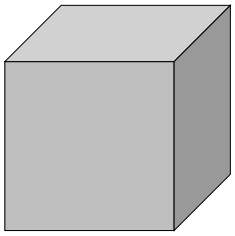
(6) 1a. Use the drawing below to illustrate the relationship between cubic yards and cubic feet.

1b. Show the dimensional analysis for the conversion of 2 cubic yards to cubic feet.
$2\ yd^3 =$ ___ ft^3



(12) 2. Convert each of the following, showing the dimensional analysis.

a. 5.2cm = _____ dam

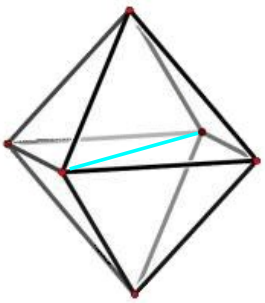
b. 0.67 m^3 = _____ cm^3

c. 2500 mL water = _____ kL

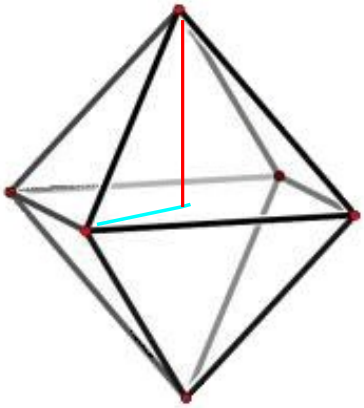
d. 36 ft^3 = _____ in^3

(5) 3. Find the mass of water (at 4°C) needed to fill a tank 1 meter wide, 1 meter high and 1 meter deep. Show the dimensional analysis that leads to your answer.

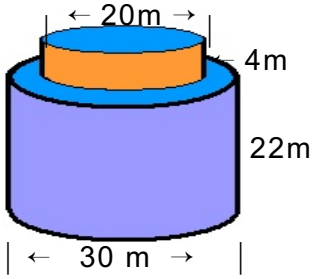
(10) 4. A regular octahedron has 10cm edges. If we slice through the regular octahedron on a plane containing four edges (think equator) we see a square. Find the diagonal length of that square.



Find the volume of a regular octahedron with 10cm edges.
Show your work.



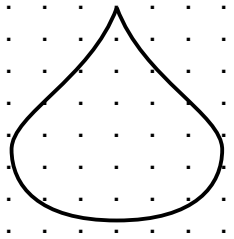
(5) 6. Find the <u>entire surface area</u> of *the solid object illustrated below*.
Assume all curves are circular, and all edges that appear vertical are.



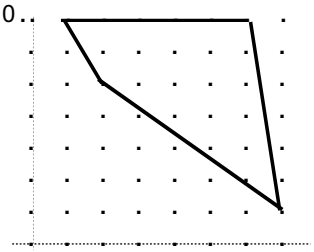
7. Find the volume of the observatory illustrated at right, consisting of a 10-foot high right circular cylinder topped by a hemispherical dome with diameter 12 feet. (Ignore the steps of the observatory!)

8. What is the Surface Area (of the exposed surface) of the building above? (Ignore the steps!)

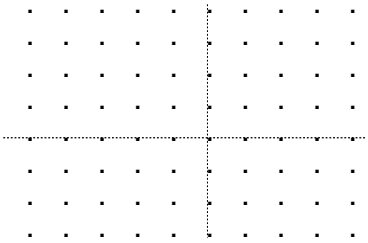
9.



10.



11.



In all the above, the area shown here is one square unit.

9. ESTIMATE the area of the figure in #9.

10. FIND THE AREA enclosed by the polygon in fig 10.
(Curve turns at points: (7,1) & (6,7) & (1,7) & (2,5))

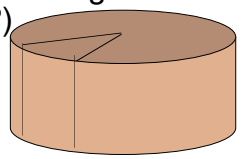
11. FIND THE PERIMETER of the triangle with vertices (– 4,– 3), (4,– 3) and (0, 0).

12. Place the following measurements in order, least to greatest:

a. .003 km, 0.5 m, 2 in, 10 cm

b. 0.5 qt, 5 dL, 100 mL, 900 cm^3

13. Find the volume of a 40° wedge of cake cut from a 8" round cake that is $^{15}/_{\pi}$" high. (If the cake averages 25 calories per cubic inch, how many calories is that?)



14*. A cylinder was designed to hold 200 mL. If a new cylinder is designed with the diameter doubled, and the height tripled, what is the capacity of the new cylinder?

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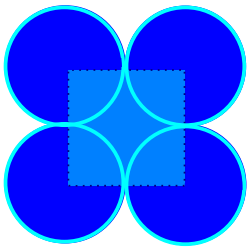
15. Find the AREA of the figure at right, given it was constructed by pasting four circles of diameter 4cm atop a square of side 4 cm, so that each circle's center is located at a vertex of the square.



Find the perimeter of the figure.