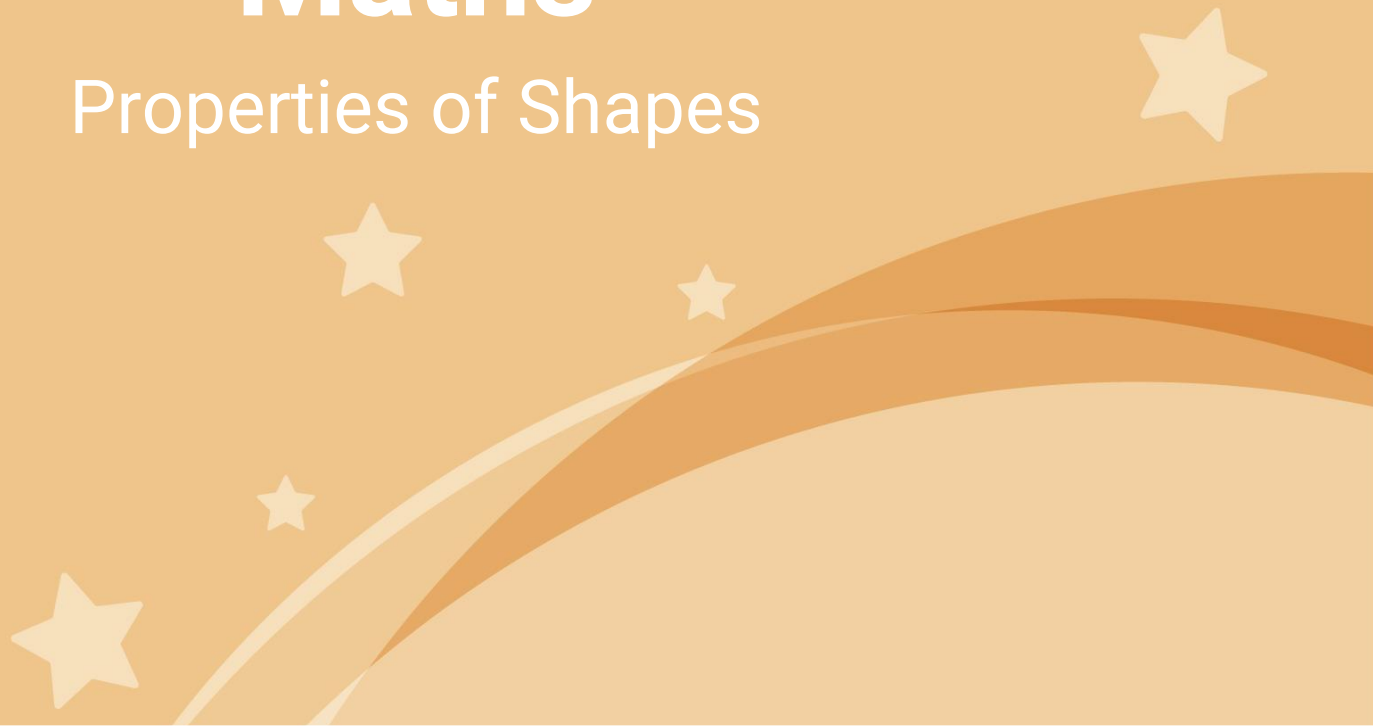




Maths

Properties of Shapes



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

Lesson Breakdown

Below is our suggestion for the most coherent and progressive sequence to teach this area of Planit Maths steps on the White Rose Maths scheme of learning although we have not aimed to mirror the exact order in which topics are taught.

2D Shapes (1): Recognising More 2D Shapes
Children begin by reviewing the 2D shapes they learnt in year 1. They begin to learn about quadrilaterals as shapes with four sides and are then introduced to quadrilaterals as shapes with four sides and a right angle. They are then introduced to quadrilaterals as shapes with four sides and a right angle. They are then introduced to quadrilaterals as shapes with four sides and a right angle. They are then introduced to quadrilaterals as shapes with four sides and a right angle.

2D Shapes (2): Introducing Polygons
In this lesson children learn the definition of a polygon and more specifically they are familiar with already triangle and square. Children are introduced to their reasoning skills to compare regular polygons. This lesson includes the Diving into Mastery activity cards. Children learn to count sides and vertices.

Introduction

In this geometry unit, children learn to identify and describe the properties of 2D shapes, including the number of sides and line symmetry in a vertical line. They learn to identify and describe the properties of 3D shapes, including the number of edges, vertices and faces. Children compare and sort common 2D and 3D shapes and everyday objects. They also learn to identify 2D shapes on the surface of 3D shapes, for example, a circle on a cylinder and a triangle on a pyramid.

Resources

Flat plastic shapes, 3D plastic shapes, camera for recording practical work.

Solvet Lesson Pack: Triangular Extravaganza

How many triangles are hidden in the picture? This Solvet Lesson investigates hidden triangles and guides children to use a systematic counting approach. It encourages children to record their answers and work methodically.

Assessment Statements

By the end of this unit:

children working towards the expected level will be able to:

- name some common 2D and 3D shapes from a group of shapes or in pictures (e.g. triangles, rectangles, squares, circles, cuboids, cubes, pyramids and spheres)
- describe some shape properties
- sort 2D and 3D shapes in simple ways
- read some shape names
- create 2D shapes using geoboards
- make simple 2D and 3D shape patterns
- create 3D shape structures

children working at the expected level will be able to:

- name common 2D and 3D shapes, use general terms to name groups of shapes, such as quadrilaterals and polyhedrons
- recognise regular and irregular polygons in real life
- describe the properties of 2D and 3D shapes (language: sides, vertices, edges and faces)
- identify vertical lines of symmetry in 2D shapes
- identify 2D faces on 3D shapes
- sort 2D and 3D shapes by their properties
- read and write some shape names
- create 2D shapes using geoboards and draw using straight lines
- make 2D and 3D shape patterns
- create and describe 3D shape structures

Properties of Shape

Maths | Year 2 | Steps to Progression Overview

The aim of this overview is to support teachers using Planit Maths to show the most coherent and progressive sequence to teach each area of maths. We also want to fully support teachers who use the White Rose Maths scheme of learning to make full use of the resources available within Planit Maths. Wherever possible, lesson packs have been matched to each of the small steps on the White Rose Maths scheme of learning.

Yearly Overview

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number: Place Value	Number: Addition and Subtraction						Measurement: Money	Number: Multiplication and Division			
Spring	Number: Multiplication and Division	Statistics	Geometry: Properties of Shape			Number: Fractions			Measurement: Length and Height	Consolidation		
Summer	Position and Direction	Problem Solving and Efficient Methods		Measurement: Time	Measurement: Mass, Capacity and Temperature			Investigations				

See our [Properties of Shapes Steps to Progression](#) document.

Twinkl Planit is our award-winning scheme of work with over 4000 resources.



Introducing Polygons



Aim

- To describe the properties of polygons.

Success Criteria

- I can say what a polygon is.
- I can describe the number of sides and vertices a polygon has.
- I can compare polygons using mathematical language.

Remember It



Unscramble the letters to make the names of 2D shapes.
Write the names on your whiteboard.

triangle

square

circle

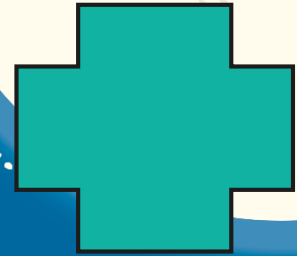
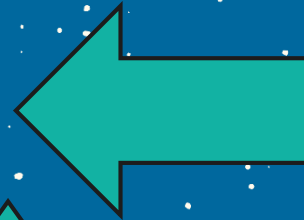
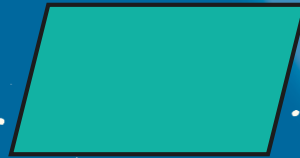
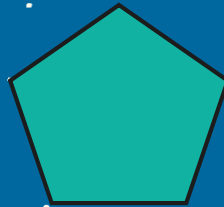
rectangle

Polygons



Polygons are a type of 2D shape.

Polygons have straight sides.
Polygons are closed shapes.
This means all of the sides meet up.
These shapes are all polygons:

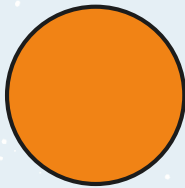


Can you name any of these shapes?

Polygons



Are these shapes polygons? Explain your ideas.



These shapes are not polygons because they have curved sides.

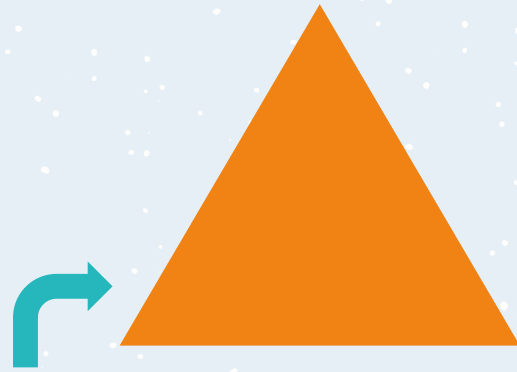


These shapes are not polygons because they have open sides.

Regular Polygons



Regular polygons have sides of equal length.
Here are some we know already:



A triangle with 3 equal sides.

Are all triangles regular polygons?

No, not all triangles have 3 equal sides.



Regular Polygons



Regular polygons have sides of equal length.
Here are some we know already:



A square with 4 equal sides.

Are all quadrilaterals regular polygons?

No, not all quadrilaterals have 4 equal sides.



Regular Polygons



Let's meet some new **regular polygons**.
How many **sides** do these shapes have?
How many **vertices**?

How are they the same?
How are they different?

These shapes all have **5 straight sides**.
The sides are equal.
They all have **5 vertices**.
Although they might look different,
they are all the same shape.
This shape is a **pentagon**.



Regular Polygons



How many **sides** do these shapes have?
How many **vertices**?

How are they the same?
How are they different?



These shapes all have **6 straight sides**.
The sides are equal.
They all have **6 vertices**.
Although they might look different,
they are all the same shape.
This shape is a **hexagon**.

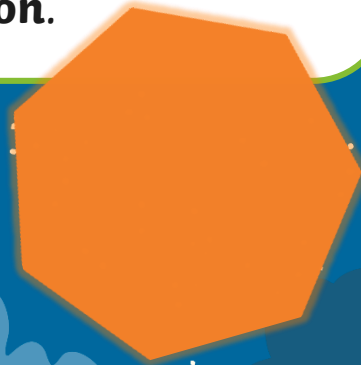
Regular Polygons



How many **sides** do these shapes have?
How many **vertices**?

How are they the same?
How are they different?

These shapes all have **7 straight sides**.
The sides are equal.
They all have **7 vertices**.
Although they might look different,
they are all the same shape.
This shape is a **heptagon**.



Regular Polygons



How many **sides** do these shapes have?
How many **vertices**?

How are they the same?
How are they different?



These shapes all have **8 straight sides**.
The sides are equal.
They all have **8 vertices**.
Although they might look different,
they are all the same shape.
This shape is an **octagon**.



Regular Polygons



There are many more polygons with even more sides. You could go on forever learning about polygons with more and more sides.

Funky facts:

A polygon with **50 sides** is called a **pentacontagon**.
A polygon with **100 sides** is called a **hectogon**.

Luckily, we don't need to remember every single shape name. We can just call them polygons.



Comparing Polygons



Here are 4 polygons. How many sides do they each have?

8 sides

5 sides

6 sides

3 sides

Which is the largest shape? Which is the smallest?
Explain how you know.

Comparing Polygons



Here are 4 polygons. How many vertices do they each have?

3 vertices

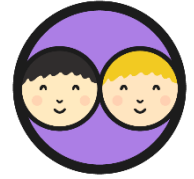
4 vertices

7 vertices

4 vertices

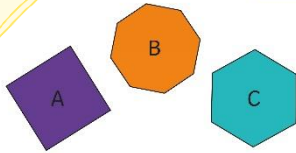
Which 2 shapes are the same but just a different size and orientation? **Convince me!**

Polygon Challenge Cards



How many sides?

1



Which shape is different?

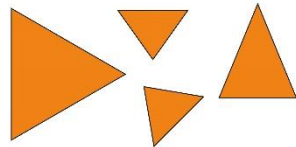
2

Explain why.



Which is the largest shape?
Convince me.

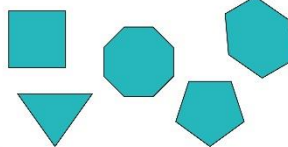
3



Which is the smallest shape?

5

Convince me.



Is the following statement
always true, sometimes
true or never true?

6



All squares
look the same.

Solve this shape riddle.

9

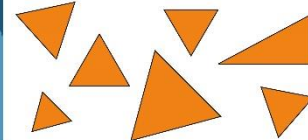
I have 4 sides.
I have 4 vertices.
I am a regular polygon.

What am I?

Which shape is different?

10

Explain why.



True or false?

7



All triangles are
regular polygons.

Is the following statement
always true, sometimes
true or never true?

11



Regular polygon
have sides of
equal lengths.

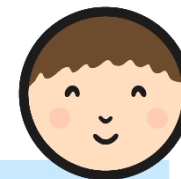
Solve this shape riddle.

12

I have 3 vertices.
I am a regular polygon.
I have 3 sides.

What am I?

Diving into Mastery








Dive in by completing your own activity!



Introducing Polygons

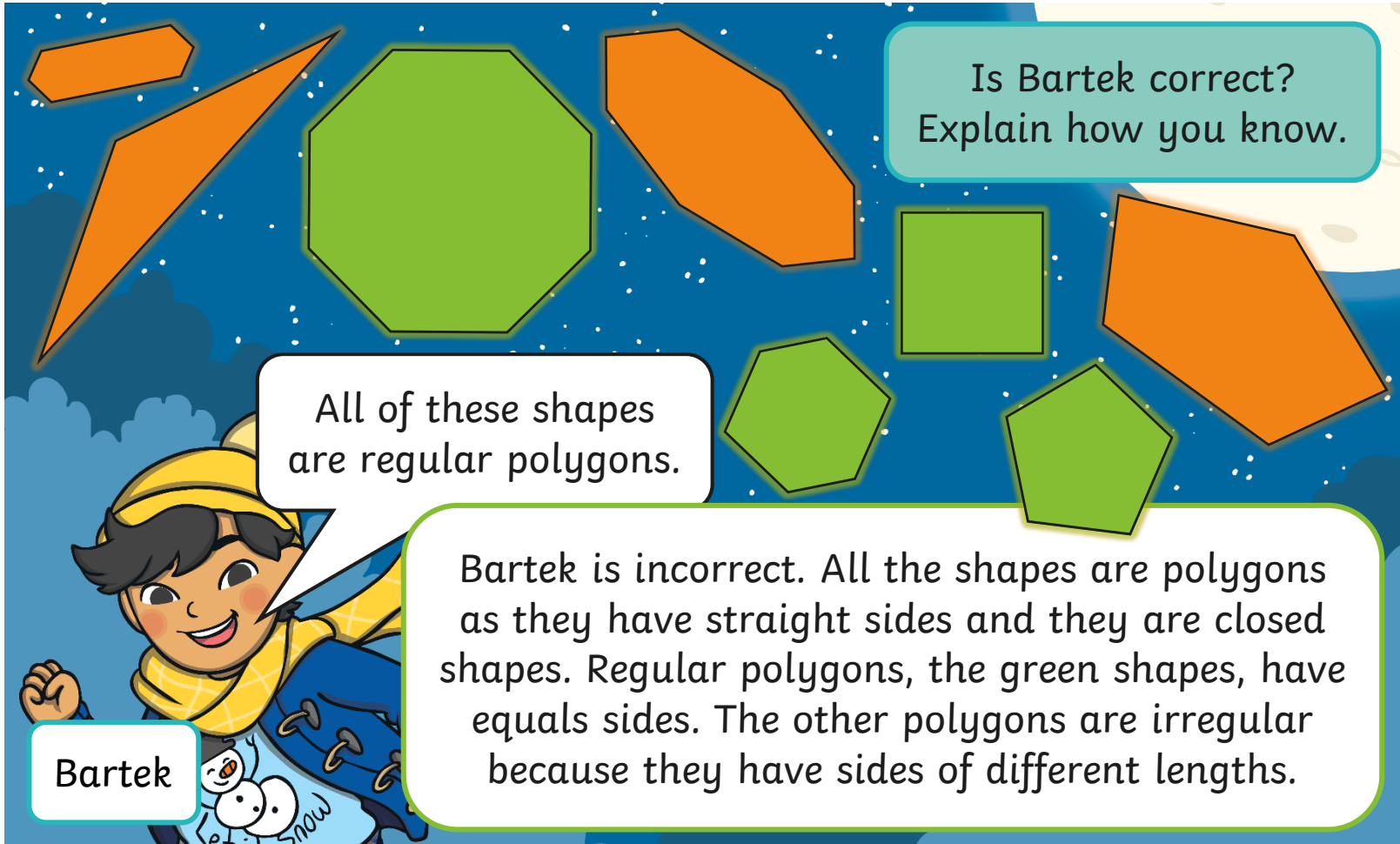
Complete the table.

Shape	Name	Number of Vertices	Number of Sides
	pentagon		
			
	hexagon		
			
	octagon		

split

rts?

Spotting Regular Polygons



Is Bartek correct?
Explain how you know.

All of these shapes
are regular polygons.

Bartek

Bartek is incorrect. All the shapes are polygons as they have straight sides and they are closed shapes. Regular polygons, the green shapes, have equals sides. The other polygons are irregular because they have sides of different lengths.

Aim



- To describe the properties of polygons.

Success Criteria

- I can say what a polygon is.
- I can describe the number of sides and vertices a polygon has.
- I can compare polygons using mathematical language.

