

Warm-up

- Get logged into [Allinlearning.com](https://www.allinlearning.com)

States of Matter

Learning Objectives: Students will be able to distinguish between states of matter, pure substances, and mixtures.

Kinetic Molecular Theory

- Definition: particles of matter are always in motion
 - This means that particles never stop moving, even in a solid.
 - $KE = \frac{1}{2} mv^2$
 - What do “m” and “v” stand for?

Gases

- Very high KE
- Very spread out
- Easily Compressible
- Volume changes with container
- Takes the shape of the container
- Very Low Density

Liquids

- Much lower energy than gases
- Very SLIGHTLY compressible
- Particles slide past one another
- Volume does not change with container
- Changes shape depending on container and gravity
- 1000 times denser than gas

Solids

- Very low KE, but still moving
- Tightly and orderly packed together
- CANNOT be compressed
- Volume and shape do not change with container
- USUALLY denser than liquid

Pure Substances and Mixtures

- A pure substance is “a sample of matter with both definite and constant composition and distinct chemical properties”
 - Elements: Gold, copper, carbon, etc
 - Compounds: carbon dioxide, carbon monoxide, etc.
- Mixtures are physical combinations of pure substances or other mixtures
 - Homogeneous – same throughout
 - Heterogeneous – different

Do not copy notes beyond this point.

- Your homework is complete, the rest of the slides we will do in class tomorrow.

Working in breakout rooms (5 minutes)

- Discuss the idea that solids CANNOT be compressed.
 - Is a rock a solid? Can it be compressed?
 - Is paper a solid? Can it be compressed?
 - Is wood a solid? Can it be compressed?
 - Is a sponge a solid? Can it be compressed?

Examples of Homogeneous and Heterogeneous Mixtures and pure substances

- For the next 10 minutes, determine if each of the following is a homogenous mixture, a heterogeneous mixture, or a pure substance.
- <https://jamboard.google.com/d/1XxkYw6lhNx11jCV59Si9obGqyvyb0fqj-ohf1mmtEEo/edit?usp=sharing>

Homework:

- Copy the notes for next class (handwritten) so that you are prepared for the direct instruction. We will be adding to your notes and you will upload a picture of them to your ebinder.
- Notes can found on my website:
<http://chemistry.christianedgar.com>