THE KINETIC THEORY OF GASES

Remember the assumptions

- **Gas consists of large number of particles (atoms or molecules)**
- **Particles make elastic collisions with each other and with walls of container**
- **There exist no external forces (density constant)**
- **Particles, on average, separated by distances large compared to their diameters**
- **No forces between particles except when they collide**

Consider some gas particles (molecules) trapped in a container. The particles are in random motion. When they hit the sides of the container they exert a force. What factors would affect what force is exerted on the sides of the container?

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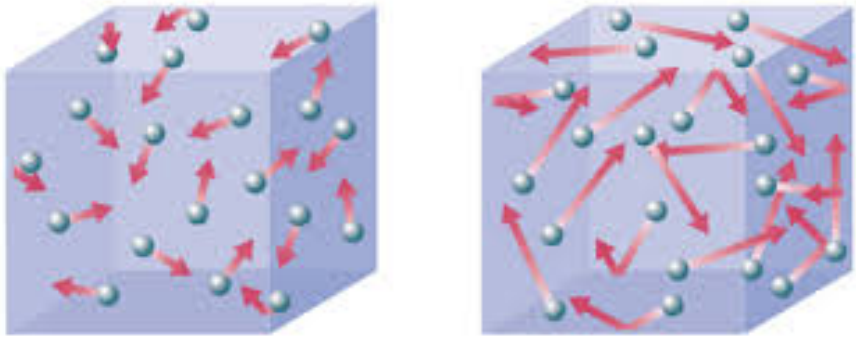


Longer arrows mean higher average speed.

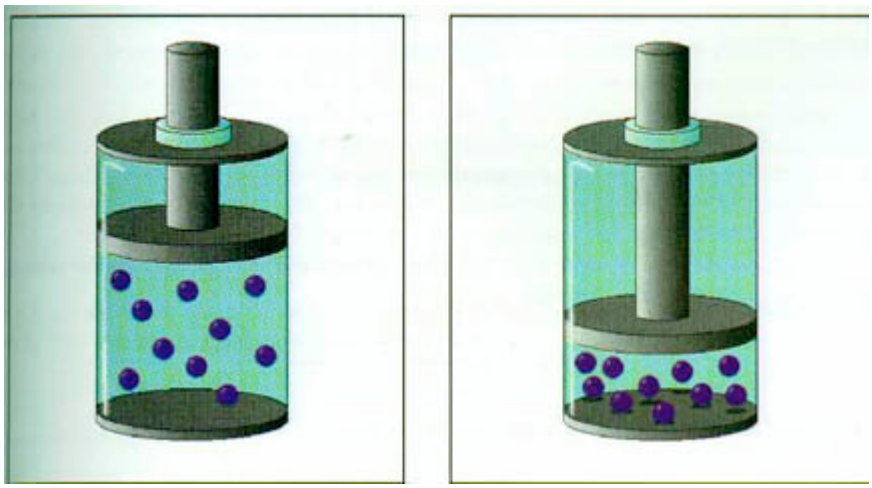
Above is a picture of a gas in a box. What do the arrows represent?

Why are the arrows longer for particles in the right hand box?

Why do the particles exert a pressure on the walls of the box?

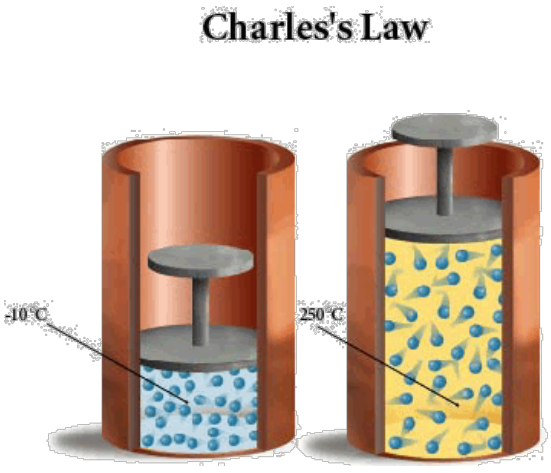
In which box would the pressure be highest and why?

Pressure and Volume



Describe what would happen to pressure if the volume of the gas is made smaller. You need to explain using particles.

Temperature and volume



Describe what will happen to the volume of a gas if the temperature is increased. Note: the volume is allowed to change.