Phases of Matter Webquest

Task #1

Go to http://www.chem4kids.com/files/matter_changes.html to answer the following questions.

1. When do states of matter change states (phase change)?
2. What do scientists use to determine when a liquid turns into a solid?
3. What happens to the freezing point when the pressure surrounding a substance goes up?
4. When it gets colder, what happens to the size of solids?
5. What does an ice cube (a solid) need to become a liquid?
6. What does a solid have to reach in order to become a liquid?
7. What needs to happen before a gas can become a liquid?
8. When a gas becomes a liquid, what is this called?

Fill in the blanks in the following chart:

Term	Phase Change
Fusion/Melting	
	Liquid to Solid
Vaporization/Boiling	
Condensation	
	Solid to Gas
	Gas to Solid

Task #2

Go to the following website to make observations about the effect adding and taking away thermal energy has on different elements and molecules.

https://phet.colorado.edu/en/simulation/states-of-matter-basics **Click on "States"**

Click on each substance and observe it in each phase. Describe what is happening in each phase in the table below.

Substance	Solid	Liquid	Gas
Neon			
Argon			
Oxygen			
Water			

9. Why do you think one of the particles did not follow the same pattern as the other three as a solid?

Explanation - Density is defined as the ratio of mass per unit volume of a substance. The mass means how much matter is in the substance and the volume is the space the matter takes up. The more tightly packed the particles are in a certain space, the higher the density.

10. Go back and look at each of the particles (neon, argon, oxygen, and water) which one is the most dense as a solid (closest particles)?

11. Go back and look at each of the particles (neon, argon, oxygen, and water) which one is the least dense as a solid (most space between particles)?

12. Explain how the density of each of the particles change as heat is added to the simulation.

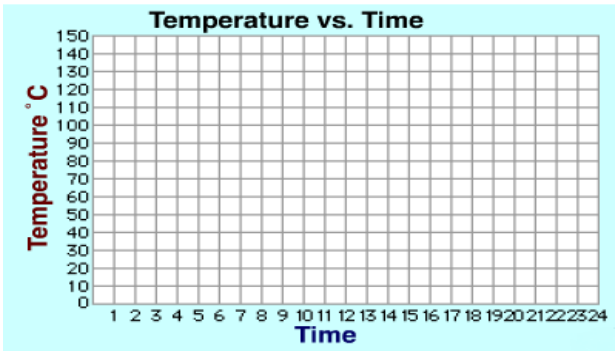
13. Explain how the density of each of the particles change as "cool" is added to the simulation.

Task #3

Go to the following site http://www.harcourtschool.com/activity/hotplate/
Place all 3 substances in the beaker and record the melting and boiling points for all 3 substances.

Then draw the graph for WATER to the right

Substance	Melting Point	Boiling Point
Ice/water		
Purple Crystal		
Green Circles		



Task #4

Go to the following site to watch the molecules move in the different phases of matter.
http://www.harcourtschool.com/activity/states_of_matter/

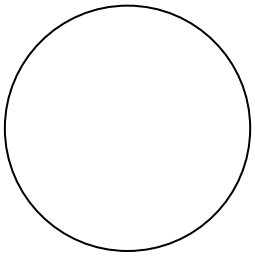
Click on Gas

14. Describe what you see in the beaker (the purple thing).

15. Describe what you see in the chamber (the big round thing).

16. What does the description say about the amount of space between gas molecules?

Draw how molecules look in the gas phase in the circle →



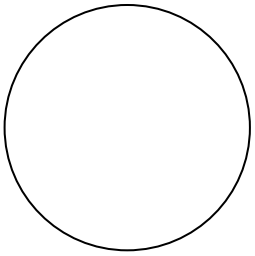
Click on Liquid

17. Describe what you see in the beaker (the purple thing).

18. Describe what you see in the chamber (the big round thing).

19. What does the description say about the arrangement of the particles?

Draw how molecules look in the liquid phase in the circle →



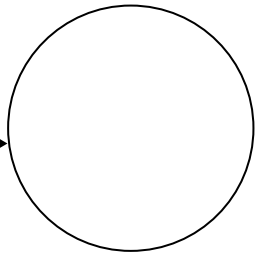
Click on Solid

20. Describe what you see in the beaker (the purple thing).

21. Describe what you see in the chamber (the big round thing).

22. What does the description say about how the particles are arranged?

Draw how molecules look in the solid phase in the circle →



Task #5

Fill in the chart below using this site as a reference: http://www.chem.purdue.edu/gchelp/atoms/states.html

Some Characteristics of Gases, Liquids and Solids and the Microscopic Explanation for the Behavior		
gas	**liquid**	**solid**

Use the chart above to identify the state of matter described by the following. Many of these may have more than one answer! (Use S, L, or G in the spaces to the left)

_____ Not easily compressible
_____ Rigid- particles locked into place
_____ Flows easily
_____ Compressible
_____ Lots of free space between particles
_____ Assumes the shape of the part of the container it occupies
_____ Does not flow easily
_____ Particles can move past one another
_____ Retains a fixed volume and shape
_____ Assumes the shape and volume of its container
_____ Little free space between particles

Task #6

Go to https://www.quia.com/custom/2202gate.html and play the matching game until you get 100%.
23. Which questions did you need help with?