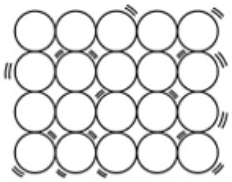
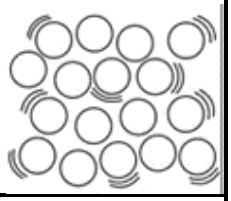
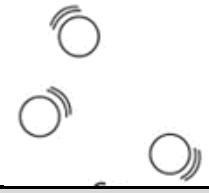
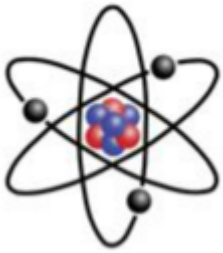
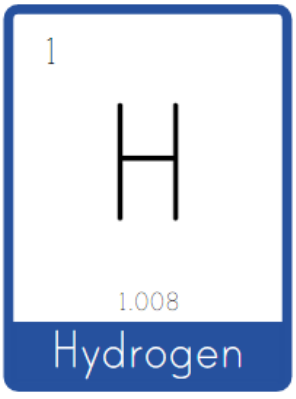
5.4 Matter — Question/Answer Packet

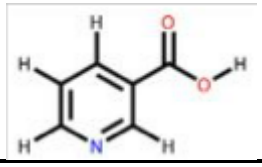
The learner will investigate & understand that matter is anything that has mass and takes up space; &occurs as a solid, liquid, or gas. Key concepts include;

5.4 Basic information:

1. What is matter?	Anything that has mass and volume. All matter is made up of atoms and molecules.
2. What is mass?	The measure of the amount of matter in an object. The mass of an object does not change.
3. What is weight?	A measure of the gravitational pull on a n object
4. What is volume?	The amount of space a solid, liquid, or gas occupies
5. What is density?	The measure of how much mass is contained in a solid, liquid, or gas and how tightly the molecules are packed. With some materials, such as liquids, the density can be changed. With other objects, the density cannot be changed.
5.4 a) distinguishing properties of each phase of matter;	
6. Phases of matter	Matter exists in different forms-. On Earth, the three basic phases of matter are: solid, liquid, & gas
7. Solid	• Matter that keeps a fixed shape • Has definite volume • Not easily compressible • Does not flow easily • Its molecules are packed closely together 
8. Liquid	• Assumes the shape of its container • Has definite volume • Not easily compressible • Flows easily 
9. Gas	• Assumes the shape of its container • Assumes the volume of its container • Compressible (lots of free space between particles) • Flows easily 
5.4b) the effect of temperature on the phases of matter;	
10. What makes matter change phases? (A physical change)	Temperature:
11. What happens to matter as the temperature increases?	**Heat up matter**, and molecules lose their tight grip on each other. They begin to move around- changing from a solid, to a liquid, to a gas
12. What happens to matter as the temperature decreases?	**Cool down matter**, and the molecules begin to move closer together, changing from a gas, to a liquid to a solid
13. At what temperature does water freeze?	0 degrees Celsius (32 degrees Fahrenheit)

14. At what temperature does water boil?	100 degrees Celsius (212 degrees Fahrenheit)
5.4c) atoms and elements;	
15. What is all matter made of?	It is made up of atoms.
16. What are atoms?	The smallest unit of an element. They cannot be seen by the unaided eye. 
17. What are atoms made up of?	Subatomic particles called: Protons, neutrons, and electrons 
18. Describe the proton & neutrons location & charges	• Protons & neutrons are located in the center (nucleus) of an atom. • Most of the mass of an atom is located in the nucleus of an atom. • **Protons** have a **positive** electrical charge. • **Neutrons** have **no electrical charge**.
19. Describe the location and charge of an electron.	• Electrons swirl around the outside of the nucleus. (always moving) • Compared to protons & neutrons, they are very tiny & have little mass. • Electrons have a negative electrical charge, and it is the flow of electrons that creates electricity.
20. What is the center of an atom called?	The nucleus
21. What is an element?	Matter made up of only one type of matter. Everything on this planet is made up of matter. There are about 120 different types of elements 

22. What is the Periodic Table of Elements?	• A chart that lists and organizes all elements.
	• It organizes the similar elements into groups.
	• Each element has an abbreviation called a symbol.
	  • H = Hydrogen
	  • O = Oxygen
	  • Au = Gold
	  • C = Carbon
	  • Al = Aluminum
	• Each element has an atomic number. The higher the atomic number, the more mass the element has.
	 

5.4d) molecules and compounds; and	
23. What is a molecule?	• A combination of atoms bonded together. • It is the smallest part of a substance that is made up of two or more atoms. • It is the smallest unit of a compound 
24. How do scientists diagram or model molecules?	• Scientists use circles with the chemical element's symbol inside • Scientists use drawings with the chemical symbols. • Scientists make 3-D models   
25. What is a compound?	• A substance made of at least two different elements bonded together. 
26. What are examples of compounds?	• **H2O (water)** • **NaCl (salt)** H= hydrogen, O = Oxygen, Na = Sodium, and Cl = Chlorine
5.4 e) mixtures including solutions.	
27. What is a mixture?	A combination of two or more pure substances that are **not bonded** together & can be easily separated by physical methods. (They do not lose their identity when combined) Example: 
28. What is a solution?	A mixture in which one substance dissolves into another.