

# SHAPE 2

Summer Term

Shape 2

## Topics

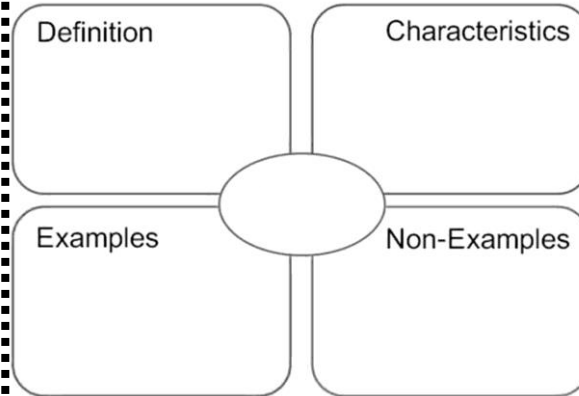
- 3D shapes
- Plans and elevations
- Isometric drawing

## What do I need to be able to do?

- Name 3D shapes and know properties about them
- Draw a plan of a 3D object
- Draw using isometric paper

## Plans and elevations

A plan is like the birds eye view of the shape.  
The front is the view as if someone was stood in front of the shape and the side is the view from the side.  
The plan, front and side should always be drawn in 2D. If the shape is made from cubes, it must have the correct number of squares in the diagram.



## Career Links

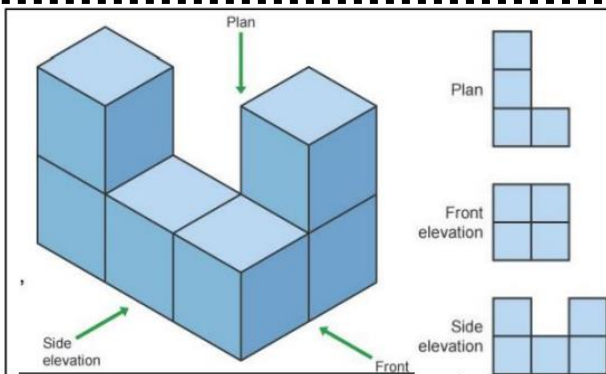
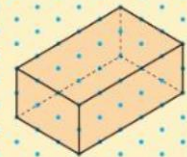
Being able to confidently work with shape is a great skill to have and has lots of links with a number of careers such as:

- Architecture
- Landscaping
- Engineering
- Construction
- Carpenter

## Key Terms

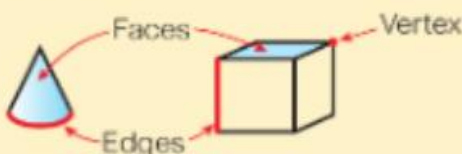
Volume	Space inside a 3D shape
Surface Area	Total area of all faces of a 3D shape
Sphere	A ball shape
Prism	A 3D shape with the same cross section throughout its length
Plan	Birds eye view of a shape
Elevation	A view of a shape

3D solids can be drawn on **isometric paper**. This cuboid is 3 units wide, 5 units long and 2 units high.

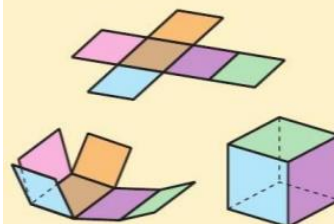


<b>Cube</b>  6 square faces 12 edges 8 vertices	<b>Tetrahedron</b>  4 triangular faces 6 edges 4 vertices	<b>Sphere</b>  1 curved surface 0 edges 0 vertices
<b>Cuboid</b>  6 faces 12 edges 8 vertices	<b>Octahedron</b>  8 faces 12 edges 6 vertices	<b>Triangular prism</b>  5 faces 9 edges 6 vertices
<b>Square-based pyramid</b>  5 faces 8 edges 5 vertices	<b>Cone</b>  1 circular face 1 curved surface 1 curved edge 1 apex	<b>Cylinder</b>  2 circular faces 1 curved surface 2 curved edges 0 vertices

A 3D solid has **faces, edges** and **vertices**. Faces and edges can be flat or curved.



A net is a 2D shape that folds up to make a 3D solid.



## Why learn this?

Packaging designers design nets to make up boxes to the shapes they want.

# Data

Summer Term

Data

## Topics

- Pictograms
- Bar Charts
- Averages
  - Mean
  - Mode
  - Median

## What do I need to be able to do?

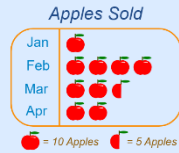
- Work out the mean, mode and median of a set of data
- Draw a pictogram
- Draw a bar chart

## Career Links

Being able to confidently work with data is a great skill to have and has lots of links with a number of careers such as:

- Statistician
- Business Analyst
- Biostatistician
- Healthcare

Here is a pictograph of how many apples were sold at the local shop over 4 months:



- In January **10 apples** were sold
- In February **40 apples** were sold
- In March **25 apples** were sold
- In April **20 apples** were sold

Definition

Characteristics

Examples

Non-Examples

Here is a discrete data set, calculate the mean, mode, median and range for this data.

2 5 3 9 7 7

Mode: 7

Range:  $9 - 2 = 7$

Median: 2 3 5 7 7 9

Mean:  $\frac{2+3+5+7+7+9}{6} = 5.5$

Put them in order first  
Two numbers in the middle – add them together and divide by two

$$\frac{5+7}{2} = 6$$

There are six data values so divide by 6.

## Key Terms:

**Mean** - Add up the values you are given and divide by the number of values you have.

**Median** - The median is the middle value, when your data is in order.

**Mode** - It is the value or item there is the most of.

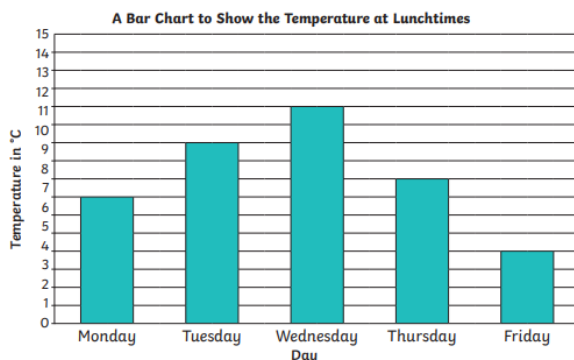
**Range** - This is the difference between the largest and smallest values.

**Frequency** - the number of pieces of data we have.

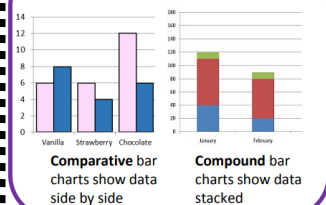
**Grouped Data** - If we have a large spread of data, we put it into categories (classes) to make the data easier to display or analyse

Average	Advantage	Disadvantage
Mode	Can be used for qualitative data Easy to obtain	There can be more than one mode or even no mode
Median	Not affected by very large or very small values	Can be time consuming when there is a lot of data
Mean	Takes into account all of the data	Very small or very large values affects the mean

A bar chart has a horizontal axis and a vertical axis. Bars show the data value of each category. There must be a gap between each bar. The scale of the bar chart is chosen based on the data range.



## Bar Charts



Comparative bar charts show data side by side

Compound bar charts show data stacked