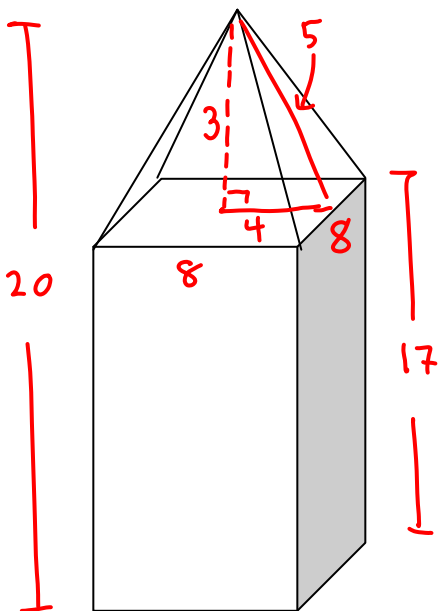


12.1-12.3 Review

1. Find the total surface area of a square pyramid on top of a square prism. The base edge of both is 8, the total height of the solid is 20, the slant height of the pyramid is 5.



$$A_{\Delta} = \frac{8 \cdot 5}{2} = 20$$

$$L.S.A_{pyr} = 4(20) = 80$$

$$L.S.A_{prism} = 32(17) = 544$$

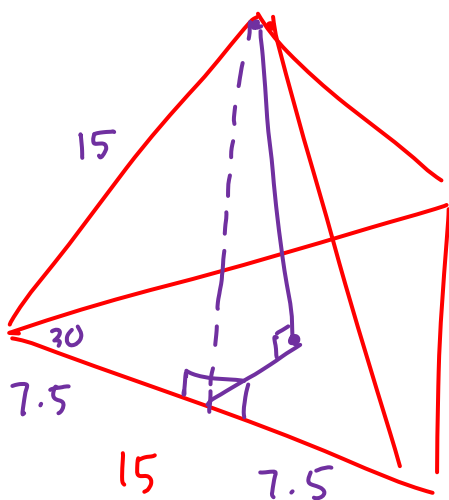
$$A_{Base} = 8 \cdot 8 = 64$$

$$T.S.A. = 80 + 544 + 64 = \boxed{688}$$

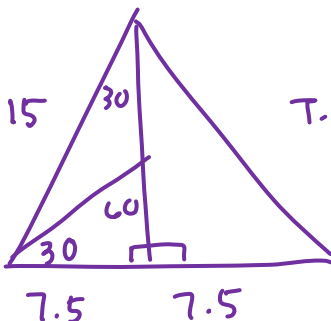
2. Find the total surface area of a hemisphere with radius of 2.

$$\begin{aligned} SA &= \frac{4\pi r^2}{2} + \text{base} \\ &= 2\pi(2)^2 + \pi(2)^2 \\ &= \boxed{12\pi} \end{aligned}$$

3. Find the total surface area, height, and slant height of a regular tetrahedron with a lateral edge length of 15.



face

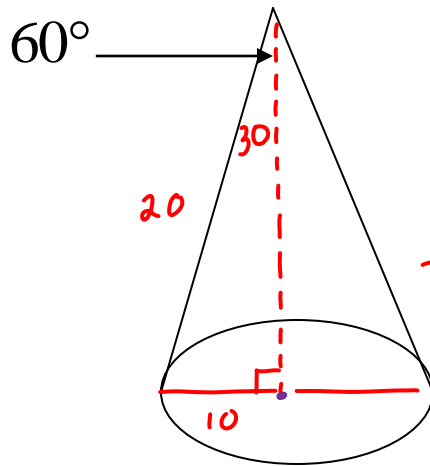


$$l = 7.5\sqrt{3} = \boxed{\frac{15\sqrt{3}}{2}}$$

$$T.S.A. = 4 \left(\frac{15^2\sqrt{3}}{4} \right) = \boxed{225\sqrt{3}}$$

$$\boxed{h = 5\sqrt{6}}$$

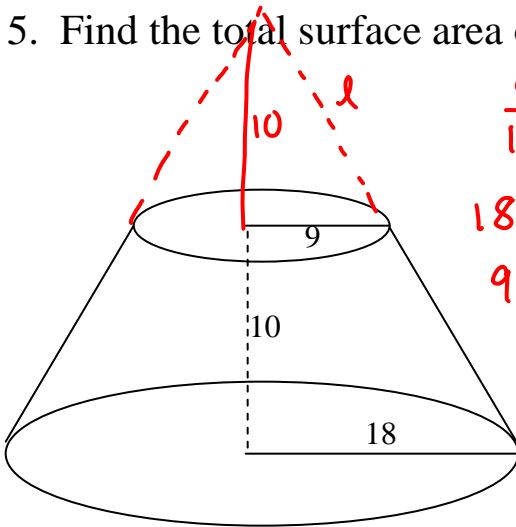
4. Find the total surface area of the cone below. The radius has a length of 10.



$$\begin{aligned} \text{L.S.A.} &= \frac{1}{2}(20\pi)(20) \\ &= \boxed{200\pi} \end{aligned}$$

$$\begin{aligned} \text{T.S.A.} &= 200\pi + 100\pi \\ &= \boxed{300\pi} \end{aligned}$$

5. Find the total surface area of the frustrum.



$$\begin{aligned} \frac{9}{18} &= \frac{x}{x+10} \\ 18x &= 9x + 90 \\ 9x &= 90 \\ x &= 10 \end{aligned}$$

$$\begin{aligned} 9^2 + 10^2 &= l^2 \\ \sqrt{181} &= l \end{aligned}$$

$$\begin{aligned} \text{L.S.A.}_{\text{small}} &= \frac{1}{2}(18\pi)(\sqrt{181}) \\ &= 9\pi\sqrt{181} \\ \text{L.S.A.}_{\text{big}} &= \frac{1}{2}(36\pi)(2\sqrt{181}) \\ &= 36\pi\sqrt{181} \end{aligned}$$

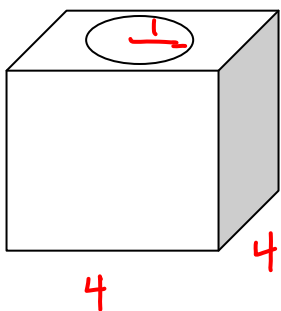
6. If the total surface area of a sphere is 200π , what is the length of the diameter?

$$\boxed{27\sqrt{181}\pi + 405\pi}$$

$$\begin{aligned} \text{S.A.} &= 4\pi r^2 \\ 200\pi &= 4\pi r^2 \\ 50 &= r^2 \\ 5\sqrt{2} &= r \end{aligned}$$

$$\boxed{d = 10\sqrt{2}}$$

7. Find the total surface area of the ice cube below. The cube has edges of length 4 and the hole that goes through it has a diameter of 2.



$$\begin{aligned} \text{L.S.A.}_{\text{prism}} &= 16(4) = 64 \\ \text{A}_{\text{base}} &= 16 - \pi \\ \text{L.S.A.}_{\text{cyl}} &= 2\pi \cdot 4 = 8\pi \end{aligned} \quad \left| \quad \begin{aligned} \text{T.S.A.} &= \\ &= 64 + 32 - 2\pi + 8\pi \\ &= \boxed{96 + 6\pi} \end{aligned}$$