

Name: _____

Period: _____

Electric House Project

Objective

Following the guidelines of the project, students will design a wiring diagram for a house using separate series, parallel, and complex circuits.

Requirements for The Electric House

Each room of the house must have at least one series circuit consisting of a switch and at least two lights.
The house must have at least one parallel circuit consisting of a switch and at least two lights powered by 110 V.
The house must have at least one complex circuit consisting of a switch, at least two lights, and one doorbell powered by 110 V.
The house must have the following appliances powered by 220 V:

Hot water heater

Oven/range

Dryer hook up

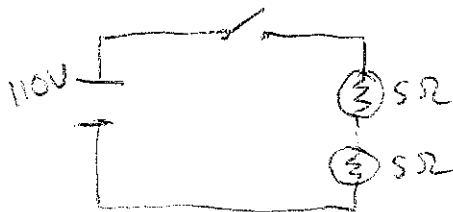
Description of The Electric House

The house will consist of one story 3 bedrooms / 2baths. Each individual room will be illuminated by its own light. There should be a front door, a porch, and a porch light. You may design your own home or use the template given.

Calculations:

Use the space below to calculate the following using the GERC format:

1. Calculate the current of one room that consists of a series circuit.



$$I = \frac{V}{R}$$

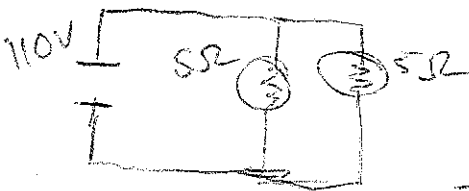
$$I = \frac{110V}{10.5\Omega} = 11A$$

STOP

The work below is A-B level work. Try to solve the problems, but make sure that you have mastered the above material.

2. Calculate the current of one room that consists of a parallel circuit.

$$\frac{1}{R_T} = \frac{1}{R_1} + \frac{1}{R_2} + \dots$$

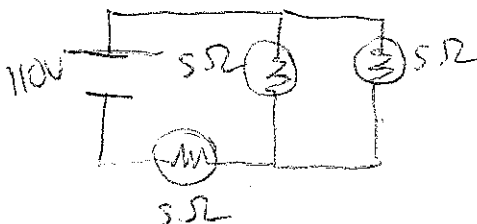


$$I = \frac{V}{R}$$

$$I = \frac{110V}{2.5\Omega} = 44A$$

$$\frac{1}{R_T} = \frac{1}{5\Omega} + \frac{1}{5\Omega} = 2.5\Omega$$

3. Calculate the current of one room that consists of a complex circuit.



$$R_T = 2.5\Omega + 5\Omega = 7.5\Omega$$

$$I = \frac{V}{R} = \frac{110V}{7.5\Omega} = 14.6A$$