

## Count Sides on 2D Shapes

### Adult Guidance with Question Prompts



Children count the sides on 2D shapes. They could mark each side as they go to make sure they don't count the same side twice. This activity includes some 2D shapes children may not have seen before. They do not need to be able to name these shapes, just count the sides. Children will need a selection of colouring pencils for this activity.

**Are these 2D or 3D shapes?**

**Explain what a side is.**

**Can you point to one?**

**Can you point to a shape with four sides?**

**How many shapes have one side?**

**Are there any shapes you don't know the name of?**

**How many sides do those shapes have?**

**Can you draw a shape with one/three/four/five sides that's different to these ones?**

## Count Sides on 2D Shapes



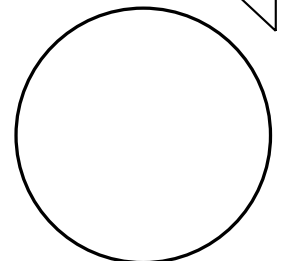
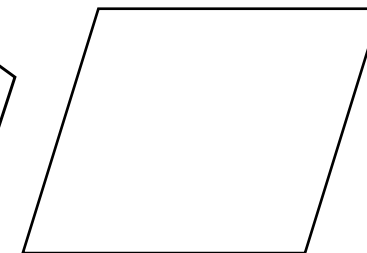
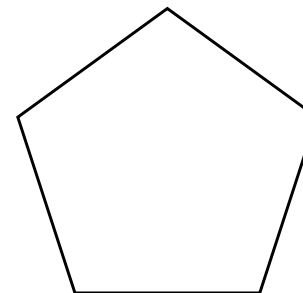
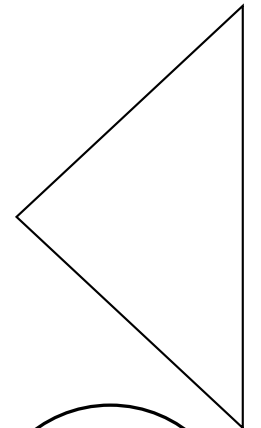
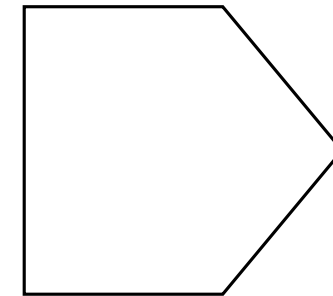
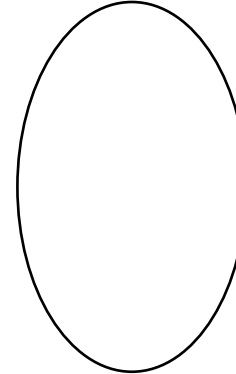
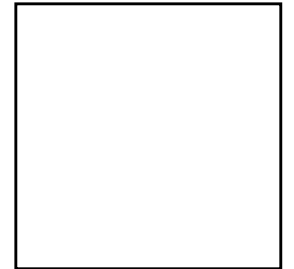
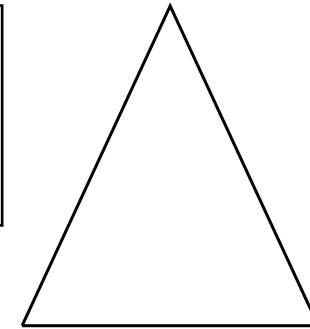
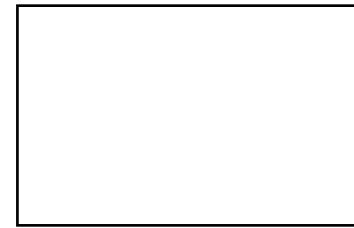
Colour each of these labels with different colours and then colour the shapes to match.

1 side

3 sides

4 sides

5 sides



## Count Sides on 2D Shapes Title of Card

### Adult Guidance with Question Prompts



This activity addresses common misconceptions with 2D shapes. Children often say a circle has no sides because the side is curved and they are used to seeing straight sides. Children should be aware that there are many different four sided shapes; these can be given the general name 'quadrilaterals'. Children should understand that a square is a type of rectangle because it has four right angles and its opposite sides are of equal length.

Can you draw me a circle or point to one in the room?

Tell me about it.

Does it have any sides?

How many?

What is the side like?

What words describe it?

Could a shape with zero sides exist?

What do you know about rectangles?

How many sides do they have?

What do we know about the opposite sides of a rectangle?

Which of these shapes have opposite sides of equal length?

Is it a rectangle if both pairs of opposite sides are the same as each other?

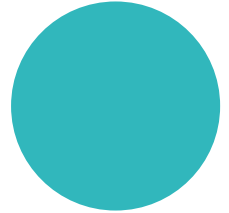
## Count Sides on 2D Shapes



Evan says,



A circle has zero sides.



These shapes all have 4 sides so they must all be rectangles.



Is he correct? Convince me!

## Count Sides on 2D Shapes

### Adult Guidance with Question Prompts



This investigation can be done individually, in pairs or small groups. Each child, pair or group will need ten straws of the same length. Children make different shapes by arranging straws in different ways. They can put two or more straws end to end to make longer sides. Photos could be used to record the different shapes children make or they could have a go at drawing the shapes they have made using a ruler to get the sides straight and squared paper.

Can you make a shape with one side?

How about two sides?

Why not?

Can you make different sized triangles? How many?

Show me what four sided shapes you can make?

Can you name any of them?

Can you make shapes with five/six/seven etc. sides?

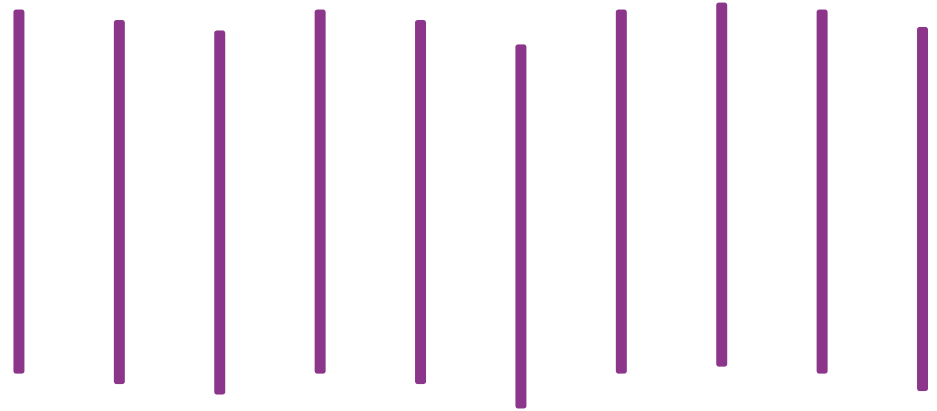
Show me a shape using all the straws.

Compare your shapes to a friend's, are theirs the same or different?

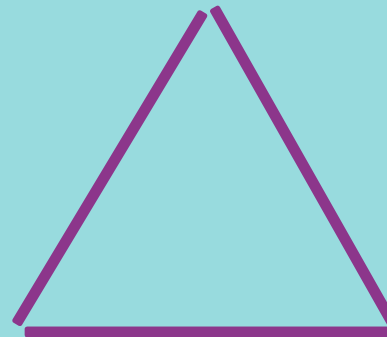
## Count Sides on 2D Shapes



Using 10 straws, how many different 2D shapes can you make?



For example:



Can you make a circle?

Can you make a 2D shape with two straws?

How many different 4 sided shapes can you make?

Can you make a shape using all the straws?

## Count Vertices on 2D Shapes

### Adult Guidance with Question Prompts



Children begin to refer to corners as vertices. They know that a vertex is where two sides meet at a point. Children are able to count the vertices on a 2D shape. They could mark or circle each vertex as they count to make sure they don't count the same one twice.

Can you read these shape names?

What is a vertex?

Can you point to a vertex?

How many vertices do each of these shapes have?

How can you make sure you don't count the same one twice?

What can you tell me about this shape?





Are any of these shapes similar? How?

How are they different?

## Count Vertices on 2D Shapes



Count the vertices and complete the table.

Shape	Name	Number of Vertices
	square	_____
	triangle	_____
	pentagon	_____
	hexagon	_____
	rectangle	_____

## Count Vertices on 2D Shapes

### Adult Guidance with Question Prompts



Children count the vertices on each shape to find the odd one out in each row. They could mark or circle each vertex as they count to make sure they don't count the same one twice.

How many vertices do each of these shapes have?

I think that the ones in the first row all have four vertices. Am I correct?

Which is the odd one out? Why do you think that?

How many vertices does a circle/oval have?

In the second row, why have you chosen that shape as the odd one out?

What is the name of a shape with six sides?

Does a six-sided shape always have six vertices?

Do all six-sided shapes look the same?

What is the word that we can use to describe all four-sided shapes?

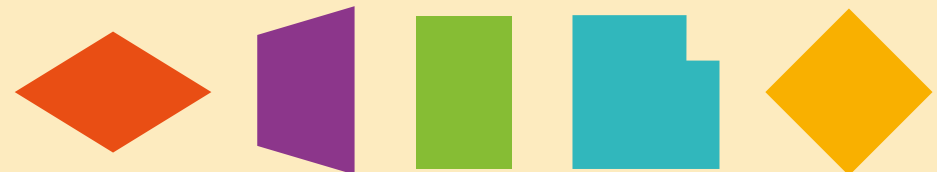
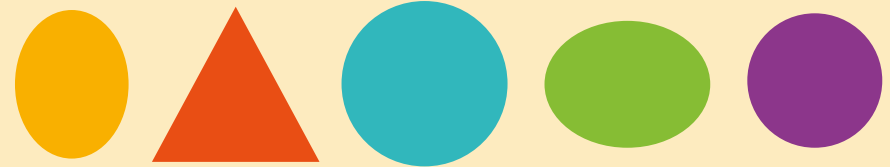
Do all quadrilaterals have four vertices?

Are these all quadrilaterals?

## Count Vertices on 2D Shapes



In each row, count the vertices on each shape and circle the odd one out. Explain your answers.



## Count Vertices on 2D Shapes

### Adult Guidance with Question Prompts



Children will need a paper right-angled triangle and a pair of scissors. It is very important that children know that 2D shapes are flat, and that the shapes they will make in the activity are representations of 2D shapes.

What shape is this?

Is your paper shape really a 2D shape? Why not?

How many vertices does your shape have?

When you cut it in half, what two shapes does it make (representations of)?

Can you put the two shapes together in different ways to make other shapes?

Do you think the other shapes you make will also have three vertices each?

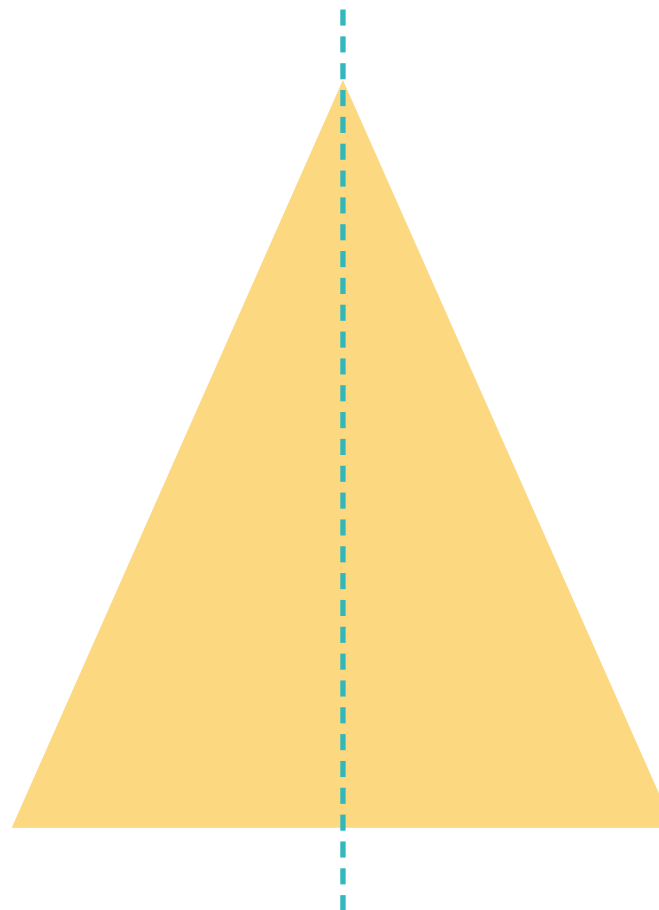
How many vertices do these new shapes have?

Can you name some of the new shapes that you make?

## Count Vertices on 2D Shapes



Cut a paper triangle in half. Put the parts back together to make different shapes.



What different shapes can you make?

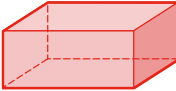

How many vertices does each shape have?

# 3-D Shapes

PS Problem-solving questions

## Challenge 1

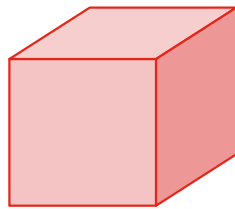
PS 1 Complete this table. Put a ✓ if the property is correct and a ✗ if it is not correct.

Shape	Has Six Faces	Has Circular Faces
cuboid 		
cylinder 		

  
4 marks

2 **Vertices** are where two edges meet to make a corner.

a) Mark the **vertices** you can see on this cube.



b) How many edges does the cube have in total?  
\_\_\_\_\_ edges

c) How many corners does the cube have in total?  
\_\_\_\_\_ corners

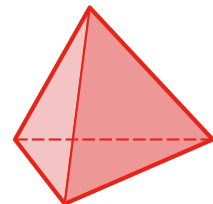
  
3 marks

Marks..... /7

## Challenge 2

1 This 3-D shape is a pyramid. Write two properties that describe it.

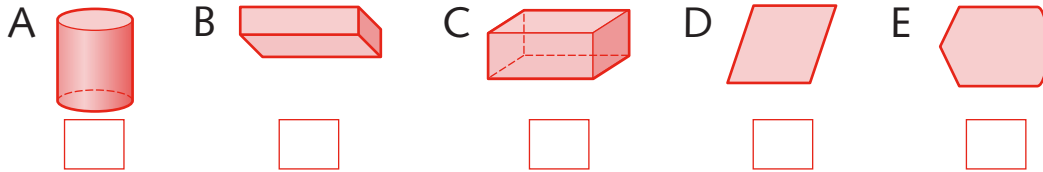
\_\_\_\_\_ and \_\_\_\_\_



  
2 marks

# 3-D Shapes

**2** Tick the shapes that are cuboids.



2 marks

Marks..... /4

## Challenge 3

**PS** **1** Write the name of the 3-D shape.

a) I have no corners or flat faces.

I am a \_\_\_\_\_.

b) I have a square base and four triangular faces. I am

a \_\_\_\_\_.

c) I have a pointed top and a

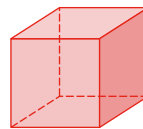
circular face. I am a \_\_\_\_\_.

d) I have six rectangular faces. I am not a cube.

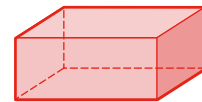
I am a \_\_\_\_\_.

e) I have no right-angle corners. I have two circular faces.

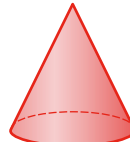
I am a \_\_\_\_\_.



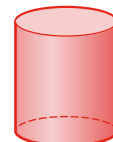
cube



cuboid



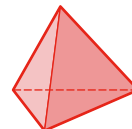
cone



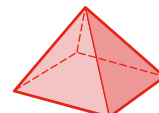
cylinder



sphere



triangular-based pyramid



square-based pyramid



5 marks

Marks..... /5

Total marks ..... /16

How am I doing?





## Count Edges on 3D Shapes

### Adult Guidance with Question Prompts



Children know an edge is where two flat faces meet or where a flat face meets a curved surface. Children will need to keep track of which edges they have counted, perhaps by marking them with a whiteboard pen. Children will need a selection of 3D shapes to handle for this activity (not necessarily matching the ones pictured).

**What is an edge?**

**Can an edge be curved?**

**Show me an example of a straight edge/curved edge.**

**How can you count the edges accurately?**

**How can we make sure we don't count the same one twice?**

**How many edges does this shape have?**

**What is the name of the shape?**

**Are there any shapes with no edges?**

**Why?**

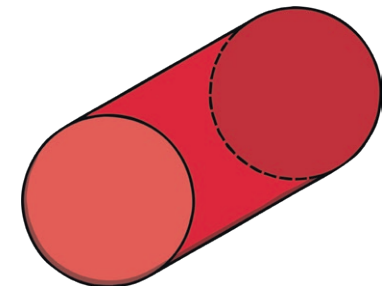
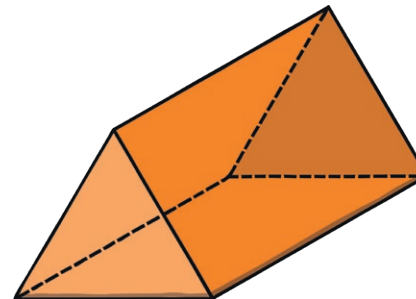
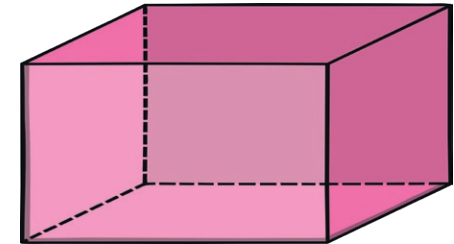
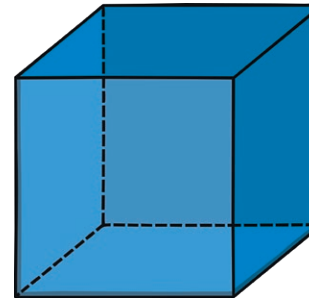
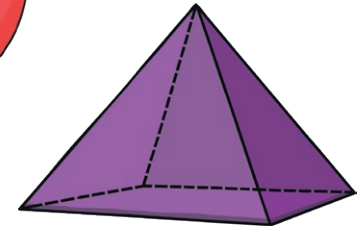
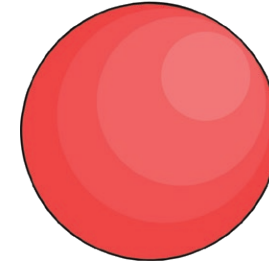
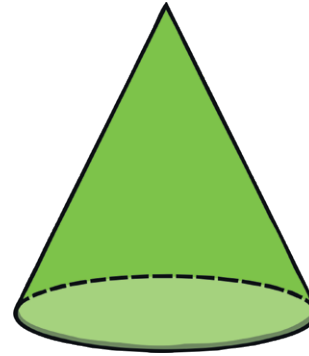
**Shapes with one face will have no edges, true or false? Explain.**

**A cone has no edges, true or false? Explain.**

## Count Edges on 3D Shapes



Investigate 3D shapes. How many edges do they have?



## Count Edges on 3D Shapes

### Adult Guidance with Question Prompts



Children read clues about the edges of shapes and try to match them to the options. Some of the clues could describe more than one shape. It would be ideal to have these four shapes for children to look at and count during this activity.

Which shapes are the children describing?

Is there one with only one edge?

How would you describe the edge of that shape?

Is there a shape with 12 edges?

Is there another shape that could fit that clue?

Which shape has no edges?

Which shapes have only straight edges?

Is there another shape that could fit that clue?

Can you write your own clues for some other 3D shapes?

## Count Edges on 3D Shapes



These four children are describing a chosen shape.

It has one edge that is not straight.

It has 12 edges.

It has no edges.

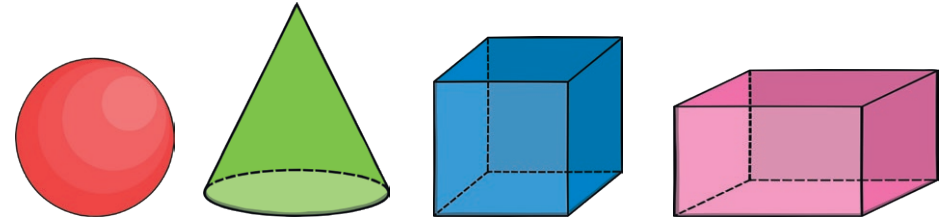
All the edges are straight.

Amna

Ben

Alex

Shan



Match the children to the shape they are describing.

Is there more than one possible answer? Why?

## Count Edges on 3D Shapes

### Adult Guidance with Question Prompts



Children count the number of edges on 3D shapes and order them starting either with the fewest or most edges. Children will benefit from having these shapes to handle in this activity, as well as a selection of others with different numbers of edges.

How many edges do each of these shapes have?

Will you order them starting from the fewest edges or the most edges?

Which will come first, second, etc?

I think the triangular prism will come last, am I right? Why/why not?

What shape could come next in your sequence after these four?

Why?

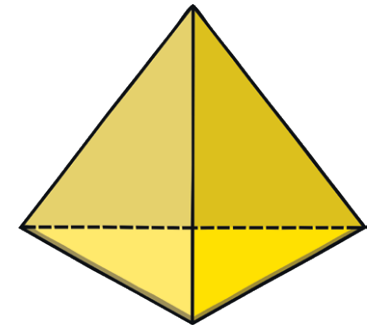
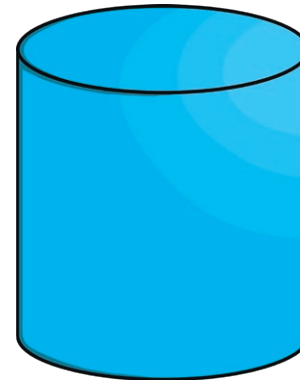
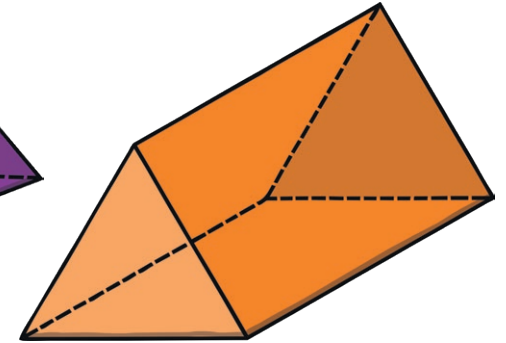
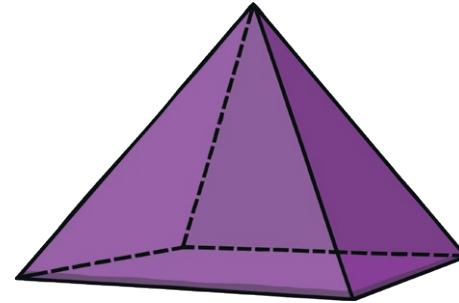
Can you name all these shapes?

A shape always has more edges than faces, true or false? Explain your answer.

## Count Edges on 3D Shapes



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



What could the next shape in the sequence be?