Thursday Reading Assessment: Unit 0 part II, Capacitance

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1 Memory Bank

- $Q = CV$ ... Relationship between capacitance, charge, and voltage.
- $C_{tot} = C_1 + C_2 + C_3 + ...$ ... Capacitors in parallel.

2 Capacitors

1. Consider Fig. 1. Notice how the total capacitance *is the sum* of all the capacitors' individual capacitances. Why do you think it works this way?

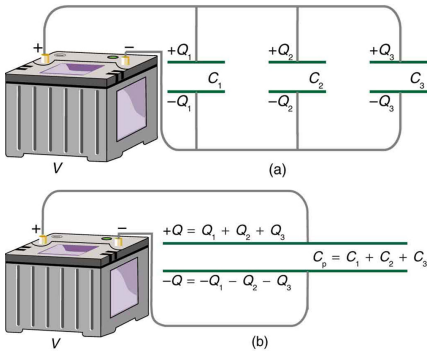

Figure 1: The relationship between potential energy and voltage.

2. Suppose C_1 is 20 pF, C_2 is 20 pF, and the total capacitance is 100 pF. What is the capacitance of C_3?

3. Suppose the total charge stored is 1 pC, and the total capacitance is 24 pF. At what voltage is the charge being stored?

4. Suppose a different system stores the same charge at half the voltage. What is true of the capacitance?
   - A: It has half the capacitance
   - B: It is the same capacitance
   - C: It is double the capacitance
   - D: It has zero capacitance