1. What is the maximum current that a 1-W 55-kΩ resistor can safely conduct?

2. What is the maximum voltage that can be safely applied across a 1/2-W, 80-Ω resistor?

3. Solar energy falling on the earth (i.e. sunlight) has a maximum power of about 1 kwatt/meter^2. Typical inexpensive consumer solar panels that convert sunlight into electrical energy are about 14% efficient. How many square meters of solar panels would it take to make toast if you have a 1600w toaster?

4. Suppose you have a 120v voltage source wired in series with five resistors. The resistors have values of 5, 6, 7, 8, and 9 Ω. Find the voltage across the 8 Ω resistor.

5. A typical alkaline AA battery has a capacity of around 2.4Ah (Amp Hours) at 1.5v. For how long can a AA battery deliver 100mA?

6. How much power does an electric clock require if it draws 26.5 mA from a 110v line?

7. Consider a circuit with a 240v source, and three resistors wired in series with values of 12-, 20-, and 16-Ω. Find the current out of the positive terminal of the battery, and the voltages across each of the resistors.

8. Draw the following series/parallel resistor network and determine its total resistance (The “+” means a series connection and the || means a parallel connection, and the parallel operator has the highest precedence. All values are in ohms.): (4 + 24 || 12) || 6

9. A 2µF capacitor is initially charged to 300v. Then it is discharged through a 270-kΩ resistor. What is the capacitor voltage at 0.25s after the capacitor starts to discharge?

10. Consider a series connection of a switch, a 200v source, a 2-MΩ resistor, and an uncharged 0.1µF capacitor. Find the capacitor voltage at 0.1s after closing the switch.