

8th Practice Exam

1. If the volume of a confined gas is doubled while the temperature remains constant, what change (if any) would be observed in the pressure?
 - a. It would be half as large.
 - b. It would double.
 - c. It would be four times as large.
 - d. It would be 1/4 as large.
 - e. It would remain the same.
2. What volume of SO₂ at 25 °C and 1.50 atm contains the same number of molecules as 2.00 L of Cl₂ measured at 0 °C and 1.00 atm?
 - a. 0.68 L
 - b. 1.22 L
 - c. 1.45 L
 - d. 1.83 L
 - e. 2.18 L
3. What pressure (in atmospheres) is exerted by 82.5 grams of CH₄ in a 75.0 liter container at 35.0 °C?
 - a. 0.197 atm
 - b. 0.339 atm
 - c. 1.73 atm
 - d. 2.57 atm
 - e. 27.8 atm
4. Of the gases, Ne, N₂, O₂, CH₄, and SiH₄, which one would you expect to be easiest to liquefy?
 - a. Ne
 - b. N₂
 - c. O₂
 - d. CH₄
 - c. SiH₄

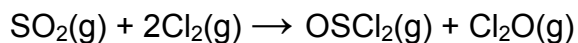
5. The volume of a certain gas sample is 235 mL when collected over water at a temperature of 25 °C and a pressure of 698 mmHg. What will be the volume of this gas sample when measured dry at standard pressure? The vapor pressure of water at this temperature is 23.8 mmHg.

- a. 197 mL
- b. 208 mL
- c. 223 mL
- d. 265 mL
- e. 275 mL

6. What volume of O₂, collected at 22.0 °C and 728 mmHg would be produced by the decomposition of 8.15 g KClO₃?



- a. 1.12 L
 - b. 1.48 L
 - c. 1.68 L
 - d. 2.23 L
 - e. 2.52 L
7. If 20.0 mL of SO₂(g) and 20.0 mL of Cl₂(g) react according to the equation below, what is the total volume of all gases after the reaction when they are at the same temperature and pressure?



- a. 20.0 mL
- b. 26.6 mL
- c. 30.0 mL
- d. 40.0 mL
- e. 66.6 mL

8. Which of the following solids is held in the solid state primarily by induced dipole-induced dipole forces?
- ice
 - NaCl
 - solid NH_3 at low temperature
 - I_2
 - Na
9. An atom that is shared equally between eight cubic unit cells is called
- an edge atom.
 - a face atom.
 - a corner atom.
 - a diagonal atom.
 - a central atom.
10. Which of the following exhibit **NO CHANGE IN TEMPERATURE** when 27 joules of heat energy is removed?
- 100 g $\text{H}_2\text{O}(\text{s})$ at $-10\text{ }^\circ\text{C}$
 - 100 g $\text{H}_2\text{O}(\text{l})$ at $0\text{ }^\circ\text{C}$
 - 100 g $\text{H}_2\text{O}(\text{l})$ at $75\text{ }^\circ\text{C}$
 - 100 g $\text{H}_2\text{O}(\text{g})$ at $110\text{ }^\circ\text{C}$
 - 100 g $\text{H}_2\text{O}(\text{s})$ at $0\text{ }^\circ\text{C}$
11. Methanol, CH_3OH , (molar mass 32.04 g/mol) has a heat of vaporization of 39.2 kJ/mol and a density of 0.7914 g/mL. How much energy is needed to vaporize 350. mL of methanol?
- 1.08×10^4 kJ
 - 8.86×10^2 kJ
 - 428 kJ
 - 652 kJ
 - 339 kJ

The following questions pertain to gold (atomic mass 197.0 g/mol) which crystallizes in a face-centered cubic arrangement with the atoms touching along the face diagonal. A gold atom has a radius of 1.44×10^{-8} cm.

12. How many gold atoms are there per unit cell?

- a. 1
- b. 2
- c. 4
- d. 8
- e. 12