

Chemistry Module 12 Review

Convert between different units of pressure (atm, torr, Pa, kPa, mmHg, psi)

Convert Celsius to Kelvin

Know STP

Know when gases behave ideally

Know what vapor pressure is and how it changes with temperature

Know the definition of boiling point

Calculate volume, temperature, or pressure

Calculate mole fractions

Calculate partial pressures

Use the Ideal Gas Law to calculate pressure, volume, number of moles, or temperature

Stoichiometry problems

Practice Problems

1. Convert 80.0 kPa to torr.
2. Convert 18.9 psi to mmHg.
3. Convert 160.0°C to Kelvin.
4. List the temperature and pressure for STP.
5. The vapor pressure for a beaker of alcohol is 0.95 atm and the atmospheric pressure is 1.00 atm. Is the alcohol boiling?
6. The vapor pressure of a liquid is 600.0 torr at 10°C. At 0°C, would the vapor pressure be higher or lower?
7. A canister of gas has a volume of 35.0 cm³ at a pressure of 130.0 kPa. What would its volume be at 105.0 kPa? Assume that temperature is constant.
8. A balloon full of gas has a volume of 2.70 L at a temperature of 28.0°C. At what temperature would the volume equal 3.00 L? Assume the pressure remains constant.
9. A cylinder of gas has a pressure of 2.80 atm at a temperature of 16.0°C. What is the pressure in the cylinder when the temperature is increase to 200.0 °C? Assume the volume remains constant.
10. A collapsible container holds 1.96 L of gas at 750.0 torr and 20.0°C. Find the volume of the container when the temperature is 50.0°C and the pressure is 900.0 torr.
11. If you mix 12.0 g helium, 8.2 g. hydrogen gas, and 3.1 g nitrogen gas, what would the mole fraction of each gas be?
12. If the pressure in the container for Problem 11 was 1.12 atm, what is the pressure caused by each separate gas?
13. A cylinder contains oxygen gas and argon. The pressure of the oxygen is 320.0 torr, and the pressure of the argon is 80.0 torr. What is the mole fraction of each gas?
14. A 29.5 g sample of xenon is at 1.5 atm and 20.0°C. Find its volume.
15. A sample of carbon dioxide has a pressure of 0.80 atm at 25.0°C, and it occupies a volume of 1.62 L. How many moles of carbon dioxide are in the sample?
16. Methane gas (CH₄) is burned with excess oxygen. Carbon dioxide and water vapor are produced.
 - a. Write a balanced equation for the reaction.
 - b. How many liters of water vapor at STP are produced from burning 650.0 g methane?