

Name: _____

Electricity – Test

Conceptual Questions (1 pt. Each)

1. If you have your headlights on while you start your car, why do they dim while the car is starting?

2. Two sets of Christmas lights are available. For set A, when one bulb is removed, the remaining bulbs remain illuminated. For set B, when one bulb is removed, the remaining bulbs do not operate. Explain the difference in wiring for the two sets.

3.
 - a. Two resistors are connected in series across a battery. Is the power delivered to each resistor (i) the same or (ii) not necessarily the same?

 - b. Two resistors are connected in parallel across a battery. Is the power delivered to each resistor (i) the same or (ii) not necessarily the same?

Short Answer (3 pts. Each)

4. Given three resistors in series, each with a resistance of $5\ \Omega$, connected to a 20 V battery, determine the: a) total resistance b) total current and c) total power in the circuit.

5. Given three resistors in parallel, each with a resistance of $5\ \Omega$, connected to a 20 V battery, determine the: a) total resistance b) total current and c) total power in the circuit.

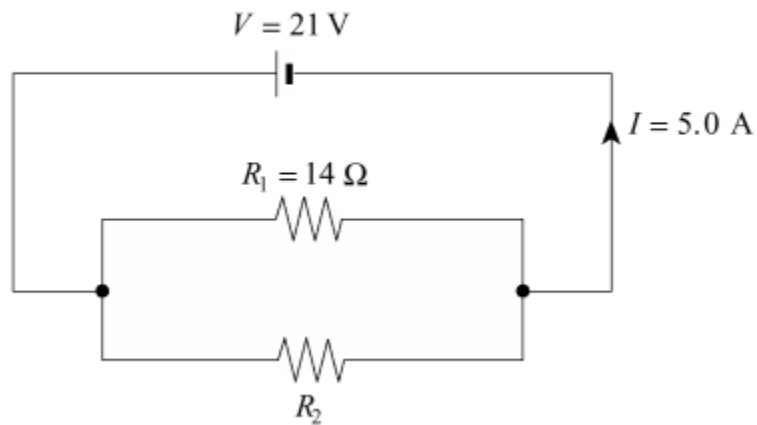
Name: _____

6. The load across a battery consists of two resistors, with values of $18\ \Omega$ and $48\ \Omega$, connected in series.
- What is the total resistance of the load?
 - What is the voltage of the battery if the current in the circuit is $97\ \text{mA}$?

Circuit Work (4 pts. Each)

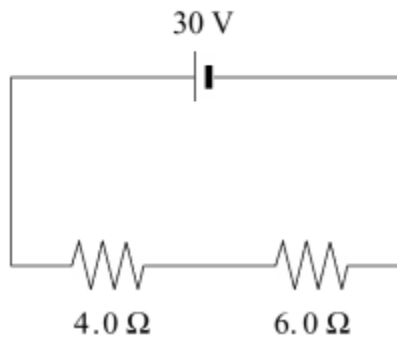
7.

Find the current flowing through resistor R_2 in the circuit shown below.



8.

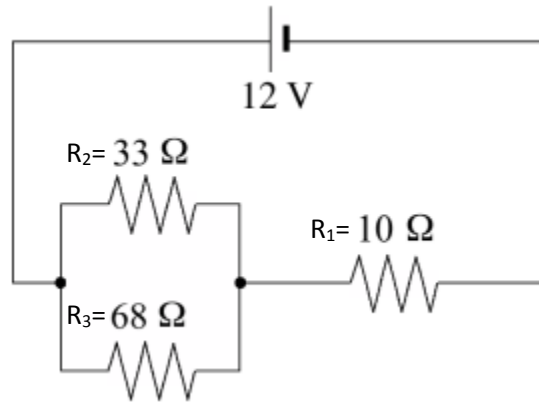
What is the power output of the $6.0\ \Omega$ resistor in the diagram?



Name: _____

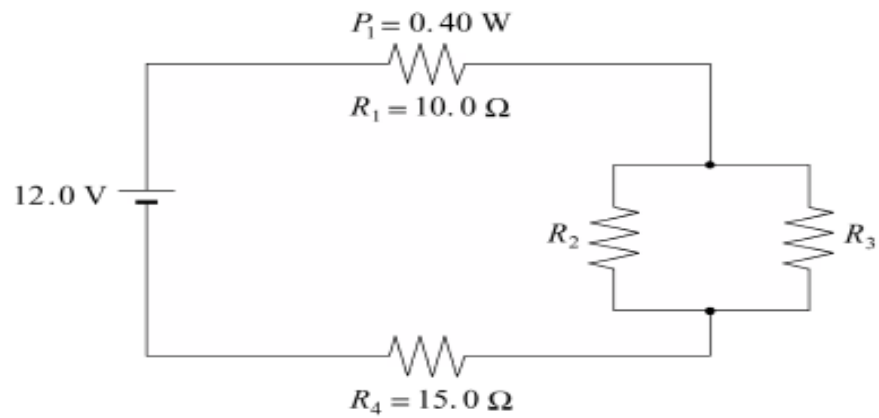
9.

Determine the Voltage, Current, Resistance, and Power flowing through each resistor:



10.

In the circuit below, resistor R_1 dissipates 0.40 W. Resistors R_2 and R_3 are identical.



What is the resistance of R_2 ?

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