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Surface Area of 3-D Shapes

Prism:

Surface Area: $A_{total} = 2 \times A_{base} + A_{rectangles}$

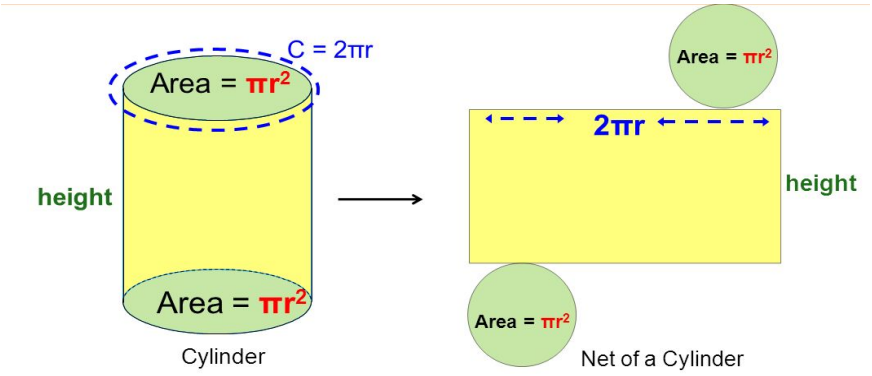
Pyramid:

Surface Area: $A_{total} = A_{base} + A_{triangles}$

Cylinder:

Surface Area: $A_{total} = 2 \times A_{circular\ base} + A_{lateral\ face}$

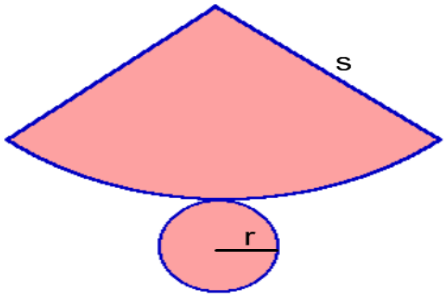
$$A_{total} = 2\pi r^2 + 2\pi rh$$



Cone:

Surface Area: $A_{total} = A_{circular\ base} + A_{lateral\ face}$

$$A_{total} = \pi r^2 + \pi rs$$

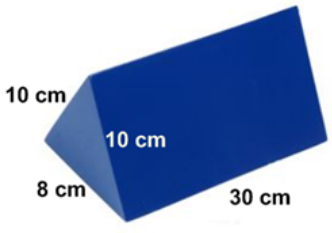


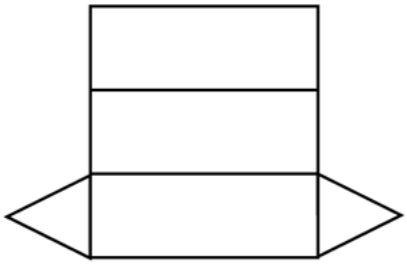
Sphere:

Surface Area: $A_{total} = 4\pi r^2$

Demonstration using Surface Area of Cylinder:
https://www.youtube.com/watch?v=Fyvq-jIQKr8
Orange Demonstration:
https://www.youtube.com/watch?v=FB-acn7d0zU
Another Video of interest:
https://www.youtube.com/watch?v=T_DBkFnr4NM

Example 1: Calculate the surface area of the following triangular-based prism.





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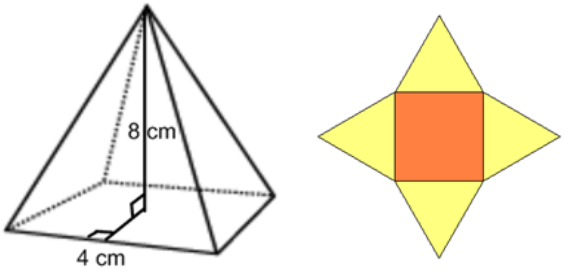
Example 2: Calculate the surface area of the square-based pyramid.



Example 3: The slant height of a cone is tripled. Does this triple the surface area of the cone? Explain.

Example 4: A cone is formed from a circle with a 90º sector removed. Another cone is formed from a semicircle with the same radius. How do the two cones differ? How are they the same?

Example 5: The lateral area of a cone with slant height 14 cm is 132 cm^2.

a) Find the radius of the cone, to the nearest cm.

b) Find the height of the cone, to the nearest tenth of a cm.

Example 6: A can of soup is 10.3 cm high and its diameter is 6.7 cm. How much paper is required to make the soup can label?

Example 7: The radius of a sphere is tripled. Does this triple the surface area of the sphere? Explain.

Example 8: The surface area of an orange is 147 cm^2. What is the diameter of the orange? Round your answer to two decimal places.