**Physical Science – Matter**

**Physical and Chemical Changes Lab Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Per:\_\_\_**

**Background Information:**

Matter is constantly changing. The two kinds of changes that occur in matter are physical and chemical changes. In a physical change, no new substances are formed. However, physical properties such as size, shape, color, or phase may change. Melting of ice and dissolving salt in water are examples of physical changes.

As a result of a chemical change, one or more “new” substances with new and different properties are formed. The new substances are different from the original substance. Burning and the rusting of iron are examples of chemical change.

In the investigation you will observe physical and chemical changes and learn to recognize each type of change when it occurs.

**Materials:**

* Safety goggles
* Birthday candle
* Aluminum foil (15 cm x 15 cm)
* Modeling clay
* Small piece of paper
* Watch glass
* Scoop
* Magnesium ribbon (1 cm long)
* 1 M HCl (hydrochloric acid)
* 2 test tubes
* test-tube rack
* test-tube clamp
* insulating pad
* matches
* table salt
* dropper bottle of 0.1 M AgNO3 (silver nitrate)

**Procedure:**

1. Take a small piece of modeling clay and place it on the square of aluminum foil. Firmly place a candle in the clay so that it is well supported. Light the candle and allow it to burn while you continue with the rest of the investigation. Record your observations of the burning candle in the space provided in Observations.
2. Tear the piece of paper into small pieces and place them on the watch glass. Place the watch glass and pieces of paper on the insulating pad. Light the pieces of paper with a match and allow them to burn completely. Record your observations of the burning paper.
3. Add a small scoop of table salt to a test tube that has been half filled with tap water. Place your thumb over the top of the test tube and shake to dissolve the salt. Record your observations. Using the dropper, add five drops of AgNO3 (silver nitrate) to the salt water. Record your observations.
4. In a clean, empty test tube, place a small piece of magnesium ribbon. Add five drops HCl (hydrochloric acid) to the test tube. Touch the bottom of the test tube with your fingertips. Record your observations.

**Observations:**

1. What did you observe as the candle burned?
2. What was left after the candle burned?
3. What did you observe as the paper burned?
4. What was left after the paper burned?
5. What did you observe when you added the salt to the water in the test tube and shook it?
6. What did you observe when the silver nitrate was added to the salt water?
7. What did you observe then the hydrochloric acid was added to the magnesium metal?

**Analysis and Conclusions:**

1. Identify each of the following as either a physical change or a chemical change. **Give a reason for your answer.**
   1. Melting candle wax:
   2. Burning a candle:
   3. Tearing paper:
   4. Burning paper:
   5. Dissolving table salt:
   6. Mixing salt water with silver nitrate:
   7. Cutting a piece of magnesium ribbon:
   8. Adding hydrochloric acid to magnesium metal:
2. Describe ***two*** observations you might make when a physical change occurs:
3. Describe ***two*** observations you might make when a chemical change occurs:

**Critical Thinking and Application:**

1. Dissolving salt in water results in a physical change. How could you show that this is true?
2. Combining acid with magnesium ribbon results in a chemical change. How could you show this is true?
3. Each of the following changes can indicate that either a chemical or physical change has occurred. Explain how each change might be the result of a ***physical change,*** not a chemical change.
   1. Change of color:
   2. Loss of mass:
   3. The substance seems to “disappear”: