

Before we begin, are there any questions from last day's work?

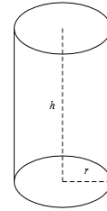
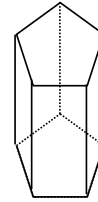
Today's Learning Goal(s):

By the end of the class, I will be able to:

- a) calculate the surface area or volume of a 3-dimensional solid
- b) use the volume and density of a material to calculate its mass

Define and discuss Prisms

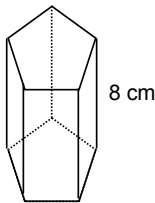
- ☞ named by the shape of the base
- ☞ ex. triangular prism, rectangular prism, trapezoidal prism, pentagonal prism
- ☞ discuss slicing perpendicular to the base
- ☞ exception: ☞ the cylinder



The volume of a prism can be found quickly using the formula:

$$\text{☞ Vol}_{\text{prism}} = A_{\text{base}} \times \text{height}$$

Ex. 1 Determine the volume of the prism if the A_{base} is 10 cm^2 .



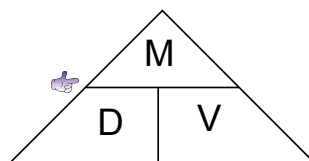
$$\text{☞ Vol}_{\text{prism}} = A_{\text{base}} \times \text{height}$$

$$\text{☞} = 10 \times 8$$

$$\text{☞} = 80 \text{ cm}^3$$

Density formula:

$$\text{☞ Density} = \frac{\text{Mass}}{\text{Volume}}$$

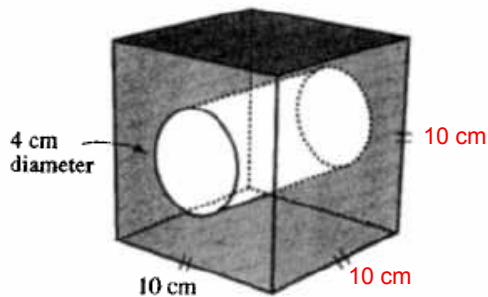


$$\text{☞ Mass} = \text{Density} \times \text{Volume}$$

☞ The density of water is 1 g/ml .

Example 1 6.5.2: Volume

A metal casting has the dimensions shown.



If the density of the material is 6.8 g/cm^3 , determine the mass of the casting, in kilograms.

Solution *Any class ideas on an approach to the problem?*

Determine the volume,
then multiply by the density to get the mass.

Recall: Mass = Density x Volume

$$\text{Vol}_{\text{prism}} = A_{\text{base}} \times \text{height}$$

$$= A_{\text{base}} \times 10$$

$$= 87.4336 \times 10$$

$$= 874.336 \text{ cm}^3$$

$$A_{\text{base}} = A_{\text{rectangle}} - A_{\text{circle}}$$

$$= lw - \pi r^2$$

$$= (10)(10) - \pi(2)^2$$

$$\doteq 87.4336$$

$$\text{Mass} = \text{Density} \times \text{Volume}$$

$$= 6.8 \text{ g/cm}^3 \times 874.336 \text{ cm}^3$$

$$= 5945.4848 \text{ g}$$

$$= 5.945 \text{ kg}$$

the mass of the casting is 5.945 kg

6.5.1 5, 7, 8, 10 or 12

6.5.2 4, 5, 7-9

Project Renovation due tomorrow