



# Y8 Maths Knowledge Organiser Topic 4: 3D Shapes

What must I be able to do?	Key vocabulary	
<b>New content:</b> <ul style="list-style-type: none"> <li>□ Recognise nets of 3D shapes                             <ul style="list-style-type: none"> <li>➤ Sparx M518</li> </ul> </li> <li>□ Identify faces, edges and vertices on a 3D shape                             <ul style="list-style-type: none"> <li>➤ Sparx M767</li> </ul> </li> <li>□ Draw plans and elevations of a given solid                             <ul style="list-style-type: none"> <li>➤ Sparx M229</li> </ul> </li> <li>□ Identify a solid from its plans and elevations                             <ul style="list-style-type: none"> <li>➤ Sparx M229</li> </ul> </li> </ul>	<b>Net</b>	A flat <u>2D</u> shape which can be folded to <u>create a 3D shape</u> .
	<b>Face</b>	A <u>flat</u> or <u>curved</u> surface.
	<b>Edge</b>	Where <u>two faces meet</u> .
	<b>Vertex</b>	A <u>corner</u> where <u>edges meet</u> . The plural is vertices
	<b>Elevation</b>	A <u>view</u> of a 3D shape when looked at from the <u>side or front</u> .
	<b>Plan</b>	A <u>view</u> of a 3D shape when looked at from <u>above</u> .
	<b>Prism</b>	A prism is a type of <u>3D</u> shape with flat sides. It has two ends that are the same shape and size. It has the <u>same cross-section</u> all along the shape from end to end; that means if you cut through it you would see the same 2D shape as on either end.

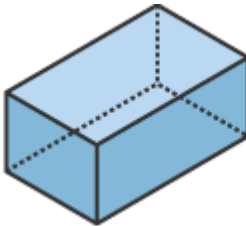
### Names of 3D Shapes



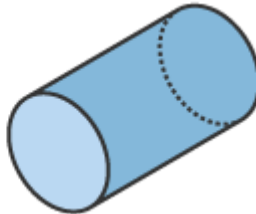
Sphere



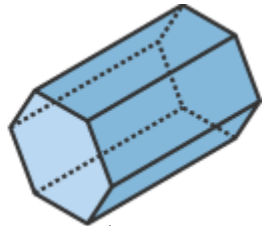
Cube




Cuboid



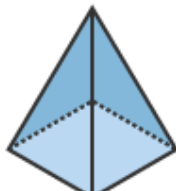
Cylinder



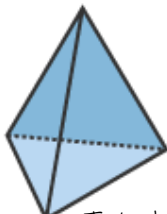
Hexagonal Prism



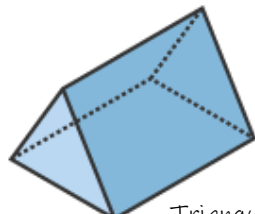
Cone



Square Based Pyramid




Tetrahedron



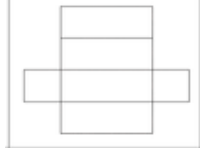
Triangular Prism

Cubes and cuboids are also examples of prisms

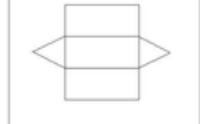
### Nets



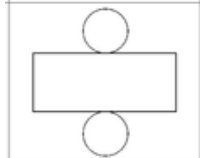
Cube



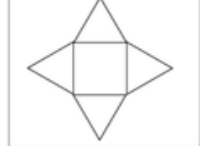
Cuboid



Triangular Prism

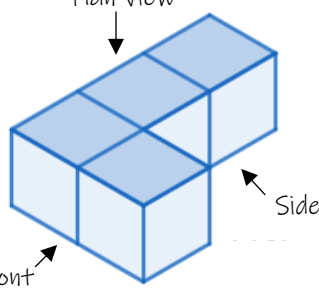



Cylinder



Square Based Pyramid


### Plans and Elevations






Plan view

Plan view or elevations are always a 2D drawing of how the shape looks from that direction.

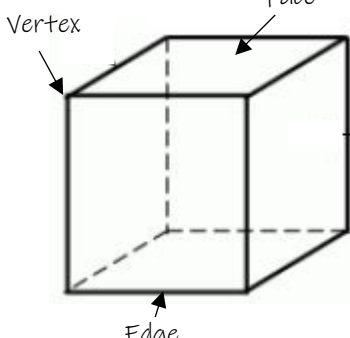


Front elevation



Side elevation

### Properties of 3D Shapes



A cube has:

6 faces                  12 edges                  8 vertices

There is a famous formula known as Euler's formula (pronounced Oy-ler).

It states that for all 3D shapes which have flat faces and straight edges:

$$\text{Faces} + \text{Vertices} = \text{Edges} + 2$$

So for the cube,  $6 + 8 = 12 + 2$