



**Temperature**

- ☐ The higher the temperature the higher the average energy of the particles.
- ☐ Energy is transferred to the kinetic stores of particles when the temperature increases.
- ☐ This means the higher the energy the faster the particles move.

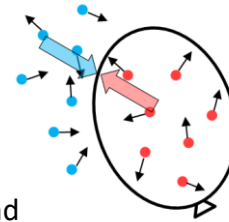
**Pressure**

- ☐ For a sealed container, the pressure is the total force of the particles per unit area.
- ☐ Increasing the temperature of the gas means particles have more energy so they move faster.
- ☐ 1. Decreasing the volume means particles are closer together so hit the sides more often.
- ☐ 2. Pressure and volume are inversely proportional (if one increases the other decreases).

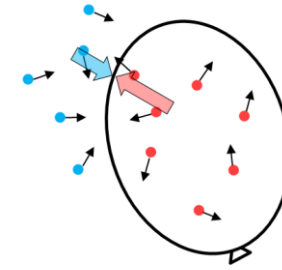
$$P = \frac{F}{A}$$

33. In a container Gas pressure causes an outwards force at right angles to the wall.

34. The pressure of the air pushes on the outside of the container.



Balloon at ground level. Internal and external pressures are equal.



Balloon rising. Air pressure decreases. Internal pressure is greater so balloon expands.

- ☐ A change in pressure can cause a container to change shape.
- ☐ Eg. if a helium balloon is released it rises. As it gets higher the atmospheric pressure decreases, causing the balloon to expand until the pressure inside the balloon equals the air pressure again.

$$P \propto \frac{1}{V}$$

**Work Done**

- ☐ Work is done when energy is transferred by applying a force.
- ☐ Work done on a gas increases its temperature. This can increase the temperature of the gas.
- 40. Pumping up a bike tire does work **mechanically**.
- 41. The gas exerts a force on the plunger (due to pressure).
- 42. To push the plunger down against this force work has to be done.
- 43. Energy is transferred to the kinetic stores of the gas particles, increasing the temperature.

