

Unit 2 Chemistry

The Big Idea: The kinetic molecular theory and the theory of the atom explain the behaviour of matter.

2.1 Kinetic Molecular Theory

In this section will think about the following question: How does kinetic energy help explain the states of matter?

States of Matter Video Questions

Textbook Work: Read pages 246 and 248 of your textbook before watching the following videos.

1. What are the three states of matter?
2. Give an example of a solid.
3. What are the three properties of solids?
4. Give an example of a liquid.
5. What are the three properties of liquids?
6. Give an example of a gas.
7. What are the three properties of gases?
8. In which state are the particles the closest together?
9. In which state(s) do the particles take the shape of the container it is in?

Matter Video Questions

1. What is made of matter?
2. What is matter?
3. What is volume?
4. What are the states of matter?

5. What is a particle?
6. What is a state of change?
7. What is a property of matter?
8. Give six examples of properties of matter.
9. How can we use the properties of matter to identify an object?
10. Can coal change into diamonds?
11. Can we grow diamonds in a laboratory?
12. What do material scientists do?
13. What is a non-newtonian fluid?

Potential and Kinetic Energy Video Questions

Textbook work: Read page 249 of your textbook before watching the following videos.

1. What is the Law of Conservation of Energy?
2. What is Potential Energy?
3. What is Kinetic Energy?
4. What is the unit of energy?

5. Draw a bicycle at the top of a hill, show the bicycle going down the hill. Label the potential and kinetic energy.

The Kinetic Molecular Theory Video Questions

1. What is the Kinetic Molecular Theory?
2. What type of energy do moving particles hold?
3. Particles in high temperature have _____ energy.
4. In low temperatures particles have _____ energy.
5. The more energy a particle has the _____ it will move.
6. Particles in solids barely move, the energy in a solid is very _____ and tightly packed.
7. In liquids, particles have _____ energy and the freedom to move around.

Gas Chamber Online Activity

Follow these instructions below and answer the questions on a piece of paper then hand it in to your teacher:

1. Download the Gas Properties simulator to the right (note: in order to run this program your computer must have Java)
2. Use the pump once to put some heavy gas into the chamber
3. Change the 'Gas in Pump' setting to 'Light Species'
4. Use the pump once to put some light gas into the chamber
5. What do you notice about the light gas versus heavy gas? (Hint: speed)
6. Now use the 'Heat Control' to 'Remove' heat from the chamber (ie. make colder).
7. What do you notice about the speed of the particles?
8. How use the 'Heat Control' to 'Add' heat to the chamber (ie. make warmer).
9. What do you notice about the speed of the particles?
10. Use your knowledge of the Kinetic Molecular Theory to explain what is happening to the gas particles when you remove and add heat. (Please write your answer in complete sentences)

States of Matter Online Activity

Follow these instructions below and answer the questions on a piece of paper then hand it in to your teacher:

1. Open the States of Matter simulator to the right
2. Select the state 'Solid'
3. What do you notice about the particles?

4. Select the state 'Liquid'
5. What do you notice about the particles?

6. Select the state 'Gas'
7. What do you notice about the particles?

8. Return to the state 'Solid'
9. Use the 'Heat and Cool' control at the bottom to increase the 'Heat' (note: you will have to hold the heat button to increase the temperature)
10. As you hold the 'Heat' on the solid state will change into the liquid, then gas state. How do you know that the state has changed?

11. How can you change this gas back into a liquid state and/or solid state?

~ ~ ~ Hand in section 2.1 to your teacher ~ ~ ~