape	Name	Edges	Faces
	cube	12	6
	pyramid	8	5
	cuboid	12	6

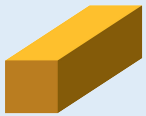
Activity 2 Count Edges on 3-D Shapes

Complete the table:

Shape	Name	Edges	Faces
			
			
			

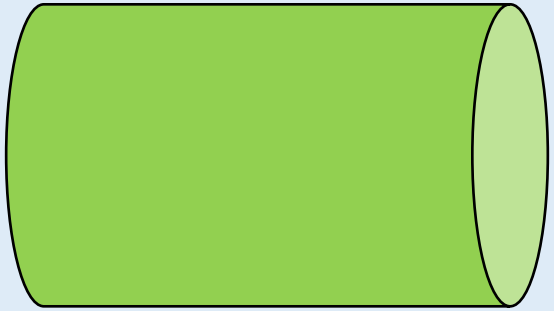
Activity 2 Count Edges on 3-D Shapes

Complete the table:

Shape	Name	Edges	Faces
	cone	0	1 / 1 curved face
	cylinder	0	2/ 1 curved face
	cuboid	12	6

Activity 3 Count Edges on 3-D Shapes

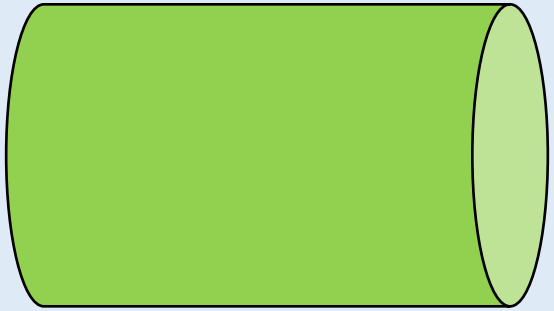
How many edges does this shape have?



What do you notice about the shapes with ___ edges?

Activity 3 Count Edges on 3-D Shapes

How many edges does this shape have?



A cylinder has no edges if we define an edge as a straight line.

Activity 3 Count Edges on 3-D Shapes

How many edges does this shape have?

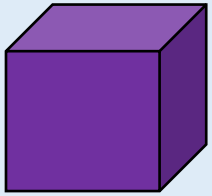
Activity 3 Count Edges on 3-D Shapes

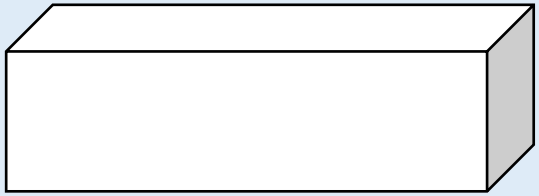
How many edges does this shape have?

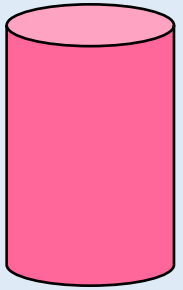
A cuboid has 12 edges.

Activity 4 Count Edges on 3-D Shapes

Sort your shapes depending on the number of edges and/or faces.

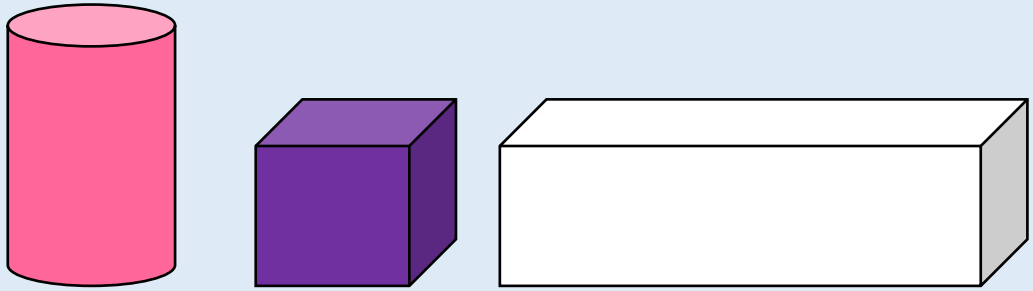






Activity 4 Count Edges on 3-D Shapes

Sort your shapes depending on the number of edges and/or faces.

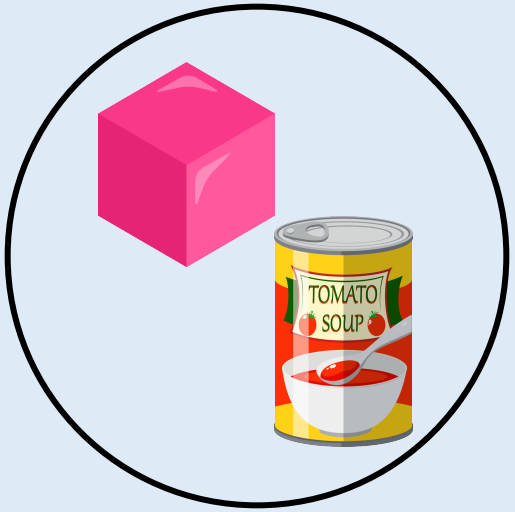


Smallest to largest number of edges.

Reasoning - 1 Count Edges on 3-D Shapes

Zach has sorted these shapes according to the number of edges.

1 edge



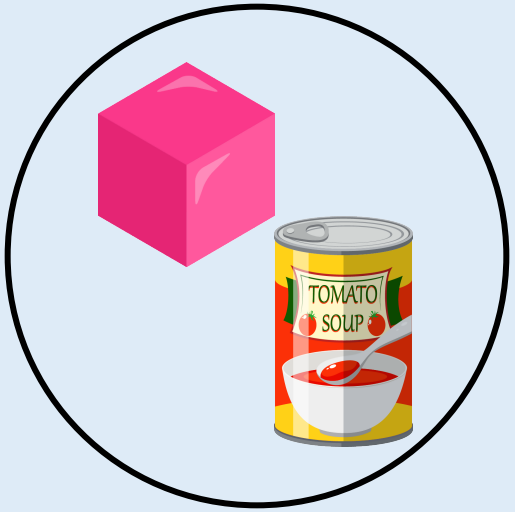
More than 1 edge

Which shape is in the wrong place?
Explain why.

Reasoning - 1 Count Edges on 3-D Shapes

Zach has sorted these shapes according to the number of edges.

1 edge



More than 1 edge

The sphere (basketball) is in the wrong place because it doesn't have any edges, it has one curved surface.

Reasoning - 2 Count Edges on 3-D Shapes

Esin

My 3-D shape has 6 edges.

She could have a cube, cuboid or square-based pyramid.

Leanna

Is Leanna correct?
Explain why.

Reasoning - 2 Count Edges on 3-D Shapes

Esin

My 3-D shape has 6 edges.

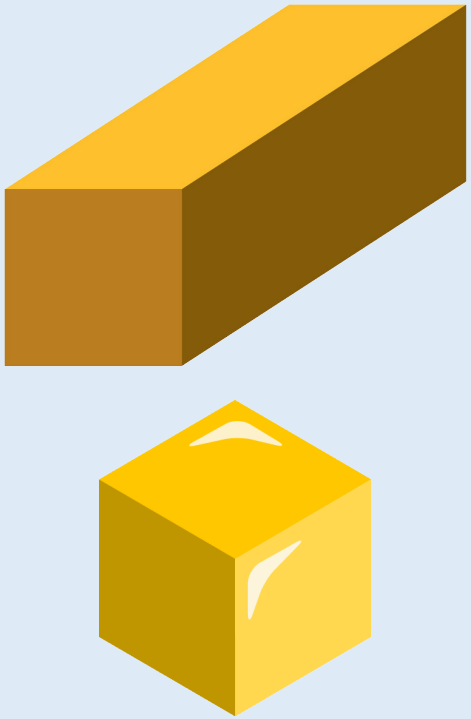
She could have a cube, cuboid or square-based pyramid.

Leanna

Leanna is not correct, because a square-based pyramid has 8 edges.

Reasoning - 3 Count Edges on 3-D Shapes

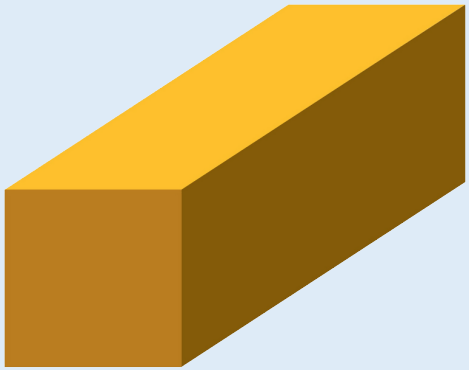
Compare these 3-D shapes.

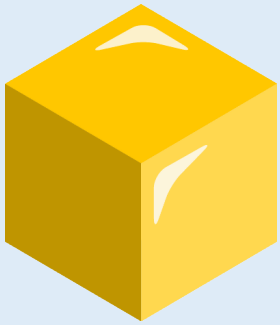


What is the same and what is different?

Reasoning - 3 Count Edges on 3-D Shapes

Compare these 3-D shapes.





Same – both have square faces, 6 faces, 12 edges, don't roll, can stack, no curved edges.

Different – name, size, one only has square faces the other has square and rectangles.

Discussion

Count Edges on 3-D Shapes

What do we mean by 'edge' of a shape?

How can you make sure that you don't count the edges more than once?

What do you notice about the shapes with ___ edges?

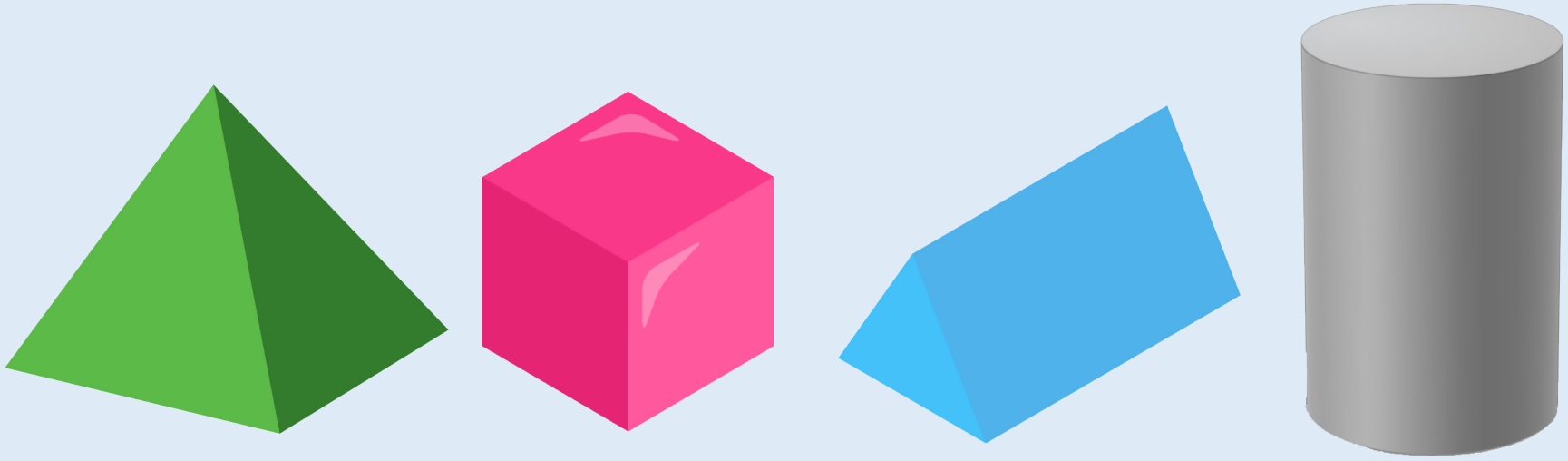
Count Vertices on 3-D Shapes

2

Fluency & Reasoning Teaching Slides

Activity 1 Count Vertices on 3-D Shapes

Look at these 3-D shapes:

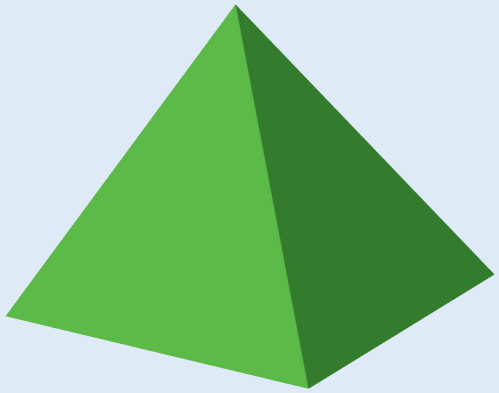


How many vertices does each shape have?

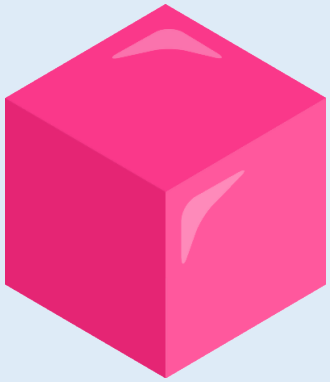
What is the difference between vertex and vertices?

Activity 1 Count Vertices on 3-D Shapes

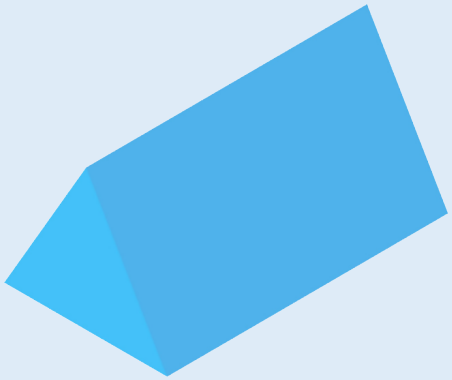
Look at these 3-D shapes:



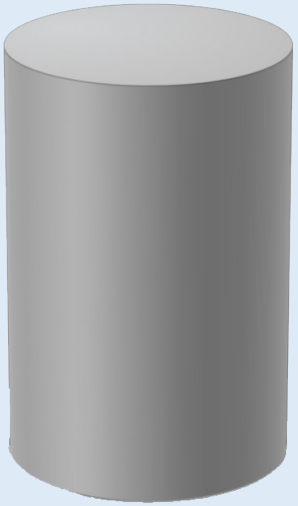
5 vertices



8 vertices



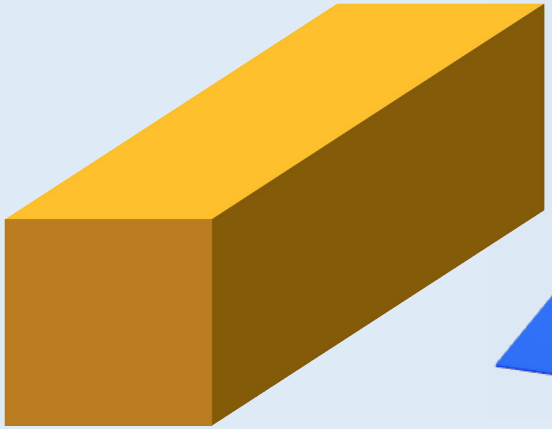
6 vertices

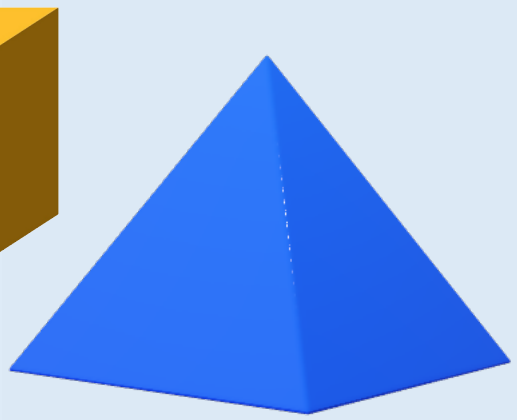


No vertex

Activity 1 Count Vertices on 3-D Shapes

Look at these 3-D shapes:



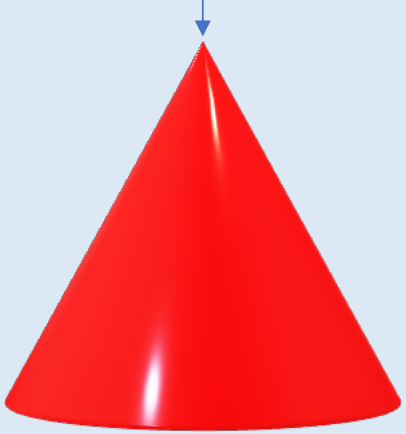


How many vertices does each shape have?

Activity 1 Count Vertices on 3-D Shapes

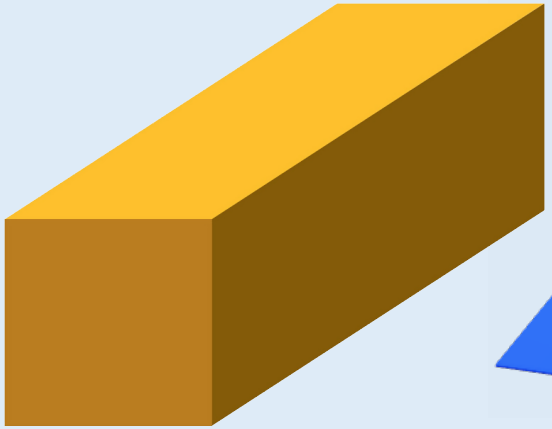
Look at these 3-D shapes:

We can also call the point an apex.

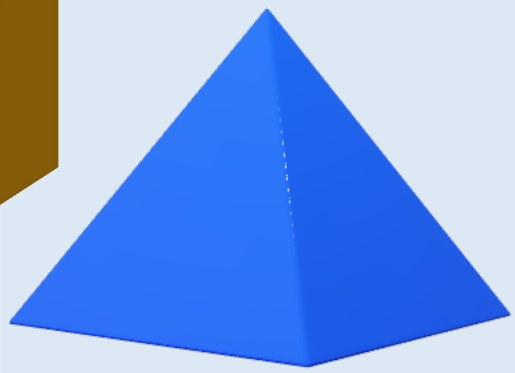


1 vertex

No vertex



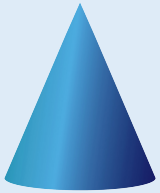
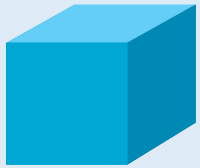
8 vertices



5 vertices

Activity 2 Count Vertices on 3-D Shapes

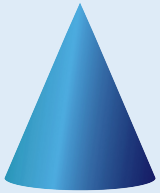
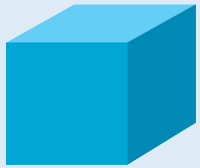
Complete the table:

Shape	Name	Faces	Edges	Vertices
				
				
				

How can you make sure that you don't count the vertices more than once?

Activity 2 Count Vertices on 3-D Shapes

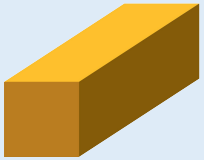
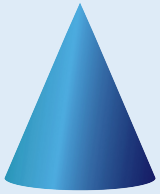
Complete the table:

Shape	Name	Faces	Edges	Vertices
	cone	1	0	1
	cube	6	12	8
	pyramid	5	8	5

Activity 2

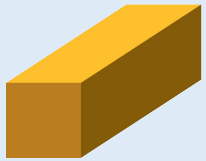
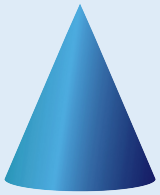
Count Vertices on 3-D Shapes

Complete the table:

Shape	Name	Faces	Edges	Vertices
				
				
				

Activity 2 Count Vertices on 3-D Shapes

Complete the table:

Shape	Name	Faces	Edges	Vertices
	cuboid	6	12	8
	cylinder	2	0	0
	cone	1	0	1

Activity 3

Count Vertices on 3-D Shapes

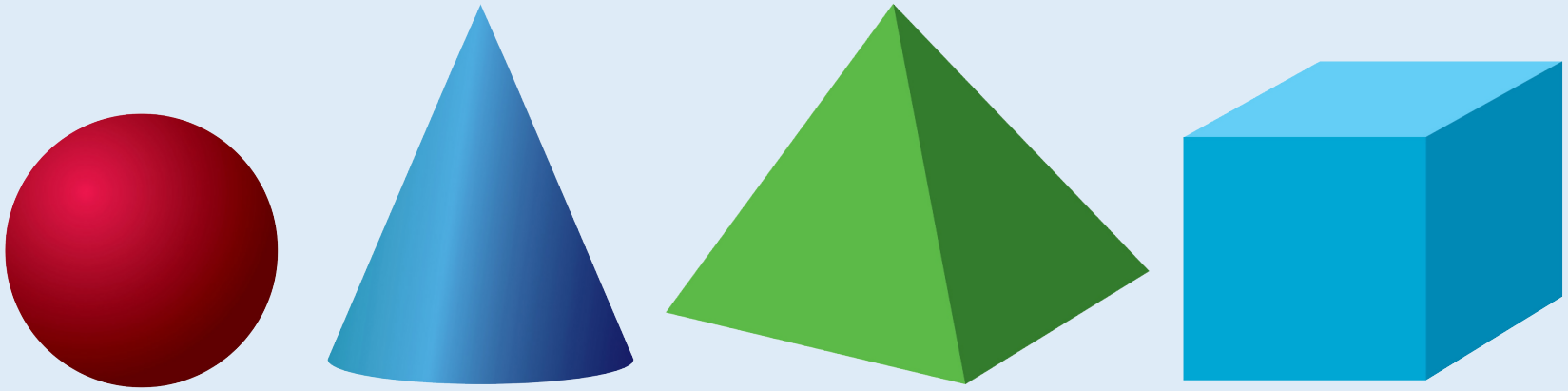
Place 3-D shapes in order starting with the shape with the fewest vertices.

How many edges meet to make a vertex on a 3-D shape?

Activity 3

Count Vertices on 3-D Shapes

Place 3-D shapes in order starting with the shape with the fewest vertices.



Activity 4

Count Vertices on 3-D Shapes

Zach has a shape with 8 vertices.
What 3-D shape could it be?

Activity 4

Count Vertices on 3-D Shapes

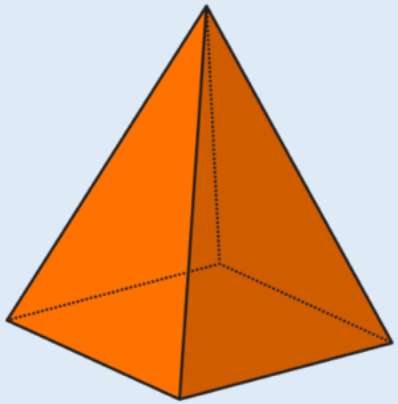
Zach has a shape with 8 vertices.
What 3-D shape could it be?

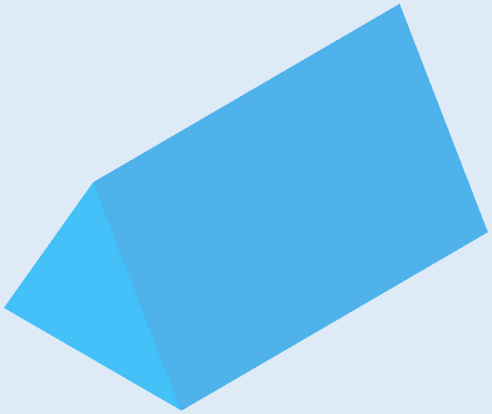
Zach could have a cube or a cuboid.

Reasoning - 1

Count Vertices on 3-D Shapes

What is the same about these 2 shapes?

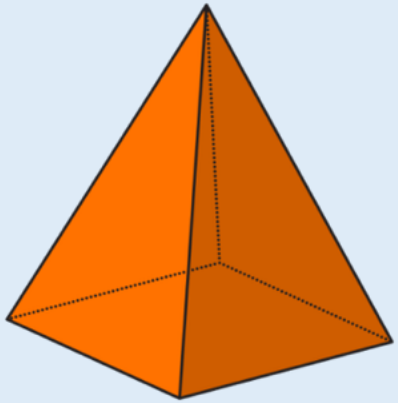


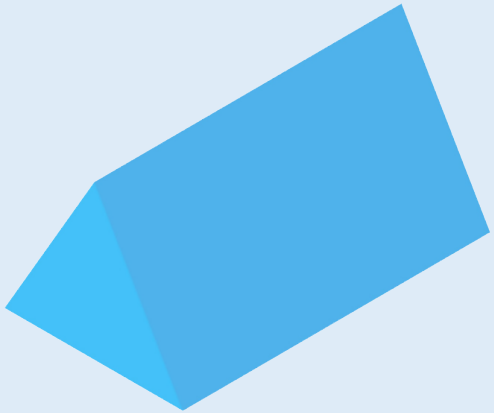


What is different about them?
Talk about faces, edges and vertices in your answer.

Reasoning - 1

Count Vertices on 3-D Shapes





What is the same about these 2 shapes?

Example answer:
Same – both have a triangular face, both have 5 faces.

Different – name, colour, size, one has 6 vertices the other has 5 vertices, one has a rectangular face, one has a square face.

Reasoning - 2

Count Vertices on 3-D Shapes

Tia

All 3-D shapes have at least one vertex.

Is this true or false?
Explain why.

Reasoning - 2

Count Vertices on 3-D Shapes

Tia

All 3-D shapes have at least one vertex.

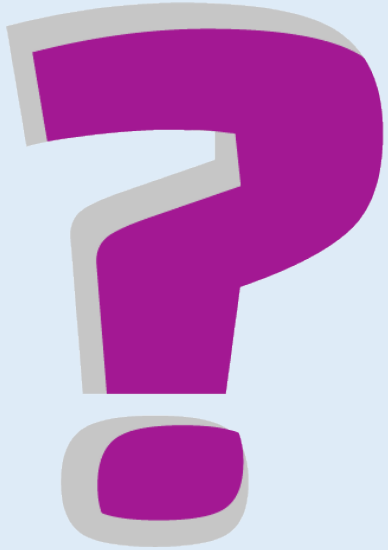
False. A sphere has no vertices.

Could also be an opportunity to talk about the words apex and vertex.

Reasoning - 3

Count Vertices on 3-D Shapes

Malachi has a shape with 5 vertices.



What 3-D shape could it be?

Reasoning - 3

Count Vertices on 3-D Shapes

Malachi has a shape with 5 vertices.

A pyramid.

Discussion

Count Vertices on 3-D Shapes

What is the difference between vertex and vertices?

How can you make sure that you don't count the vertices more than once?

How many edges meet to make a vertex on a 3-D shape?

How many sides meet to make a vertex on a 2-D shape?

Sort 3-D Shapes

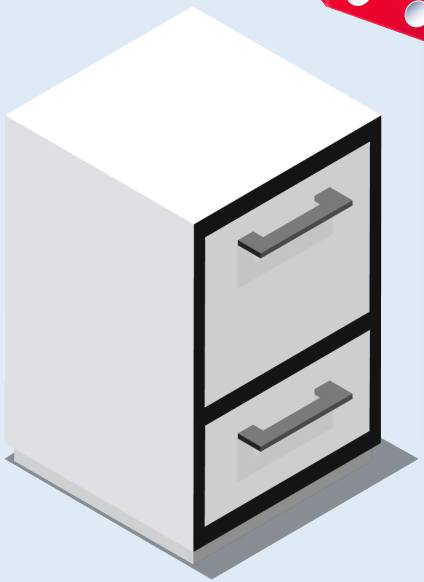
2

Fluency & Reasoning Teaching Slides

Activity 1 Sort 3-D Shapes

How could you sort these objects?
Can you find some other classroom objects to add to each set?



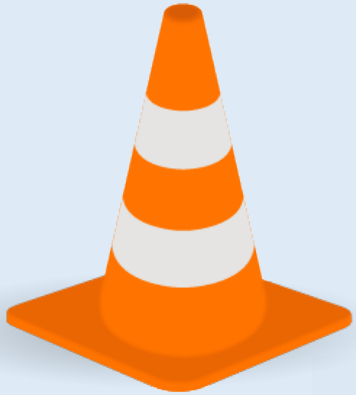
How have you sorted your shapes?

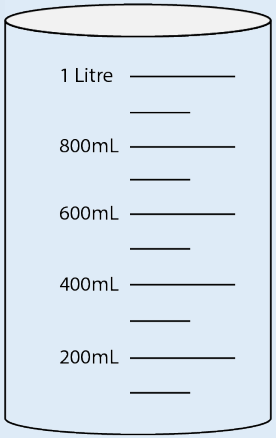
Activity 1 Sort 3-D Shapes

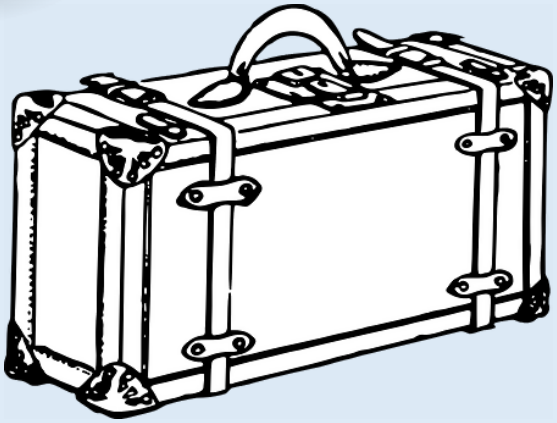
How could you sort these objects?
Can you find some other classroom objects to add to each set?

Activity 1 Sort 3-D Shapes

How could you sort these objects?
Can you find some other classroom objects to add to each set?

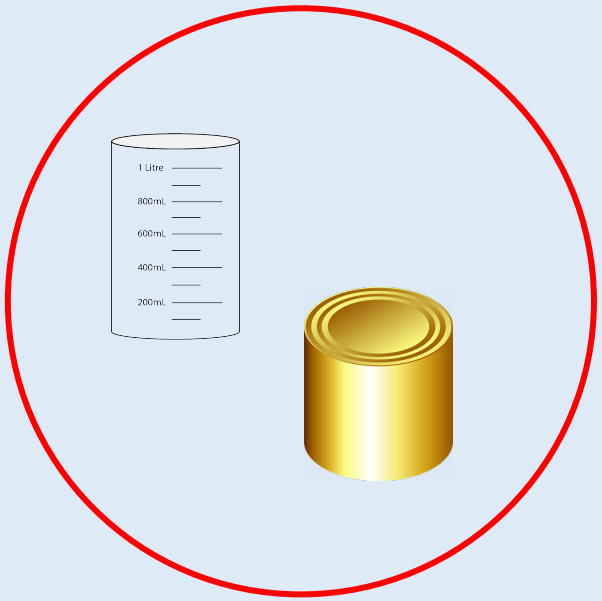


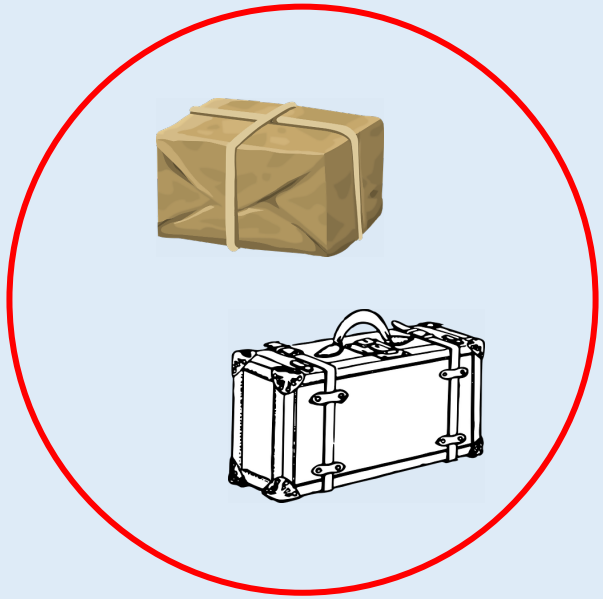


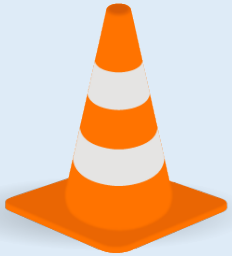


Activity 1 Sort 3-D Shapes

How could you sort these objects?
Can you find some other classroom objects to add to each set?

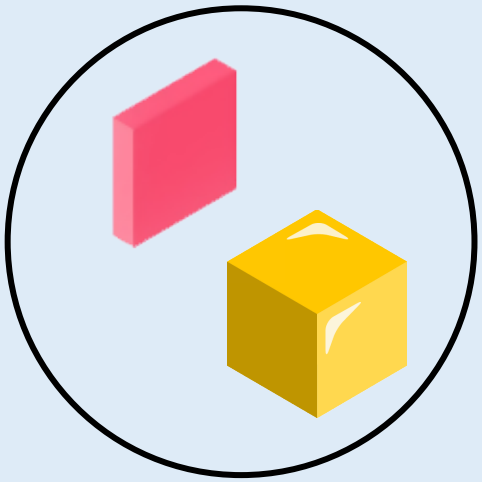


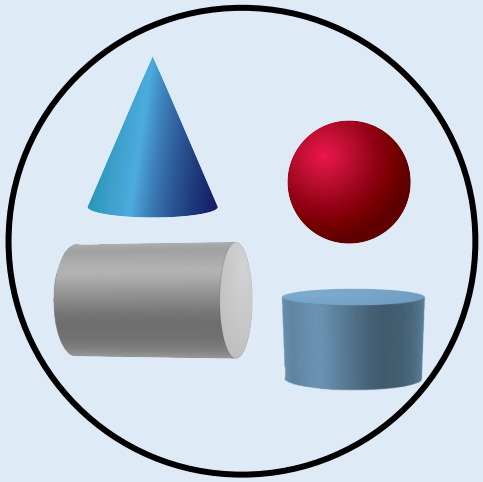




Activity 2 Sort 3-D Shapes

How have these shapes been grouped?
Could you group them in a different way?

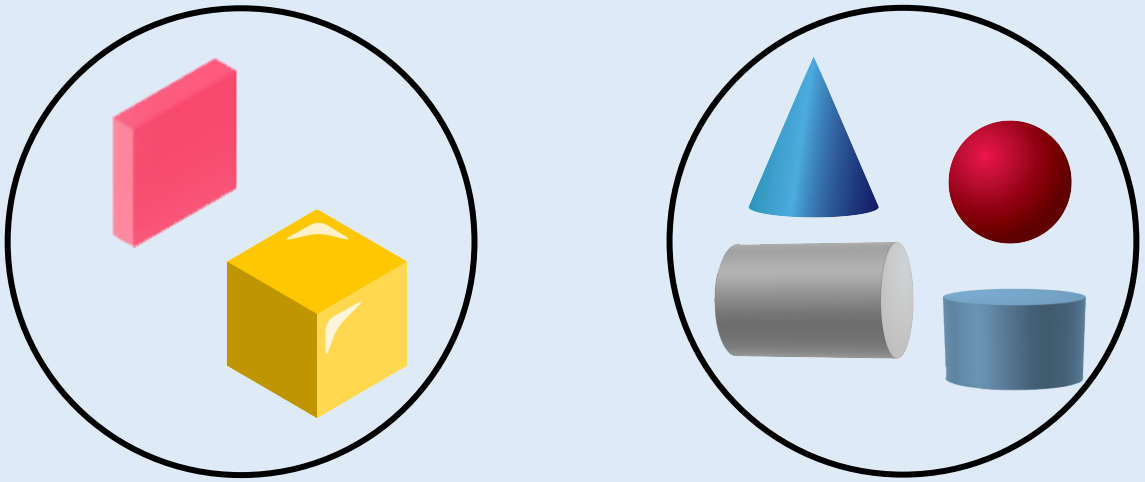




Can you sort your shapes in a different way?

Activity 2 Sort 3-D Shapes

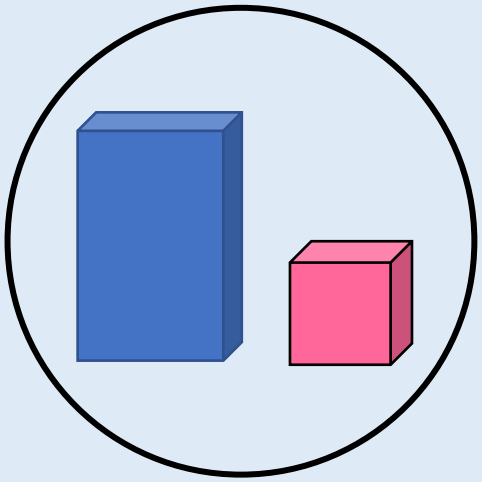
How have these shapes been grouped?
Could you group them in a different way?



These shapes were grouped according to the type of face- flat faces and curved faces.

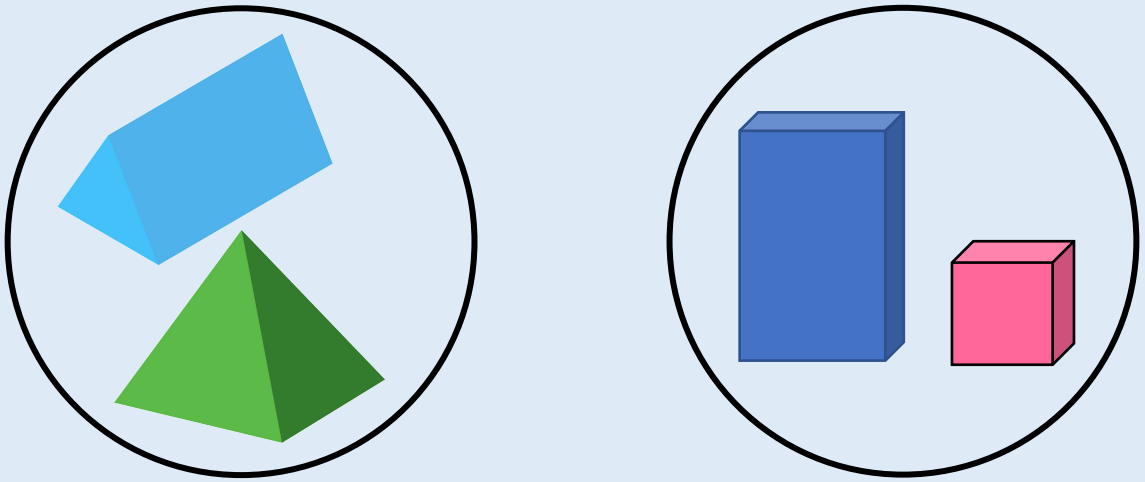
Activity 2 Sort 3-D Shapes

How have these shapes been grouped?
Could you group them in a different way?



Activity 2 Sort 3-D Shapes

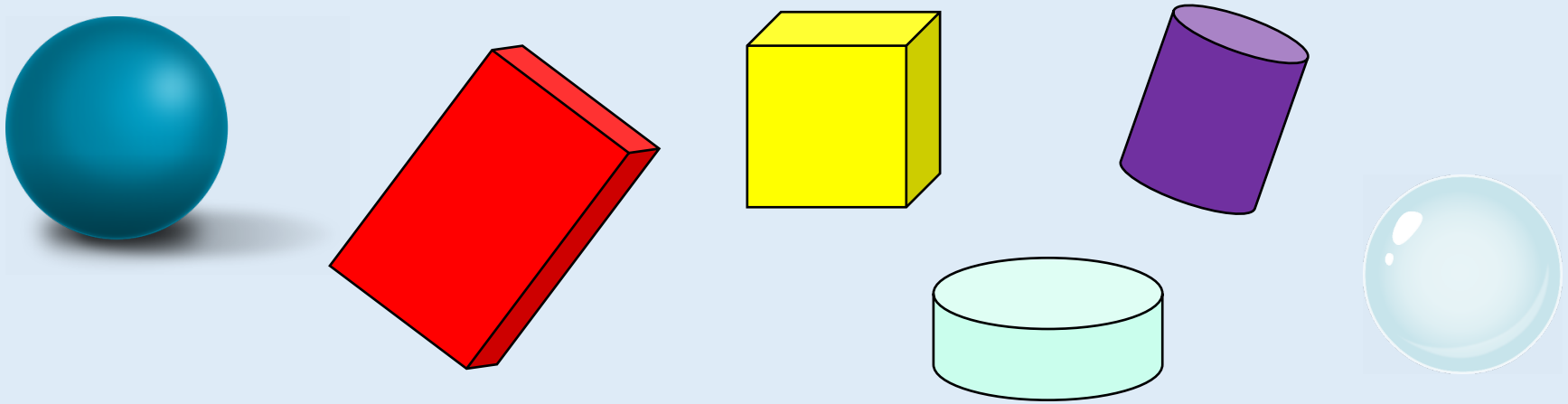
How have these shapes been grouped?
Could you group them in a different way?



These shapes were grouped according to the type of face.

Activity 3 Sort 3-D Shapes

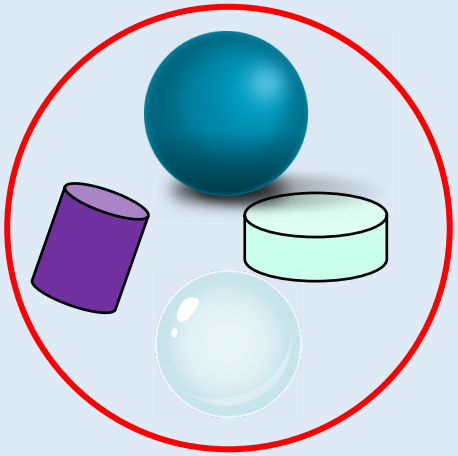
Sort the 3-D shapes on your table. Label the groups.
Can you find more than one way?
Remove the labels. Can someone guess how you sorted them?



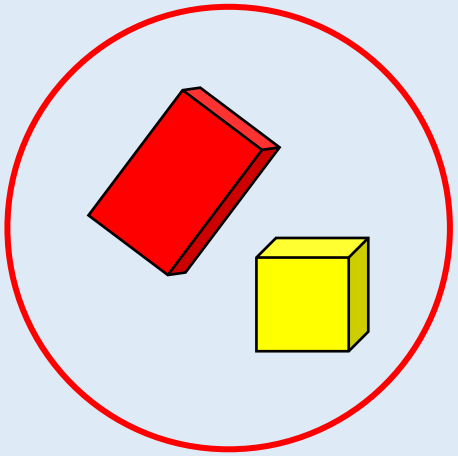
Can your friend guess how you have sorted them?

Activity 3 Sort 3-D Shapes

Sort the 3-D shapes on your table. Label the groups.
Can you find more than one way?
Remove the labels. Can someone guess how you sorted them?



No vertex



1 or more vertices

Reasoning - 1 Sort 3-D Shapes

Rosie is sorting 3-D shapes.
She puts a cube in the cuboid pile.

Rosie 

A cube is a type of cuboid.

Do you agree? Why?

Reasoning - 1 Sort 3-D Shapes

Rosie is sorting 3-D shapes.
She puts a cube in the cuboid pile.

Rosie 

A cube is a type of cuboid.

Rosie is right.

They both have 6 faces. They both have 12 edges.

A cube is a special kind of cuboid where all faces are squares.

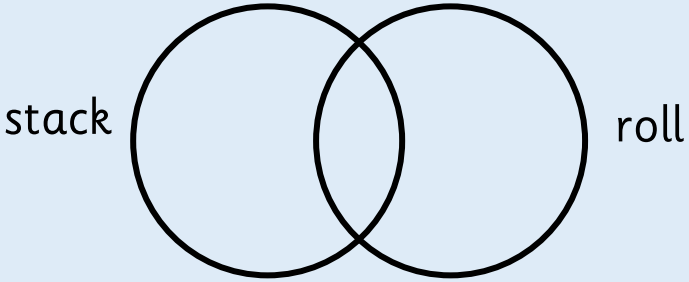
Reasoning - 2 Sort 3-D Shapes

Zach is investigating which shapes stack and which shapes roll.

Zach

Some shapes will roll **and** stack.

Is he correct?



Sort your shapes using the Venn diagram. Explain what you notice about each set. Do all shapes with flat surfaces stack?

Reasoning - 2 Sort 3-D Shapes

Zach is investigating which shapes stack and which shapes roll.

Some shapes with flat faces will stack – they will need to have flat faces on opposite sides.
(cubes, cylinders, cuboids)

Shapes with a curved surface will roll.
(cone, sphere, cylinder)

Some shapes with a flat face cannot be stacked
(square, based pyramid, cone)

Discussion

Sort 3-D Shapes

How have you sorted your shapes?

How do you know you have sorted your shapes correctly?

Which method have you used to sort your shapes?

Can you sort your shapes in a different way?

Can your friend guess how you have sorted them?

Can you group your solids by shape, type of faces and size?

Make Patterns with 3-D Shapes

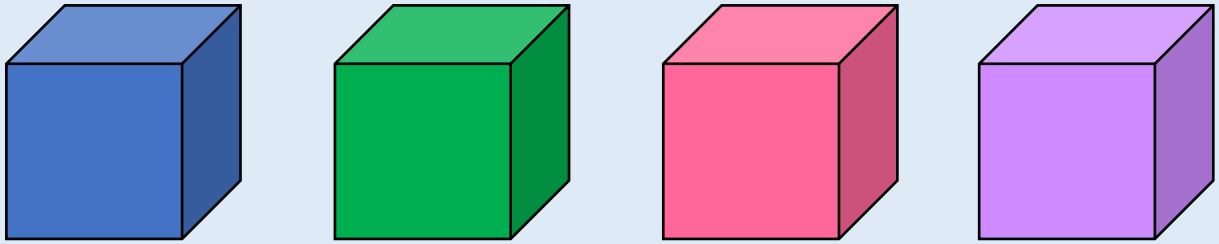
2

Fluency & Reasoning Teaching Slides

www.masterthecurriculum.co.uk

Activity 1 Make Patterns with 3-D Shapes

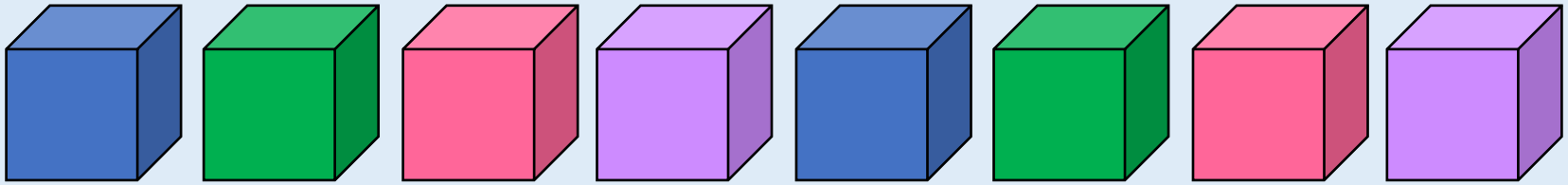
Use some different coloured cubes to make a repeating pattern.
Can you describe the pattern to your partner?
Using colours? Using letters? Using sounds?



Can you explain your pattern to a partner?

Activity 1 Make Patterns with 3-D Shapes

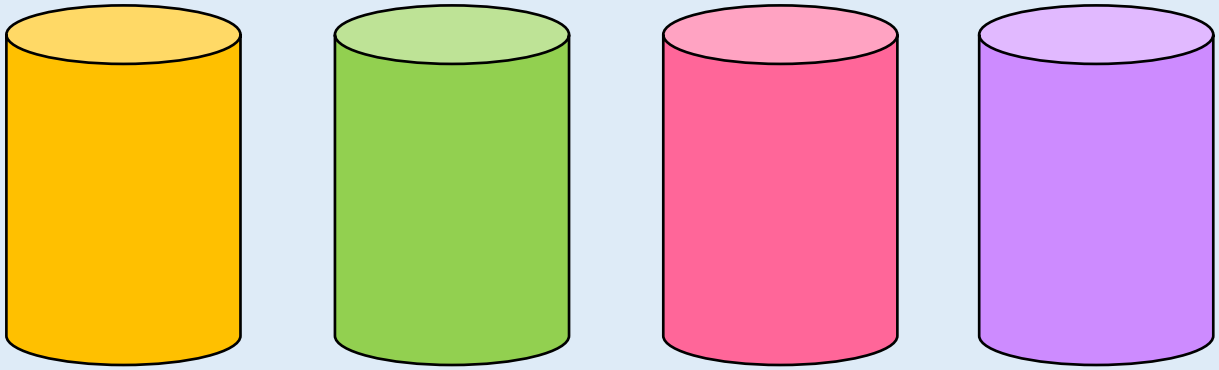
Use some different coloured cubes to make a repeating pattern.
Can you describe the pattern to your partner?
Using colours? Using letters? Using sounds?



Coloured cubes in a repeating pattern.

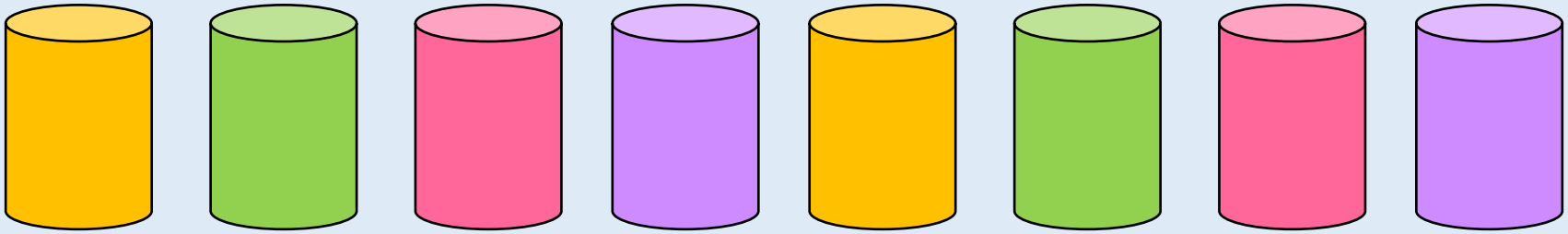
Activity 1 Make Patterns with 3-D Shapes

Use some different coloured cylinders to make a repeating pattern. Can you describe the pattern to your partner? Using colours? Using letters? Using sounds?



Activity 1 Make Patterns with 3-D Shapes

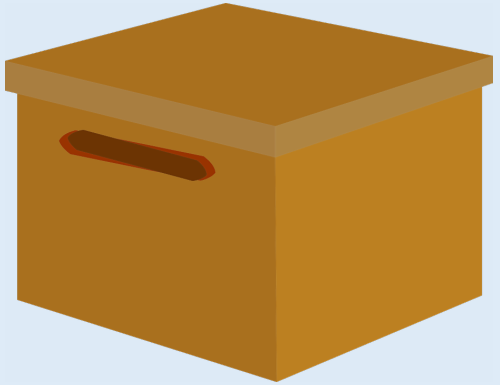
Use some different coloured cylinders to make a repeating pattern. Can you describe the pattern to your partner? Using colours? Using letters? Using sounds?



Coloured cylinders in a repeating pattern.

Activity 2 Make Patterns with 3-D Shapes

Make a sequence of 3-D shapes. Can you build a similar pattern with real life objects? You could use food cans, boxes, balls, or other things in your classroom. Describe the pattern.



Where can you see real life patterns with 3-D shapes?

Activity 2 Make Patterns with 3-D Shapes

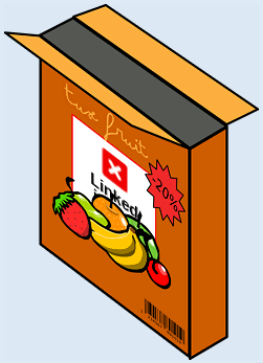
Make a sequence of 3-D shapes. Can you build a similar pattern with real life objects? You could use food cans, boxes, balls, or other things in your classroom. Describe the pattern.

Sequence by their vertices, edges and sides.

Activity 2

Make Patterns with 3-D Shapes

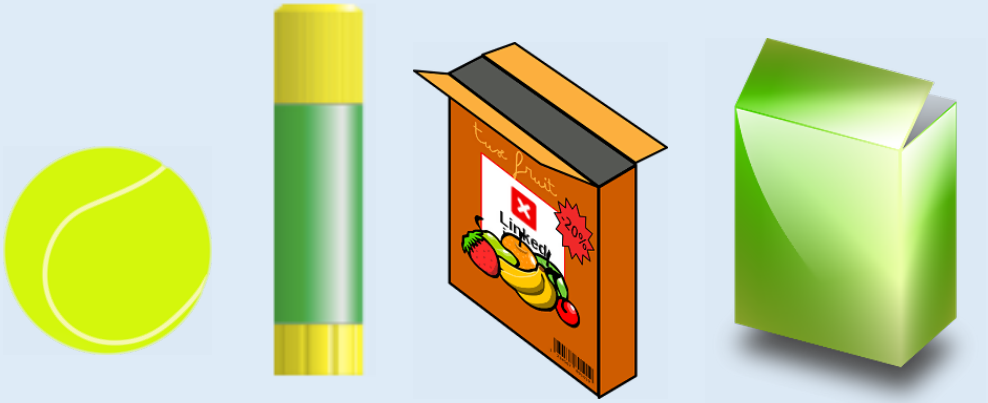
Make a sequence of 3-D shapes. Can you build a similar pattern with real life objects? You could use food cans, boxes, balls, or other things in your classroom. Describe the pattern.



Activity 2

Make Patterns with 3-D Shapes

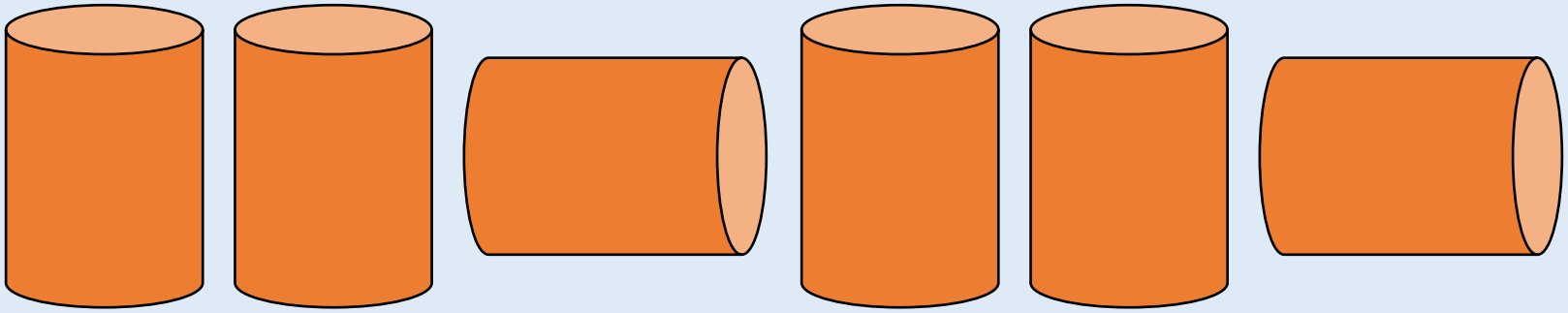
Make a sequence of 3-D shapes. Can you build a similar pattern with real life objects? You could use food cans, boxes, balls, or other things in your classroom. Describe the pattern.



Activity 3

Make Patterns with 3-D Shapes

How many times does the pattern repeat?
What will the 10th cylinder look like?

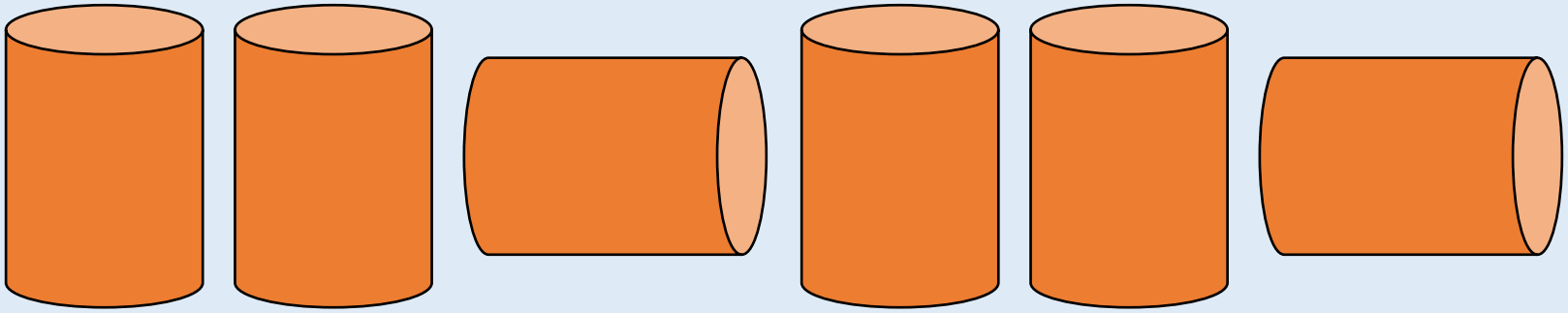


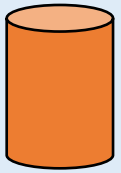
Does the shape always have to be a certain way up?

Activity 3

Make Patterns with 3-D Shapes

How many times does the pattern repeat?
What will the 10th cylinder look like?

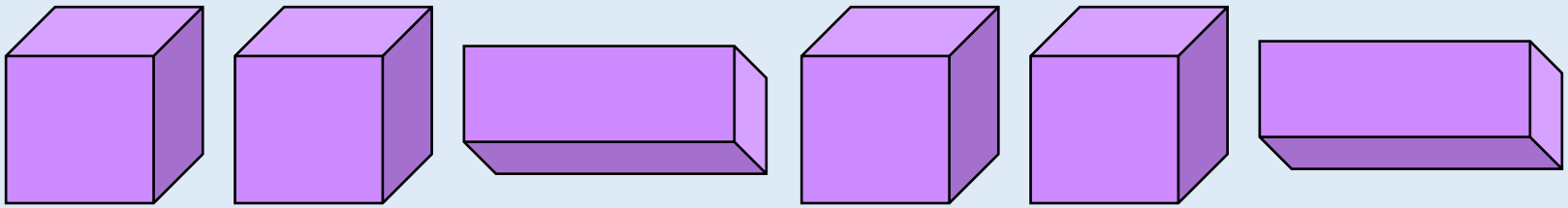


The pattern repeats twice. The 10th cylinder will look like 

Activity 3

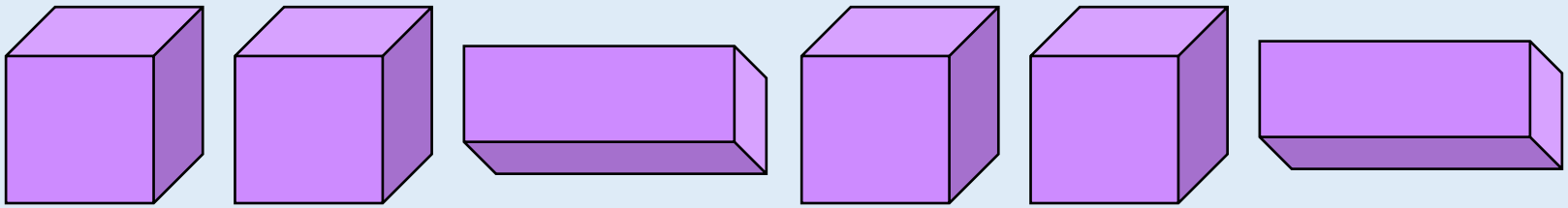
Make Patterns with 3-D Shapes

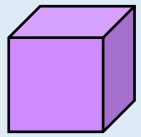
How many times does the pattern repeat?
What will the 8th cuboid look like?



Activity 3 Make Patterns with 3-D Shapes

How many times does the pattern repeat?
What will the 8th cuboid look like?

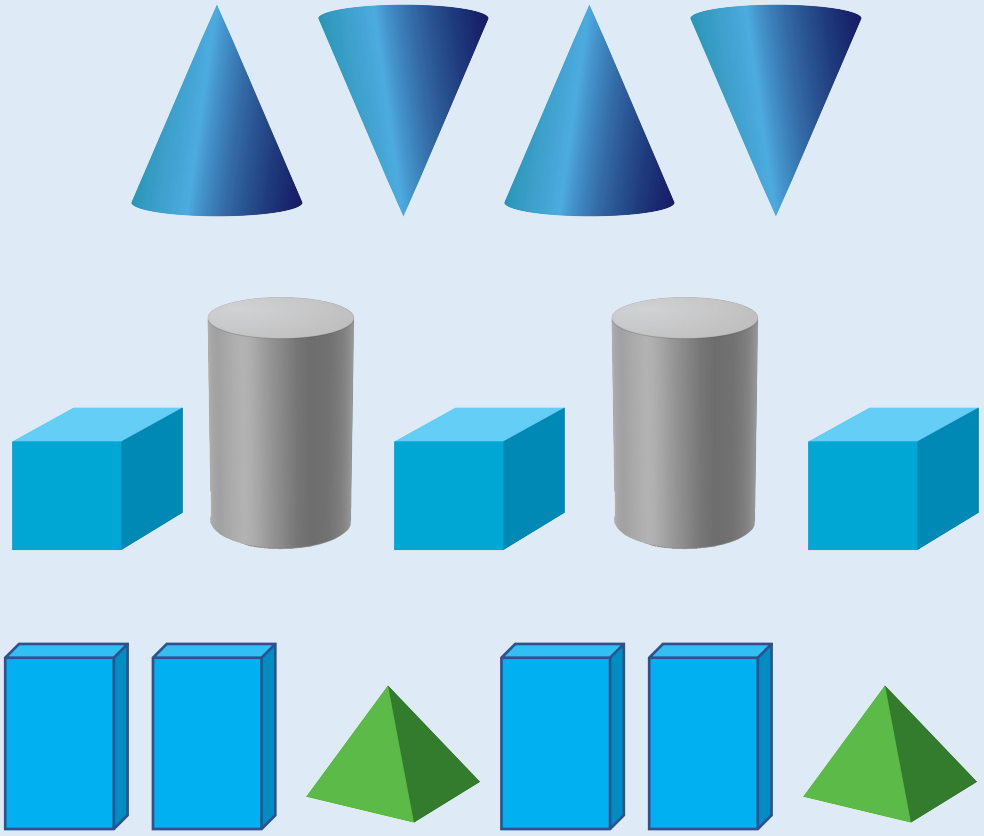


The pattern repeats twice. The 8th cuboid will look like 

Reasoning - 1

Make Patterns with 3-D Shapes

What is the same about these patterns?
What is different about these patterns?



Reasoning - 1 Make Patterns with 3-D Shapes

What is the same about these patterns?
What is different about these patterns?

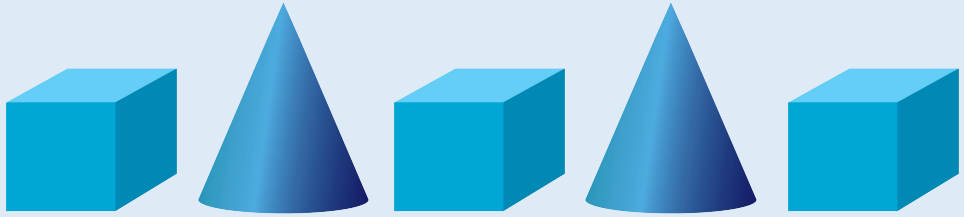
The second and third patterns use two shapes.

Colour is a difference to note.

In the 1st pattern, one shape is used in different orientations.
In 3rd pattern, the shape is used twice each time.

Reasoning - 2 Make Patterns with 3-D Shapes

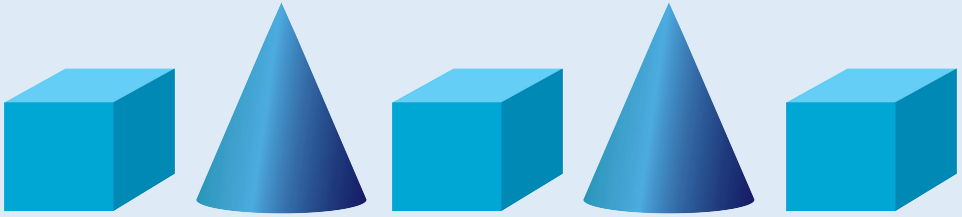
Choose two 3-D shapes.



What different repeating patterns could be made?

Reasoning - 2 Make Patterns with 3-D Shapes

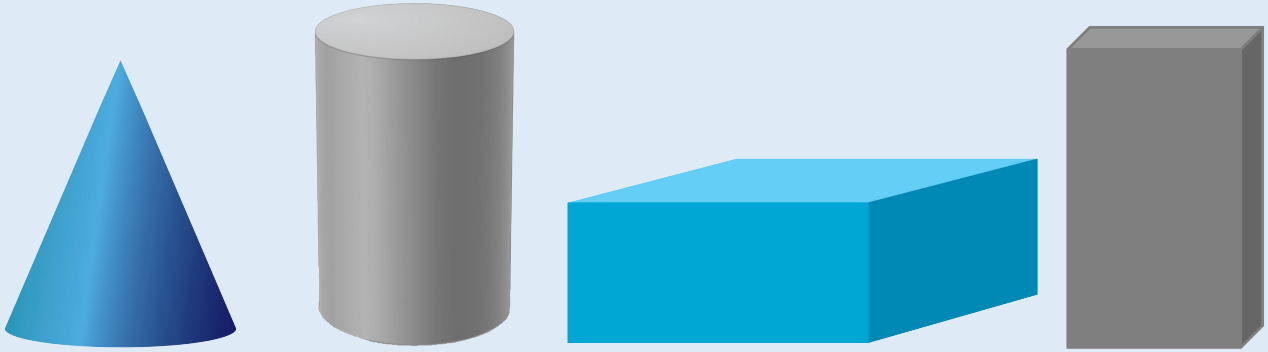
Choose two 3-D shapes.



Possible answer:
Cone, cube, cone, cube ...
Cone, cone, cube, ...

Reasoning - 3 Make Patterns with 3-D Shapes

Using the 3-D shapes:

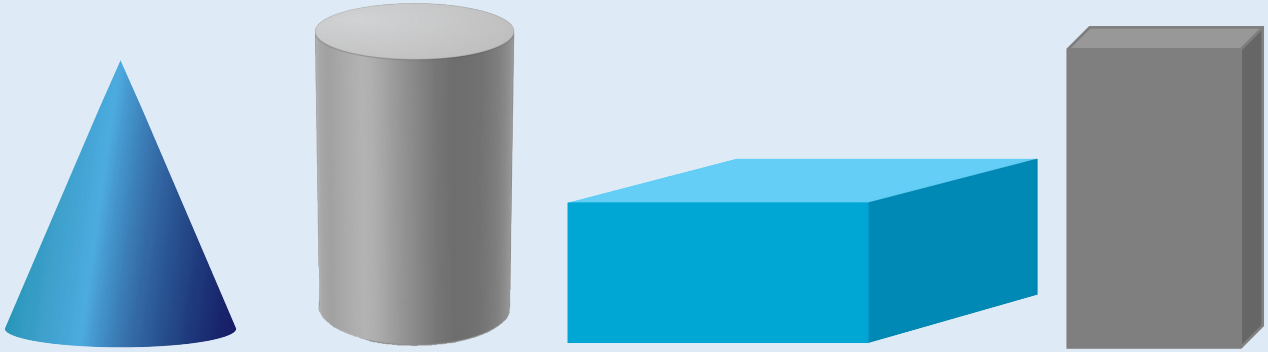


Make a repeating pattern where there are more cuboids than cones.

Make a repeating pattern where the third shape is always a cone.

Reasoning - 3 Make Patterns with 3-D Shapes

Using the 3-D shapes:



Answer will depend on the shapes used.

Discussion

Make Patterns with 3-D Shapes

Where can you see real life patterns with 3-D shapes?

Can you explain your pattern to a partner?

Does the shape always have to be a certain way up?

Can you work out what shape would be the ___th?