STEM 101
Powered by THE STEM ACADEMY

Name: _____
Period: _____

CREATE YOUR OWN GREETING CARD

UNIT: ELECTRICITY_LEVEL 1

THE PROBLEM

You have been asked to design and create a greeting card that will light up when you push a button. You will need to first understand the basics of electricity before using supplied materials for your design.

CONSTRAINTS AND CRITERIA

1. Come up with a few design ideas for your card. This can be a birthday card, get well soon card or any holiday card.
2. Using paper, you will create your card
3. Watch the video on making your greeting card
4. Go through the presentation on basic electricity.
5. Sketch out your circuit on the inside of your card. Where will everything be placed?
6. Test your card.

MATERIALS

- Paper or cardstock
- Copper conductive tape
- LED's
- 3V Coin battery (more than one could be used)

TOOLS:

- ✓ Colored pencils or markers
- ✓ Scissors
- ✓

Be sure to check off each step ☑ as you progress.

☐ **Step#1** – Define the Problem

Read along and listen to your teacher explain the **problem** listed above.

☐ **Step#2** – Define the Criteria

Read along and listen as your teacher reads through and explains the **constraints** and **criteria**.

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☐ **Step#3** – Develop Ideas

Brainstorm three or four ideas for your greeting card. Sketch them in the boxes below.

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☐ **Step #4** – Develop Solutions

What will be your final solution? In the box below, sketch out your final design in detail. This includes the front of the card design as well as the circuit design. Draw the circuit the way you think it should be designed and get it approved by your instructor before beginning your solution.

☐ **Step #5** – Test and Evaluate

Build your card according to your plan. **Present** your card to the instructor and your class. **Reflect** by answering the questions on page 6.

REFELECTION – Compare the outcome of your card with your sketch.

1. Did the card turn out like your final solution idea?
    a. Did your electrical circuit work based off your design?

    b. Did you need to make any adjustments? If so, what needed to change?

2. What was most difficult when completing this activity?

3. Describe how your circuit lights a LED.

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	Indicator not demonstrated	Indicator partially demonstrated	Indicator adequately demonstrated	Indicator effectively demonstrated
Design Brief & Refection Questions Points___/4	**Incomplete** Less than 50% complete 1	**Inadequate** Mostly complete; Criterion not met 2	**Adequate** Criterion met; more attention to neatness or detail needed 3	**Exceptional** Meets or exceeds expectations; high effort, attention to detail 4
Brainstorming & Sketch Points___/4	**Incomplete** Incomplete or missing more than one constraint requirement 1	**Inadequate** Mostly complete; Criterion not fully met 2	**Adequate** Brainstorming & Sketch are complete and meet expectations 3	**Exceptional** Excellent details in Brainstorming, Sketch and Labeling 4
Greeting Card Build Points __/4	**Incomplete** Incomplete; No technique modeled or unable to be built 1	**Inadequate** Build differs greatly from sketch 2	**Adequate** Build differs slightly from sketch 3	**Exceptional** Build matches sketch 4
Effort Points ___/4	**Incomplete** Refused to participate 1	**Inadequate** Frequent reminders needed from teacher to stay on task 2	**Adequate** Very minimal prompting needed from teacher to stay on task 3	**Exceptional** Completed all tasks using effective strategies 4