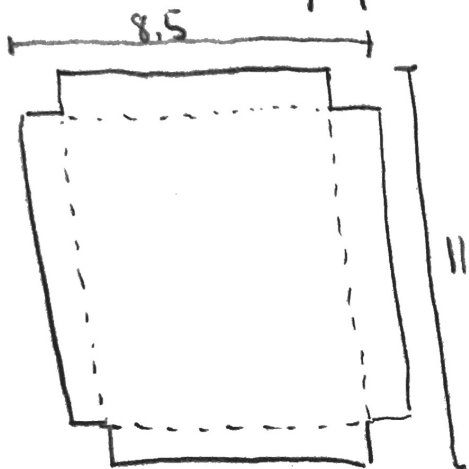


EXAMPLES IN CLASS

p. 554 # 1, 2, 7 ^{TO ASSIGN} p. 554 # 3, 4, 5, 6 HONORS # 10-15
p. 558-559 # 1, Example B ^{TO ASSIGN} p. 559 # 2, 3, 4

#1 IF you cut a 1-inch square from each corner of a piece of 8.5 x 11 in paper and fold into a box, what is the volume?



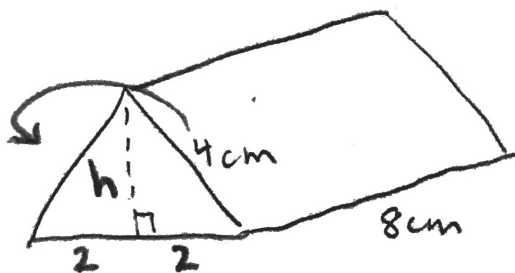
$$V = l \cdot w \cdot h$$

$$V = (11-2)(8.5-2)(1)$$

$$= (9)(6.5)(1)$$

$$= 58.5 \text{ in}^3$$

#2 A prism has equilateral triangle bases with side lengths 4 cm. The prism height is 8 cm. Find the volume.



$$V = A_{\text{triangle}} \cdot h$$

$$V = \left(\frac{1}{2} b \cdot h\right) h_p$$

$$V = \frac{1}{2}(4)(2\sqrt{3})(8)$$

$$= 32\sqrt{3} \text{ cm}^3 \approx 55.43 \text{ cm}^3$$

$$2^2 + h^2 = 4^2$$

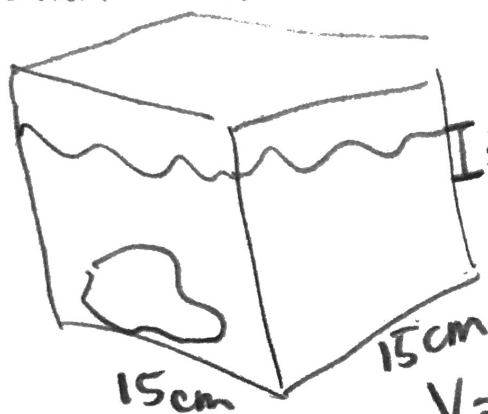
$$4 + h^2 = 16$$

$$\sqrt{h^2} = \sqrt{12}$$

$$h = 2\sqrt{3}$$

DISPLACEMENT METHOD → we only care about the change in water level

EX. When you put a rock in a container of water, the water level rises 3 cm. If the container is a rectangular prism with a base 15 cm x 15 cm, what is the volume of the rock?



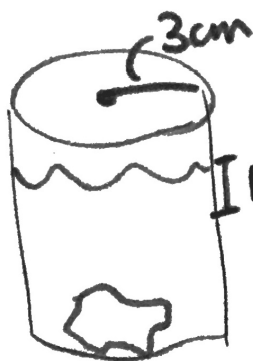
$$V_{\text{water}} = V_{\text{rock}}$$

$$V = l \cdot w \cdot h \quad \text{— change in water level}$$

$$V = (15 \text{ cm})(15 \text{ cm})(3 \text{ cm})$$

$$V = 650 \text{ cm}^3$$

EX. A clump of metal (mass = 351.4 g) is dropped in a cylindrical container and the water rises 1.1 cm. The radius of the base is 3 cm. What is the density? What kind of metal is it, assuming it's pure?



$$V = \pi r^2 h$$

$$V = \pi (3)^2 \cdot (1.1)$$

$$V = 9.9 \pi \text{ cm}^3 \approx 31.1 \text{ cm}^3$$

$$\text{density} = \frac{m}{V}$$

$$d = \frac{351.4 \text{ g}}{31.1 \text{ cm}^3}$$

$$d = 11.30 \text{ g/cm}^3$$

This matches the density of lead.