Y8 Maths Knowledge Organiser Topic 12: 3D Shapes

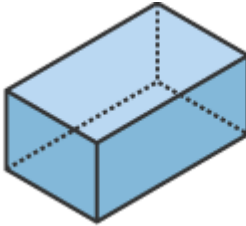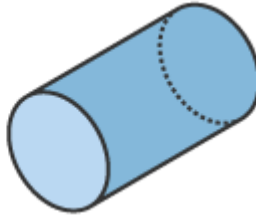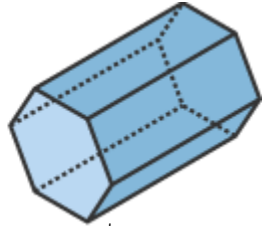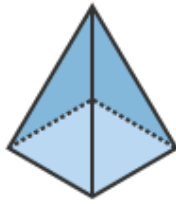| What must I be able to do?	Key vocabulary	
New content:	**Net**	A flat <u>2D</u> shape which can be folded to <u>create a 3D shape</u>.
☐ Recognise nets of 3D shapes	**Face**	A <u>flat</u> surface.
➢ Mathswatch G12c	**Edge**	Where <u>two faces meet</u>.
☐ Identify faces, edges and vertices on a 3D shape	**Vertex**	A <u>corner</u> where <u>edges meet</u>. The plural is vertices
➢ Mathswatch G12a	**Elevation**	A <u>view</u> of a 3D shape when looked at from the <u>side or front</u>.
☐ Draw plans and elevations of a given solid	**Plan**	A <u>view</u> of a 3D shape when looked at from <u>above</u>.
☐ Identify a solid from its plans and elevations	**Prism**	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.
➢ Mathswatch 51 (GCSE)		

Names of 3D Shapes

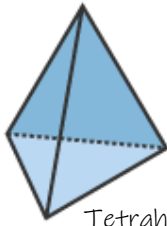
Sphere   Cube   Cuboid   Cylinder   Hexagonal Prism
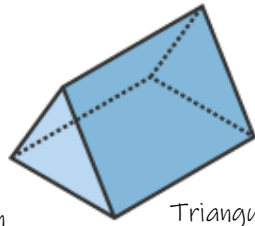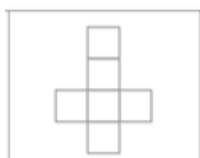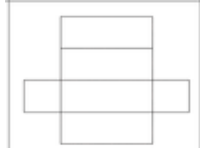
Cone   Square Based Pyramid   Tetrahedron   Triangular Prism
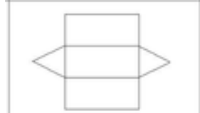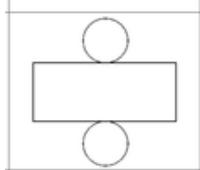
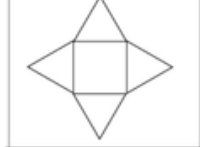Cubes and cuboids are also examples of prisms
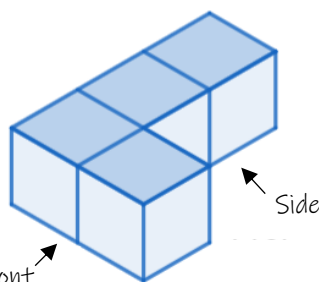
Nets

Cube

Cuboid

Triangular Prism

Cylinder

Square Based Pyramid

Plans and Elevations

Front   Side

Plan view

Front elevation   Side elevation

Plan view or elevations are always a 2D drawing of how the shape looks from that direction.
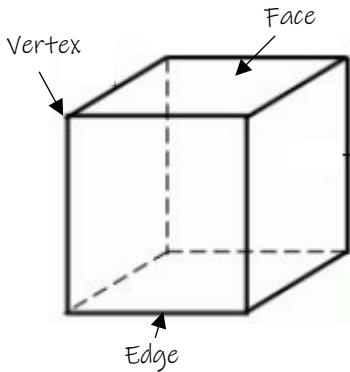
Properties of 3D Shapes

Vertex   Face

Edge

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:

Faces + Vertices = Edges + 2

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