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| **Topic/Skill**  | **Definition/Tips** | **Example****Topic: Volume**  |
| 1. Volume | Volume is a measure of the amount of space inside a solid shape.Units: $mm^{3}, cm^{3},m^{3}$ etc. | Image result for math definition volume |
| 2. Volume of a Cube/Cuboid | $$V=Length×Width×Height$$$$V=L×W×H$$You can also use the Volume of a Prism formula for a cube/cuboid. | Image result for volume cuboid |
| 3. Prism | A prism is a 3D shape whose **cross section is the same** throughout. | Image result for math definition prism |
| 4. Cross Section | The **cross section** is the **shape** that **continues** all the way **through the prism**. |  |
| 5. Volume of a Prism | $$V= Area of Cross Section×Length$$**The cross section can be as simple as a square face, but here we have a piece of curved piping . Sometimes in the exam they will give you the area of the** **cross-section .****Eg., say here the cross section has an area of 50**$cm^{2}$**, the length is 20cm what is the volume of this prism****So all you would need to do is** **V = 50** $×20$ **= 1000**$cm^{3}$ | Resourceaholic: Common Errors Made by Maths Teachers |
| 6. Volume of a Cylinder | $$V= Area of Cross Section×Length$$**V = Area of circle** $×$ **length** **Since cylinders often hold liquid they are upright so we use** **V = Area of circle** $×$ **height**$$V=πr^{2}h$$ |  |
| 7. Volume of a Cone | $$V=\frac{1}{3}πr^{2}h$$**A cone is circle based pyramid so** **V=** $\frac{1}{3}×volume of cylinder$Hence $$V=\frac{1}{3}πr^{2}h$$ |  |
| 8. Volume of a Pyramid | Volume of any pyramid = $\frac{1}{3}×volume of 3d shape its inside$So here its $\frac{1}{3}×volume of a cuboid$V = $\frac{1}{3}×base ×width×height$ | $$V=\frac{1}{3}×6×6×7=84cm^{3}$$ |
| 9. Volume of a Sphere | $$V=\frac{4}{3}πr^{3}$$Look out for hemispheres – just halve the volume of a sphere. | Find the volume of a sphere with diameter 10cm.Since d=10, r=5$$V=\frac{4}{3}π(5)^{3}=\frac{500π}{3}cm^{3}$$ |
| 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. | $$V=\frac{1}{3}π\left(10\right)^{2}\left(24\right)-\frac{1}{3}π\left(5\right)^{2}\left(12\right)=700πcm^{3}$$ |

$$Topic: Geometry and Measures (H) $$

**Knowledge Organiser**