Problem 1
A 2.58 A current flows through a uniform resistor, across which a voltmeter reads 438 mV.
(a) Find its resistance.
(b) If the resistor is ohmic, and the voltage across it is doubled, find the new current and the new resistance. (Assume a fixed temperature.)
(c) A resistor made of the same materials is larger by a factor of 4.6 in all directions. Find its resistance.

Problem 2
A microwave oven is rated at 1400 W for 120 V power. What current does it draw, and what is its resistance?

Problem 3
(a) Find the resistance of a 60 W bulb for use in the home (120 V) and a 60 W bulb to be used with a 12 V car battery.
(b) Which is higher?

Problem 4
A space heater produces 1400 W at 120 V. Find (a) its resistance; (b) the current; and (c) the cost to run it for two hours, at 8.9 cents/kW-hr.

Problem 5
The capacity of a car battery is usually specified in ampere-hours. A battery rated at, say 100 A-h should be able to supply 100 A for 1 h, 50 A for 2 h, 25 A for 4 h, 1 A for 100 h, or any other combinations yielding a product of 100 A-h.

a. How many coulombs of charge should we be able to draw from a fully charged 100 A-h battery?
b. How many electrons does your answer to part a require?