Bouncy Balls and Chemistry

Date: _____

What needs to be prepared **BEFORE** lesson:

Copy of this poster on chart paper: https://www.pinterest.com/pin/AdrurUJKEODjRKQFEJmwcWVyyJJvBwPQS5FGRYoip59IG6NuCg0gcgY/

Vocabulary on another chart paper:

1. Matter - anything that takes up space and has weight
2. State of matter - the solid, liquid, or gaseous condition of a substance
3. Substance - a particular kind of material
4. Liquid - matter that keeps its size but takes the shape of its container
5. Gas - matter that can freely change shape and size, often it cannot be seen
6. Solid - matter that helps its shape and size
7. Chemical change - a change in the chemical makeup of a substance
8. Mixture - a combination of substances in which a chemical reaction does not occur
9. Physical change - a change in the size, shape, or color of a substance that does not change it into a different substance
10. Solution - a mixture in which the atoms of a solid separate and become invisible in a liquid.
11. Mass - the measure of the amount of matter in an object

Questions to ask students after reviewing vocabulary (chart paper)

1. How can I tell whether something has gone through a physical change or a chemical change?
    - If the materials have been mixed and retain their own properties, it is a physical change.
    - If the materials form something new and take on new properties, it is a chemical change.

2. Can all liquids mix with all other liquids? What about solids and gases?
    - Many liquids do mix(ex, milk and chocolate syrup). Some do not (oil and vinegar)
    - Solids do not mix as easily with one another. They often have to be melted into liquids, combined, and then cooled back to a sold to blend together
    - Gases mix pretty easily, like carbon dioxide from a car exhaust into the air or helium from a balloon.
        - While doing this, mix together milk and syrup to show how they blend together.
        - Then, mix the vegetable oil and water and show how they don't mix.

"Now we're going to do a chemical change! We're going to mix solids and liquids to make bouncy balls. We will also use art to mix colors to get the color that we want!"

Materials to make bouncy balls:

- Warm water
- Borax
- White liquid glue
- Food coloring
- Cornstarch
- Bowls and cups
- Measuring cups/spoons

Materials to explain science:

- milk
- chocolate syrup
- vegetable oil
- vinegar

For **each student**, you will need:

1. 1/2 cup warm water

2. 1 tablespoon Borax
3. 2 tablespoons white liquid glue
4. 1 tablespoon cornstarch
5. Food coloring
6. 2 bowls

Step by Step Instructions:

1. Add warm water to the bowl. Make sure it is quite warm to dissolve the Borax.
2. Add 1 tablespoon of Borax to the water and stir until it dissolves.
3. In the other bowl, add 2 tablespoons or white liquid glue, 1 tablespoon of cornstarch, and food coloring. Mix colors to achieve the colors you want!
4. Gently mix the glue, cornstarch, and coloring until you have a smooth texture.
5. Pour the water and Borax into the glue mixture.
6. QUICKLY stir as the mixture will Harden very quickly!
7. Once you have a clump, use your hands to pull it from the bowl and spoons.
8. If you ball is sticky, it's OK! When the ball is no longer sticky, give your ball a bounce!

Questions after experiment:

1. What ingredients were solids?
    - borax, cornstarch
2. What ingredients were liquids?
    - glue, water, food coloring
3. What happened when you added the Borax to the water?
    - The borax dissolved in the water
4. What happened when you added the glue, corn starch, and food coloring?
    - They all mixed together and was smooth
5. What happened when you mixed the bowls together?
    - It started to turn hard or rubbery
6. What state of matter was the end result of your chemical change?
    - Solid