



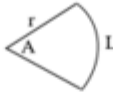

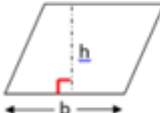


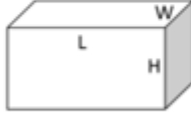
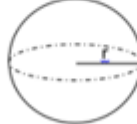



Topic 16: Area/Volume

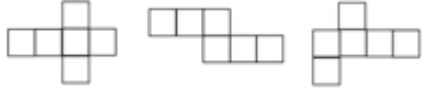
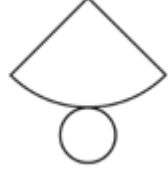
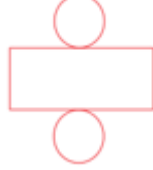
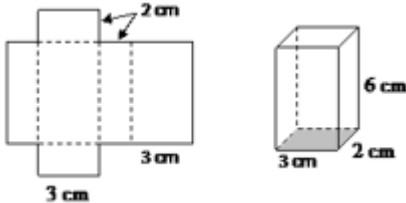
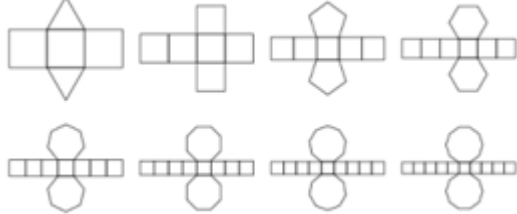
1) The Formulae: (Note the ones with an asterisk next to them are **NOT** in the Tables)

<p>Square:</p>  <p>Area = L^2 *</p> <p>Per = $4L$ *</p>	<p>Rectangle:</p>  <p>Area = $L \times W$ *</p> <p>Per = $2L + 2W$ *</p>	<p>Triangle:</p>  <p>Area = $\frac{1}{2} b \times h$</p>	<p>Circle:</p>  <p>Area = πr^2</p> <p>Circum = $2\pi r$</p>	<p>Sector:</p>  <p>Area = $\frac{A}{360^\circ} \times \pi r^2$</p> <p>L = $\frac{A}{360^\circ} \times 2\pi r$</p>	<p>Cone:</p>  <p>Vol = $\frac{1}{3}\pi r^2 h$</p> <p>CSA = $\pi r L$</p>
<p>Parallelogram:</p>  <p>Area = $b \times h$</p>	<p>Cylinder:</p>  <p>Vol = $\pi r^2 h$</p> <p>CSA = $2\pi r h$</p>	<p>Cube / Cuboid:</p>  <p>Vol = L^3 *</p> <p>TSA = $6L^2$ *</p>	 <p>Vol = $L \times W \times H$ *</p> <p>TSA = $2LW + 2WH + 2HL$ *</p>	<p>Sphere:</p>  <p>Vol = $\frac{4}{3}\pi r^3$</p> <p>CSA = $4\pi r^2$</p>	<p>Prism:</p>  <p>Vol = Area $A \times h$</p>

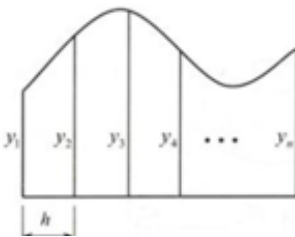

2) Solving Problems:

<p>a) Tips for solving Area/Volume problems:</p> <ol style="list-style-type: none"> 1. Draw a good-sized diagram. 2. Label and fill in all information given. 3. Identify the shapes in the question. 4. Write down relevant formulae for those shapes. 	<p>b) Recasting/Remoulding:</p> <ul style="list-style-type: none"> • Melting down shapes and making new shapes. <p style="text-align: center;">Vol of Old Shape = Vol of New Shape(s)</p>
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3) Nets:

<p>➤ The net, of a particular shape, is a flat surface that, when folded, can be made into that shape.</p> <p>a) Nets of Cubes:</p> <p>➤ There are 11 nets for a cube. Some are shown below.</p> 	<p>c) Net of a Cone:</p> 	<p>d) Net of a Cylinder:</p> 
<p>b) Net of a Cuboid:</p> 	<p>d) Nets for some Polygonal Prisms:</p> 	

4) Trapezoidal Rule:

<p>Note:</p> <p>➤ Used to estimate the area of irregular shapes.</p> <div style="border: 1px solid black; border-radius: 50%; padding: 10px; width: fit-content; margin: 10px auto;"> $A \approx \frac{h}{2} [y_1 + y_n + 2(y_2 + y_3 + \dots + y_{n-1})]$ </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="border: 1px solid black; padding: 5px;">1st height</div> <div style="border: 1px solid black; padding: 5px;">Last height</div> <div style="border: 1px solid black; padding: 5px;">Other heights</div> </div> 	<p>Example: Find an estimate of the area below:</p>  $A \approx \frac{h}{2} [y_1 + y_n + 2(y_2 + y_3 + \dots + y_{n-1})]$ $A \approx \frac{4}{2} [5 + 6 + 2(4 + 5 + 7 + 4 + 9)]$ $A \approx 2[69] = 138 \text{ units}^2$
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