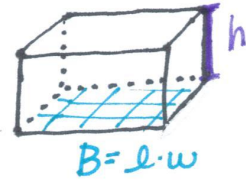


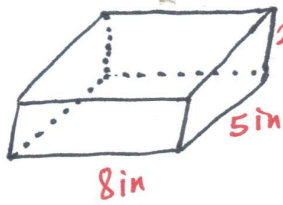
Volumes of Prisms & Cylinders (Section 13-3)

* Volume of a Prism: $V = B \cdot h$

Area of the base



#1
ex:



$$V = B \cdot h$$

$$V = (8 \cdot 5)(2)$$

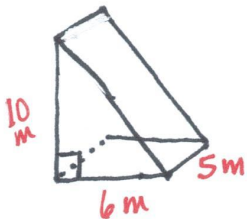
$$V = 80 \text{ in}^3$$

* As long as its rectangular:

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

* Don't forget to use units³!

Got it?
ex:



$$V = B \cdot h \rightarrow 5$$

a triangle!

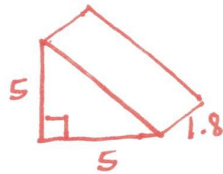
$$V = \left(\frac{1}{2} \cdot 10 \cdot 6\right)(5)$$

$$= 30(5)$$

$$V = 150 \text{ m}^3$$

#4

ex: base of triangular prism is a 45-45-90 triangle w/a leg of 5 in. The height is 1.8 in. Find the volume.

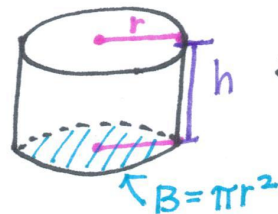


$$V = \frac{1}{2}(5 \cdot 5)(1.8)$$

$$V = 22.5 \text{ in}^3$$

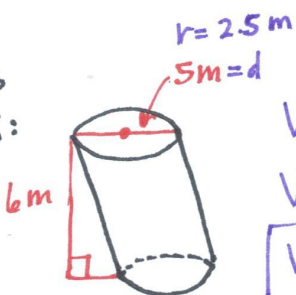
* Volume of a Cylinder: $V = B \cdot h$

the Base is always a circle!



$$\text{so... } V = \pi r^2 h$$

#5
ex:



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

$$V = \pi(2.5)^2(6)$$

$$V = 117.8 \text{ m}^3$$

#6

ex: Diameter = 1 yd
Height = 4 yds
Find Volume.
 $r = .5 \text{ yd}$

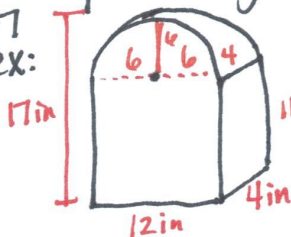
$$V = \pi r^2 h$$

$$V = \pi(.5)^2(4)$$

$$V = 3.1 \text{ yd}^3$$

* Composite Figures: Break it into known figures!

#7
ex:



Rect. prism + $\frac{1}{2}$ cylinder

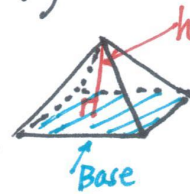
$$V = (12 \cdot 4)(11) + \frac{1}{2}(\pi 6^2)(4)$$

$$V = 528 + 226.2$$

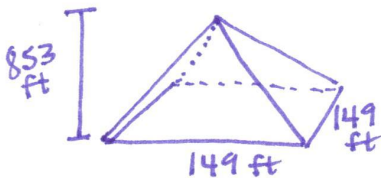
$$V = 754.2 \text{ in}^3$$

Volumes of Pyramids & Cones (Section 13-4)

* Volume of a Pyramid: $V = \frac{1}{3} B \cdot h$
 Area of the Base



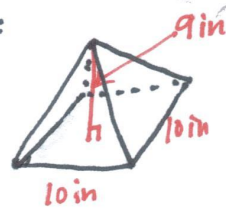
#1 ex: Bldg 853 ft tall w/square base that is 149 ft on each side. Find the volume.



$$V = \frac{1}{3} (149 \cdot 149) \cdot (853)$$

$$V = 6,312,484 \text{ ft}^3$$

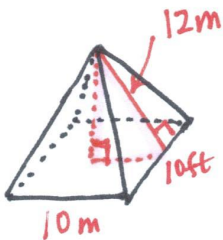
#2 ex:



$$V = \frac{1}{3} (10 \cdot 10) (9)$$

$$V = 300 \text{ in}^3$$

#3 ex:



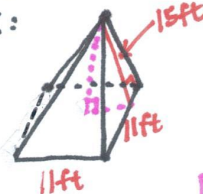
$$x^2 + 5^2 = 12^2$$

$$x = \sqrt{119}$$

$$V = \frac{1}{3} (10 \cdot 10) (\sqrt{119})$$

$$V = 363.6 \text{ m}^3$$

#4 ex:



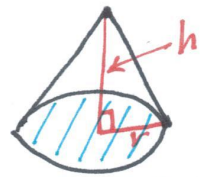
$$x^2 + (5.5)^2 = 15^2$$

$$x = 13.956 \dots$$

$$V = \frac{1}{3} (11 \cdot 11) (\text{ANS})$$

$$V = 562.9 \text{ ft}^3$$

* Volume of a Cone: $V = \frac{1}{3} B \cdot h$ so... $V = \frac{1}{3} (\pi r^2) h$
 Base is a circle



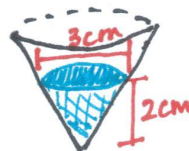
$$B = \pi r^2$$

#5 ex: Diameter = 6.5 cm
 Height = 6 cm
 Find Volume.
 $r = 3.25$

$$V = \frac{\pi}{3} (3.25)^2 (6)$$

$$V = 66.4 \text{ cm}^3$$

#6 ex:



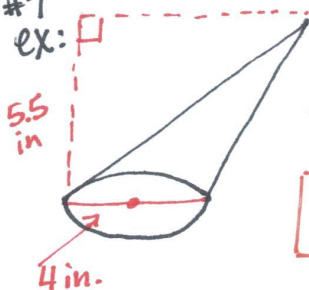
$$r = 1.5 \text{ cm}$$

$$h = 2 \text{ cm}$$

$$V = \frac{\pi}{3} (1.5)^2 (2)$$

$$V = 4.7 \text{ cm}^3$$

#7 ex:



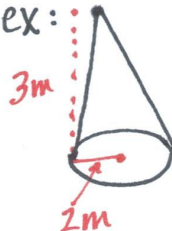
$$r = 2 \text{ in}$$

$$h = 5.5 \text{ m}$$

$$V = \frac{\pi}{3} (2)^2 (5.5)$$

$$V = 23.0 \text{ in}^3$$

#8 ex:



$$r = 2 \text{ m}$$

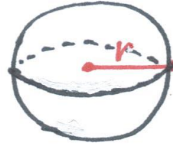
$$h = 3 \text{ m}$$

$$V = \frac{\pi}{3} (2)^2 (3)$$

$$V = 12.6 \text{ m}^3$$

Volume of a Sphere (Section 13-5)

* Volume of a Sphere: $V = \frac{4}{3}\pi r^3$



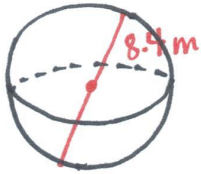
#5
ex:



$$V = \frac{4}{3}\pi(5)^3$$

$$V = \frac{500\pi}{3} \text{ OR } 523.6 \text{ ft}^3$$

#6
ex:



$$V = \frac{4}{3}\pi(4.2)^3$$

$$V = 310.3 \text{ m}^3$$

#19

ex: Hailstone dia = 5.6 in
weighed: 0.018 lb/in³
normal weight: 0.033 lb/in³

$$V = \frac{4}{3}\pi(2.8)^3$$

$$V = 91.952 \text{ in}^3$$

$$V \cdot \text{weight} = \text{lbs.}$$

$$(91.952)(.018) = 1.655 \text{ lbs}$$