

## Unit 2 Review Notes

Main Idea	Supporting Details/Answer
1. What is matter?	Matter is everything that has a mass and volume.
2. Describe the measurement tests we need to do conclude an object is made of matter.	<ol style="list-style-type: none"> <li>1. Measure mass using a triple beam balance (grams)</li> <li>2. Measure volumes using a graduated cylinder (liquids), calculation (rectangular prisms), or by water displacement (oddly shaped objects) (liters, milliliters, cubic centimeters).</li> </ol>
3. Define volume and describe different ways to measure it.	<ol style="list-style-type: none"> <li>1. Volume is the amount of 3-D space an object occupies.</li> <li>2. Measure volumes using a graduated cylinder (liquids), calculation (rectangular prisms), or by water displacement (oddly shaped objects)(liters, milliliters, cubic centimeters).</li> </ol>
4. Define mass and describe how to measure it.	<ol style="list-style-type: none"> <li>1. Mass is the amount of matter an object is made of.</li> <li>2. Measure mass using a triple beam balance (grams).</li> </ol>
5. Define weight and describe how to measure it.	<ol style="list-style-type: none"> <li>1. Weight is the amount of gravitational pull on an object.</li> <li>2. Measure weight using a spring scale (Newtons).</li> </ol>
6. How are mass and weight different?	<ol style="list-style-type: none"> <li>1. Mass and Weight are different because mass is the amount of space an object takes up while weight is the amount of gravitational pull on that object.</li> <li>2. Mass of any object is constant in the universe because the number of particles in an object does not change even if location does.</li> <li>3. Weight is dependent on the amount of gravity present.</li> <li>4. The amount of gravity depends on the distance between two objects and the masses of the objects.</li> <li>5. Mass is measured on a balance in grams.</li> <li>6. Weight is measured by a spring scale in Newtons.</li> <li>7. <math>Weight = mass \times gravity</math></li> </ol>
7. Matter has four main states.	<ol style="list-style-type: none"> <li>1. Solid, liquid, gas, and plasma</li> <li>2. Bose- Einstein is the 5<sup>th</sup> state of matter.</li> </ol>
8. Define and draw: SOLID	<ol style="list-style-type: none"> <li>1. Specific shape and volume</li> <li>2. Particles vibrate locked in place</li> <li>3. Particles have low energy</li> </ol>
9. Define and draw: LIQUID	<ol style="list-style-type: none"> <li>1. No specific shape; specific volume</li> <li>2. Particles move past each other but have not overcome all forces holding them together</li> <li>3. Particles are more spread out than solid</li> </ol>



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	4. Particles have more energy than solid and less energy than gas
10. Define and draw: GAS	<ol style="list-style-type: none"> <li>1. No specific shape; no specific volume</li> <li>2. Particles move very fast</li> <li>3. Many collisions between particles</li> <li>4. Particles are far apart – overcome forces of attraction between particles</li> <li>5. particles have high energy</li> </ol>
11. Define and draw: PLASMA	<ol style="list-style-type: none"> <li>1. No specific shape; no specific volume</li> <li>2. Particles move very fast</li> <li>3. Many collisions between particles</li> <li>4. Particles are far apart – overcome forces of attraction between particles</li> <li>5. Particles have very high energy and atoms have split apart into ions (positively and negatively charged particles)</li> </ol>
12. What is density and what is the formula for density?	<p>Density is how much matter (mass) occupies a given space (volume).</p> <p>2. The formula for density is <math>\text{mass/volume} = \text{density}</math>. (units = <math>\text{g/cm}^3</math> or <math>\text{g/ml}</math>)</p>
13. Why is density an important property of matter?	<p>Density is an important part of matter because it can help scientists identify the type of matter.</p> <p>Density determines whether an object will sink or float, which affects many physical processes on earth such as weather and ocean currents.</p>
14. Why do objects float or sink?	<p>They sink or float due to the relative (comparable) density. If they are denser than the liquid they are in, objects sink. If they are less dense than the liquid, objects will float.</p>
15. What are properties of matter?	<p>Properties of matter are ways of describing matter.</p>
16. Define chemical property of matter:	<p>A chemical property of matter can only be observed by reacting matter with other matter to create a new type of matter.</p> <p>Chemical properties describe the ability of a type of matter to react with other matter.</p>
17. Define physical property of matter:	<p>A physical property can be observed without changing the matter into a new substance.</p>
18. What is an intensive (characteristic) property of matter and why are they useful to scientists?	<ol style="list-style-type: none"> <li>1. An intensive property of matter is a property of matter that is always true of a type of matter, no matter how much or how little of the matter is available.</li> <li>2. Scientists use intensive properties to help identify different types of matter. For example, if a scientist has a sample of matter that is explosive, reacts with water and has a density of <math>10 \text{ g/cm}^3</math>, they might be able to identify it. If a scientist has a sample of matter that is 10 grams, and this is all they know, they</li> </ol>



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	only know how much they have
19. List at least five chemical properties:	Flammability, reactivity with acid, reactivity with water, radioactivity, reactivity with oxygen, explosivity
20. List at least five physical properties:	Flexibility, malleability, ductility, solubility, electrical conductivity, shape, color, odor, weight, mass, volume, density
21. Define melting/freezing point:	The Melting point is when you add enough heat or pressure to change a solid to a liquid. Freezing point is when you take away enough heat to change a liquid to a solid
22. Define boiling/condensation point:	Boiling point is when you add so much heat or pressure so that the liquid turns into a gas. Condensation point is when you take away enough energy to turn a gas into a liquid.
23. Describe what happens to the particles of a solid as we add energy to the solid.	The particles in the solid start to move faster and start to separate more.
24. Describe what happens to the particles of a gas as we take energy away from the gas.	The particles in the gas start to move slower and get closer together.
25. Define these terms: Melting Freezing Boiling/evaporation Condensation Sublimation	<ol style="list-style-type: none"> <li>1. Melting = solid changes to liquid.</li> <li>2. Freezing = liquid changes to solid.</li> <li>3. Boiling/evaporation = liquid changes to gas.</li> <li>4. Condensation = gas changes to liquid.</li> <li>5. Sublimation = solid changes to gas.</li> </ol>
26. What are observations?	Observations are the data scientists collect during investigations using their five senses.
27. What do scientists use observations for?	Scientists use observations to help them make accurate inferences about why something is happening in an investigation.