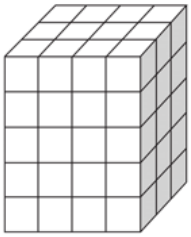
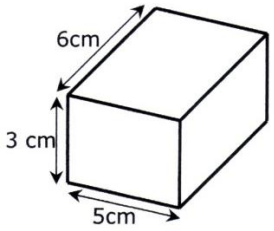
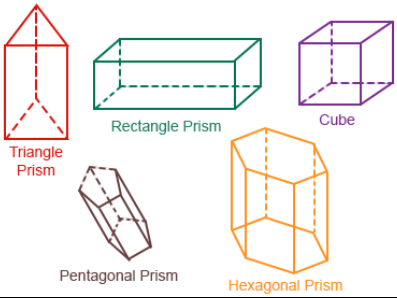
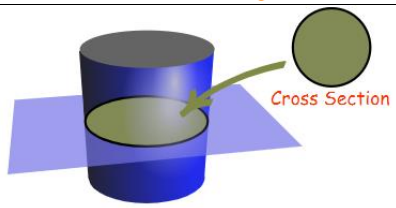
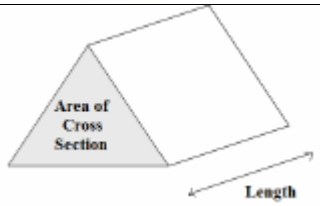
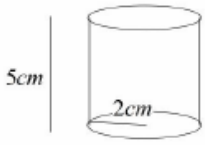
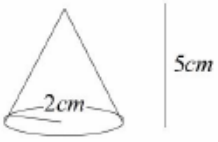
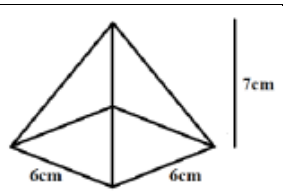
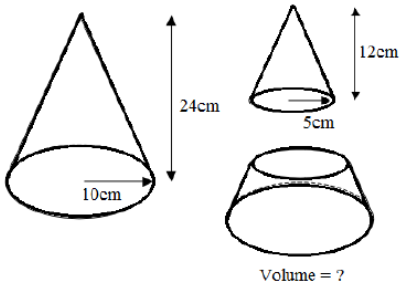
Topic: Volume

Topic/Skill	Definition/Tips	Example
1. Volume	Volume is a measure of the amount of space inside a solid shape. Units: mm^3, cm^3, m^3 etc.	
2. Volume of a Cube/Cuboid	$\boldsymbol{V = Length \times Width \times Height}$ $\boldsymbol{V = L \times W \times H}$ You can also use the Volume of a Prism formula for a cube/cuboid.	 volume = 6 x 5 x 3 = 90 cm^3
3. Prism	A prism is a 3D shape whose **cross section is the same** throughout.	
4. Cross Section	The **cross section** is the **shape** that **continues** all the way **through the prism**.	
5. Volume of a Prism	$\boldsymbol{V = Area\ of\ Cross\ Section \times Length}$ $\boldsymbol{V = A \times L}$	
6. Volume of a Cylinder	$\boldsymbol{V = \pi r^2 h}$	 $V = \pi(4)(5)$ $= 62.8cm^3$
7. Volume of a Cone	$\boldsymbol{V = \frac{1}{3}\pi r^2 h}$	 $V = \frac{1}{3}\pi(4)(5)$ $= 20.9cm^3$

8. Volume of a Pyramid	$\boldsymbol{Volume = \frac{1}{3}Bh}$ where B = area of the base	 $V = \frac{1}{3} \times 6 \times 6 \times 7 = 84cm^3$
9. Volume of a Sphere	$\boldsymbol{V = \frac{4}{3}\pi r^3}$ Look out for hemispheres – just halve the volume of a sphere.	Find the volume of a sphere with diameter 10cm. $V = \frac{4}{3}\pi(5)^3 = \frac{500\pi}{3}cm^3$
10. Frustums	A frustum is a solid (usually a cone or pyramid) with the **top removed**. Find the volume of the whole shape, then take away the volume of the small cone/pyramid removed at the top.	 $V = \frac{1}{3}\pi(10)^2(24) - \frac{1}{3}\pi(5)^2(12)$ $= 700\pi cm^3$