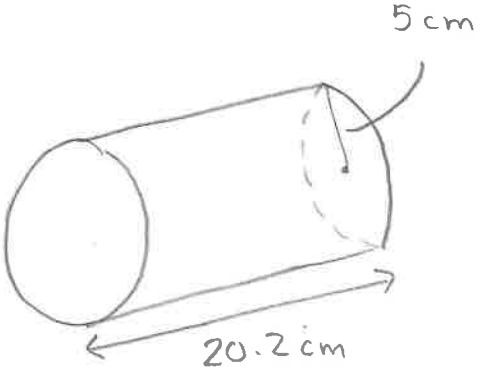
THESE SOLUTIONS ARE SIMILAR TO ASSIGNMENT PROBLEMS, BUT USE DIFFERENT NUMBERS.

1)




Find Volume!

This is a Cylinder

$V = A_{base} \times h$

$A_{base}$ = Area of Base
(Base is a circle)

$A_{base} = \pi r^2$
$= \pi (5\,cm)^2$

$A_{base} = 78.54\,cm^2$

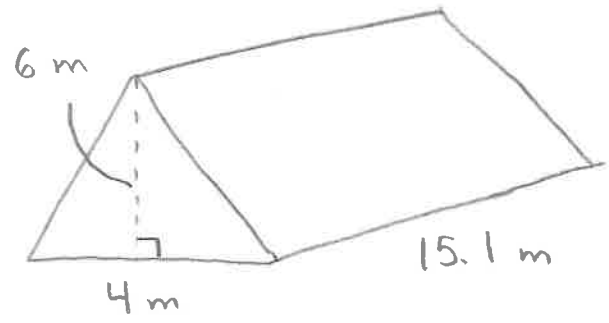
V = Volume  h = how long is the cylinder

$V = A_b \times h$

$V = (78.54\,cm^2) \times (20.2\,cm)$

$V = 1586.5\,cm^3$

2) Find volume of this TRIANGULAR PRISM




Volume of Triangular prism is the AREA of a TRIANGLE multiplied by the length of the prism.

$$V = A_{triangle} \times \ell = A_{base} \times \ell$$

$$A_{triangle} = \frac{1}{2}bh = \frac{bh}{2}$$

$$A_{triangle} = \frac{(4\,m)(6\,m)}{2}$$

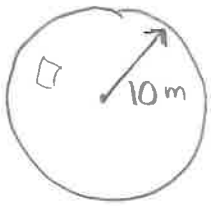
$$A_{triangle} = 12\,m^2$$

$$V = A_{triangle} \times \ell$$

$$V = (12\,m^2)(15.1\,m)$$

$$\boxed{V = 181.2\,m^2}$$

3) A sphere has radius of 10 m. What is VOLUME?



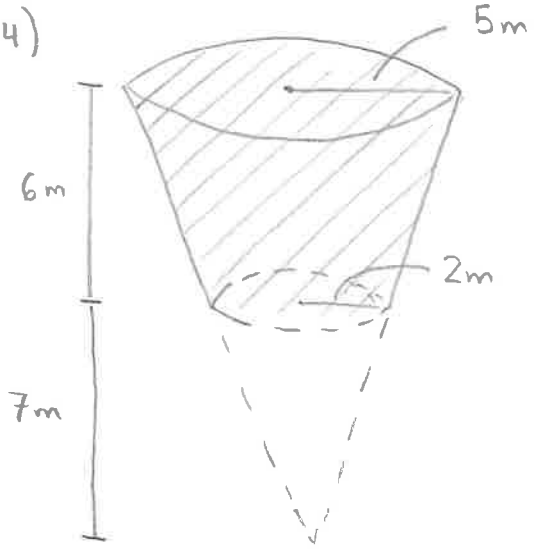

$$V = \frac{4}{3}\pi r^3$$

$$V = \frac{4}{3}\pi (10\,m)^3$$

$$V = \frac{4}{3}\pi (1000\,m^3)$$

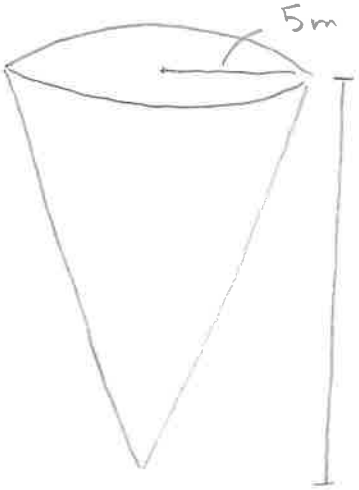
$$\boxed{V = 4188.8\ m^3}$$

4)



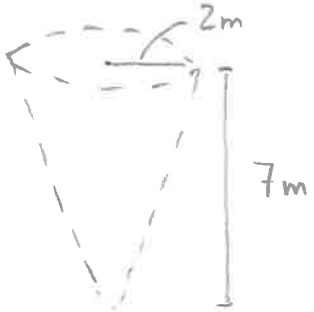

What is the volume of the shaded area?

We have 2 cones:




CONE 1

$6m + 7m = 13m$




CONE 2

$$V_{SHADED} = V_{CONE\,1} - V_{CONE\,2}$$

$$V_{CONE\,1} = \frac{1}{3} A_{base} \times h \rightarrow A_{base} = \pi r^2 = \pi (5m)^2$$

$$A_{base} = 78.54\ m^2$$

$$V_{CONE\,1} = \frac{(78.54\ m^2)(13\ m)}{3}$$

$$V_{CONE\,1} = 340.3\ m^3$$

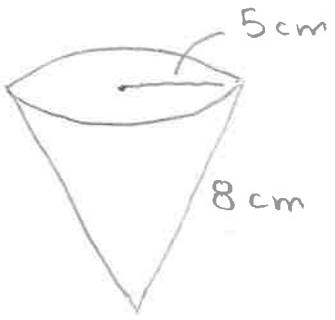
$$V_{CONE\,2} = \frac{1}{3} A_{base} \times h = \frac{\pi (2m)^2 \times (7m)}{3}$$

$$V_{CONE\,2} = 29.3\ m^3$$

$$V_{SHADED} = 340.3\ m^3 - 29.3\ m^3$$

$$\boxed{V_{SHADED} = 311.0\ m^3}$$

1) Find the SURFACE AREA




Total Area requires the Area of the circle and the Area of the pointed side

$A_{Total} = A_{base} + A_{side}$
(circle)

$A_{base} = \pi r^2$

$A_{side} = \pi r s$ where s is the side length

$A_{base} = \pi(5\,cm)^2$

$A_{base} = 78.54\ cm^2$

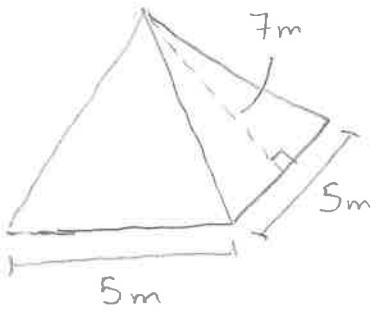
$A_{side} = \pi(5\,cm)(8\,cm)^2$

$A_{side} = 1005.31\ cm^2$

$A_{Total} = 78.54\ cm^2 + 1005.31\ cm^2$

$\boxed{A_{Total} = 1083.85\ cm^2}$

3) Calculate the SURFACE AREA




A square pyramid has 4 triangular sides and 1 square base. Need to add all these Areas together.

$A_{Triangle} = \frac{1}{2}bh$ where h is the height of the triangle. b is the base.

But we have 4 $A_{Triangles}$

so $4 \times \frac{1}{2}bh = 2bh$

$A_{sides} = 2bh$

$A_{sides} = 2(5m)(7m)$

$A_{sides} = 70\,m^2$

$A_{base} = b \times b = b^2$

$A_{base} = (5m)^2$

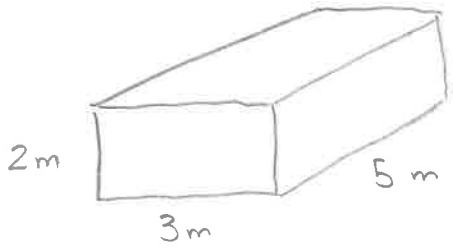
$A_{base} = 25\,m^2$

$A_{Total} = A_{sides} + A_{base}$

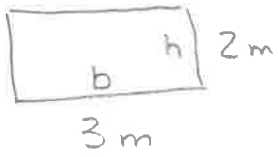
$A_{Total} = 70\,m^2 + 25\,m^2$

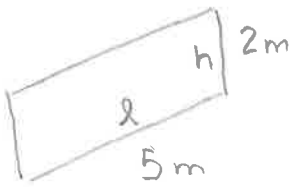
$\boxed{A_{Total} = 95\,m^2}$

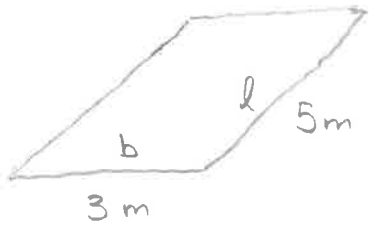
4) Calculate the SURFACE AREA of this Rectangular Prism.




To determine $A_{Total}$ we must add up all 6 rectangular faces that make it up

$2 \times$ 


$2 \times$ 


$2 \times$ 

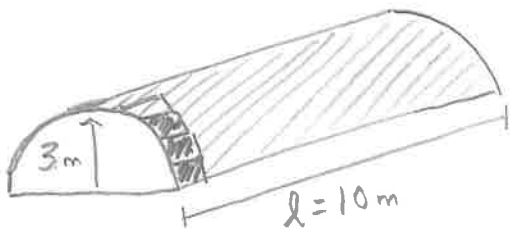

$$A_{Total} = 2 \times (bh + h\ell + b\ell)$$

$$A_{Total} = 2 \times [(3m)(2m) + (2m)(5m) + (3m)(5m)]$$

$$A_{Total} = 2 \times [6m^2 + 10m^2 + 15m^2]$$

$$\boxed{A_{Total} = 62\ m^2}$$

1) The curved surface is composed of steel panels 1m × 1m. About how many panels are needed for the roof?




We are only putting panels on the ROOF

The panels are

1m × 1m


The roof is a HALF CYLINDER

We are only roofing the SIDE.

$A_{side} = 2\pi r\ell$ but since it is only a half cylinder

$$A_{side} = \frac{2\pi r\ell}{2} = \pi r\ell$$

$$A_{side} = \pi(3m)(10m)$$

$$A_{side} = 90.42\ m^2$$

The total area that needs to be paneled is $90.42\ m^2$

$A_{panel} = bh$

$A_{panel} = (1m)(1m)$

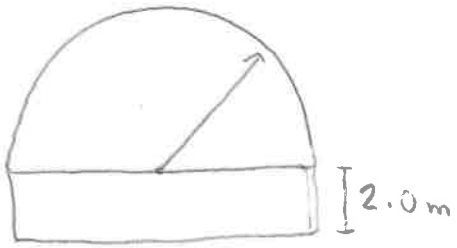

$$A_{panel} = 1m^2$$

$$\#\ PANELS = \frac{A_{side}}{A_{panel}} = \frac{90.42m^2}{1m^2}$$

$$\#\ PANELS = 91$$

* Cannot have a half panel.

2) What is the volume of the structure?




We have a HALF SPHERE on top of a CYLINDER.

$V_{Total} = V_{\frac{1}{2}Sphere} + V_{cylinder}$

The Half Sphere must have the same radius as the Cylinder.

$V_{sphere} = \frac{4}{3}\pi r^3$

$V_{sphere} = \frac{4}{3}\pi(6m)^3$

$V_{sphere} = 904.78\ m^3$

$V_{\frac{1}{2}sphere} = \frac{904.78\ m^3}{2}$

$V_{\frac{1}{2}sphere} = 452.4\ m^3$

$V_{cylinder} = A_b \times h$

$V_{cylinder} = \pi r^2 h$

$V_{cylinder} = \pi(6m)^2(2.0m)$

$V_{cylinder} = 226.19\ m^3$

$V_{Total} = 452.4\ m^3 + 226.19\ m^3$

$V_{Total} = 678.6\ m^3$