

Name: Key
Gas laws HW

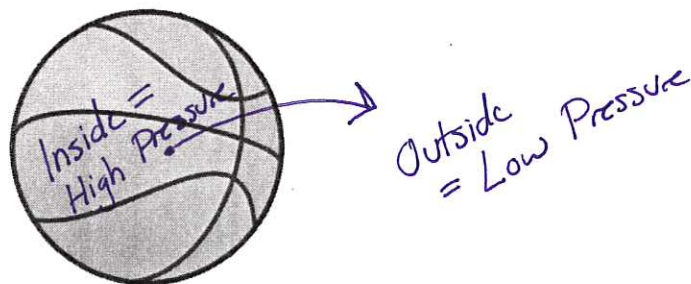
Period: _____
Date: _____

1. Gases mimic the characteristics of their containers by taking on their shapes and their:
 - a. Melting points
 - b. Masses
 - c. Volumes
 - d. Colors
2. Suppose the atmosphere (which is composed of gas) exerts a force of 124,500N on a kitchen table with an area of 1.5m². **Calculate the pressure** in Pascals of the atmosphere on the table.

Pressure = force of the gas / area of the container

$$\frac{124,500 \text{ N}}{1.5 \text{ m}^2} = 83,000 \text{ Pa}$$

3. When a basketball is punctured with a nail, the air inside flows outside very quickly. With that in mind, label in the drawing below where the high pressure and the low pressure are.



4. Describe Boyle's Law, at a constant temperature.
 - a. If **pressure** increases, the **volume** of a gas decrease.
 - b. If **pressure** decreases, then the **volume** of a gas increases.
5. When scuba divers dive to great ocean depths, they often experience intense pain and pressure in their sinus cavities, which are filled with air. Think about Boyle's law and try to explain why divers experience these changes in pressure (hint: as you dive down farther the weight of water above you increases a lot).
 - a. The volume of the sinuses increases, causing pressure to decrease
 - b. The volume of the sinuses increases, causing pressure to increase
 - c. The volume of the sinuses decreases, causing pressure to decrease
 - d. The volume of the sinuses decreases, causing pressure to increase
6. If a gas is compressed from 4L to 1L and the temperature remains constant, what happens to the pressure?
Decrease Volume so Pressure Increases

7. A gas with a volume of 4L is allowed to expand to a volume of 12L. What happens to the pressure in the container if the temperature remains constant?

Increases Volume so pressure decreases

8. Describe Charles's Law, At a constant Pressure

a. If **temperature** increases, the **volume** of a gas increase.

b. If **temperature** decreases, then the **volume** of a gas decrease.

9. Suppose it is the night before a big parade, and you are in charge of inflating the parade balloons. You just learned that the temperature will rise 15°C between early morning and the time the parade starts. How will this information affect the way you inflate the balloons?

You will not inflate the balloon all the way because the increase in temperature will increase the volume of the balloon.

10. You blow up a balloon and tie it off. You then place this balloon in a freezer. What will happen to this balloon after it has remained in the freezer for some period of time? Why?

It's volume will decrease because the particles will move slower and get closer together.