NAME _____ DATE _____ CLASS _____

Section 18-3

HOLT PHYSICS

# Concept Review

## *Capacitance*

**Use $k_C = 8.99 \times 10^9\ \mathrm{N \cdot m^2/C^2}$.**

**1.** Consider the following units: picofarad, nanofarad, microcoulomb. Explain what quantities they measure, and write their equivalents using powers of 10.

**2.** A 1.00 pF and a 1.00 nF capacitor each has a charge of 1.00 $\mu$C. Which has a higher potential difference between its plates? Show your calculations, and explain your reasoning.

**3.** A parallel-plate capacitor holds $2.00 \times 10^2$ $\mu$C of charge when a potential difference of $5.00 \times 10^2$ V is applied between its plates.

**a.** What is the capacitor's capacity in units of farads and in units of nanofarads?

**b.** The potential difference is doubled to $1.000 \times 10^3$ V. How does the capacitance change? How does the charge change?

**c.** How much electrical energy was stored in the capacitor at $5.00 \times 10^2$ V? at $1.000 \times 10^3$ V?