

States and Changes of Matter Study Guide

1. Circle the correct word
2. _____ changes when the volume of an object increases while the mass stays the same. (Viscosity or Density)
3. A gas _____ (fast or slow) moving particles
4. At higher temperatures, particles in an object move _____ (faster or slower)

Fill in the blanks: Liquid, Space, Motion, Particles, Thermal Energy, Gas

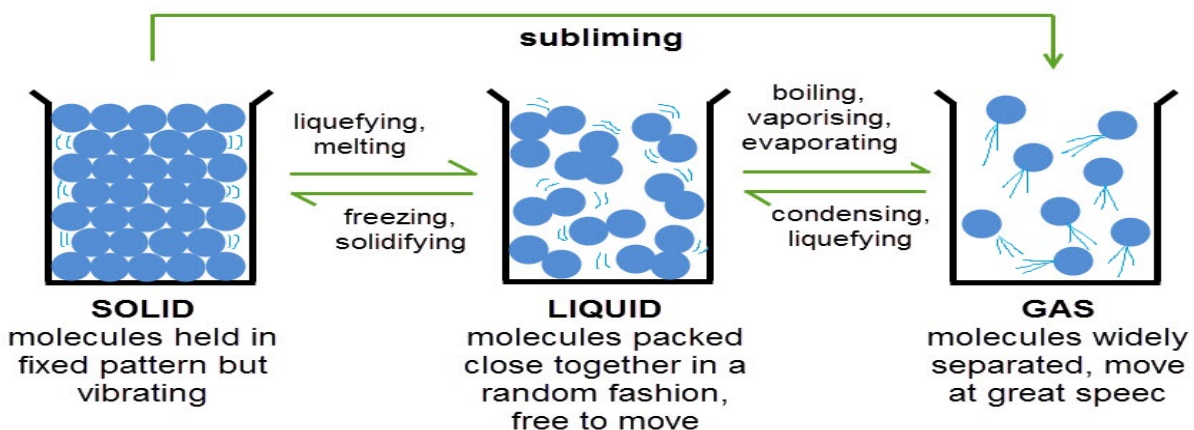
5. All matter is made up of particles
6. Matter is in constant motion
7. Atoms are mostly empty space
8. thermal energy affects the movement of particles

Short Answer:

9. Describe how **the motion and arrangement** of particles in a substance change as the substance freezes.
The particles lose energy and slow down and the attraction between particles cause a solid to form
10. Rank solids, liquids, and gases in order of particle speed from the highest speed to the lowest speed.
Gases, liquids, then solid
11. Give 2 examples of a solid, liquid and gas that can be found in your classroom.
Solid: book, desk liquid: water, hand sanitizer gas: oxygen, carbon dioxide

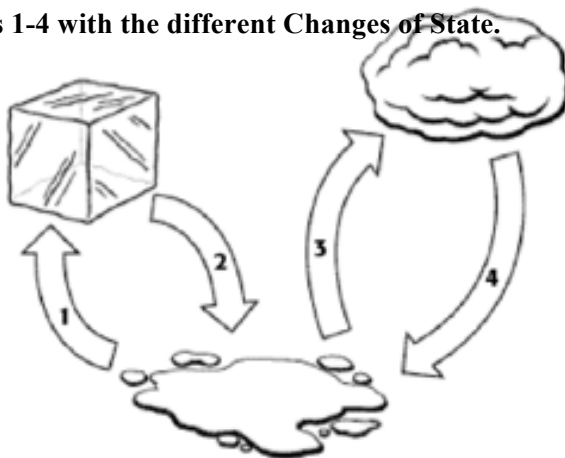
Visual Concepts

12. Draw the particles arrangement picture for each state of matter and give a description.



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13. Label the arrows 1-4 with the different Changes of State.



Short Answer

14. **What would happen if you put a blown up balloon in the freezer? (key ideas: particle movement and thermal energy changes).**

Average kinetic energy of the gas particles decreased when the temperature decreased so balloon shrank

15. **Why is molasses (syrup) slower in January (winter) as compared to August (summer)? (key ideas: thermal energy, particle movement, and particle arrangement)**

Temperature in January is low and kinetic energy is low and the movement of particles are slower than in the summer when the temperature is higher because the kinetic energy is faster and the motion of particles are faster

True or False

16. T Ice changing to liquid water at room temperature is a physical change.

17. F Ice changing to liquid water using a stove is a chemical change.

Sequence the states of matter according to their density (how compact the particles are in the state of matter). (3-highest 1-lowest) 3 – Solid 2 – Liquid 1 – gas

Circle the words

18. When the (**size / temperature**) of a liquid sample reaches its (**melting point / boiling point**), the liquid rapidly changes to a gas.

Temperature and boiling point

19. When the (**size / temperature**) of a liquid sample reaches its (**freezing point / melting point**), the liquid begins to change to solid.

Temperature and freezing point