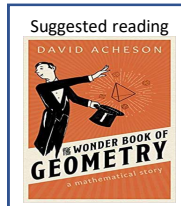


Year 9 – Construction in 2D/3D

3D Shapes



Want to know more?
Scan the QR code to visit the curriculum overview for Year 9 Maths, including topic summaries, key words, and books that you may want to read in your own time



What do I need to be able to do?

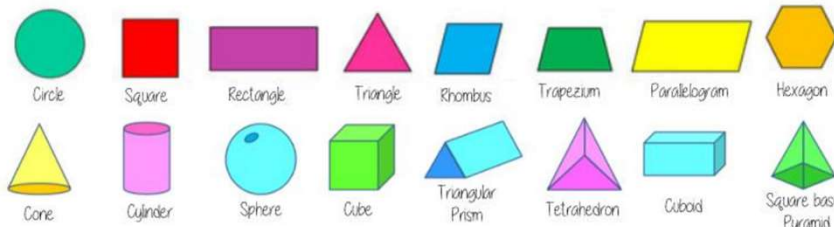
By the end of this unit you should be able to:

- Name 2D & 3D shapes
- Recognise Prisms
- Sketch and recognise nets
- Draw plans and elevations
- Find areas of 2D shapes
- Find Surface area for cubes, cuboids, triangular prisms and cylinders
- Find the volume of 3D shapes

Keywords

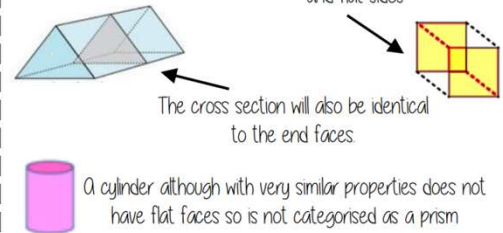
- 2D:** two dimensions to the shape e.g length and width
- 3D:** three dimensions to the shape e.g length, width and height
- Vertex:** a point where two or more line segments meet
- Edge:** a line on the boundary joining two vertex
- Face:** a flat surface on a solid object
- Cross-section:** a view inside a solid shape made by cutting through it
- Plan:** a drawing of something when drawn from above (sometimes birds eye view)
- Perspective:** a way to give illustration of a 3D shape when drawn on a flat surface.

Name 2D & 3D shapes

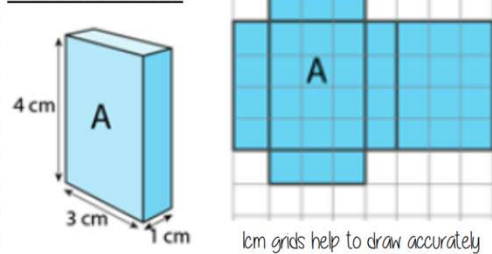


Recognise prisms

A solid object with two identical ends and flat sides

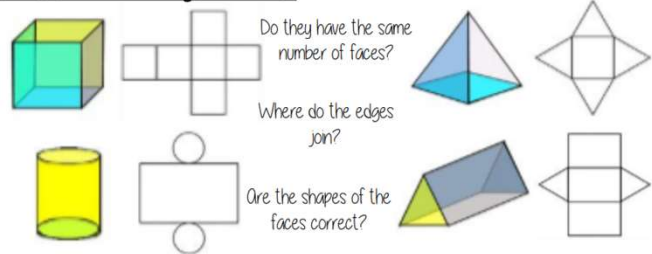


Nets of cuboids

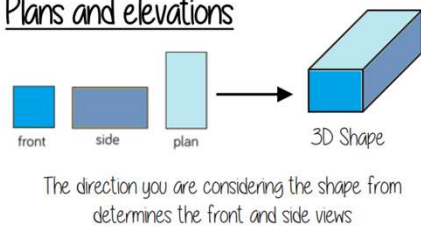


Visualise the folding of the net. Will it make the cuboid with all sides touching

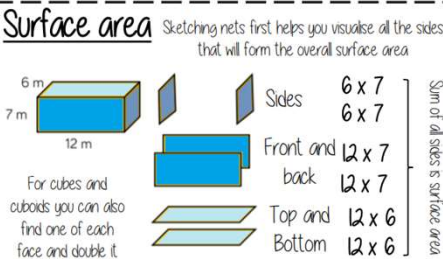
Sketch and recognise nets



Plans and elevations



Surface area



Volumes

Volume is the 3D space it takes up – also known as capacity if using liquids to fill the space

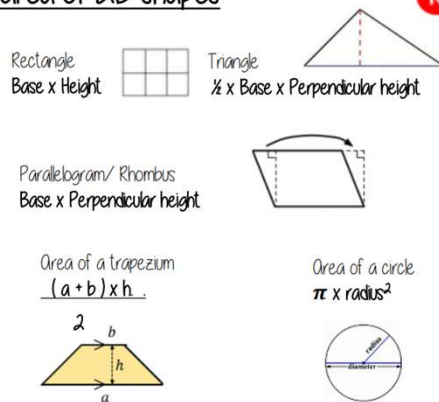


Counting cubes
Some 3D shape volumes can be calculated by counting the number of cubes that fit inside the shape.

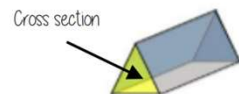
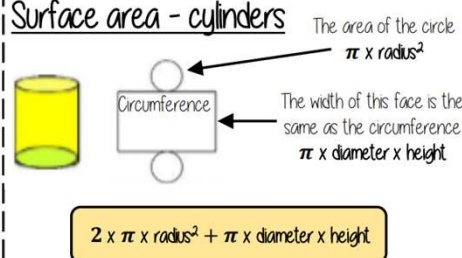
Cubes/ Cuboids = base x width x height

Remember multiplication is commutative

Area of 2D shapes



Surface area - cylinders



Prisms and cylinders = area cross section x height

Height can also be described as depth

Areas – square units
Volumes – cube units

Areas and volumes can be left in terms of pi π