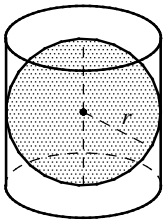
Exercises - Cylinders and Spheres

1



In the figure above, a sphere is inscribed in a cylinder, so that the diameter of the sphere is the same as the diameter of the cylinder and the height of the cylinder. What is the value of $\frac{\text{Volume of the sphere}}{\text{Volume of the cylinder}}$?

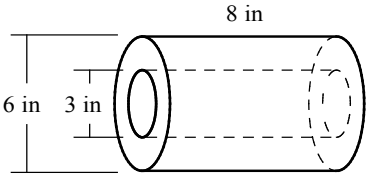
A) $\frac{1}{2}$

B) $\frac{2}{3}$

C) $\frac{7}{10}$

D) $\frac{3}{4}$

2



The figure above shows the mechanical part in the shape of a steel cylinder 8 inches high and 6 inches long in diameter. A hole with a diameter of 3 inches is drilled through the mechanical part. The density of steel is $490\ \text{lb/ft}^3$. What is the mass of the mechanical part, to the nearest pound? (1 foot = 12 inch)

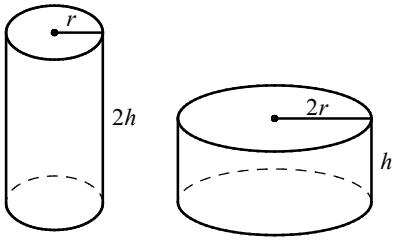
A) 36

B) 42

C) 48

D) 52

3



The figure above shows two cylinders. The height of cylinder I is twice the height of cylinder II and the radius of cylinder II is twice the radius of cylinder I. If the volume of cylinder I is $45\pi\ \text{in}^3$, what is the volume of cylinder II in cubic inches?

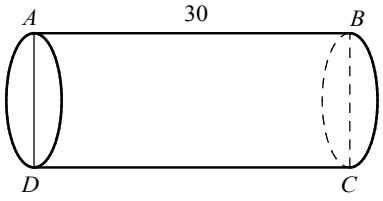
A) 22.5π

B) 45π

C) 67.5π

D) 90π

4



In the cylindrical tube shown above, the height of the tube is 30 and the circumference of the circular base is 32. If the tube is cut along $\overline{AB}$ and laid out flat to make a rectangle, what is the length of $\overline{AC}$ to the nearest whole number?

A) 24

B) 30

C) 34

D) 38