

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.

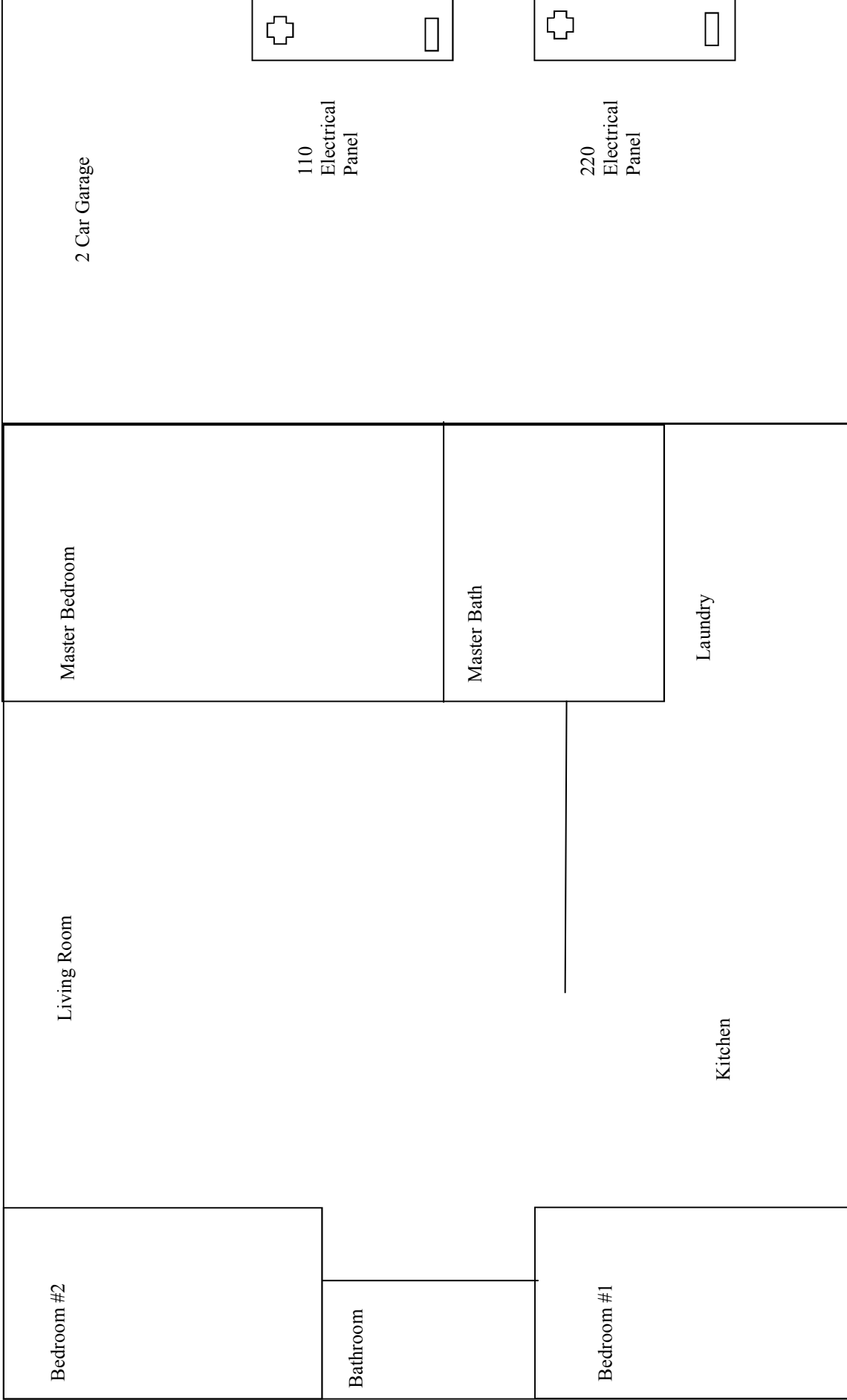


The work below is A-B level work. Try to solve the problems, but make sure that you have mastered the above material.

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

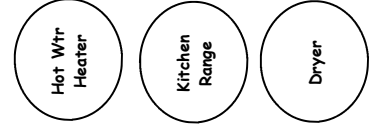
$$\frac{1}{R_T} = \frac{1}{R_1} + \frac{1}{R_2} + \dots$$

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



- Light bulb resistance- 5Ω
- Door bell- 6Ω
- Clothes Dryer- 10Ω
- Hot Water Heater- 14Ω
- Oven/Range- 20Ω

Electrical Symbols			Water Equivalent
Electrical Device	Symbol	Function	Water Equivalent
wire	—	path for electricity to flow	pipes
battery	$\begin{array}{c} + \\ \\ - \end{array}$	pushes electricity through circuit	pump
light bulb	$\textcircled{\Omega}$	makes lights; resists electricity	water wheel
switch	$\text{---} \text{---} \text{---}$	turns electricity on and off	valve
resistor	$\text{---} \text{---} \text{---}$	resists flow of electricity.	restriction in a pipe



Notes:
 Most all circuits in a house are wired with 110 Volt service
 The larger appliances that use 220V service are:
 -Hot Water Heater
 -Kitchen Range/Oven
 -Dryer Hookup