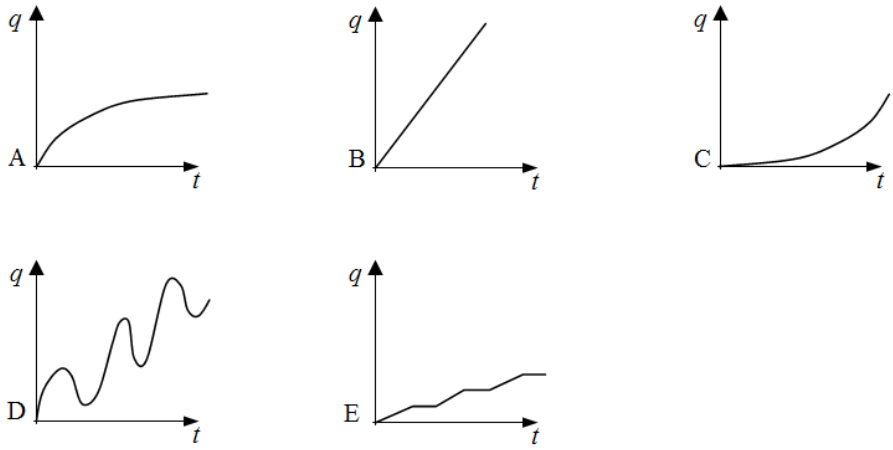
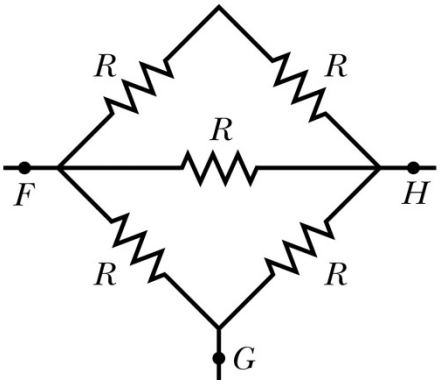
Ch. 21 Worksheet

1. Complete the following statement: The sum of the magnitudes of the currents directed into a junction _____
_____
_____

2. Consider each of the graphs shown. Which of these graphs represents the charge on a capacitor as it is being charged in a circuit containing a resistor and a capacitor in series shortly after they are connected to a battery?
   a. A
   b. B
   c. C
   d. D
   e. E



3. The figure to the right shows five 5.00 Ω resistors. Find the equivalent resistance between points *F* and *H*. (Hint: For each pair of points, imagine that a battery is connector across the pair.)



4. A car battery with a 12 V emf and an internal resistance of 0.040 Ω is being charged with a current of 50 A. What are (a) the potential difference across the terminals, (b) the rate P_r of energy dissipation inside the battery, and (c) the rate P_{emf} of energy conversion to chemical form?

5. In the figure below, the resistance of the each resistor is $R_1 = R_2 = R_3 = 2.00\ \Omega$, $R_4 = 16.0\ \Omega$, $R_5 = 8.00\ \Omega$, and $R_6 = 4.00\ \Omega$. What is the equivalent resistance?