Name:_____

The Great Chocolate Shape Shift

Your Mission: You have learned that some changes caused by heat are reversible and some are irreversible. Your job is to test a piece of chocolate to find out which type of change it goes through, and gather evidence to prove it!

Materials Needed:

- 1 small piece of chocolate (a chocolate square or a few chocolate chips)
- 1 small clear plastic zip-top bag
- A warm heat source (your hands or a sunny window)
- A cooling source (a freezer)
- A timer or stopwatch

Step 1: The Starting Condition (Observation)

- Before we change the temperature, we need to know what we are starting with.
- Place your chocolate inside the plastic bag and seal it tight.
- Feel the chocolate through the bag. Tap it gently on the table.
- Record Data: What state of matter is the chocolate right now? (Circle one) SOLID | LIQUID | GAS

Step 2: Make a Prediction (Hypothesis)

What do you think will happen when you add heat? What will happen when you cool it back down?

I predict that adding heat will make the chocolate _____.

I predict that cooling it afterward will make the chocolate _____.

Step 3: Apply Heat (The Meltdown)

It's time to add thermal energy (heat)!

- Hold the sealed bag of chocolate tightly between your warm hands, or place it in a very sunny window.
- Start your timer. Keep applying heat until the chocolate feels soft and squishy.
- Record Data: How many minutes did it take to get squishy? _____ minutes.
- Observe: What state of matter is the chocolate acting like now? (Circle one) SOLID | LIQUID | GAS

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Step 4: Apply Cold (The Freeze-Out)

Now we will see if the change can be undone.

- Place your bag of squishy chocolate into the freezer.
- Set your timer for 10 minutes.

Step 5: The Final Observation (Analysis)

- Take the bag out of the freezer. Tap the chocolate on the table again.
- Observe: Did the chocolate return to a hard solid? YES or NO

Step 6: Conclusion and Evidence

Like a real scientist, use the evidence from your experiment to answer the final questions based on the passage you read.

1. Is melting chocolate a reversible or irreversible change?
2. What is your evidence? (Hint: What happened in Step 5?)

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