NAME: _____

# Lab Report: Codename Reliability

CHIP KIDS

Complete the lab report as you conduct the experiment!

## PURPOSE:

## HYPOTHESIS:

## OBSERVATIONS AND RESULTS:

## CONCLUSION:

NAME:

## MATERIALS:

- Two 6"x6" squares of cardboard
- Two 6"x6" squares of aluminum foil
- Two 6"x6" squares of plastic (or Ziploc bag)
- Three slips of paper
- Sharpie
- Scotch tape
- Safety goggles
- Hammer
- Piece of plywood or other surface that can withstand hammer impact
- Heat lamp/light
- Bucket/tub of water
- Towel

## PROCEDURE:

1. Your teacher will write the same secret message with a Sharpie on all three slips of paper, then fold them up to keep the message hidden.
2. For each material, make a "sandwich"/envelope by placing one of the slips in between the two squares of that material, all stacked vertically. Tape the squares together using Scotch tape. (If using a Ziploc bag for the plastic, simply place one of the slips inside and close the bag.)
3. Your mission is to test each material to see which is best suited to preserving a message across many types of environments and conditions that may damage it. To do this, we will do what is called **reliability testing**, quickly simulating these extreme conditions and observing which material holds up the best; today, you will perform tests for 1) high impact, 2) heat exposure, and 3) water submersion. Fill out the Purpose section of your Lab Report, then fill out the Hypothesis section with your prediction of which material will best protect the message inside.
4. High Impact
    a) Put on safety goggles.
    b) Place the cardboard envelope on top of the plywood.
    c) Strike it forcefully with a hammer 5 times.
    d) Repeat a), b) and c) with the aluminum foil and plastic envelopes.
5. Heat Exposure
    a) Put on gloves.
    b) Turn on the heat lamp, allowing it time to get hot.
    c) Place the cardboard envelope on top of the heat lamp. Leave it there for approximately one minute.
    d) Repeat a), b), and c) with the aluminum foil and plastic envelopes.
6. Water Submersion
    a) Place the cardboard square pair in the tub of water. Leave it in for approximately one minute.
    b) Remove the cardboard square pair and place it on the towel.
    c) Repeat a) and b) with the aluminum foil and plastic envelopes.
7. Now that the three tests are complete, open each envelope and check the slips for smudges, tears, and ink loss. Can you still read what the secret message inside says? Which material did the best job at preserving the message? Finally, complete the Observations & Results and Conclusion sections of your Lab Report.