Ready-to-go Lesson Slides
Year 2

Please note:
3-D shapes would be useful for this lesson.

Geometry: Properties of Shapes
Lesson 10

Spr3

At Third Space Learning we provide personalised online lessons from specialist maths tutors to support the target groups in your school.

These ready-to-go slides are designed to work alongside our interventions to supplement quality first teaching and raise attainment in maths for all pupils.

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Boosting maths progress through 1-to-1 conversations…

THIRD SPACE LEARNING

To count vertices on 3-D shapes

Success Criteria:

- ❑ I can find and count vertices on 3D shapes
- ❑ I know that the point of a cone can be called an apex or a vertex

Starter:

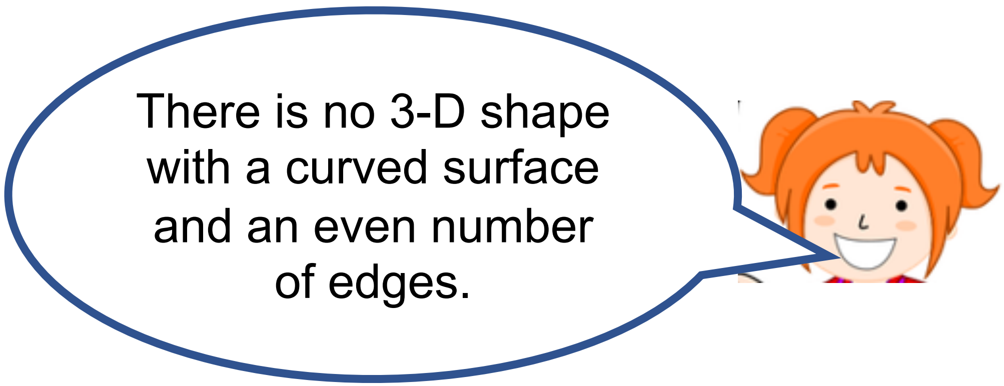
Do you agree with Violet?
Why?
Why not?
Can you explain your thinking?

There is no 3-D shape with a curved surface and an even number of edges.

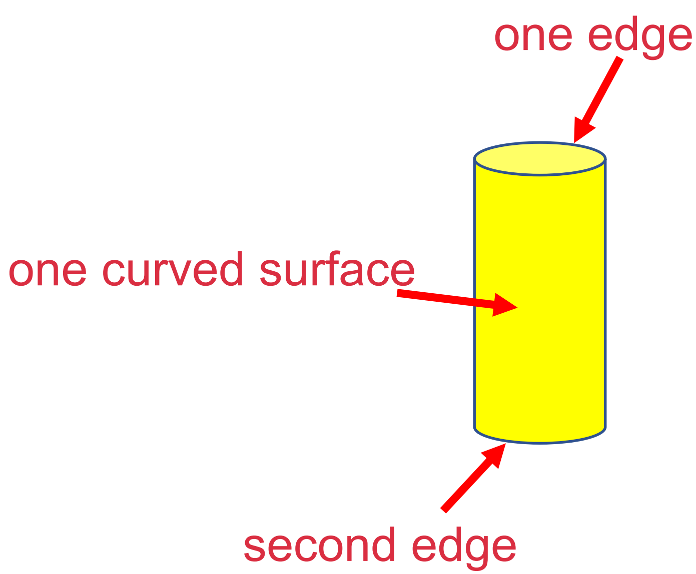
To count vertices on 3-D shapes

Starter:

Do you agree with Violet?
Why?
Why not?
Can you explain your thinking?



Violet is not correct.
The cylinder has a curved surface and two edges.



To count vertices on 3-D shapes

Talking Time:

Here is a cuboid.
How many vertices does this shape have?

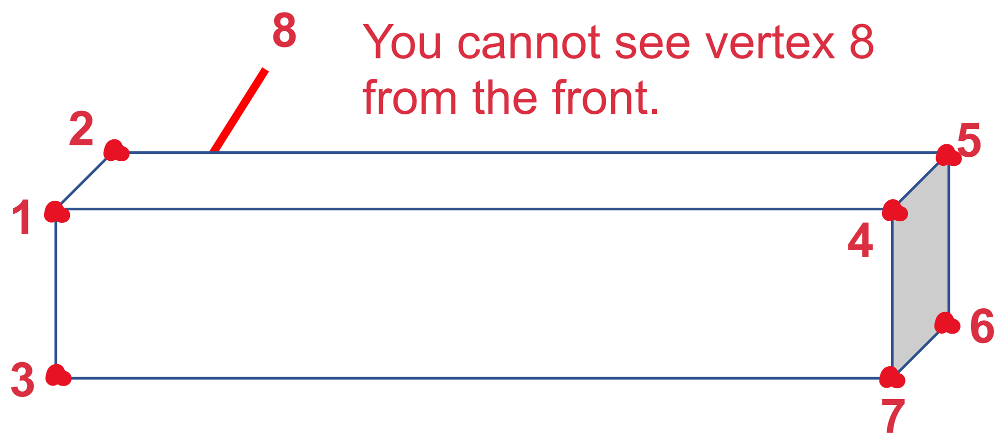
How could you make sure that you do not miss any when you count them?

To count vertices on 3-D shapes

Talking Time:

Here is a cuboid.
How many vertices does this shape have?
The cuboid has 8 vertices altogether.

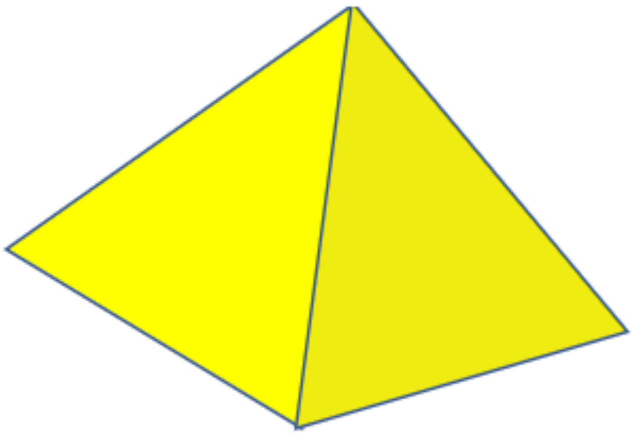
How could you make sure that you do not miss any when you count them?
You could mark each vertex with a sticker so that you do not count the same vertex twice.



To count vertices on 3-D shapes

Talking Time:

Here is a square-based pyramid.
How many vertices does this shape have?

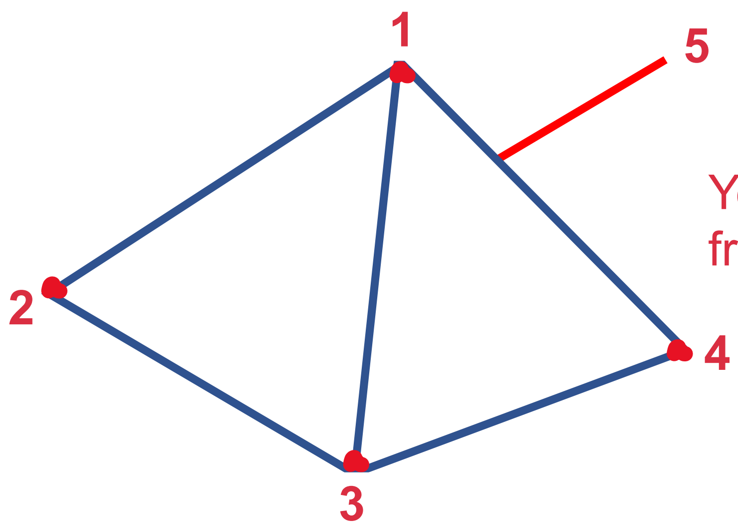


To count vertices on 3-D shapes

Talking Time:

Here is a square-based pyramid.
How many vertices does this shape have?

The square-based pyramid has 5 vertices altogether.



You cannot see vertex 5 from the front.

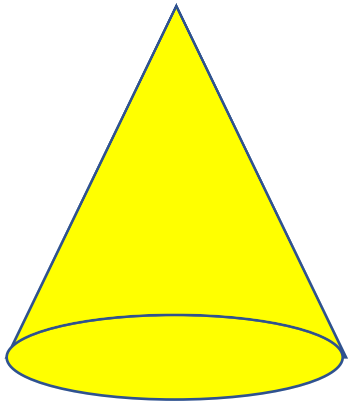
To count vertices on 3-D shapes

Talking Time:

Evie and Lola are talking about the number of vertices on a cone.
Who do you agree with?
Can you explain your thinking?

I think that a cone has 1 vertex.

Evie



I think that a cone has no vertices.

Lola

To count vertices on 3-D shapes

Talking Time:

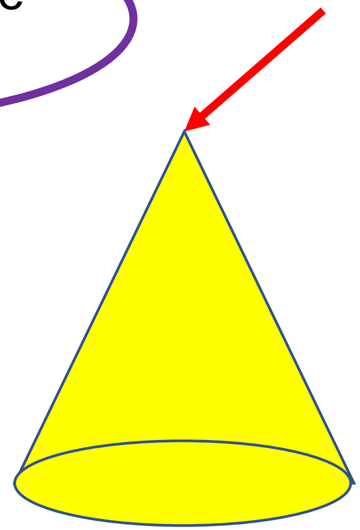
Evie and Lola are talking about the number of vertices on a cone.
Who do you agree with?
Can you explain your thinking?

Evie is correct.

The vertex or apex is at the top of the cone.

I think that a cone has 1 vertex.

Evie



I think that a cone has no vertices.

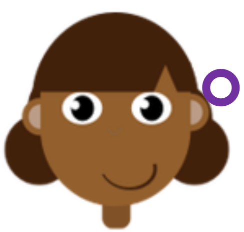
Lola

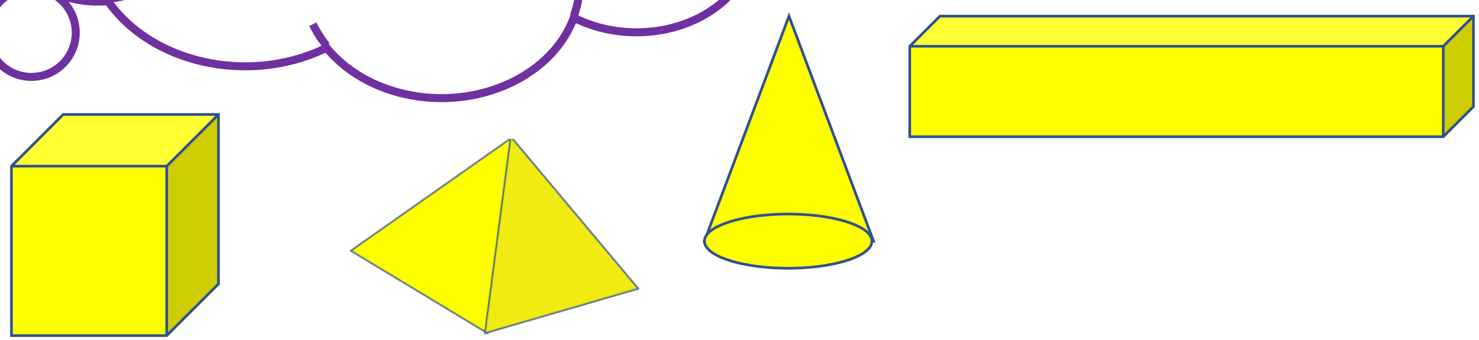
To count vertices on 3-D shapes

Activity 1:

Aisha is thinking of a 3-D shape.
Can you work out which shape it is from Aisha's clues?
Is there more than one answer?
Why?

The shape that I am thinking of has six faces. The shape that I am thinking of has 8 vertices. It has 12 edges.





To count vertices on 3-D shapes

Activity 1:

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Can you work out which shape it is from Aisha's clues?
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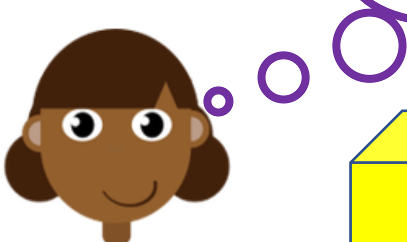
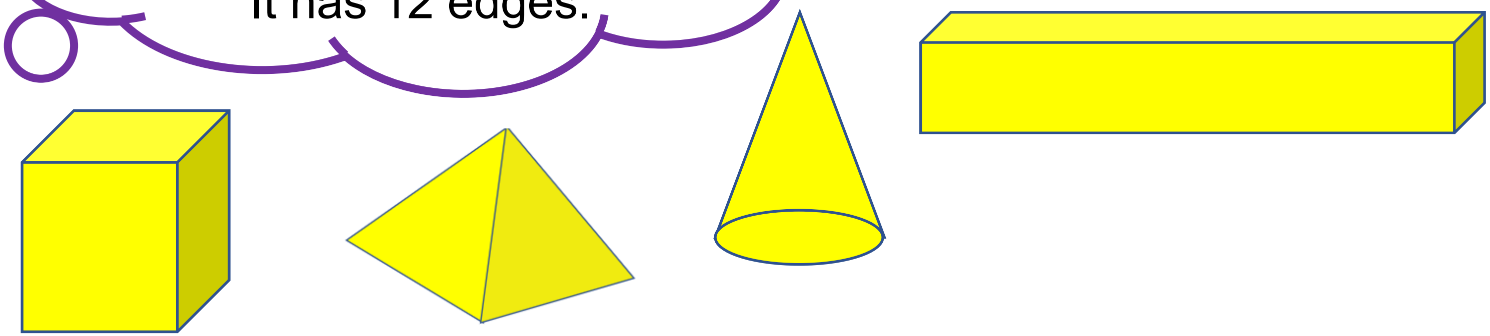


The shape that I am thinking of has six faces.
The shape that I am thinking of has 8 vertices.
It has 12 edges.

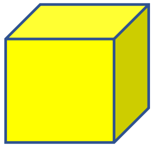
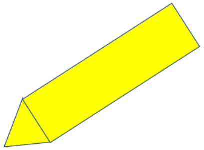
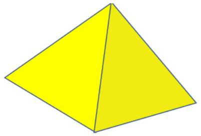


Aisha could be thinking of a cube or a cuboid.
The square-based pyramid has fewer faces, vertices and edges.
The cone has fewer faces, and just one edge and vertex.

To count vertices on 3-D shapes

Talking Time:

Can you complete this table of 3-D shapes?

shape	name of shape	number of faces	number of edges	number of vertices
				
				
				

To count vertices on 3-D shapes

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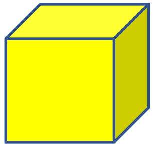
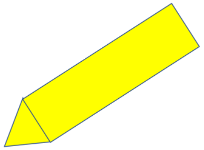
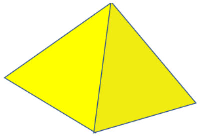
Can you complete this table of 3-D shapes?

shape	name of shape	number of faces	number of edges	number of vertices
	cube	6	12	8
	triangular prism	5	9	6
	square-based pyramid	5	8	5

To count vertices on 3-D shapes

Talking Time:

Here is a 3-D shape that was missing from the last slide.

Are the numbers in this table correct?
Does anything need changing?

shape	name of shape	number of faces	number of edges	number of vertices
	cuboid	6	8	12

To count vertices on 3-D shapes

Talking Time:

Here is a 3-D shape that was missing from the last slide.

Are the numbers in this table correct?
The numbers are right, but not all of them are in the right place.

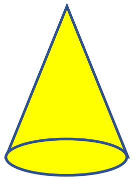
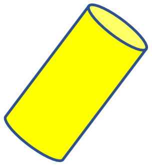
Does anything need changing?
The number of edges should be 12 and the number of vertices should be 8.

shape	name of shape	number of faces	number of edges	number of vertices
	cuboid	6	8 This should be 12.	12 This should be 8.

To count vertices on 3-D shapes

Talking Time:

Can you complete this table of 3-D shapes?

shape	name of shape	number of faces	number of edges	number of vertices
				
				
				

To count vertices on 3-D shapes

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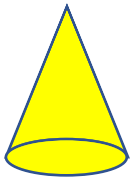
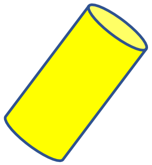
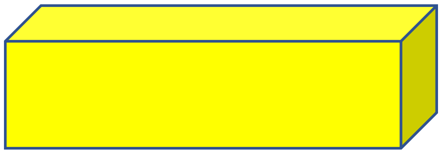
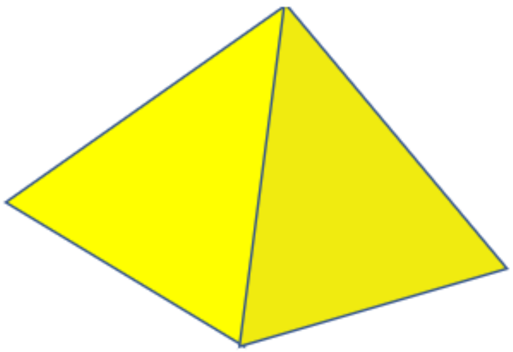
shape	name of shape	number of faces	number of edges	number of vertices
	cone	1 flat and 1 curved surface	1	1
	cylinder	2 flat and 1 curved surface	2	0
	sphere	0 flat and 1 curved surface	0	0

To count vertices on 3-D shapes

Activity 2:

Here are two 3-D shapes.
What is the same about them?
What is different?





Can you use the words faces, edges and vertices in your answer?

To count vertices on 3-D shapes

Activity 2:

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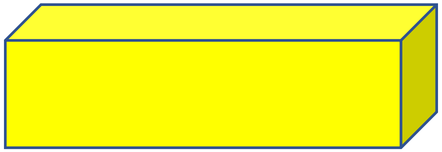
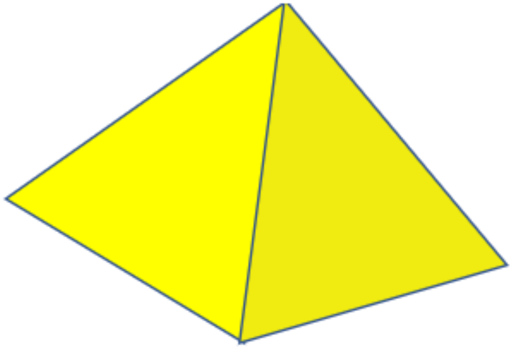
What is different?





The same

- They both have at least one square face
- They both have flat faces and no curved surfaces
- Neither of them can roll

Different

- One has 8 vertices and the other has 5
- One has 12 edges and the other has 8
- One has triangular faces and one does not
- One has rectangular faces and one does not

Can you use the words faces, edges and vertices in your answer?

To count vertices on 3-D shapes

Talking Time:

Jenson and Bishan have a feely bag and they each pick a **different** 3-D shape to describe.

Can Bishan be right?
Why? Why not?

Jenson

My 3-D shape has 6 faces, 8 vertices and 12 edges.

Wow! So does my shape!

Bishan

To count vertices on 3-D shapes

Talking Time:

Jenson and Bishan have a feely bag and they each pick a **different** 3-D shape to describe.

Can Bishan be right?
Why? Why not?

My 3-D shape has 6 faces, 8 vertices and 12 edges.

Jenson

Wow! So does my shape!

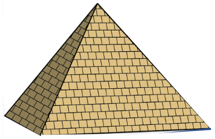
Bishan

Yes, Bishan is right.
One of the boys must have a cube, and the other must have a cuboid.
Both 3-D shapes have 6 faces, 8 vertices and 12 edges.

To count vertices on 3-D shapes

Talking Time:

Freddie is sorting these real-life 3-D shapes into the sorting hoops.
Can you sort them as well?
Do you get the same answers as Freddie?



0 vertices

1 vertex

> 2 vertices

To count vertices on 3-D shapes

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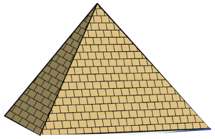
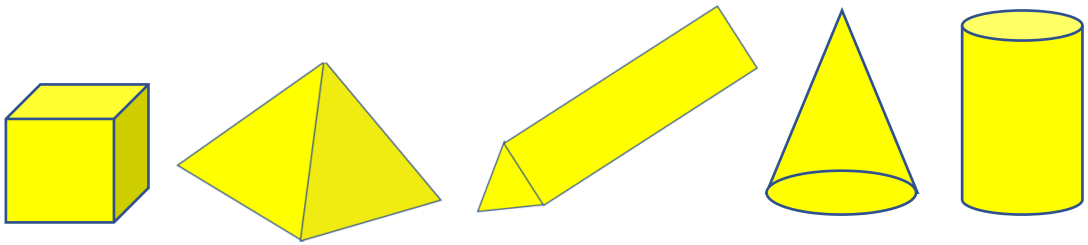


To count vertices on 3-D shapes

Activity 2:

Can you place these 3-D shapes in order?

Start with the shape that has the fewest vertices and going up to the one with the most vertices.



fewest vertices → most vertices

To count vertices on 3-D shapes

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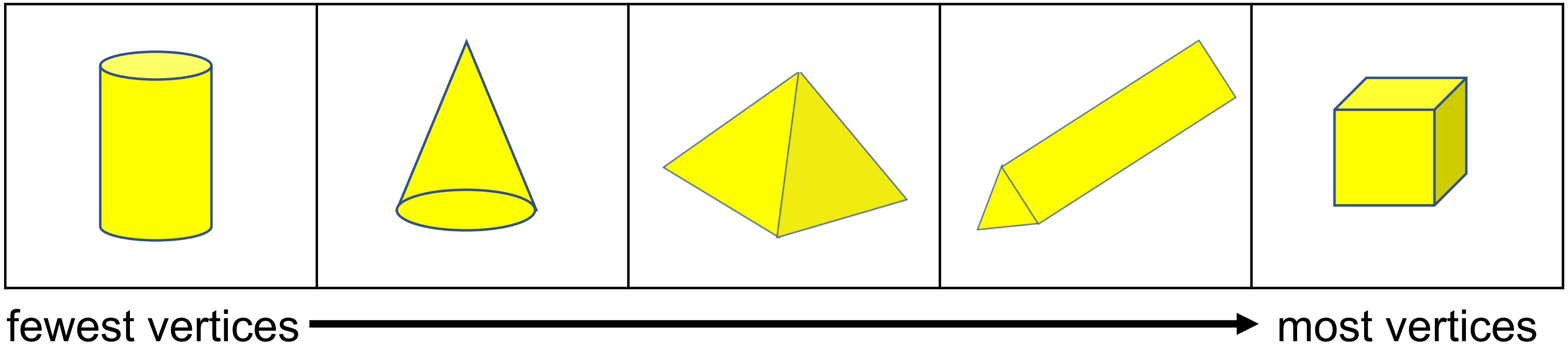


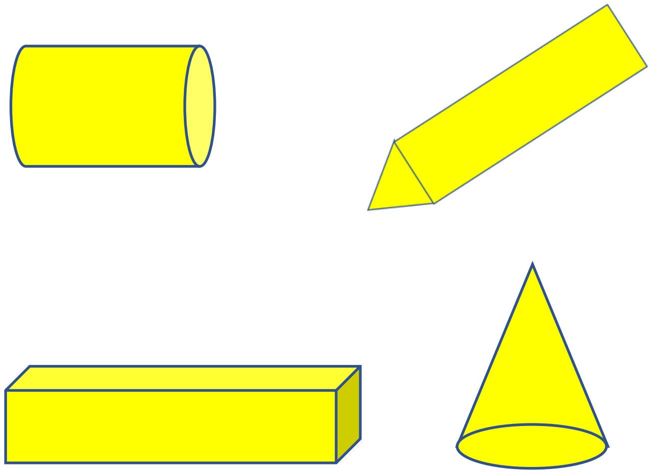
To count vertices on 3-D shapes

Evaluation:

Can you use the clues to guess which 3-D shape I am thinking of?

The shape that I am thinking of

- has at least one vertex
- has an even number of vertices
- has more than six vertices



To count vertices on 3-D shapes

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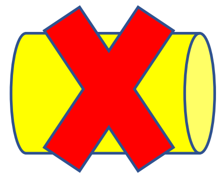
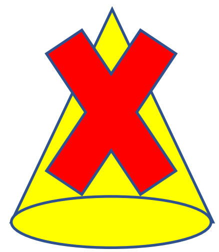
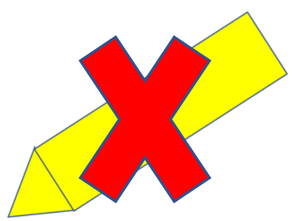


- has an even number of vertices



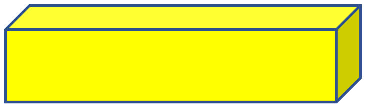
- has more than six vertices



Success Criteria:

- ❑ I can find and count vertices on 3D shapes
- ❑ I know that the point of a cone can be called an apex or a vertex

I am thinking of a cuboid.



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