1. –/2 pointsSerCP9 17.P.005.

A certain laboratory experiment requires an aluminum wire of length of 26.0 m and a resistance of 3.60 Ω at 20.0°C. What diameter wire must be used? (The resistivity of aluminum at 20.0°C is 2.82×10^{-8} Ω · m.)

[ ] mm

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2. –/2 pointsSerCP9 17.P.010.

An electric heater carries a current of 11.0 A when operating at a voltage of 3.30×10^2 V. What is the resistance of the heater?

[ ] Ω

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3. –/2 pointsSerCP9 17.P.011.

A person notices a mild shock if the current along a path through the thumb and index finger exceeds 86 μA. Compare the maximum possible voltage without shock across the thumb and index finger with a dry-skin resistance of 5.0×10^5 Ω and a wet-skin resistance of 2000 Ω.

dry skin [ ] V

wet skin [ ] V

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4. –/2 pointsSerCP9 17.P.013.

Nichrome wire of cross-sectional radius 0.751 mm is to be used in winding a heating coil. If the coil must carry a current of 10.00 A when a voltage of 3.00×10^2 V is applied across its ends, find the following.

(a) the required resistance of the coil

[ ] Ω

(b) the length of wire you must use to wind the coil

[ ] m

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5. –/2 pointsSerCP9 17.P.022.

If a certain silver wire has a resistance of 5.00 Ω at 13.0°C, what resistance will it have at 27.0°C?

[ ] Ω

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6. –/2 pointsSerCP9 17.P.033.

Suppose your waffle iron is rated at 0.65 kW when connected to a 1.50×10^2 V source.

(a) What current does the waffle iron carry?

[ ] A

(b) What is its resistance?

[ ] Ω

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7. –/2 pointsSerCP10 16.P.001.

A uniform electric field of magnitude 406 N/C pointing in the positive x-direction acts on an electron, which is initially at rest. The electron has moved 3.40 cm.

(a) What is the work done by the field on the electron?

[ ] J

(b) What is the change in potential energy associated with the electron?

[ ] J

(c) What is the velocity of the electron?

magnitude [ ] m/s

direction ---Select---

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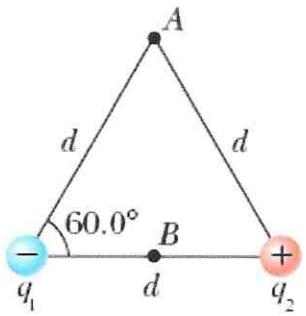
8. –/2 pointsSerCP10 16.P.012.

The two charges in the figure below are separated by d = 2.50 cm.
(Let q_1 = −19.5 nC and q_2 = 27.5 nC.)



(a) Find the electric potential at point A.

[ ] kV

(b) Find the electric potential at point B, which is halfway between the charges.

[ ] kV

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9. –/2 pointsSerCP10 16.P.026.

(a) When a 4.00-V battery is connected to the plates of a capacitor, it stores a charge of 31.0 μC. What is the value of the capacitance?

[ ] μF

(b) If the same capacitor is connected to a 10.0-V battery, what charge is stored?

[ ] μC

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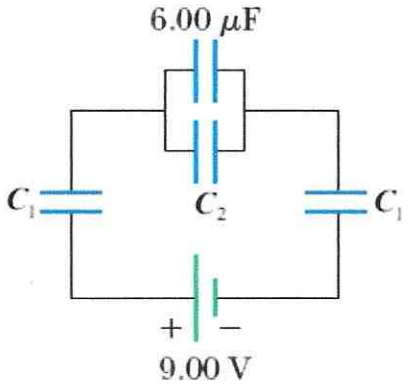
10.–/2 pointsSerCP10 16.P.035.

Consider the following. (Let C_1 = 40.20 μF and C_2 = 34.20 μF.)



(a) Find the equivalent capacitance of the capacitors in the figure.

[ ] μF

(b) Find the charge on each capacitor.

on the right 40.20 μF capacitor [ ] μC

on the left 40.20 μF capacitor [ ] μC

on the 34.20 μF capacitor [ ] μC

on the 6.00 μF capacitor [ ] μC

(c) Find the potential difference across each capacitor.

on the right 40.20 μF capacitor [ ] V

on the left 40.20 μF capacitor [ ] V

on the 34.20 μF capacitor [ ] V

on the 6.00 μF capacitor [ ] V

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