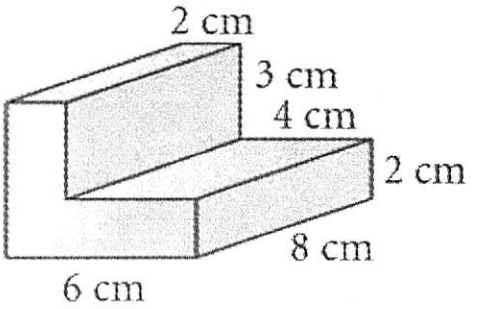
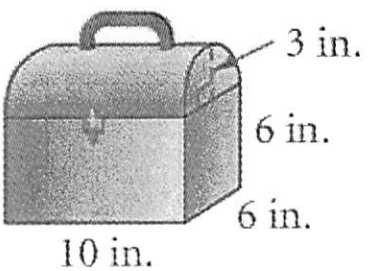
Volume, LA and SA of Composite Polyhedrons

Find the Volume and Surface Area to the *nearest tenth.*

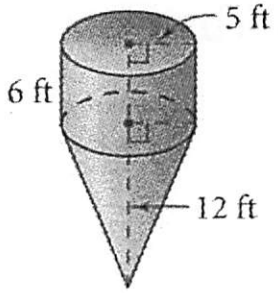
1.



2.

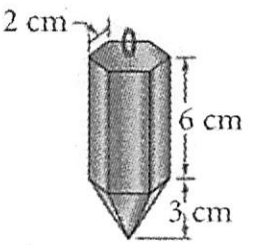


3.



Challenge

4. The Hexagonal Prism has an apothem of $\sqrt{3}$.



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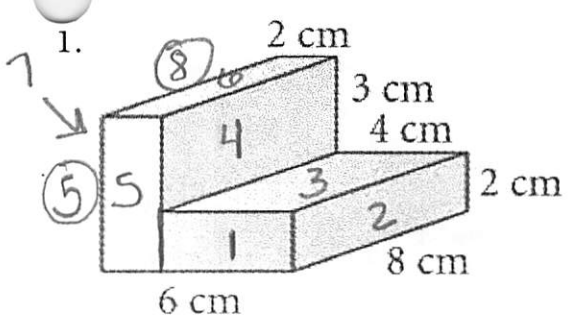


Volume

$V = L \cdot W \cdot H$

$V = (2)(8)(5)$ $V = (4)(2)(8)$

$V = 80\ cm^3$ $V = 64\ cm^2$

$TV = 144\ cm^3$

Surface Area $A = L \cdot W$

1) $8\ cm^2 \times 2 = 16\ cm^2$

2) $16\ cm^2$

3) $32\ cm^2 \times 2 = 64\ cm^2$

4) $24\ cm^2$

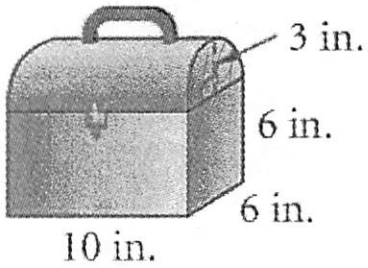
5) $10\ cm^2 \times 2 = 20\ cm^2$

6) $16\ cm^2 \times 2 = 32\ cm^2$

7) $40\ cm^2$

$TSA = 112\ cm^2$

2.



Volume

$V_{RP} = L \cdot W \cdot H$ $V_{CY} = \pi r^2 h$

$V_{RP} = (10)(6)(6)$ $V_{CY} = \pi 3^2 (10)$

$= 360\ in^3$ $= \frac{282.74}{2}$

$= 141.4\ in^3$

$TV = 501.4\ in^3$

Surface Area

RP Faces

$36 + 36 + 60 + 60 + 60$

$= 252\ in^2$

Area O

$A = \pi r^2$

$A = \pi 9$

$= 28.3\ in^2$

LA CY.

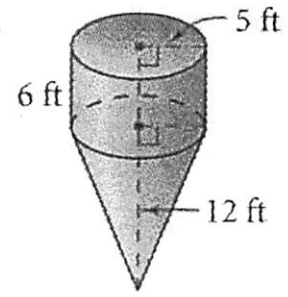
$LA = 2\pi rh$

$= 2\pi 3(10)$

$= \frac{188.49}{2} = 94.2\ in^2$

$TSA = 374.5\ in^2$

3.



Volume

$V_{cy} = \pi r^2 h$ $\quad V_{cone} = \frac{1}{3}\pi r^2 h$

$V_{cy} = \pi(5)^2(6)$ $\quad V = \frac{1}{3}(\pi)(5^2)(12)$

$V_{cy} = 471.2$ $\quad V = 314.2$

TV = 785.4 ft²

Surface Area

$A_o = \pi r^2$

$= \pi 5^2$

$= 78.5$

$LA_{cy} = 2\pi r h$

$= 2\pi(5)(6)$

$= 188.5$

$LA_{cone} = \pi r l$

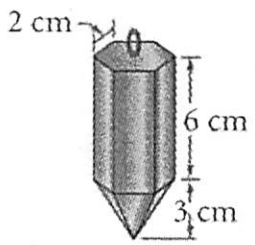
$= \pi(5)(13)$

$= 204.2$

TSA = 471.2 ft²

Challenge

4. The Hexagonal Prism has an apothem of $\sqrt{3}$.



Volume

$V_p = \frac{1}{2}aph$

$= \frac{1}{2}(\sqrt{3})(12)(6)$

$= 62.4 \text{ cm}^3$

$V_c = \frac{1}{3}(\frac{1}{2}ap)h$

$= \frac{1}{3}(\frac{1}{2}(\sqrt{3})(12)(6)$

$= 20.8 \text{ cm}^3$

TV = 83.2 cm³

Surface Area

$A = \frac{1}{2}ap$

$= \frac{1}{2}(\sqrt{3})(12)$

$= 10.4 \text{ cm}^2$

$LA = (6)(6)(2)$

$= 72 \text{ cm}^2$

$LA = 6(\frac{1}{2}(2)(\sqrt{12}))$

$= 20.8 \text{ cm}^2$

TSA = 102.8 cm²

$3^2 + (\sqrt{3})^2 = c^2$

$9 + 3 = c^2$

$c = \sqrt{12}$