**Name: Date: Class:**

Cushions and Capacitance Exit Ticket Key

**Matching Directions:** Match each of the following parts of the capacitance sensor you built with its function:

1. Tin Foil: **B**

a. Tool used to connect the capacitance sensor with the digital multimeter.

1. Wax Paper: **C**
2. Material that is the *conductor* and is used to “sense” when the sensor is pushed.
3. Alligator Clips: **A**
4. Material that is the *insulator* and is used In between two conductors in the sensor.
5. Digital Multimeter: **D**
6. Tool used to measure and display the capacitance of the sensor.

**Patterns Directions:** Answer the following questions about the relationship between capacitance as pressure:

The sensor you created doesn’t actually measure pressure, but it does measure capacitance which is directly related to the pressure.

* 1. If you sit on the sensor, you are pushing the pieces of tin foil closer and closer together. This

**increases (increases or decreases)** the capacitance.

* 1. As the sensor is pushed down, the number shown on a digital multimeter will  **increase (increase or decrease).**
  2. If you sit on this sensor, you are pushing the pieces of tin foil closer and closer together, increasing the capacitance, this means that the pressure  **increases (increases or decreases).**

**Data Calculation Directions:** A small, light box and a large box were placed on a capacitance sensor in two separate experiments. Calculate the capacitance of each box and answer the questions:

|  |  |  |  |
| --- | --- | --- | --- |
| **Object** | **Initial Capacitance (nF)** | **Final Capacitance (nF)** | **Object’s Capacitance (nF)** |
| ***Small Box*** | 0.45 nF | 0.88 nF | 0.88 nF – 0.45 nF = 0.43 nF |
| ***Large Box*** | 0.40 nF | 1.07 nF | 1.07 nF – 0.40 nF = 0.67 nF |

1. Which box has the higher capacitance?  **The Large Box**
2. If you wanted to select the object that would put the *least* pressure on a surface, which box would you choose and why? **You should choose the Small Box because it has the lowest capacitance, indicating that it would also put the least pressure on a surface.**