



# LIGHT UP MY LIFE



## Guiding Question

How do we design and install the electricity in a house?

## Essential Skills

ESK 6.1 I can design and build series, parallel and complex circuits

ESK 6.2 I will be able to use Ohm's Law to predict changes in voltage, current and resistance.

## Timeline



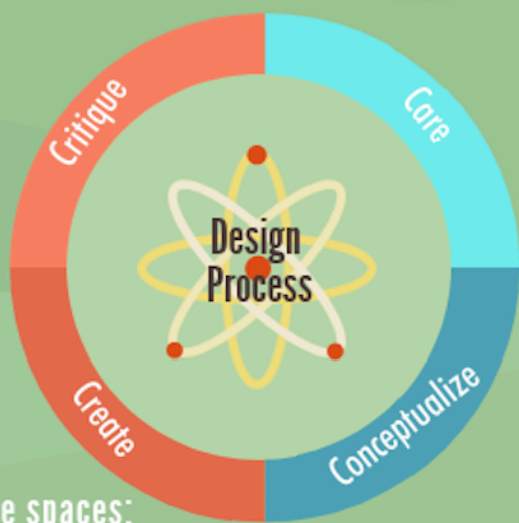
- 5/9-10 Individual Circuit Design
- 5/11 Group Building Plans Approval
- 5/21-22 1/2 done with Construction
- 5/25 Final Building Inspection

## Project Overview

Your building must have the following circuits in these separate spaces:

1. A series circuit room: two lights in series with a switch in one room
2. A parallel circuit room: three lights in parallel with a switch in one room
3. A combination circuit room: three lights some in series and parallel with a switch in one room
4. A single outside light OR unique feature with a separate switch

## Design Process



## Approval of Building Plans (one design for whole group)

You must provide one diagram for the complete circuit in your building (all rooms). It must be labeled and be complete including all electrical components for each circuit using accurate circuit symbols learned in class. It must be neat & drawn with a ruler and fill an entire piece of 8.5"x11" paper. When your design is submitted to the City (Hannouche) it will either be approved or denied.

If it is denied, meaning it was not made correctly, you must resubmit your design before you begin construction.

## Construction Phase

Upon approval of your building plan (circuit diagram) by the City (Hannouche) you may begin the actual construction of your building. To earn full credit, each circuit mentioned above must be present and working in class when attached to a single 9V battery. How you construct your building is up to you as long as it still meets the requirements. The following are building suggestions: - Switches will be made from brads and paper clips. - Your house will be powered by a 9V battery so make two obvious wires to attach your battery. - Each circuit must be able to work with it's own switch from the others but must all be able to be on at the same time without moving the battery.- Insulated wire and lights from holiday lights will be provided.

## Building Inspection

After your building is submitted, a Building Inspector will use the following checklist to make sure you have met all of the requirements. If your building fails to meet any of these inspection points you will have to pay a fine (a point deduction). In order for the Building Inspector to evaluate your construction, you must first conduct your own inspection and write a paragraph addressing the following requirements.

	4	3	2	1
<i>Décor</i>	The rooms are well decorated and it is obvious that care was taken to do so. The rooms have an obvious purpose.	There has been some effort made to decorate but the result is not clean or care was not taken. The purpose of the rooms is slightly unclear.	Rooms are plain or standards, it is not immediately clear what the purpose of the room is for.	The rooms are sloppily or undecorated. The purpose is not clear.
<i>Furniture &amp; Structure</i>	The furniture appears to be well built and the structure of the building seems solid. Furniture is unique and made by the student.	The furniture is questionable or the structure seems of lower quality.	The furniture appears poorly made or unsafe. The buildings structure appears poorly made or unsafe.	Furniture is of poor quality or is missing. Furniture is not made by the student, and it not unique to the room.
ESK 6.1	Diagram is neatly drawn with a ruler, and uses the correct symbols, and accurate proportions. Each part is correctly labeled. Includes all correct components; each room is controlled by its own switch.	Diagram is neatly drawn with a ruler, and uses the correct symbols, and accurate proportions. Most parts are correctly labeled. Includes all correct components; each room is controlled by its own switch.	Diagram drawn with most of the correct symbols, and accurate proportions. Each part is correctly labeled. Includes all correct components; each room is controlled by its own switch.	Parts of the diagram may be missing, or the drawing is sloppy. Components may have incorrect symbols.
ESK 6.2	Student calculates the voltage, current and resistance of every branch. Student shows all work and includes units on all numbers.	Student calculates the voltage, current and resistance of every branch. Student shows all work and may be missing units on some numbers.	Student calculates the voltage, current and resistance of most branches. Student shows some work and includes some units on numbers.	Student calculates the voltage, current and resistance some of none of the branches. Work is missing on most branches OR units are missing on most numbers.

