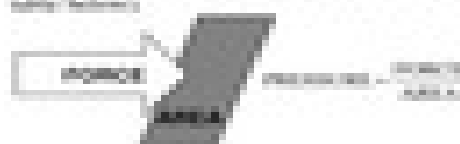


Pressure Conversions

Chem Worksheet 13-1

Name _____

Pressure is defined as the force pushing over a certain area. If gas pressure results from the many collisions between gas particles and their container, the common unit for pressure is the number per square meter (N/m^2). This unit is called a **pascal** (Pa). Since it is so small it is often reported in thousands of pascals or **kilopascals** (kPa). The gas surrounding the earth's surface is known as approximately 1 **atmosphere** (atm) at sea level. There are other units used to measure pressure (see the table below).



CONVERSIONS	
1 atm = 101,325 Pa	1 atm = 760 mmHg
1 atm = 101.325 kPa	1 atm = 760 torr
1 atm = 14.7 psi	1 psi = 68 mm
1 atm = 1.013 bar	

Example

A cylinder of gas exerts the pressure of 100 kPa. Convert the pressure to psi.

$$100 \text{ kPa} \times \frac{1000 \text{ Pa}}{1 \text{ kPa}} \times \frac{1 \text{ atm}}{101,325 \text{ Pa}} \times \frac{14.7 \text{ psi}}{1 \text{ atm}} = 147 \text{ psi}$$

Atmospheric pressure is equal to 14.7 psi. Convert this to atm.

$$14.7 \text{ psi} \times \frac{1 \text{ atm}}{14.7 \text{ psi}} = 1 \text{ atm}$$

Use the conversion factors in the table to solve the following problems.

- The pressure is recorded as 130 mmHg. Convert this measurement to atmosphere (atm).
- A ball is inflated to a pressure of 100 pounds per square inch (psi). Convert this pressure to atmosphere (atm).
- What is the pressure in pascals if the pressure is equal to 100 atm?
- The air pressure in a tire is 1.20 atm. What is the pressure in kilopascals?
- The atmosphere supports a column of mercury that is 760 mm in height. What is atmospheric pressure in atm? Convert this pressure to atmosphere (atm).
- Many pneumatic tools operate at an air pressure of 90 psi. What is the equivalent pressure in kilopascals (kPa)?
- The safety disk in a scuba tank will blow at a pressure of approximately 2000 kPa. Convert this pressure to mmHg.
- When a scuba tank is filled with a pressure of 100 psi the pressure is converted about 1200 psi in the master cylinder. What is the pressure of the master cylinder in atm?
- Normal atmospheric pressure in Mexico City is about 663 mm Hg. Convert this to atmosphere.
- If the gas in a container can support 74 inches of mercury, what is the gas pressure in pounds (psi)?