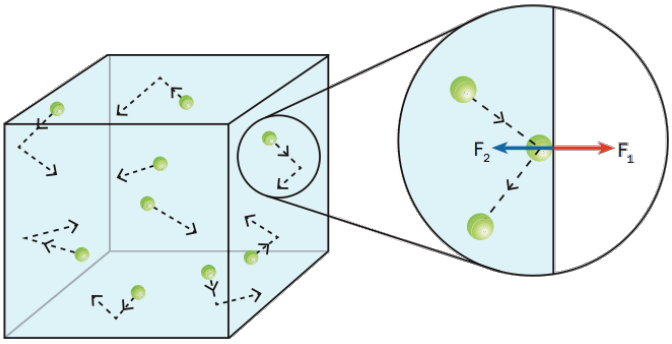
Pressure of a gas (Recall P = F/A)

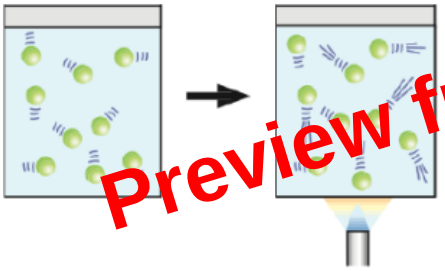


- Moving gas molecules collide with the **inner wall** of the container and exert a force on it.
- The **force exerted per unit area** is the called gas pressure.

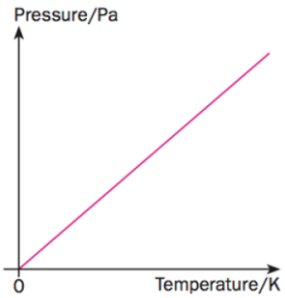
[Note: Each and every collision can result in a different sized force, and it is not realistic to know all the forces that individual molecules exert on the walls. However, because the molecular motions are random and because of the very large number of them, the total force caused by many molecular collisions on any unit area of the container wall will be completely predictable and will (usually) be constant at all places in the container.]

Relationship between Pressure, Volume and Temperature of a gas

1. **Pressure and temperature (keeping volume constant)**



- At a higher temperature, the air molecules have greater speeds (greater average **kinetic energy**).
- The air molecules will then bombard the walls of their container **more forcefully** and **more frequently**.
- This causes an **increase** in gas pressure inside the container.



The **pressure *p*** of a **fixed mass** of gas is **directly proportional** to its **temperature *T*** at **constant volume**.