\[ \text{Area} = 14 \times 8 = 112 \text{ cm}^2 \]

\[ \text{Area}_{\text{cut}} = 112 - 16 = 96 \text{ cm}^2 \]

\[ \text{Area}_{\text{remaining}} = 8 \times 2 = 16 \text{ cm}^2 \]
Volume of Cylinders, Spheres, Pyramids and Cones
Volume of Prisms

The most important step in determining the volume of a prism, is identifying first that it is a prism and second what the base is.

A prism is essentially the same base stacked on top of each other over and over again.

To find the volume, we need to find the area of the base and multiply it by the height of the prism.
Example:
Determine which of the following are prisms.
Example:
Determine the volume.

Rectangular prism

Vol = area \cdot \text{base} \times \text{height}

= (4)(4)(25)

= 400 \text{ cm}^3

Volume is 3-D
Example:
Determine the volume.

Triangular prism
Vol = area \( \triangle \) \times \text{height}
\[
= \left( \frac{1}{2}bh \right) \times \text{length}
\]
\[
= \left( \frac{1}{2} \times 7.5 \times 6 \right) \times 10
\]
\[
= 225 \text{ cm}^3
\]
Determining the volume of a cylinder is very similar to determining the volume of a prism.

Essentially every cylinder is just a circle stacked on top of each other over and over again.

Therefore, we need to find the area of the circle and multiply by the height.
Example:
Determine the volume.

Cylinder
Vol = \( \pi r^2 h \)

Diameter = 6.5 m
Radius = 3.25 m \( \left( \frac{d}{2} \right) \)

Vol = \( \pi \left( 3.25 \right)^2 (8) \)

= \( (3.14)(3.25)^2(8) \)

= 265.33 m\(^3\)
Volume of a Sphere and a Cone

Finding the Volume of a Sphere and a Cone is very similar to a cylinder.

Make sure you have the radius, **NOT** the diameter.

For a cone, you need to have the radius and height.

For a sphere, you only need the radius.
Example:
Find the volume.
Example:
Find the volume.

\[ V = \frac{4}{3} \pi r^3 \]
\[ V = \frac{4}{3} \pi (3.5)^3 \]
\[ V = 179.59 \text{ m}^3 \]
Volume of a Pyramid

Finding the Volume of a Pyramid is very similar to a Prism.

You have to find the volume of the same based prism and then find one third of it.

In other words, divide it by 3.
Example:
Find the volume.
Example:
Find the volume.

\[ V = \frac{1}{3} b^2 h \]

\[ V = \frac{1}{3} (8)^2 (6.5) \]

\[ V = 138.67 \text{ m}^3 \]
Homework

Handout

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