

Name

Date



GEOMETRY QUICK GUIDE 5: 3D SHAPE FORMULAS

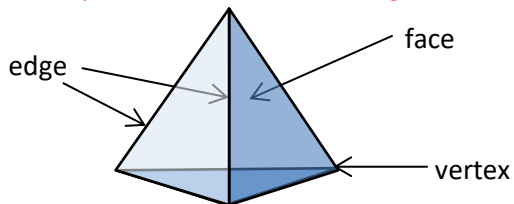
3D SHAPES

All 3d shapes can be described in terms of their faces, vertices and edges.

Face - a flat or curved surface

Edge - line where 2 faces meet

Vertex - point where 3 or more edges meet

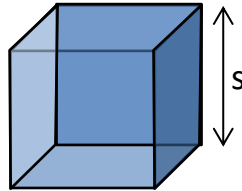


CUBE

Volume = s^3

Surface area = $6s^2$

where s is the length of one side

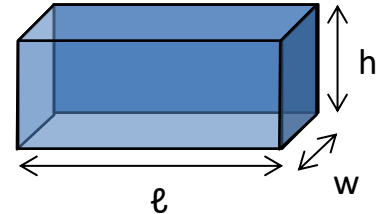


CUBOID (RECTANGULAR PRISM)

Volume = $\ell \times w \times h$

Surface area = $2\ell h + 2\ell w + 2wh$

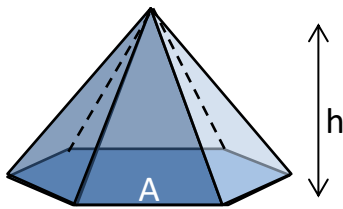
where ℓ = length, w = width, h = height



PYRAMIDS

Volume of a general pyramid = $\frac{1}{3} Ah$

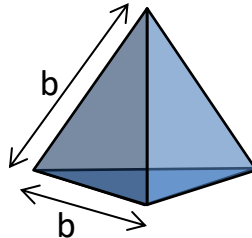
where A = base area and h = height



REGULAR TETRAHEDRON

Volume = $b^3/6\sqrt{2}$

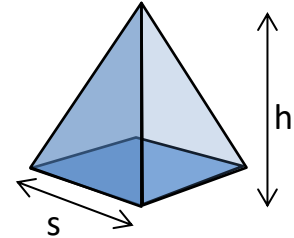
Surface area = $\sqrt{3}b^2$



SQUARE PYRAMID

Volume = $\frac{1}{3} s^2 h$

Surface area = $s^2 + 2sh$

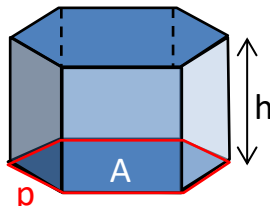
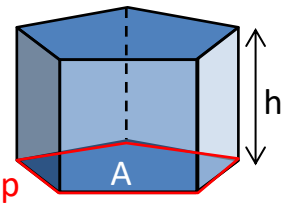


PRISMS

Volume of any prism = Ah

Surface area of a closed prism = $2A + (h \times p)$

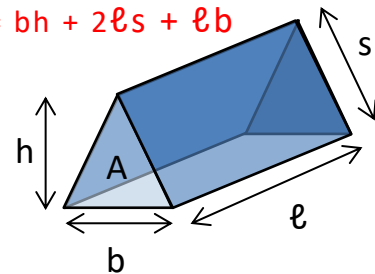
where A = base area, h = height, p = base perimeter



TRIANGULAR PRISM

Volume = $A\ell$ or $\frac{1}{2}bh\ell$

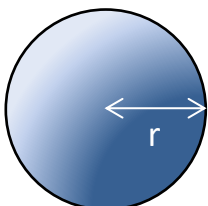
Surface area = $bh + 2\ell s + \ell b$



SPHERES

Volume = $\frac{4}{3} \pi r^3$

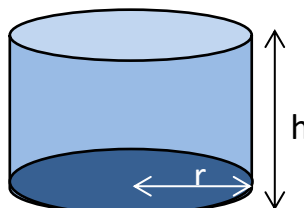
Surface area = $4\pi r^2$



RIGHT CYLINDER

Volume = $\pi r^2 h$

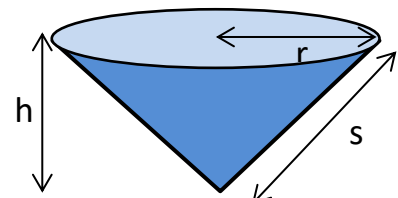
Surface area = $2\pi r(r + h)$



RIGHT CIRCULAR CONE

Volume = $\frac{1}{3} \pi r^2 h$

Surface area = $\pi r(r + s)$



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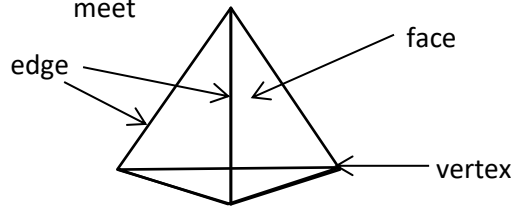


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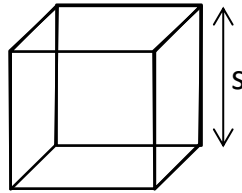


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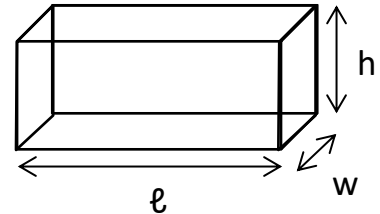


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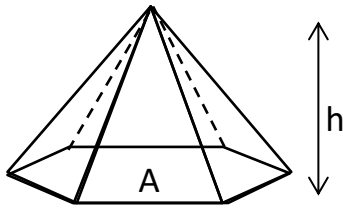
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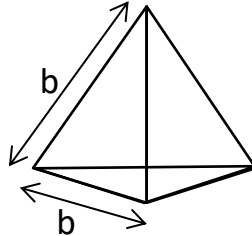
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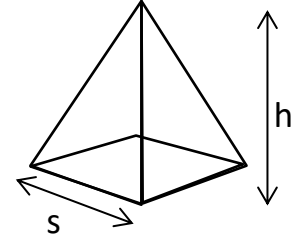
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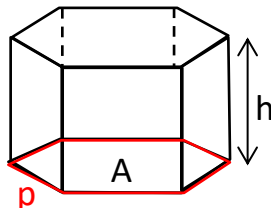
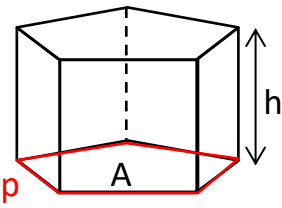


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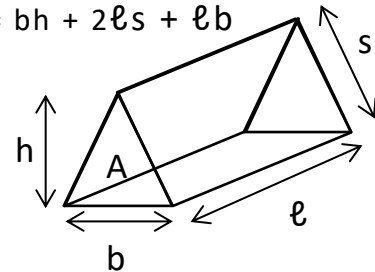
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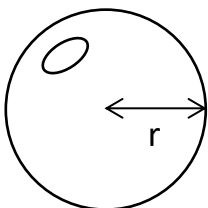
Surface area = $bh + 2\ell s + \ell b$



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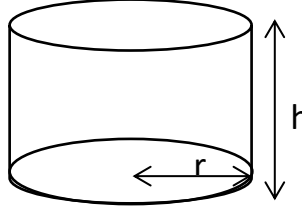
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