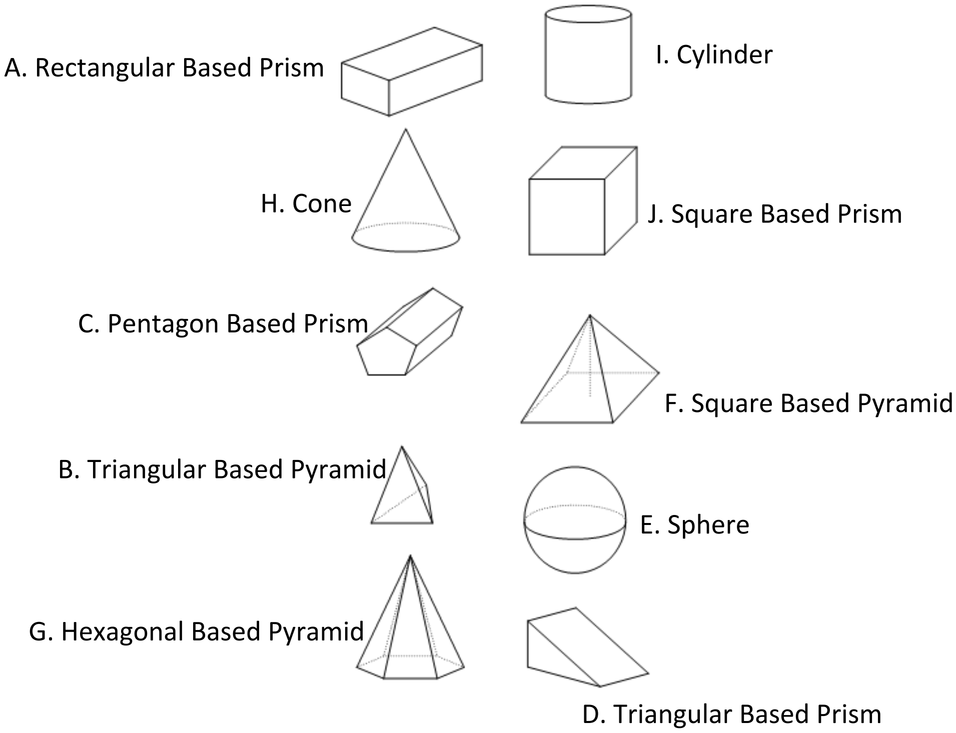
Part A - Match the following names by dragging each name to with the correct shape:



** rice/water Demonstration with 3 D Prisms and Pyramids

Polyhedron: A three-dimensional object with faces that are polygons.

Prism: A prism is a three-dimensional solid (a polyhedron). The top and bottom (the bases) are parallel, identical polygons.

The lateral faces are rectangles; they meet the bases at right angles.
A prism is named by the shape of its bases,
for example, rectangular prism, triangular prism

Volume of any Prism:

$V = A_{base} \times \text{height}$

Surface Area:

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

Pyramid:

A pyramid is a three-dimensional solid (a polyhedron) with a polygon-shaped base. The remaining sides are triangles that come to a point at the top.

Volume of any Pyramid:

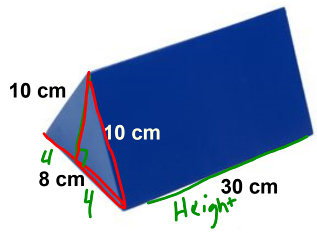
$V = \frac{1}{3}(A_{base} \times \text{height})$

Surface Area:

$A_{total} = A_{base} + A_{triangles}$

Note: Height (vertical) is measured from the center of the base to the point of the pyramid, not to be confused with the slant height.

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



$V = A_{base} \times Height$

$V = \frac{b \times h}{2} \times 30$

$V = \frac{8 \times 9.16}{2} \times 30$

$V = 36.64 \times 30$

$V = 1099.2\ cm^3$

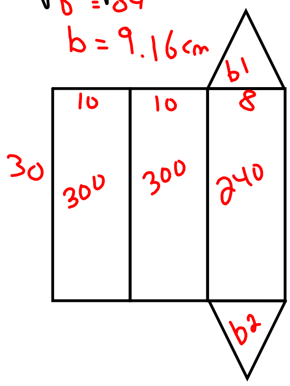
$4^2 + b^2 = 10^2$

$16 + b^2 = 100$

$b^2 = 100 - 16$

$\sqrt{b^2} = \sqrt{84}$

$b = 9.16\ cm$



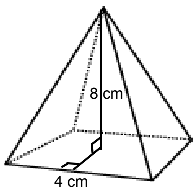
$SA = A\ base \times 2 + A\ Rectangles$

$SA = 36.64 \times 2$

$= 73.28 + 300 + 300 + 240$

$= 913.28\ cm^2$

Example 2: Calculate the volume of the following square-based pyramid.



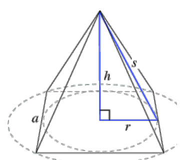
$V = \frac{A\ base \times height}{3}$

$V = \frac{4 \times 4 \times 8}{3}$

$V = \frac{16 \times 8}{3}$

$V = \frac{128}{3}$

$V = 42.6\ cm^3$



Example 3: Calculate the surface area of the pyramid in example 2.

Square Based Pyramid

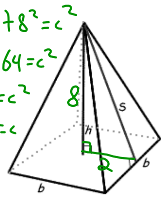
$a^2 + b^2 = c^2$

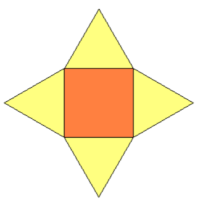
$2^2 + 8^2 = c^2$

$4 + 64 = c^2$

$68 = c^2$

$8.24 = c$





$SA = A\ base + A\ triangles$

$SA = 16 + 16.48(4)$

$SA = 16 + 65.92$

$SA = 81.92\ cm^2$

$SA\ triangle = \frac{b \times h}{2}$

$= \frac{4 \times 8.24}{2}$

$= \frac{32.96}{2}$

$= 16.48$

Example 4: A box of chocolates has a volume of 80 cm^3. If its length is 10 cm and its height is 2 cm, what is its width?

$V = A_{base} \times height$

$V = l \times w \times h$

$\frac{80}{2} = \frac{10 \times w \times 2}{2}$

$\frac{40}{10} = \frac{10 \times w}{10}$

$4 = w$

$\therefore$ the width of the box of chocolates is 4 cm

Today's Practice Questions:

Pgs. 441-443 #1a, 2b, 3b, 4b, 6, 8, 9 (1cm^3=1mL), 11, 12, 13, 15, 17