

## Understanding the Kinetic Molecular Theory

Use the website [http://phet.colorado.edu/simulations/index.php?cat=Featured\\_Sims](http://phet.colorado.edu/simulations/index.php?cat=Featured_Sims)

View simulations button, chemistry

Learning goals: Students will be able to describe the matter in terms of particle motion. The description should include -diagrams to support the description -how the particle mass and temperature affect the image -what are the differences and similarities between solid, liquid, and gas particle motion

1 a. Open states of matter simulation: Make notes of the solid particles' motion

b. Add heat. What happens to the molecules?

c. What happens to the temperature?

d. Remove heat. What happens to the molecules?

- e. Write a paragraph that explains the differences and similarities between solid, liquid, and gas particle motion and what causes changes in the phase of matter; include drawings to help with your explanation.

2. Go back to simulation page open Gas Particle simulation and use the pump to put a little heavy gas into the box.

a. Observe the particles' behavior.

b. Pump in some lighter particles and talk about the similarities and differences that you see between heavy and light particles.

c. Use the simulation to see how changing the temperature affects the behavior of the gas particles.

d. Write a description for a gas based on your observations; include diagrams to help with your description.

e. Come up with a Molecular Theory which describes matter based on your observations.

3. Open the Gas Particle simulation again

a. Add some gas particles and observe what happens to the pressure (the number of particles hitting the sides of the container) as the temperature rises when the volume of the container is held constant.

b. What happens to the pressure of the gas when more particles of gas are placed in the container?

c. What happens to the volume of the container when the temperature is changed if the pressure is held constant?

d. What happens to the pressure the gas exerts when the volume changes if the temperature is held constant.

4. In your own words state the relationship between  
a. volume and pressure of gases

b. volume and temperature of gases

c. pressure and temperature of gases

d. pressure and number of gas particles.