Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Pd: \_\_\_ Ast: \_\_\_\_\_

**MATTER STUDY GUIDE**

***Indicate whether each clue corresponds best to density, mass, or volume by writing “D” (for density), “M” (for mass), or “V” (for volume) on the line provided.***

1. \_\_\_\_\_ - usually measured in milliliters or centimeters cubed (cubic centimeters)
2. \_\_\_\_\_ - the amount of matter an object/substance is made of
3. \_\_\_\_\_ - can be calculated by formula or measured in a graduated cylinder
4. \_\_\_\_\_ - the amount of space an object/substance takes up
5. \_\_\_\_\_ - the amount of matter in a given space
6. \_\_\_\_\_ - usually measured in grams
7. \_\_\_\_\_ - indicates how closely packed the particles are in a substance
8. \_\_\_\_\_ - measured on a balance or scale
9. \_\_\_\_\_ - is independent of sample size (amount)
10. \_\_\_\_\_ - determines whether objects sink or float

***Complete the following table comparing “weight” and “mass”.***

|  |  |  |
| --- | --- | --- |
|  | **MASS** | **WEIGHT** |
| 1. How are they different?
 |  |  |
| 1. How are they related?
 |  |  |
| 1. How would they be affected if the object were on a different planet or moon?
 |  |  |

***Provide a short answer to the following questions. If math is required, remember to show your work [i.e.: 1) write the equation, 2) plug in the numbers, 3) solve it with units].***

1. How does density determine whether an object sinks or floats?
2. You have a 25 g metal block with a volume of 9.26 cm3 and a 5 mL chunk of metal with a mass of 13.5 g. Are these two samples made of the same substance? Explain your reasoning.
3. Will either of the two samples in question 15 float if they were placed in water? Explain your answer.
4. The density of gold is 19.32 g/cm3. Are either of the samples from question 15 made of gold? Explain your answer.
5. How would you classify water as a type of matter (element, mixture, or compound)? Describe the composition of a water molecule.
6. Why is water a “POLAR MOLECULE”? What does “polar molecule” mean?
7. Hydrogen bonds between water molecules result in COHESION and ADHESION. Describe these two properties of water.
8. Why does ice float on top of water? What causes this to happen? (*discuss density*)
9. What property of water allows it to be a good solvent? How does this affect the water we usually encounter?
10. What effect does water’s high specific heat capacity have on Earth’s ability to sustain life?
11. Why do we sometimes encounter water in solid, liquid, and gas form all in the same location?
12. What is the density of water?
13. How can you predict if an object will sink or float in water?