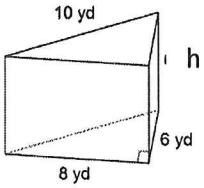Name: **Key**

Putting it All Together! Day 1 HOMEWORK

Directions: If it is not indicated, round to the nearest tenth.

1. The volume of a triangular prism is 144 yd³. The prism has a right triangle base with legs of 8 meters and 6 meters. Find the height of the prism.
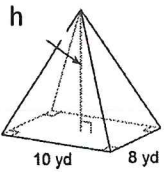
$V = B \cdot H$

$144 = \left(\frac{1}{2} 8 \times 6\right) H$

$H = 6 \, yd$

2. The volume of the rectangular pyramid has a volume of about 266.67 yd³. The base of the pyramid is a rectangle that is 10 km by 8 km. Find the height of the pyramid.

$V = \frac{1}{3} B \cdot H$

$266.67 = \frac{1}{3} 80h$

$H = 10 \, yd$

3. The volume of a cylinder is 7875π cubic meters and the radius is 15 meters. Find the height the cylinder.

$V = B \cdot H$

$7875\pi = \pi 15^2 \cdot H$

$H = 35 \, m$

4. The volume of a rectangular pyramid is 84 in³ and the area of the base is 12 in². Find the height of the pyramid.

$V = \frac{1}{3} B \cdot H$

$84 = \frac{1}{3} 12 \cdot H$

$H = 21 \, in$

5. The surface area of a cone is 250π km². The cone has a diameter of 20 km. Find the slant height of the cone.

$250\pi = \pi 10^2 + \pi 10 \ell$

$150\pi = \pi 10 \ell$

$\ell = 15 \, km$

6. Find the surface area and volume of the composite solid.

$SA = \underset{(No \, circle)}{Cone} + \underset{(one \, circle)}{cylinder}$

$SA = \pi r \ell + \pi r^2 + 2\pi r H$

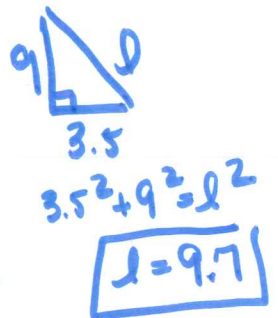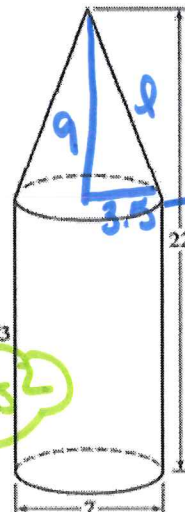$SA = \pi 3.5 \times 9.7 + \pi 3.5^2 + 2\pi 3.5 \cdot 13$

$SA \approx 431.0 \, units^2$

$V \approx 615.8 \, units^2$

$V = \frac{1}{3} B \cdot H + B \cdot H$

$V = \frac{1}{3} \pi r^2 \cdot H + \pi r^2 \cdot H$

$V = \frac{1}{3} \pi 3.5^2 \cdot 9 + \pi 3.5^2 \cdot 13$

9   ℓ 9   9 ℓ

3.5

$3.5^2 + 9^2 = \ell^2$

$\ell = 9.7$

22

13

13

7. Find the surface area and volume of the composite solid.

2 in.

5 in.
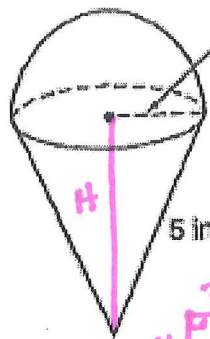
$SA = \frac{1}{2}$ (sphere (No circle)) + cone (no circle)

$SA = \frac{1}{2} 4\pi r^2 + \pi r l$

$SA = \frac{1}{2} 4\pi 2^2 + \pi 2 \cdot 5$

$SA \approx 56.5 in^2$
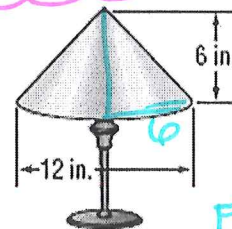
$H^2 + 2^2 = 5^2$

$H = \sqrt{21} \approx 4.6$

$V = \frac{1}{2}$ sphere + whole cone

$V = \frac{1}{2} (\frac{4}{3} \pi r^3) + \frac{1}{3} \pi r^2 \cdot H$

$V = \frac{1}{2} \cdot \frac{4}{3} \cdot \pi 2^3 + \frac{1}{3} \pi 2^2 \cdot 4.6$

$V \approx 36.0 in^3$

8. **LAMPS** Diego has a conical lampshade with an altitude of 6 inches and a diameter of 12 inches. Find the lateral area of the lampshade.

6 in.

←12 in.→

$l = 6\sqrt{2}$

$l = 8.5$

Find slant

$6 \quad \begin{array}{c} 6\sqrt{2} \\ \end{array} \quad 6$

$LA = SA$ w/out the circle base!

$LA = \pi r^2 + \pi r l \quad LA = \pi r l$

$LA = \pi 6 \cdot 8.5$

$LA \approx 160.2 in^2$

9. *Application* A contractor needs to build a ramp, as shown at right, from the street to the front of a garage door. How many cubic yards of fill will she need?

2 yards

17 yards

10 yards = H
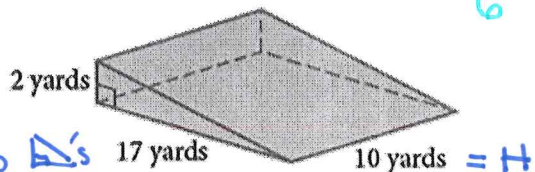
area of the BASE!

$B = (\frac{1}{2} 17 \times 2)$

$V = B \cdot H \leftarrow$ connects two △'s

$V = \frac{1}{2} 17 \cdot 2 \cdot 10$

$V = 170 yd^3$

10. **DIGITAL CAMERA** The world's most powerful digital camera is located in New Mexico at the Apache Point Observatory. It is surrounded by a rectangular prism made of aluminum that protects the camera from wind and unwanted light. If the prism is 12 feet long, 12 feet wide, and 14 feet high, find its volume to the nearest cubic foot.

14

12

12
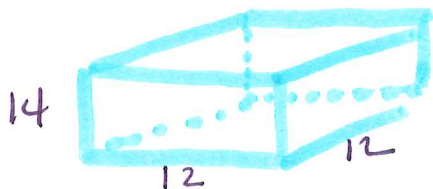
$V = B \cdot H$
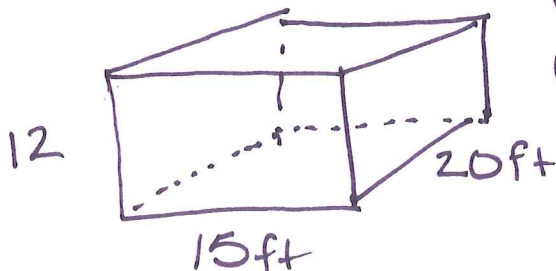
$V = (12 \times 12) 14$

$V = 2016 ft^3$

$B = 12 \times 12$

$H = 14$

11. **PAINTING** Eva and Casey are planning to paint the walls and ceiling of their living room. The room is 20 feet long, 15 feet wide, and 12 feet high. Find the surface area to be painted.

12

15ft

20ft

walls: $2(12 \times 15) + 2(12 \times 20)$

ceiling: 15×20 (No floor!)

SA to be painted!

$1380 ft^2$