Chapter 15 Problem 17 [†]

Given
$m = 8.8\ kg$
$V = 0.050\ m^3$

Solution
a) Find the density of the compressed air.

Density is given by the formula

$$\rho = \frac{m}{V}$$

Substitute in the given values and we have

$$\rho = \frac{(8.8\ kg)}{(0.050\ m^3)} = 176\ kg/m^3$$

b) What is the volume if the density is $1.2\ kg/m^3$?

Use the equation given above and solve for volume

$$V = \frac{m}{\rho}$$

$$V = \frac{8.8\ kg}{(1.2\ kg/m^3)} = 7.33\ m^3$$

[†]Problem from Essential University Physics, Wolfson