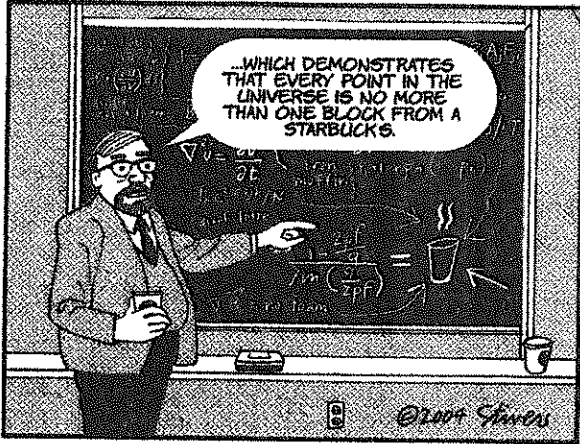


# AP 2 Capacitors WS 1

Name: \_\_\_\_\_

Period: \_\_\_\_\_



Electricity is just organized lightning – George Carlin

1. What voltage is required to store  $7.2 \times 10^{-5}$  C of charge on the plates of a  $6.0\text{-}\mu\text{F}$  capacitor?
2. If the plates of an isolated parallel-plate capacitor are moved closer to each other, does the energy storage increase, decrease, or remain the same? Explain.
3. How much charge flows through a 12-V battery when a  $2.0\text{-}\mu\text{F}$  capacitor is connected across its terminals?
4. A parallel-plate capacitor has a plate area of  $0.50\text{ m}^2$  and a plate separation of 2.0 mm. A) What is its capacitance? B) How does the capacitance change if you double the voltage of the battery attached to the capacitor?
5. What plate separation is required for a parallel-plate capacitor to have a capacitance of  $5.0 \times 10^{-9}$  F if the plate area is  $0.40\text{ m}^2$ ?

6. A 12-V battery is connected to a parallel-plate capacitor with a plate area of  $0.20 \text{ m}^2$  and a plate separation of 5.0 mm. (a) What is the resulting charge on the capacitor? (b) How much energy is stored in the capacitor?
7. The electric potential energy stored in the capacitor of a defibrillator is 73 J, and the capacitance is  $120 \mu\text{F}$ . A) What is the potential difference across the capacitor plates? B) What is the charge stored on the capacitor
8. If the potential difference across a capacitor is doubled, what happens to (a) the charge on the capacitor and (b) the energy stored in the capacitor?
9. A capacitor has a capacitance of  $2.5 \times 10^{-8} \text{ F}$ . In the charging process, electrons are removed from one plate and placed on the other plate. When the potential difference between the plates is 450 V. how many electrons have been transferred?
10. What is the capacitance of the two metal spheres shown in the figure?

