

Gases Introduction

Kinetic Theory of Gases ... True or False! Postulates (p. 426)

1. Gases consist of tiny particles (atoms or molecules). _____
2. These particles are so small compared with the distances between them that the volume (size) of the individual particles can be assumed to be negligible (zero). _____
3. The particles are in constant random motion, colliding with the walls of the container. These collisions with the walls cause the pressure exerted by the gas. _____
4. The particles are assumed not to attract or to repel each other. _____
5. The average kinetic energy of the gas particles is directly proportional to the Kelvin temperature of the gas. _____

Variables ... what can we change that effects a gas?

1. _____
2. _____
3. _____
4. _____

Pressure ...

1. What causes pressure?
2. Increased pressure is due to _____.

Units of Pressure ...

1. The _____ is a device used to measure pressure.
2. At sea level, the atmosphere will support a tube of mercury _____ long that is inverted into a dish of mercury.

What will happen at higher altitudes? Lower?

3. Additional units used to measure pressure include ...
 - a. 1 atm = _____ mmHg
 - b. 1 atm = _____ torr (in honor of Torricelli)
 - c. 1 atm = _____ pounds/sq. inch (psi)
 - d. 1 atm = _____ pascals (Pa)
 - e. 761 atm = _____ kPa

$$1 \text{ atm} = 760 \text{ mmHg} = 760 \text{ torr} = 14.7 \text{ psi} = 101,325 \text{ Pa} = 101.3 \text{ kPa}$$

Sample Problems: Use D.A.!!! to solve each!

1. $1.25 \text{ atm} = \underline{\hspace{2cm}} \text{ mmHg}$

2. $10.6 \text{ psi} = \underline{\hspace{2cm}} \text{ atm}$

3. $0.234 \text{ kPa} = \underline{\hspace{2cm}} \text{ Pa} = \underline{\hspace{2cm}} \text{ torr}$

4. $825 \text{ mmHg} = \underline{\hspace{2cm}} \text{ Pa}$

5. $752 \text{ torr} = \underline{\hspace{2cm}} \text{ psi}$