Matter Quiz Review Sheet **Name:** KEY

1. Put an X next to each of the following objects or substances that would be considered matter.

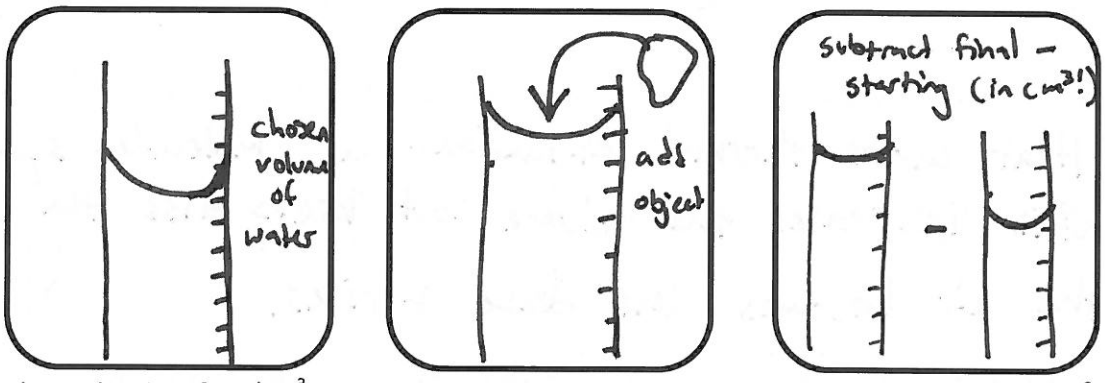
X air	X amoeba	____ fire	X milk
____ gravity	X cells	X smoke	X gold
X salt water	X cars	X Jell-O	X water
____ heat	____ force	X sand	____ sunlight

These objects/substances ARE matter because: they have mass (made of molecules) and volume (take up space) and are not energy or forces

2. Use a ruler and calculator to find the volume of a cereal, cracker, or other box at your house:

   a. Object: _____ Volume: L x W x H cm^3

3. **Draw** and **label** a set of 3 pictures that explains how to use the displacement method to find the volume of an irregularly shaped object:



4. Water has a density of 1 g/cm^3. You drop an object into the water that has a density of .86 g/cm^3. What will happen to the object?

   it will float b/c it is less dense than water

5. You drop a rock in water and the rock sinks. What can you infer from this?

   The rock is more dense than water because it sinks.
   density > 1 g/cm^3

6. Calculate the **mass** of a liquid with a density of 3.2 g/mL and a volume of 25mL.

   $M = D \times V$ $M = 3.2 g/mL \times 25 mL$ $M = 80 g$

7. What is the **volume** of a 300 mL sample of mercury, which has a density of 13.55g/cm^3.

   trick question! volume is measured in mL!
   = 300mL

8. A Which two objects take up approximately the same amount of space?
   a. 15mL of water and a dice
   b. A pool of water and a box 20cm x 11cm x 3 cm
   c. 1 L of soda and 200 mL of soda

9. A jar contains 30 mL of glycerin (whose mass is 37.8g) and 60 mL of corn syrup (whose mass is 82.8g). Which liquid is on top? Show how you arrived at this answer.

$D = \frac{m}{V}$ $\frac{37.8\text{ g}}{30\text{mL}} < \frac{82.8\text{ g}}{60\text{mL}}$

less dense more dense

glycerin is on top.

10. You took last in your family's NCAA tournament bracket challenge. As a punishment, you have the choice to either carry around 1 kg of packing peanuts or 1 kg of rocks...all day long. Which substance would you choose and why? (Think about the mass, volume, and density of each object).

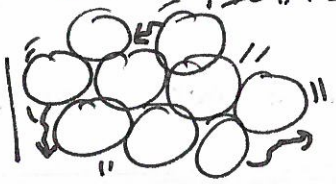
1 kg of rocks. Rocks are more dense so they have the same mass (1kg) in less space (volume).

11. Warm air rises and cool air sinks. Why? (think about temperatures effect on molecules and their density)

Heat causes thermal expansion - air molecules spread out. This increases the volume but keeps mass the same so the air becomes less dense & rises.

12. Not surprisingly, you are able to do a cannon ball into a pool of water, but not onto a cement sidewalk. However, it may be surprising to know that it is impossible to compress the cement *and* the water. **Explain how it is possible that you cannot compress the molecules of water but you can jump into them.**

The molecules of a liquid are TIGHTLY PACKED but MOVE FREELY.



Reach each statement and circle the state(s) of matter that has that specific characteristic. **There may more than one correct answer for each statement.**

13. The molecules have low energy.	solid	liquid	gas
14. The molecules **cannot** be compressed.	solid	liquid	gas
15. Molecules flow past one another.	solid	liquid	gas
16. No specific shape or volume.	solid	liquid	gas