Name: _____ Class: _____ Date: _____ ID: A

Honors Chemistry Ch 14 Practice Questions

Matching

Match each item with the correct statement below.

a. Boyle's law
b. Charles's law
c. Dalton's law
d. Graham's law
e. Gay-Lussac's law
f. ideal gas law

____ 1. For a given mass of gas at constant temperature, the volume of the gas varies inversely with pressure.

____ 2. The volume of a fixed mass of gas is directly proportional to its Kelvin temperature, if the pressure is kept constant.

____ 3. The pressure of a gas is directly proportional to its Kelvin temperature if the volume is kept constant.

____ 4. $P \times V = n \times R \times T$

____ 5. At constant volume and temperature, the total pressure exerted by a mixture of gases is equal to the sum of the partial pressures of the component gases.

____ 6. The rate at which a gas will effuse is inversely proportional to the square root of the gas's molar mass.

Match each item with the correct statement below.

a. effusion
b. compressibility
c. diffusion
d. partial pressure

____ 7. a measure of how much the volume of matter decreases under pressure

____ 8. the pressure exerted by a gas in a mixture

____ 9. the escape of gas through a small hole in a container

____ 10. tendency of molecules to move to regions of lower concentration

Multiple Choice

Identify the choice that best completes the statement or answers the question.

____ 11. Why is a gas easier to compress than a liquid or a solid?
a. Its volume increases more under pressure than an equal volume of liquid does.
b. Its volume increases more under pressure than an equal volume of solid does.
c. The space between gas particles is much less than the space between liquid or solid particles.
d. The volume of a gas's particles is small compared to the overall volume of the gas.

____ 12. Why does the pressure inside a container of gas increase if more gas is added to the container?
a. There is an increase in the number of collisions between particles and the walls of the container.
b. There is an increase in the temperature of the gas.
c. There is a decrease in the volume of the gas.
d. There is an increase in the force of the collisions between the particles and the walls of the container.

____ 13. How does the gas propellant move when an aerosol can is used?
a. from a region of high pressure to a region of lower pressure
b. from a region of high pressure to a region of equally high pressure
c. from a region of low pressure to a region of higher pressure
d. from a region of low pressure to a region of equally low pressure

____ 14. If the volume of a container of gas is reduced, what will happen to the pressure inside the container?
a. The pressure will increase.
b. The pressure will not change.
c. The pressure will decrease.
d. The pressure depends on the type of gas.

____ 15. If a balloon is squeezed, what happens to the pressure of the gas inside the balloon?
a. It increases.
b. It stays the same.
c. It decreases.
d. The pressure depends on the type of gas in the balloon.

____ 16. What happens to the temperature of a gas when it is compressed?
a. The temperature increases.
b. The temperature does not change.
c. The temperature decreases.
d. The temperature becomes unpredictable.

____ 17. As the temperature of the gas in a balloon decreases, which of the following occurs?
a. The volume of the balloon increases.
b. The average kinetic energy of the gas decreases.
c. The gas pressure inside the balloon increases.
d. all of the above

____ 18. What happens to the pressure of a gas inside a container if the temperature of the gas decreases?
a. The pressure increases.
b. The pressure does not change.
c. The pressure decreases.
d. The pressure cannot be predicted.

____ 19. Why does air escape from a tire when the tire valve is opened?
a. The pressure outside the tire is lower than the pressure inside the tire.
b. The pressure outside the tire is greater than the pressure inside the tire.
c. The temperature is higher outside the tire than inside the tire.
d. There are more particles of air outside the tire than inside the tire.

____ 20. Which of these changes would NOT cause an increase in the pressure of a contained gas?
a. The volume of the container is increased.
b. More of the gas is added to the container.
c. The temperature is increased.
d. The average kinetic energy of the gas in increased.

____ 21. When the Kelvin temperature of an enclosed gas doubles, the particles of the gas ____.
a. move faster
b. strike the walls of the container with less force
c. decrease in average kinetic energy
d. decrease in volume

____ 22. The volume of a gas is doubled while the temperature is held constant. How does the gas pressure change?
a. It is reduced by one half.
b. It does not change.
c. It is doubled.
d. It varies depending on the type of gas.

____ 23. The volume of a gas is reduced from 4 L to 0.5 L while the temperature is held constant. How does the gas pressure change?
a. It increases by a factor of four.
b. It decreases by a factor of eight.
c. It increases by a factor of eight.
d. It increases by a factor of two.

____ 24. If a balloon is heated, what happens to the pressure of the air inside the balloon if the volume remains constant?
a. It increases.
b. It stays the same.
c. It decreases.
d. The change cannot be predicted.

____ 25. The combined gas law relates which of the following?
a. pressure and volume only
b. temperature and pressure only
c. volume and temperature only
d. temperature, pressure, and volume

____ 26. What does the ideal gas law allow a scientist to calculate that the other gas laws do not?
a. number of moles
b. pressure
c. volume
d. temperature

____ 27. How is the ideal gas law usually written?
a. $\frac{PV}{nT} = R$
b. $\frac{PV}{T} = nR$
c. $PV = nRT$
d. $P = \frac{nRT}{V}$

____ 28. Which of the following gases will effuse the most rapidly?
a. bromine
b. chlorine
c. ammonia
d. hydrogen

____ 29. Which of the following atoms would have the greatest velocity if each atom had the same kinetic energy?
a. bromine
b. chlorine
c. ammonia
d. hydrogen

____ 30. Which of the following gases is the best choice for inflating a balloon that must remain inflated for a long period of time?
a. argon
b. oxygen
c. hydrogen
d. neon

____ 31. A gas occupies a volume of 2.4 L at 14.1 kPa. What volume will the gas occupy at 84.6 kPa?
a. 497 L
b. 2.5 L
c. 14 L
d. 0.40 L

____ 32. A sample of gas occupies 17 mL at –112°C. What volume does the sample occupy at 70°C?
a. 10.6 mL
b. 27 mL
c. 36mL
d. 8.0mL

____ 33. A breathing mixture used by deep-sea divers contains helium, oxygen, and carbon dioxide. What is the partial pressure of oxygen at 101.4 kPa if P_{He} = 82.5 kPa and P_{CO_2} = 0.4 kPa?
a. 82.9 kPa
b. 19.3 kPa
c. 18.5 kPa
d. 101.0 kPa

____ 34. The tendency of molecules to move toward areas of lower concentration is called ____.
a. suffusion
b. suspension
c. effusion
d. diffusion