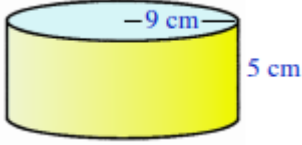
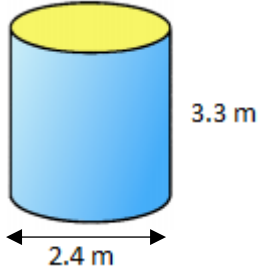
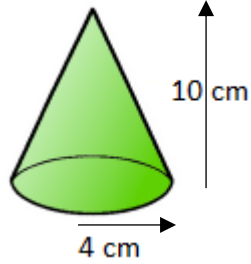
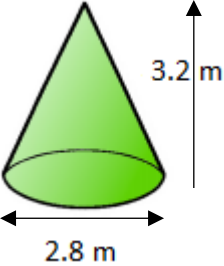
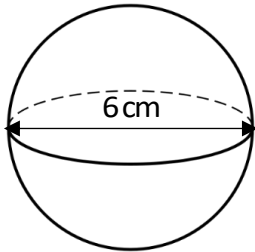
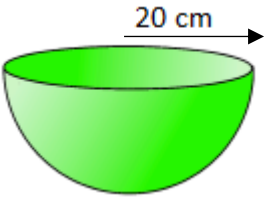


S3 Revision – Volume of 3D Solids		
1		<p>This cylinder has a radius of 9 centimetres and a height of 5 centimetres.</p> <p>Find the volume of the cylinder rounded to the nearest whole number.</p>
2		<p>This cylinder has a diameter of 2.4 metres and a height of 3.3 metres.</p> <p>Find the volume of the cylinder rounded to the nearest whole number.</p>
3		<p>This cone has a radius of 4 centimetres and a height of 10 centimetres.</p> <p>Find the volume of the cone rounded to the nearest whole number.</p>
4		<p>This cone has a diameter of 2.8 metres and a height of 3.2 metres.</p> <p>Find the volume of the cone rounded to one decimal place.</p>
5		<p>This sphere has a diameter of 6 centimetres.</p> <p>Find the volume of the sphere rounded to one significant figure.</p>
6		<p>This hemi-sphere has a radius of 20 centimetres.</p> <p>Find the volume of the hemi-sphere rounded to two significant figures.</p>

7	<p>Cylinder A and cylinder B have the same volume.</p> <ul style="list-style-type: none"> • Cylinder A has a diameter of 12 cm and a height of 7 cm. • Cylinder B has a diameter of 10 cm. <p>Calculate the height of cylinder B</p>	4
8	<p>A health food shop produces probiotic capsules for its customers. Each capsule is in the shape of a cylinder with hemispherical ends as show below.</p> <p>The length of the cylinder part is 12 millimetres and the diameter of the hemispheres is 8mm. Calculate the volume of one capsule. Give your answer correct to 2 significant figures.</p>	5
<p>25 marks</p>		

	<p>Volume – Answers</p> <p>These answers use π, if you use 3.14 your answer will still be valid.</p> <p>Failing to round or state the correct units automatically a mark, but this will only be taken off once. If you always forget to round you will not lose 7 marks!</p>		
1	<p>Mark 1 Substitute into the correct formula</p> <p>Mark 2 Calculate the answer correctly rounded answer with units</p>	$V = \pi \times 9^2 \times 5$ $V = 1272.34 \dots$ <p>Volume is 1272 cm³</p>	2
2	<p>Mark 1 Substitute the radius into the correct formula</p> <p>Mark 2 Calculate the answer</p> <p>Mark 3 Correctly rounded answer with units</p> <p>Lose one mark for using the diameter (2.4 m) instead of the radius ($V = 57.915\dots = 60 \text{ m}^3$)</p>	$V = \pi \times 1.2^2 \times 3.3$ $V = 14.928848 \dots$ <p>Volume is 15 m³</p>	3
3	<p>Mark 1 Substitute into the correct formula</p> <p>Mark 2 Calculate the answer correctly rounded answer with units</p>	$V = \frac{1}{3} \times \pi \times 4^2 \times 10$ $V = 167.5516 \dots$ <p>Volume is 168 cm³</p>	2
4	<p>Mark 1 Substitute the radius into the correct formula</p> <p>Mark 2 Calculate the answer</p> <p>Mark 3 Correctly rounded answer with units</p> <p>Lose one mark for using the diameter (2.8) instead of the radius ($V = 26.27\dots = 26.3 \text{ m}^3$)</p>	$V = \frac{1}{3} \times \pi \times 1.4^2 \times 3.2$ $V = 6.56802 \dots$ <p>Volume is 6.6 m³</p>	3
5	<p>Mark 1 Substitute the radius into the correct formula</p> <p>Mark 2 Calculate the answer</p> <p>Mark 3 Correctly rounded answer with units</p> <p>Lose one mark for using the diameter (6 cm) instead of the radius ($V = 904.7789 = 900 \text{ cm}^3$)</p> <p>Lose one mark for squaring the radius ($V = \frac{4}{3} \times \pi \times 3^2 = 37.699 = 38 \text{ cm}^3$)</p>	$V = \frac{4}{3} \times \pi \times 3^3$ $V = 113.0973355 \dots$ <p>Volume is 100 cm³</p>	3
6	<p>Mark 1 Substitute into the formula for a hemi-sphere</p> <p>Mark 2 Calculate the answer</p> <p>Mark 3 Correctly rounded answer with units</p> <p>Lose one mark for using the diameter (50) instead of the radius ($V = 261799 = 260000 \text{ m}^3$)</p> <p>Lose one mark for squaring the radius ($V = \frac{1}{2} \times \frac{4}{3} \times \pi \times 20^2 = 837.758 = 840 \text{ cm}^3$)</p> <p>Lose one mark for finding the volume of the sphere ($V = \frac{4}{3} \times \pi \times 20^3 = 33510.32 = 34000 \text{ cm}^3$)</p>	$V = \frac{1}{2} \times \frac{4}{3} \times \pi \times 20^3$ $V = 16755.16082 \dots$ <p>Volume is 17000 cm³</p>	3
7	<p>Mark 1 Substitute the radius into the correct formula</p> <p>Mark 2 Calculate the answer</p> <p>Mark 3 Show that the volume of both cylinders are equal</p> <p>Mark 4 Find the height of cylinder B</p> <p>Lose one mark for using the diameters – $V_A = 3166.7$, $height = 31667 \div 100\pi = 10 \text{ cm}$</p>	$V = \pi \times 6^2 \times 7$ $V = 791.68$ $V_A = V_B$ <p>so $791.68 = \pi \times 5^2 \times height$</p> <p>Height is $791.68 \div 25\pi = 10 \text{ cm}$</p>	

8	<p>Mark 1 Find the volume of sphere $V_{sphere} = \frac{4}{3} \times \pi \times 4^3$</p> <p>Mark 2 Find the volume of the cylinder $V_{cylinder} = \pi \times 4^2 \times 12$</p> <p>Mark 3 Know that the volume of the capsule is found by addition $V_{sphere} + V_{cylinder}$</p> <p>Mark 4 Carry out all calculations correctly, give all your answers in unrounded form where possible</p> $V_{sphere} = 268.083 \dots, \quad V_{cylinder} = 603.186 \dots,$ $V_{capsule} = V_{sphere} + V_{cylinder} = 871.269 \dots$ <p>Mark 5 Correctly rounded answer with units $V = 870 \text{ mm}^3$</p> <p>You can lose one mark for:</p> <ul style="list-style-type: none"> • Using the diameter of 8 cm rather than the radius of 4cm (4557.4 ... mm³) • Rounding too early in your calculations 	5
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