

Honors Chemistry: Gases 4 Podcast Problem Set

1. A 5.0L balloon in a freezer is at a temperature of -50°C has a pressure of 800 mm Hg. What will be the new pressure if the balloon is taken out and placed in a warm room (Temperature 37°C) and the volume expands to 7.0 L?

2. A 2.0 L bag of potato chips in Denver is at 15°C and 0.82 atm. The same bag is brought to the top of Longs Peak on a cold winter day. If the bag can only expand to 2.5 L before exploding and Longs Peak has a temperature of -5°C and a pressure of 0.45 atm, will the bag explode? Use the combined gas law to prove this to yourself.

3. A gas has a volume of 0.50 L, a pressure of 0.5 atm, and a temperature of 40°C . What will be the new temperature if the gas is expanded to 5.0 L and a pressure of 0.10 atm?

4. Convert 44.5 L of oxygen at 32°C and 654 mm Hg to STP. Hint: when STP is stated this gives you a specific temperature and a specific pressure.

5. A gas bubble has a volume of 0.650 mL at the bottom of a lake, where the pressure is 3.46-atm. What is the volume of the bubble at the surface of the lake, where the pressure is 1.00-atm? Assume that the temperature is constant. Will the new volume be bigger or smaller?