

Gas Quiz Study Guide

Name KEY Per

1. Define the Kinetic molecular theory (KMT).

• in notes

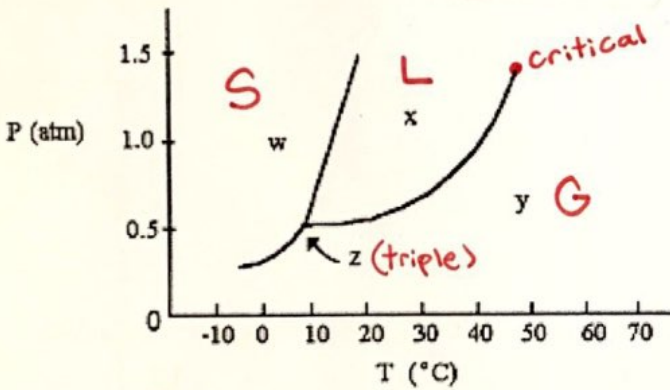
2. According to the KMT, what causes pressure? *• in notes*

3. Describe the density, motion, collisions, kinetic energy, & compressibility of the following:

Solids _____
 Liquids _____
 Gases _____

} in notes

4. Convert:
- 68.0C to Kelvin *341 K*
 - 266.6K to °C *-6.4°C*
 - 685 mmHg to atm *0.9 atm*
 - 135.6kPa to mmHg *1017 mmHg*
 - 21.34 atm to kPa *2168 kPa*
 - 25000mL to L *25.0 L*



On the Phase Diagram, label:

- the solid phase, liquid phase, and gas phase
- Each phase change (6 total)
- the Triple Point. Describe it:
- the Critical point. Describe it:
- When a solid changes to a liquid it is called melting, this (absorbs or releases) heat which is (Endothermic or Exothermic)
- When a liquid changes to a solid it is called freezing, this (absorbs or releases) heat which is (Endothermic or Exothermic)

• in notes / phase diagram practice

11. What is the relationship between:

- Pressure and Volume? Why? *inverse*
- Pressure and Temperature? Why? *direct*
- Volume and Temperature? Why? *direct*

review notes & simulation

12. A sample of carbon dioxide occupies a volume of 3.50 L at 125 kPa. What pressure would the gas exert if the volume were decreased to 2.00 L?

$$(125)(3.5) = (P_2)(2.0)$$

$$P_2 = 219 \text{ kPa}$$

13. Oxygen gas is at a temperature of 40°C when it occupies a volume of 2.3 L. What temperature in Celsius would the gas be if the volume was 1.2L?

$$\frac{2.3 \text{ L}}{313 \text{ K}} = \frac{1.2 \text{ L}}{T_2}$$

$$T_2 = 163 \text{ K} = -110^\circ\text{C}$$

14. Will a balloon filled with Ne or F₂ deflate faster? Why? Compare the rate of effusion of these two balloons.

$$\frac{\text{rate Ne}}{\text{rate F}_2} = \sqrt{\frac{38 \text{ g}}{20.18 \text{ g}}} = 1.37 \rightarrow \text{Ne deflates } 1.37 \times \text{ faster than F}_2$$

• higher molar mass rate F₂ lower

15. What is the total pressure of a gas mixture if it contains CO at 480.8 torr, O₂ at 109.2 torr & He at 891.4 torr?

$$P_T = 480.8 + 109.2 + 891.4 = \boxed{1481 \text{ torr}}$$

16. What is the pressure of N₂ gas if the total pressure of the gas is 2.2 atm, and the mixture contains 0.44 atm of H₂, 1.5 atm of Cl₂, and N₂ gas?

$$2.2 = P_{N_2} + 0.44 + 1.5$$

$$P_{N_2} = \boxed{0.26 \text{ atm}}$$

17. Some Ne gas is collected over water at 25.0°C. The levels of water inside and outside the gas-collection bottle are the same. The partial pressure of Ne is 752.5 torr. What is the barometric pressure at the time the gas is collected? (to find the Pressure use table A-8 pg. 859)

$$P_{H_2O} = 23.8 \text{ torr}$$

$$P_T = P_{H_2O} + P_{gas}$$

$$P_T = 23.8 + 752.5 = \boxed{776.3 \text{ torr}}$$

18. A child has a balloon with a volume of 1.80 liters. The temperature of the balloon when it was filled was 20°C & the pressure was 1.00 atm. If the child let go of the balloon & it rose into the sky where the pressure is 0.667 atm & the temperature is -10°C, what would the new volume be?

$$\frac{(1)(1.8)}{293} = \frac{(0.667)V_2}{263}$$

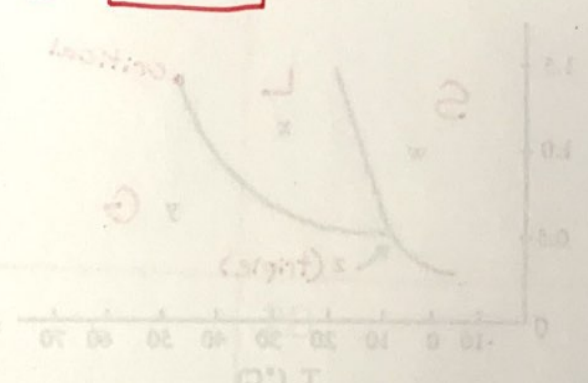
$$V_2 = \boxed{2.4 \text{ L}}$$

19. How are real gases unlike ideal gases?

• in notes

20. When do real gases behave like ideal gases?

• in notes



Review the:

* Properties of Water Lab

* Local vs. Global Sea Temperatures Activity

* Notes packets:

States of Matter

Gas Laws

Ideal Gases

Partial Pressures

Review all the vocab words in your Vocab Table. You should be able to explain each of these.

Expand

Compress

Volume

Temperature

Pressure

Collision

Constant

Inversely Proportional

Directly Proportional

Idea

Diffusion

Effusion

Condensate

Sublimation

Deposition

Critical Point

Triple Point

Endothermic

Exothermic