

The Electrical Circuit

Task: Design, draw a circuit diagram and build a model circuit using the materials provided.

Over the next three periods, you are to design, draw a circuit diagram for and build a model of a circuit using the materials provided. You will receive a ziploc bag containing all of the materials you will need. Use your materials wisely. Additional materials may be purchased from your teacher as they are needed. Your circuit must contain both series and parallel types of circuits and have a master switch as well as switches that turn the various branches on/off. Your circuit must contain a minimum of 5 loads (LEDs), 3 resistors and 3 switches. If at the end of the three periods your circuit is incomplete, you will need to come in during lunch to complete it.

Materials:

2 arm lengths of wire 3 paper clips

5 LED bulbs 1 20cm x 20cm x20cm block of wood

20 nails 3 resistors

1 battery clip

You will need to purchase a 9V battery for this activity. It is recommended that you bring in your own tools (wire cutters, hammers, pliers) for these 3 days. If you do not have these tools, there will be some provided by the school that you can share with your classmates.

Evaluation:

You will be required to submit the rough draft of your circuit diagram, the final draft of your circuit diagram and the circuit itself. As part of your evaluation, you will conference with your teacher about your circuit and the circuit building process.

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| Criteria | Level 4 | Level 3 | Level 2 | Level 1 |
| Communication | Appropriate symbols are used throughout the schematic diagramSchematic diagram accurately reflects final project | Considerable use of appropriate symbols used in the schematic drawingSchematic diagram reflects the final project with considerable accuracy | Some use of appropriate symbols in the schematic drawingSchematic diagram reflects the final project with some accuracy | Limited use of appropriate symbols in the schematic drawingSchematic diagram reflects the final project with limited accuracy |
| Thinking/Inquiry | Circuit contains all of the required elementsAll parts of the circuit work Student can clearly explain the workings of his/her circuit and his/her problem solving process | Circuit contains almost all of the required elementsMost of the parts of the circuit workStudent can explain most of the workings of his/her circuit and his/her problem solving process | Circuit contains some of the required elementsSome of the parts of the circuit workStudent can explain some of the workings of his/her circuit and his/her problem solving process | Circuit contains few of the required elements.Few of the parts of the circuit workStudent can explain little of the workings of his/her circuit and his/her problem solving process |