Sci 9 **Candle Observation Lab** Full Name:

*Reference: Science Probe 9 page 176-177* Block:

**Purpose**: To practice observation skills and identify physical and chemical Changes through the investigation of the properties of a burning candle.

**Materials:**

* 1 standard candle
* Ruler
* Scale
* Safety goggles
* Matches
* 1 petri dish
* Tongs
* Cobalt chloride paper
* 100ml beaker
* 100 ml flask
* Rubber stopper
* Timer

**Part A:** **BEFORE LIGHTING**, make observations of the UNLIT candle (color, length, mass, etc)

|  |  |
| --- | --- |
| **Make at THREE Qualitative (measured) Observations:** | **Make at THREE Quantitative (descriptive) Observations:**  Mass (candle + dish) = |

**Part B:** LIGHT THE CANDLE and anchor it to the dish by letting 3-4 drops of melted wax drip onto the center of the dish and placing the candle base to it. **Allow the candle to burn for exactly 5 minutes.** Discard spent matches in beaker of water.

**Make at least 10 total new observations** of what has changed. Observations should be made both DURING and AFTER finished burning. (What states of matter do you see? Where does the burning take place? What is actually burning? Can you smell anything? Is there something new there that wasn’t before?). Qualitative observations are *descriptive words*. Quantitative observations are *measurements.*

|  |  |
| --- | --- |
| Qualitative Observations, During burning | Quantitative Observations, During burning |
| Qualitative Observations, After burning | Quantitative Observations, After burning  Mass of dish + candle = |

**Part C.** Test a strip of *cobalt chloride test paper* with a *drop of water* and record observations.

|  |  |
| --- | --- |
| Before | After |

**Part D.**  Light the candle again. Using beaker tongs, invert a flask over the candle flame and hold it above the flame for about 30 seconds. While this is happening another partners gets a fresh test strip **but it is important to** **keep it in the sealed** **container until right before using**. After 30 seconds has passed, lower the flask all the way down. What happens to the flame? Quickly set the flask upright on table while a partner immediately drops in a fresh test strip. Record your observations:

|  |  |
| --- | --- |
| Test strip Before | Test strip After |

**Questions:**

1. A physical change in a substance can be a change in *shape* or change in *state* (*solid, liquid, gas*). A chemical change is when a *new* substance is formed. What changes of the *candle* that occurred in Part B were physical and which were chemical?

|  |  |
| --- | --- |
| Physical Changes | Chemical Changes |

1. What is the role of the wick in the candle? How does it help to keep the candle lit? Does it burn? What is your evidence?

**Analysis:**

1. From your observations in Part C, what do you think the candle needs in order to burn? What is the evidence?
2. What *substances are* *produced by the combustion* (burning) of the candle? What is your evidence? Hint: What is indicated by the test strip?