Particle motion in gases

- The molecules of a gas are in constant random motion. The temperature of the gas is related to the kinetic energy of the molecules.

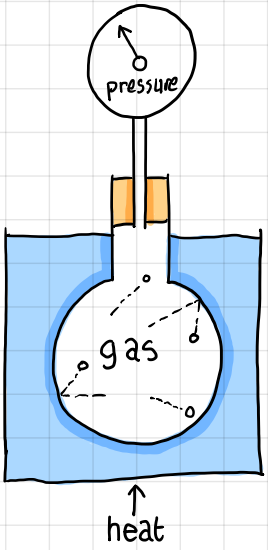
Pressure and temperature

- Pressure is caused by gas molecules colliding with the walls of the container.
- Changing the temperature of a gas, held at a constant volume, changes the pressure exerted by the gas.
- The temperature of the gas is proportional to the average kinetic energy of its molecules. Faster moving particles will collide with the container walls more frequently and with greater force. This causes the force on the walls of the container to increase and so the pressure increases.

Pressure in a sealed container

- The diagram shows a sealed container with a pressure gauge attached. The volume is constant throughout the experiment and the gas cannot escape. When the water is heated you should be able to describe what is happening using particle theory.
- State what happens to each of the variables below. You should say if they increase, decrease or stay the same.

1. Volume
2. Pressure
3. Kinetic energy
4. Potential energy
5. Mass of particles
6. Number of particles



Exam tip

- You will only be asked questions where the volume of the system is constant. You need to relate temperature to pressure by describing the particles.