MONOMERS & POLYMERS LAB

Name: _____ Date: _____ Period: _____

Purpose*:* To investigate the properties of _____ and _____, and observe how these molecules can link together or break apart in an effort to manipulate a materials _____ _____ (pg. ___)

Research **(Responsibility of the Table Captain to make sure everyone contributes and records information)**

Monomers: _____

_____

Polymers: _____

_____

Examples of Monomers: _____

_____

Examples of Polymers _____

_____

Organic Chemistry is: _____

_____

The four main organic compounds that make up humans are: _____, _____, _____, & _____.

PVA ( ) stands for _____, and is _____

_____

Acetone ( ) is a _____, and is used for _____

_____

Experiment: ***Safety Issues:***

You MUST wear safety goggles throughout the entire exp.
Do not remove your goggles until your recycler collects them.
Only use the required amount of chemical, nothing more please.
One of these chemicals is very strong, so do not inhale too closely.

Materials:

- Glue Solution
- Sodium Borate Solution
- Styrofoam Packing Peanuts (about 10)
- Glass Vial w/substance
- Glass Beaker & Flask
- Disposable Cups (2)
- Popsicle Stick (2)
- iPad (1)

Procedures*: Remember Safety First!!!*

1. ***EXPERIMENT 1:*** **Measure 20 milliliters (mL) of glue into the beaker.**
2. **Pour 20 milliliters (mL) of water into the beaker with the glue.**
3. **Add a small squirt of paint or food coloring, put only 2-3 drops into glue mixture; stir together until all three ingredients are properly mixed.**
4. **When instructed, teacher will supply the binding solution for the slime base mixture; stir immediately with your Popsicle stick when combined with mixture; observe your reaction.**
5. ***EXPERIMENT 2:*** **Collect your Styrofoam packing peanuts into your glass flask, and grab the vial with clear solution from your instructor.**
6. **Using the dropper, put 1 – 2 drops of the clear solution onto the packing peanuts. Observe and record the reaction below:** _____

_____

_____

7. **Next, while counting each drop, continue dropping the solution onto the peanuts, using only one drop at a time and swirling after each drop; observe what you saw and record how many drops it took until the peanut/solution reaction has reached its end: a) how many drops total for complete breakdown? _____**

   b) Describe what happened with each drop and swirl: _____

   _____

   _____

8. **Everyone clean up. Rinse all glassware thoroughly with water and dry. Return everything neatly to the bin.**

Analysis:

1. **Hold** the mixture from the **experiment 1** in your hands. What is its state, and why?

_____

2. **Slowly stretch/bend** your substance from **experiment 1**. Observe its "**flexibility**" and record: _____

_____

3**. Quickly pull** (stretch) your substance apart. Observe its "**tensile strength**" and record:

_____

_____

4. What happens as you **continue to hold/play** with substance from **experiment 1**? Explain.

_____

_____

Conclusion:

5. The two experiments are examples of polymers and monomers reacting with substances with completely different results. What do you think is happening in each experiment that causes one to form a new substance and the other to break down? *Be specific, and remember, we are dealing with **monomers** and **polymers** here so use both words **in each answer**.*

Exp. 1: _____

_____

_____

Exp. 2: _____

_____

_____

6. What do you think the "***n***" stands for in the PVA chemical formula from your research, **why**?

_____

_____