

# Volume of Spheres HW Key $V = \frac{4}{3} \pi r^3$

$$\begin{aligned} \textcircled{1} \quad V &= \frac{4}{3} \pi r^3 \\ V &= \frac{4}{3} \cdot \pi \cdot 10.5^3 \\ V &\approx 4849.048 \\ V &\approx 4,849.0 \text{ km}^3 \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad V &= \frac{4}{3} \pi r^3 \\ V &= \frac{4}{3} \cdot \pi \cdot 5.3^3 \\ V &\approx 623.6145 \\ V &\approx 623.6 \text{ in}^3 \end{aligned}$$

$$\begin{aligned} \textcircled{3} \quad V &= \frac{4}{3} \pi r^3 && \text{* Radius is 9} \\ V &= \frac{4}{3} \cdot \pi \cdot 9^3 \\ V &= \frac{4}{3} \cdot \pi \cdot \frac{4}{1} \cdot \frac{9}{1} \cdot \frac{9}{1} \\ V &= 972 \pi \text{ m}^3 \end{aligned}$$

$$\begin{aligned} \textcircled{4} \quad V &= \frac{4}{3} \pi r^3 && \text{* Radius 6} \\ V &= \frac{4}{3} \cdot \pi \cdot 6^3 \\ V &= \frac{4}{3} \cdot \pi \cdot \frac{6^2}{1} \cdot \frac{6}{1} \\ V &= 288 \pi \text{ ft}^3 \end{aligned}$$

$$\begin{aligned} \textcircled{5} \quad V &= \frac{1}{2} \left( \frac{4}{3} \pi r^3 \right) \\ V &= \frac{1}{2} \cdot \frac{4}{3} \cdot \pi \cdot 6^3 \\ V &\approx 452.389 \\ V &\approx 452.4 \text{ cm}^3 \end{aligned}$$

$$\begin{aligned} \textcircled{6} \quad V_{\text{total}} &= V_{\Delta} + V_{\Theta} \\ V &= \frac{1}{2} \left( \frac{4}{3} \pi r^3 \right) + \pi r^2 h \\ V &= \frac{1}{2} \cdot \frac{4}{3} \cdot \pi \cdot 10^3 + \pi \cdot 10^2 \cdot 2 \\ V &\approx 2094.3951 + 5026.5482 \\ V &\approx 7,120.9433 \\ V &\approx 7,120.9 \text{ unit}^3 \end{aligned}$$

$$\textcircled{7} \quad V_{\text{total}} = V_{\Delta} + V_{\Theta}$$

$$\begin{aligned} V &= \frac{1}{2} \left( \frac{4}{3} \pi r^3 \right) + \pi r^2 h \\ V &= \frac{1}{2} \cdot \frac{4}{3} \cdot \pi \cdot 3^3 + \pi \cdot 3^2 \cdot 2 \\ V &= \frac{1}{2} \cdot \frac{4}{3} \cdot \pi \cdot \frac{3}{1} \cdot \frac{3}{1} \cdot \frac{3}{1} + \pi \cdot 9 \cdot 2 \\ V &= 18 \pi + 18 \pi \\ V &= 36 \pi \text{ in}^3 \end{aligned}$$

$$\textcircled{8} \quad V_{\text{total}} = V_{\Theta} - V_{\Delta}$$

$$\begin{aligned} V &= \pi r^2 h - \frac{4}{3} \pi r^3 \\ V &= \pi \cdot 6^2 \cdot 12 - \frac{4}{3} \cdot \pi \cdot 6^3 \\ V &= \pi \cdot 36 \cdot 12 - \frac{4}{3} \cdot \pi \cdot 216 \\ V &= 432 \pi - 288 \pi \\ V &= 144 \pi \text{ cm}^3 \end{aligned}$$