

Name \_\_\_\_\_  
AP Physics  
Period \_\_\_\_\_

Date \_\_\_\_\_  
Lab Activity #12 (30 pts)  
Mrs. Nadworny

Partners:

Due Date \_\_\_\_\_

## Capacitors

**NO Lab Write-Up Required**  
*must be neatly written in pencil*

### Purpose

- To calculate the capacitance, amount of charge, and energy stored in a parallel plate capacitor.

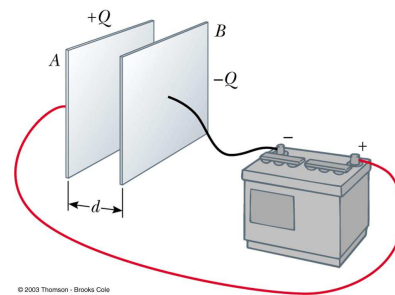
### Materials

- 2 metal plates •
- D cells •
- ruler •
- digital capacitance multimeter

### Diagram

(2)

Include other necessary labels on the diagram.



(8)

### Data Collection

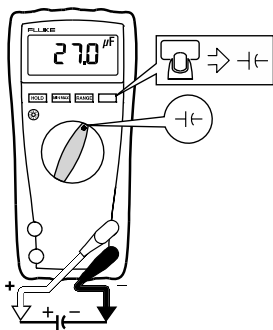
Make a clearly labeled table for organizing the raw and processed data that you expect you will collect.

## Data Processing

(18)

Include an analysis of the data collected, including sample calculations of processing the data. Place your complete answers in the provided spaces below.

### Measuring Capacitance



- Disconnect each plate from your power source.
- Discharge each plate by grounding them with your hand.
- Turn the meter dial to the capacitance setting. Press “SELECT” to select the capacitance function.
- Press the range button until nF (nanoFarad) appears on the right side of the display.
- Press the “REL” button to zero the meter.
- Firmly press each lead to each plate and hold for a few seconds until the reading settles. (You may need a second pair of hands to steady the plates in the correct position as you take the meter reading.)
  - Note – the meter uses a potential difference of 0.83 volts to measure capacitance.

Calculated Capacitance = \_\_\_\_\_ F (use this value for the last 3 calculations, not the measured C)

Measured Capacitance = \_\_\_\_\_ nF = \_\_\_\_\_ F

Percent error between expected value and meter reading of capacitance = \_\_\_\_\_ %

Amount of electric charge on the plates = \_\_\_\_\_ C

Amount of elementary charges on the plates = \_\_\_\_\_ e

Amount of energy stored in the capacitor = \_\_\_\_\_ J

(2)  
neatness