

Homework Set 7

(Distributed 10/26/16; Due on 11/2/16)

Read Chapter 11 in Zumdahl and complete the listed questions from the text: 49, 52, 59, 62, 79, 117, 118; as well as the following problems:

A. A diver takes a balloon with a volume of 5.0 L from the water's surface where the pressure is 1.0 atm to a depth of 20 meters, where the pressure is 3.0 atm. What happens to the volume of the balloon?

B. A helium-filled balloon is inflated to a volume of 2.5 L at a room temperature of 25°C is taken outside on a very cold evening at -25°C. What is the new volume assuming constant atmospheric pressure?

C. Pressurized carbon dioxide inflators are used to inflate bicycle tires in case of a flat tire. These inflators contain 16.0 g of CO₂. At 25°C, how much pressure is provided by the inflator to a tire with a volume of 3.45 L?

D. Heliox is a mixture of helium and oxygen gases used to fill tanks for scuba divers. If a 12.5 L tank contains 24.2 g helium and 4.32 g oxygen, find the partial pressure of each gas and the total pressure of the mixture.