3D Shape Properties

The aim of this presentation is:

- To use the correct mathematical language to describe 3D shapes
- To identify and classify 3D shapes

Glossary

Face – a flat or curved surface on a 3D shape

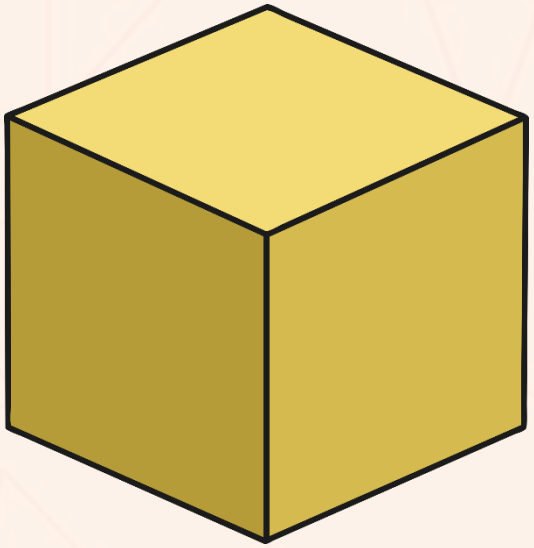
Edge – where two faces meet

Vertices – a vertex is a corner where edges meet

Cube

Cubes have:

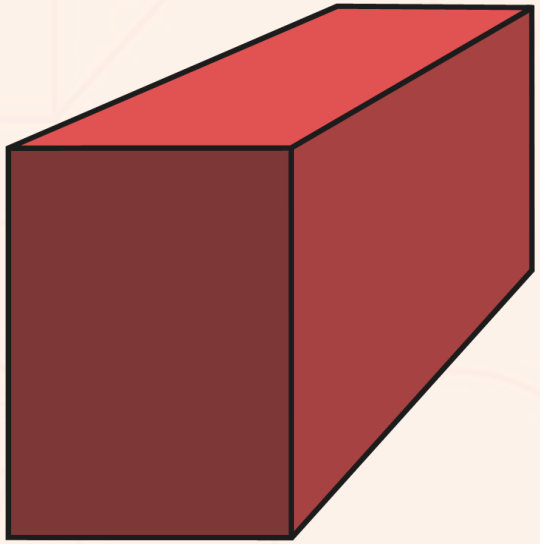
- 6 faces;
- 12 edges
- 8 vertices;
- edges that are all the same length.



Cuboid

Cuboids have:

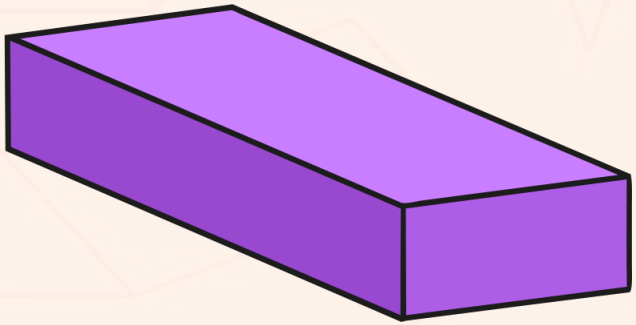
- 6 faces;
- 12 edges
- 8 vertices;
- edges that are **not** all the same length.



Rectangular Prism

Rectangular prisms have:

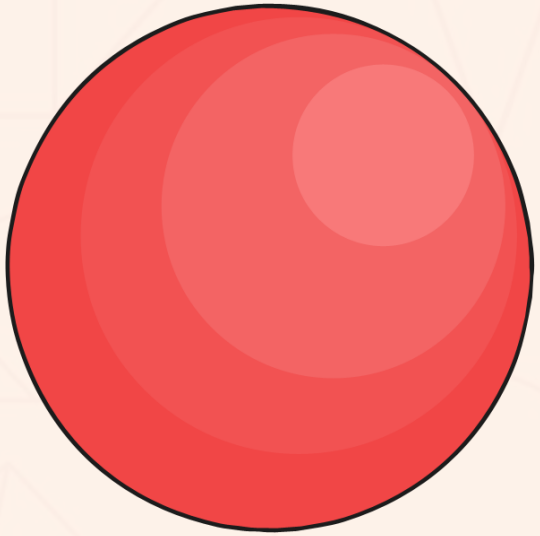
- 6 faces;
- 12 edges
- 8 vertices;
- edges that are **not** all the same length.



Sphere

Spheres:

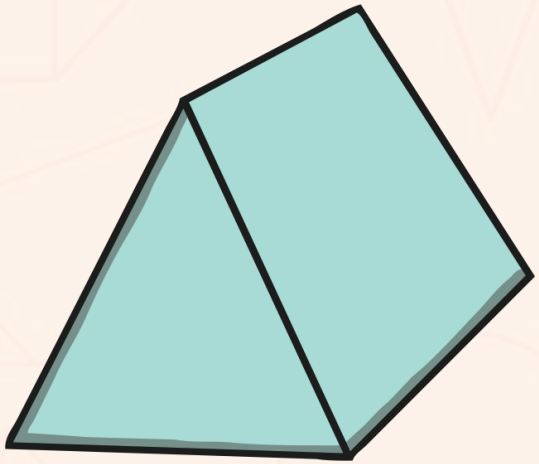
- are perfectly round;
- have no edges;
- have no vertices.
- 1 curved surface



Triangular Prism

Triangular prisms have:

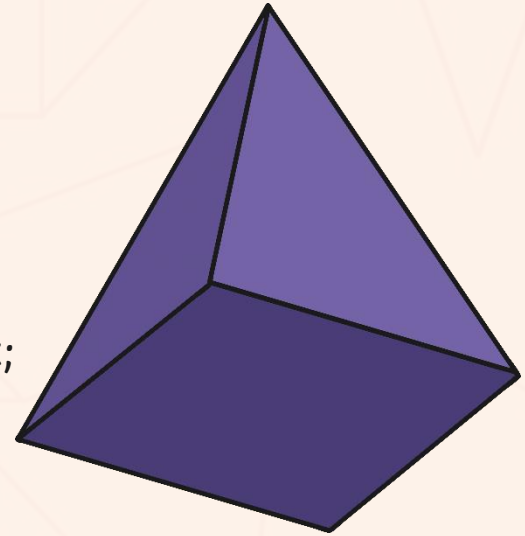
- 5 faces;
- 2 triangular faces;
- 3 rectangular faces;



Square-Based Pyramid

Square-based pyramids have:

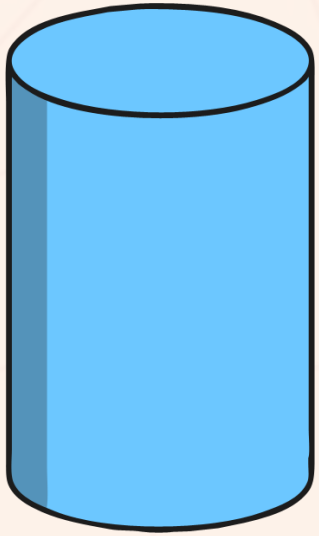
- a square base;
- 4 triangular faces that make a sharp point;
- 5 faces.



Cylinder

Cylinders have:

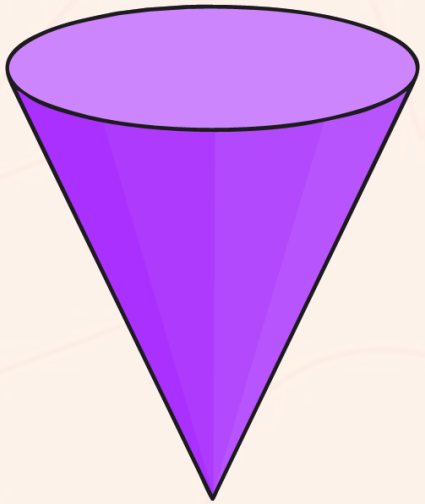
- 2 flat and circular faces;
- 1 curved surface;
- **no** vertices.



Cone

Cones have:

- 1 flat face which is a circle;
- 1 vertex;
- 1 edge;
- 1 curved surface.

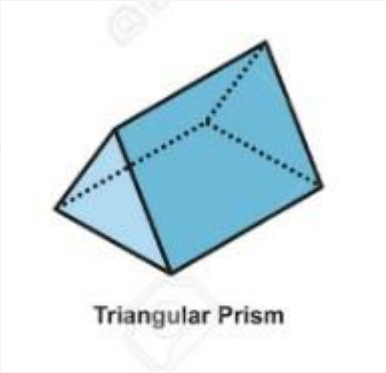


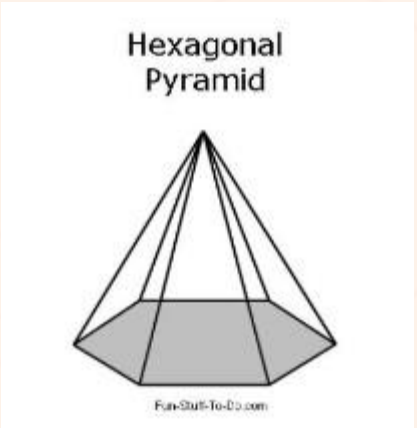
Prisms and Pyramids

Prisms have end faces that are exactly the same.

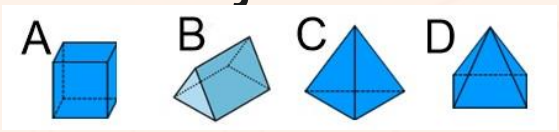
A triangular prism has six vertices and no curved faces. Its end faces are triangles.

A hexagonal-based pyramid has seven vertices and no curved faces. Its base is a hexagon.



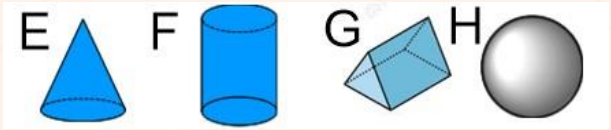


Copy and complete each Venn diagram by writing the letter of the 3D object in the correct place.



At least one triangular face

At least one square face



At least one flat face

Has a curved face

Your Tasks

Can you find examples of these 3D shapes in real life? What objects do you have at home which match these 3D shapes? Talk about their properties.

Watch the following video and complete the game.
Properties of shape
https://www.bbc.co.uk/bitesize/topics/zjv39j6/articles/zgqpk2p

Play this game to check your understanding of 3D shape
http://www.snappymaths.com/other/shapeandspace/3dshapes/interactive/3dshapeimm/3dshapeimm.htm

How can you share what you have learned about 3D shape?
Can you make a poster? An acrostic poem? Build a model? Make a game? Create a 'What Am I' riddle.

If you would like to make a model, you will find examples of Nets to build some 3D shapes in the files section on Teams.

I have 9 straws and 6 balls of Play-Doh.

What 3-D shape can I create using all of the straws and Play-Doh?

Have a go at making it.

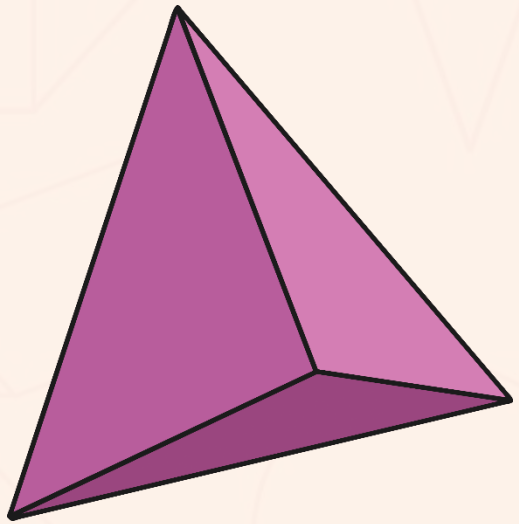
What other shapes can you create with straws and playdough?

The next slides contain some more challenging shapes. If you would like to learn more keep scrolling.

Tetrahedron

Tetrahedra have:

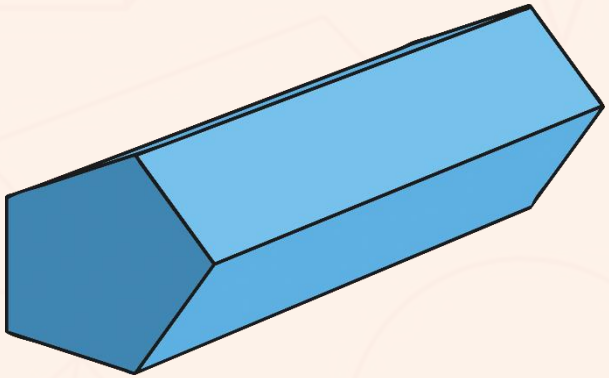
- 4 flat and triangular faces;
- 4 vertices;
- 6 edges.



Pentagonal Prism

Pentagonal prisms have:

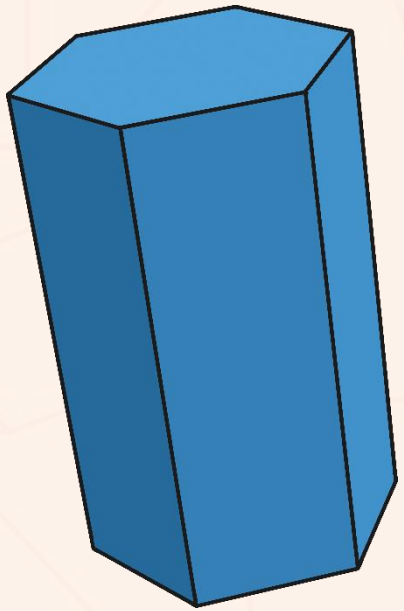
- 7 faces;
- 2 pentagonal faces;
- 5 rectangular faces;
- 15 edges;
- 10 vertices



Hexagonal Prism

Hexagonal prisms have:

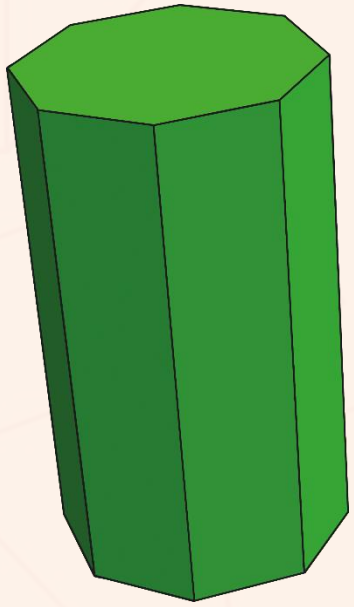
- 8 faces;
- 2 hexagonal faces;
- 6 rectangular faces;
- 18 edges;
- 12 vertices



Octagonal Prism

Octagonal prisms have:

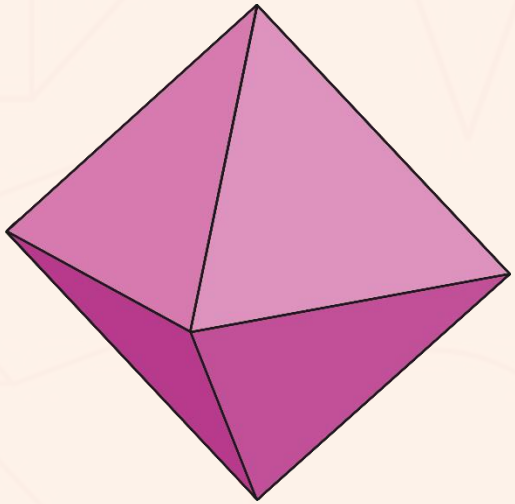
- 10 faces;
- 2 octagonal faces;
- 8 rectangular faces;
- 24 edges;
- 16 vertices



Octahedron

Octahedra have:

- 8 triangular faces;
- 12 edges;
- 6 vertices.



Dodecahedron

Dodecahedra have:

- 12 faces;
- 30 edges;
- 20 vertices.