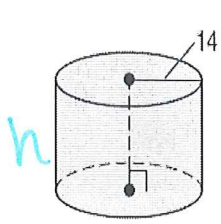


Key ☺

Notes/Examples

Working Backwards: Surface Area & Volume of Cylinders, Cones, and Spheres

1. Given the cylinder below, find the height. $V = 11083.5 \text{ ft}^3$



$V = \pi r^2 \cdot h$
 $11083.5 = \pi 14^2 \cdot h$
 $11083.5 = 16\pi h$
 $\frac{11083.5}{(16\pi)} = \frac{16\pi h}{(16\pi)}$
 $h = 220.499 \text{ ft}$

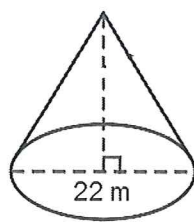
2. The volume of a cylinder is $54\pi \text{ ft}^3$ and the height is 3 ft. Find the diameter of the Cylinder.

$V = \pi r^2 \cdot h$
 $54\pi = \pi r^2 \cdot 3$
 $\frac{54\pi}{\pi} = \frac{\pi r^2 \cdot 3}{\pi}$
 $\frac{54}{3} = \frac{r^2 \cdot 3}{3}$
 $\sqrt{18} = \sqrt{r^2}$
 $r = 3\sqrt{2} \text{ ft}$

3. A cone has a radius of 6m and a surface area of $66\pi \text{ m}^2$. Find the slant height of the cone.

$SA = \pi r^2 + \pi r l$
 $66\pi = \pi 6^2 + \pi 6 \cdot l$
 $66\pi = 36\pi + 6\pi l$
 $-36\pi \quad -36\pi$
 $\frac{30\pi}{6\pi} = \frac{6\pi l}{6\pi}$
 $5 \text{ m} = l$

4. The cone below has a volume of $242\pi \text{ m}^3$. Find the height.



$V = \frac{1}{3} \pi r^2 \cdot h$
 $242\pi = \frac{1}{3} \pi 22^2 \cdot h$
 $3 \cdot 242\pi = \frac{121\pi \cdot h}{3} \cdot 3$
 $\frac{726\pi}{121\pi} = \frac{121\pi h}{121\pi}$
 $6 \text{ m} = h$

5. A sphere has a SA of 676π , find the radius.

$SA = 4\pi r^2$
 $676\pi = 4\pi r^2$
 $\frac{676\pi}{4\pi} = \frac{4\pi r^2}{4\pi}$
 $\sqrt{169} = \sqrt{r^2}$
 $r = 13$

6. A sphere has a volume of 4500π , find the radius.

$V = \frac{4}{3} \pi r^3$
 $4500\pi = \frac{4}{3} \pi r^3$
 $13500\pi = 4\pi r^3$
 $\frac{13500\pi}{4\pi} = \frac{4\pi r^3}{4\pi}$
 $3375 = r^3$
 $\sqrt[3]{3375} = r$
 $15 = r$

7.) Sphere $V = 7776\pi$
 Find diameter.
 $V = \frac{4}{3} \pi r^3$
 $7776\pi = \frac{4}{3} \pi r^3$
 $23328\pi = 4\pi r^3$
 $\frac{23328\pi}{4\pi} = \frac{4\pi r^3}{4\pi}$
 $5832 = r^3$
 $\sqrt[3]{5832} = r$
 $18 = r$
 $d = 36$