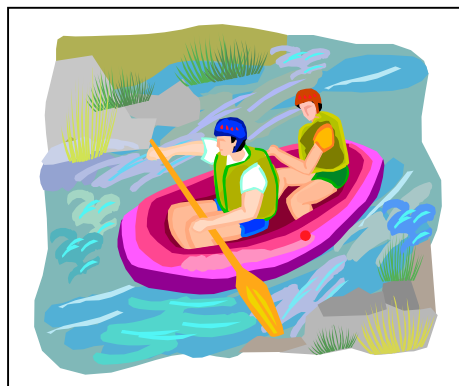


## R.A.F.T Teacher Instructions

Groups of students will show their understanding of the gas laws by writing about the concepts. They will then share their RAFTs with the class and grade each others' RAFTs using the appropriate rubric. Groups could be the same as the laboratory groups or homogeneous groups to assess knowledge across the class.



R = role

A Gas Molecule

A = audience

NASCAR team, a balloonist or a SCUBA diver

F = format

Letter of complaint

T = topic

The problem(s) that pressure, temperature, and/or volume are creating in your life.

Key points for students to include:

- Gas molecules are in constant, random motion.
- Pressure arises from collisions with container walls.
- Temperature is a measure of average kinetic energy; velocity changes directly with temperature.
- Volume and temperature are inversely related. As the volume increases, temperature decreases.
- In a tire, a maximum volume exists. Tire pressure increases with increasing temperature.
- In a hot air balloon, as the air is heated the volume increases, filling the balloon. The less dense air will then rise, lifting the balloon. A common misconception is that the molecules expand – but the size of individual molecules does not change.
- The scuba diver must be concerned with the volume of the gas bubbles in his body. As he ascends, the pressure decreases (less water pressure), increasing the volume of the air bubbles. If the bubbles become too large, they cause health problems. By ascending and stopping at prescribed depths, the diver can safely ascend.

Extensions that students may include:

- Pressure is directly related to temperature.
- Amount (moles) is directly related to pressure.
- Amount (moles) is directly related to volume.