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Resource ID#: 494

Primary Type: Virtual Manipulative

**Direct Link:** [http://phet.colorado.edu/simulations/sims.php?sim=Gas\\_Properties](http://phet.colorado.edu/simulations/sims.php?sim=Gas_Properties)

## PhET Gas Properties

This virtual manipulative allows you to investigate various aspects of gases through virtual experimentation. From the site: Pump gas molecules to a box and see what happens as you change the volume, add or remove heat, change gravity, and more (open the box, change the molecular weight of the molecule). Measure the temperature and pressure, and discover how the properties of the gas vary in relation to each other.

### General Information

**Subject(s):** Science

**Grade Level(s):** 8, 9, 10, 11, 12

**Intended Audience:** [Educators](#), [Students](#), [Parents](#)

**Suggested Technology:** Computer for Presenter, Computers for Students, Internet Connection, Java Plugin

**Freely Available:** Yes

**Keywords:** gas, property, properties, volume, temperature, heat, pressure, molecule

**Instructional Component Type(s):** [Virtual Manipulative](#), [Problem-Solving Task](#), [Tutorial](#)

**Resource Collection:** CPALMS

### Additional Information/Instructions

**By Author/Submitter**

will need to have java enabled on computer; some computers may require downloading

### Source and Access Information

**Contributed by:**

**Name of Author/Source:** Jack Barbera et al

**Is this Resource freely Available?** Yes

**Access Privileges:** Public

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### Aligned Standards

Name	Description
	Explore the scientific theory of atoms (also known as atomic theory) by using models to explain the motion of particles in solids, liquids, and gases.

[SC.8.P.8.1:](#)

**Clarifications:**

Recognize that matter is composed of discrete units called atoms and atoms are composed of sub-atomic particles called protons, neutrons, and electrons. Solid is the state in which intermolecular attractions keep the molecules in fixed spatial relationships. Liquid is the state in which intermolecular attractions keep molecules in proximity, but not in fixed relationships. Gas is the state in which molecules are comparatively separated and intermolecular attractions have relatively little effect on their respective motions.

Florida Standards Connections: MAFS.K12.MP.4: Model with mathematics.

Interpret the behavior of ideal gases in terms of kinetic molecular theory.

[SC.912.P.12.10:](#)

**Clarifications:**

Using the kinetic molecular theory, explain the behavior of gases and the relationship between pressure and volume (Boyle's law), volume and temperature (Charles's law), pressure and temperature (Gay-Lussac's law), and number of particles in a gas sample (Avogadro's hypothesis).