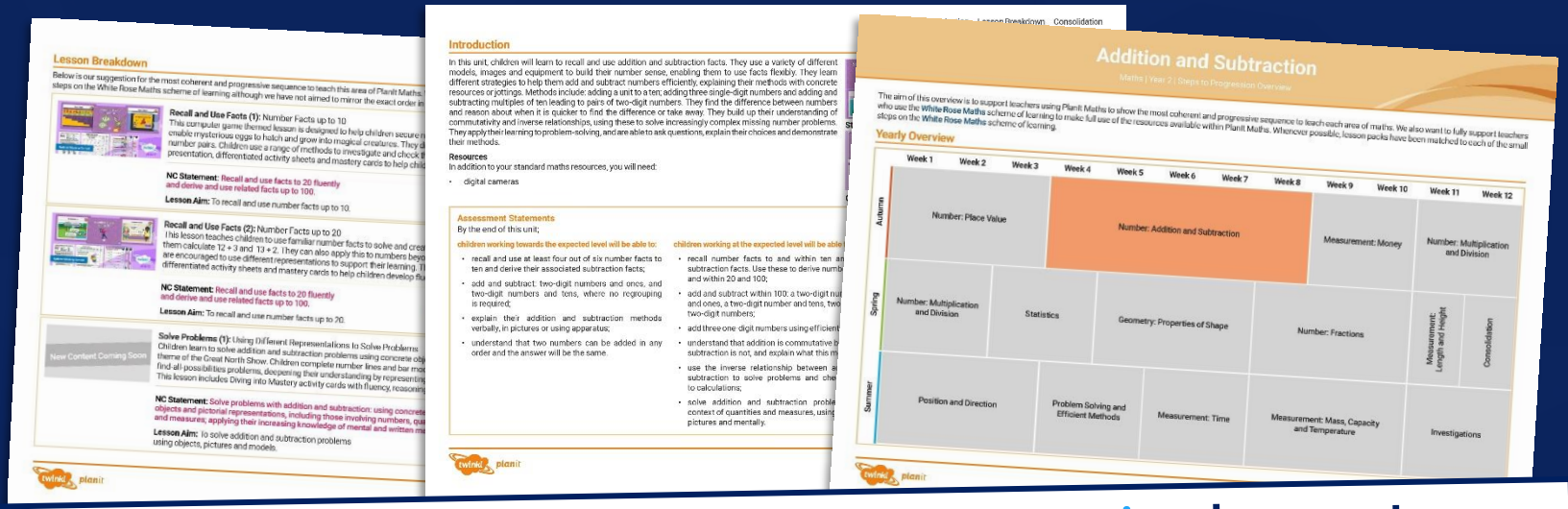
Maths

Properties of Shape

Need a coherently planned sequence of lessons to complement this resource?



See our Properties of Shapes Steps to Progression document.

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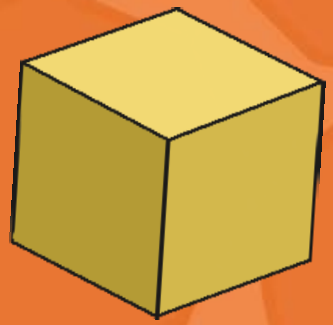
twinkl planit

Introducing Regular Polyhedrons



Aim

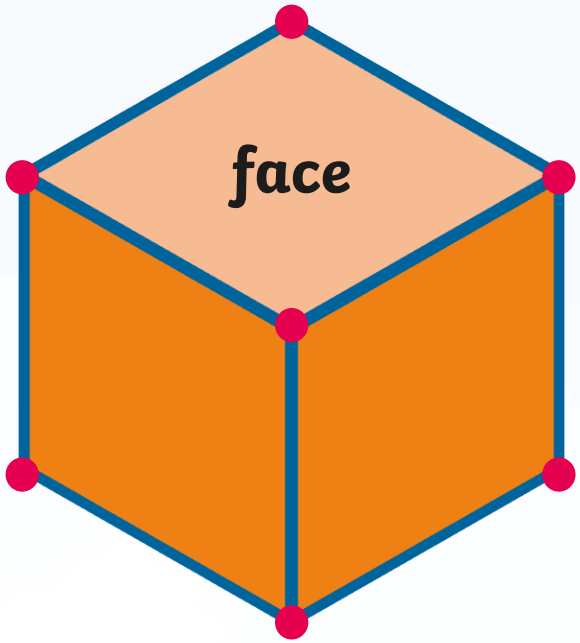
- To recognise and describe the properties of regular polyhedrons.

Success Criteria

- I can identify regular polyhedrons.
- I can describe the properties of regular polyhedrons.
- I can compare regular polyhedrons.

Remember It

Can you remember what we call these properties of 3D shapes?



The face is a flat surface of a 3D shape.

The edge is where the faces meet.

The vertex is where the edges meet.

vertices

This is the word used for more than one vertex.

Remember It

Which 3D shapes are these properties describing?

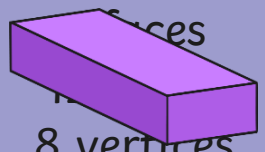
4 faces
6 edges
4 vertices

Click here for the name of the shape.

triangular-based pyramid

Click here for an extra property.

8 vertices

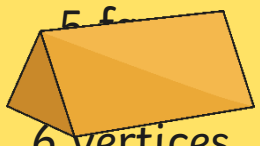


Click here for the name of the shape.

cuboid

Click here for an extra property.

6 vertices



Click here for the name of the shape.

triangular prism

Click here for an extra property.

5 faces
5 vertices

Click here for the name of the shape.

square-based pyramid

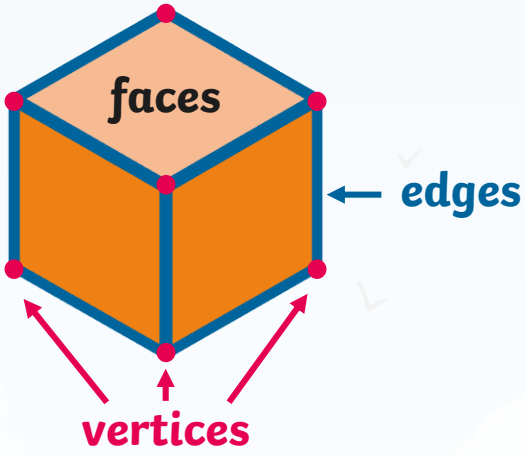
Click here for an extra property.

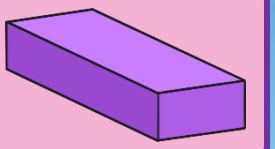
Click on the panels to reveal each shape and their names.

Remember It

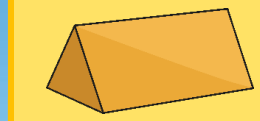
Describe a 3D shape to a friend.

Tell them about it's properties.

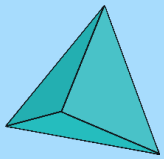




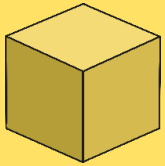
cuboid



triangular prism



triangular pyramid



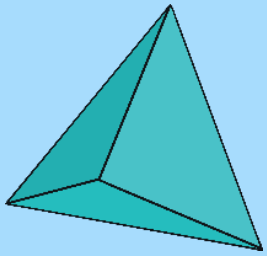
cube

square-based pyramid

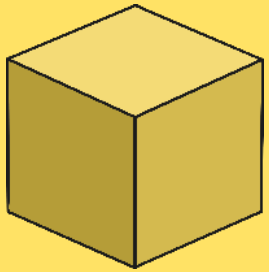
Spot the Difference

Compare these 3D shapes.

Reveal Answer



triangular-based pyramid



cube

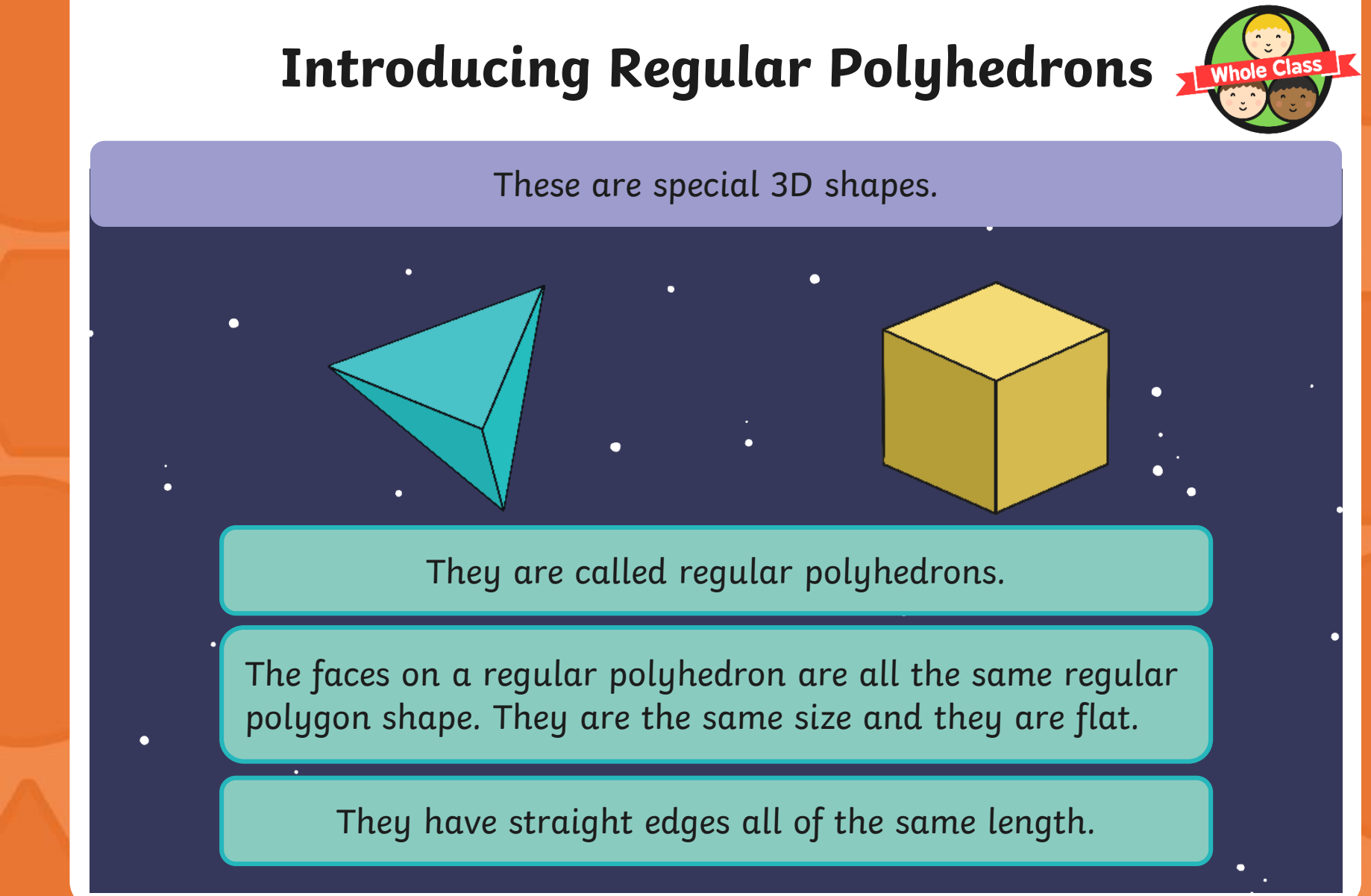
What is the same?

What is different?

The shapes have a different number of faces, edges and vertices.

Each shape has faces that are all the same shape and edges that are all the same length.

Introducing Regular Polyhedrons



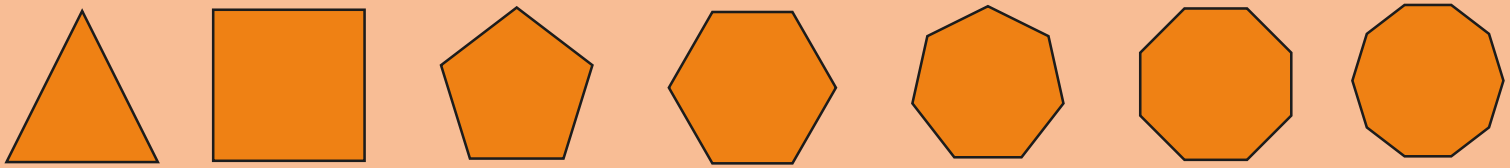
These are special 3D shapes.

They are called regular polyhedrons.

The faces on a regular polyhedron are all the same regular polygon shape. They are the same size and they are flat.

They have straight edges all of the same length.

Introducing Regular Polyhedrons



What do you remember about regular polygons?

Polygons are closed shapes.

The sides are straight.

Regular polygons have sides that are all the same length.

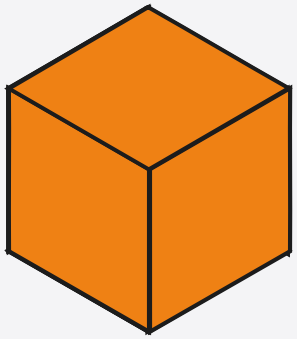
Discovering Regular Polyhedrons

Whole Class

Let's check to see if a cube is a regular polyhedron.

A cube has 6 square faces.

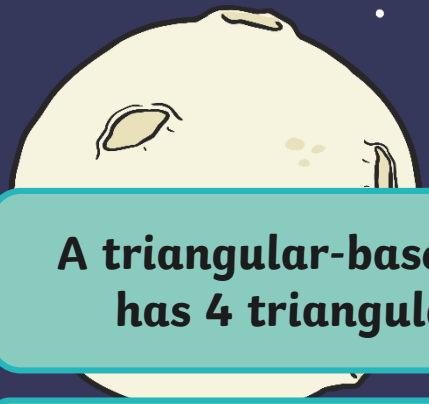
The edges are the same length.



A cube is a regular polyhedron.

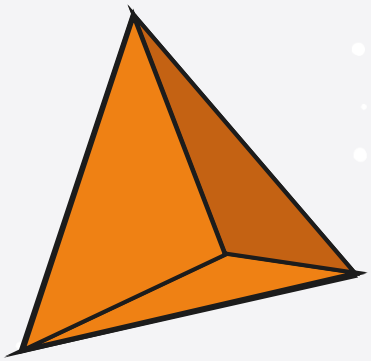
Discovering Regular Polyhedrons

Is a triangular-based pyramid a regular polyhedron? Let's check.



A triangular-based pyramid has 4 triangular faces.

The edges are the same length.

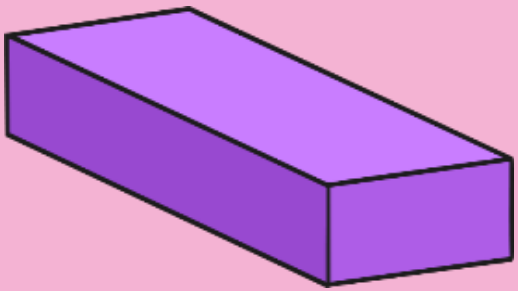


A triangular-based pyramid is a regular polyhedron.

Discovering Regular Polyhedrons

Is this cuboid a regular polyhedron?

Reveal Answer



Can you explain why?

The faces are the same polygon shape, but the edges are different lengths.

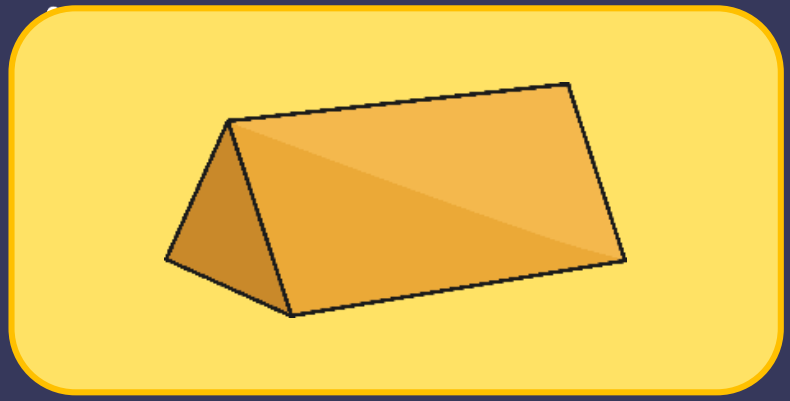
So this cuboid isn't a regular polyhedron.

Discovering Regular Polyhedrons

Whole Class

Is this triangular prism a regular polyhedron?

Reveal Answer



Can you explain why?

The faces are different polygon shapes and the edges are different lengths.

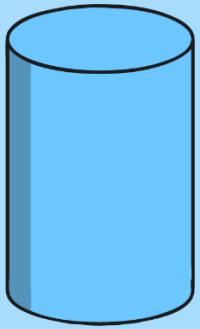
So a triangular prism isn't a regular polyhedron.

Discovering Regular Polyhedrons

Whole Class

Is this cylinder a regular polyhedron?

Reveal Answer



Can you explain why?

Although the edges are the same length, they are curved. It has two flat faces and a curved surface that is not the same.

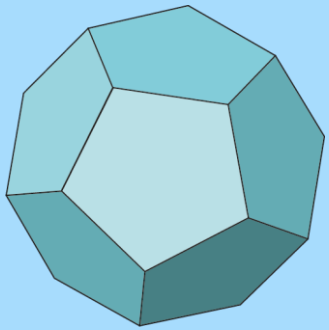
So a cylinder isn't a regular polyhedron.

Discovering Regular Polyhedrons

Whole Class

Explain how you know a dodecahedron is a regular polyhedron.

Reveal Answer



What shape are all the faces?

The faces are all regular pentagons.

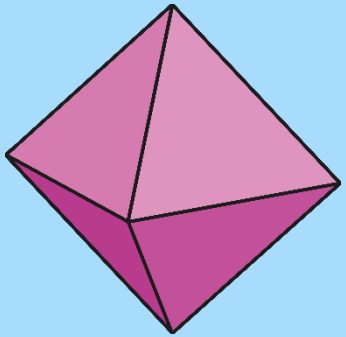
The edges are all the same length.

Discovering Regular Polyhedrons

Whole Class

Explain how you know an octahedron is a regular polyhedron.

Reveal Answer

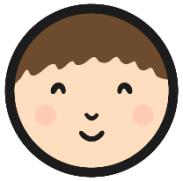


What shape are all the faces?

The faces are all regular triangles.

The edges are all the same length.

Shape Detectives



Introducing Regular Polyhe

To recognise and describe the properties of regular polyh

Find 3D shapes to match the pictures.

Draw lines to match the regular polyhedrons with the numb their faces and complete the empty box.

 triangular-based pyramid	8
 dodecahedron	6
 octahedron	
 cube	12

Introducing Regular Polyhe

To recognise and describe the properties of regular polyh

Find 3D shapes to match the pictures.

Draw lines to match the regular polyhedrons with their fac the empty boxes.

 dodecahedron	
 triangular-based pyramid	12
 cube	8
 octahedron	

Introducing Regular Polyhedrons

To recognise and describe the properties of regular polyhedrons.

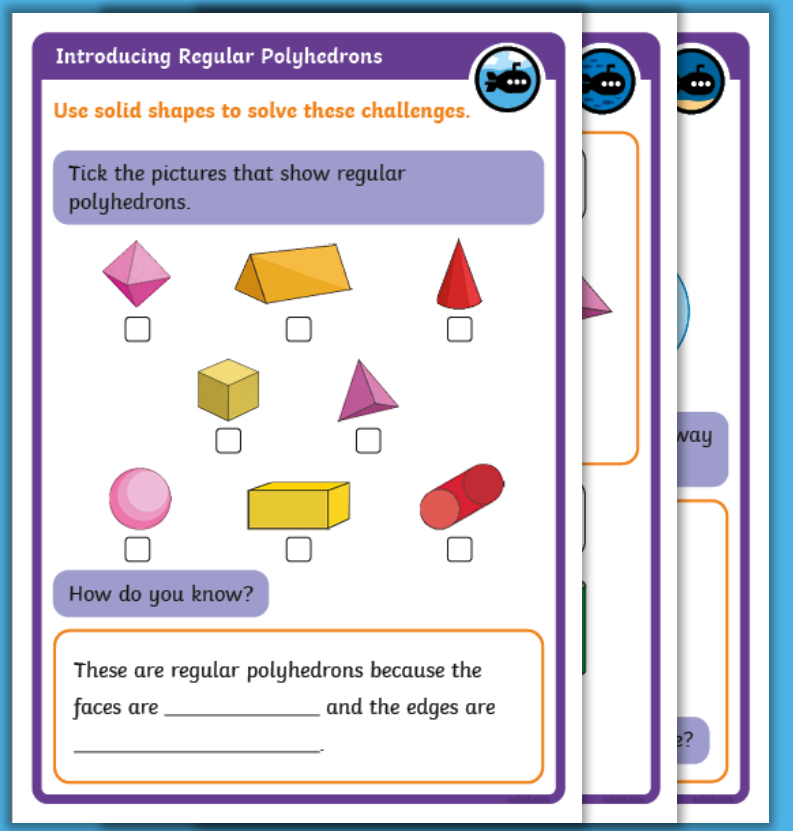
Find 3D shapes to match the pictures.

Complete number and shape of the faces for each regular polyhedron. The first has been done for you.

 cube	6 ☐
 triangular-based pyramid	
 octahedron	
 dodecahedron	

Diving into Mastery

Dive in by completing your own activity!



Quick Quiz

Whole Class

Can you spot the regular polyhedrons?

Can you explain how you know?

Quick Quiz

Which one of these statements is false?

Regular polyhedrons have straight edges.

True. Regular polyhedrons have straight edges.

The edges of regular polyhedrons are the same length.

True. The edges of regular polyhedrons are the same length.

Some regular polyhedrons have circular faces.

False. The faces of regular polyhedrons must have straight edges.

All the faces are the same shape on regular polyhedrons.

True. All of the faces are the same shape on a regular polyhedron.

Explain your reasoning.

Aim

- To recognise and describe the properties of regular polyhedrons.

Success Criteria

- I can identify regular polyhedrons.
- I can describe the properties of regular polyhedrons.
- I can compare regular polyhedrons