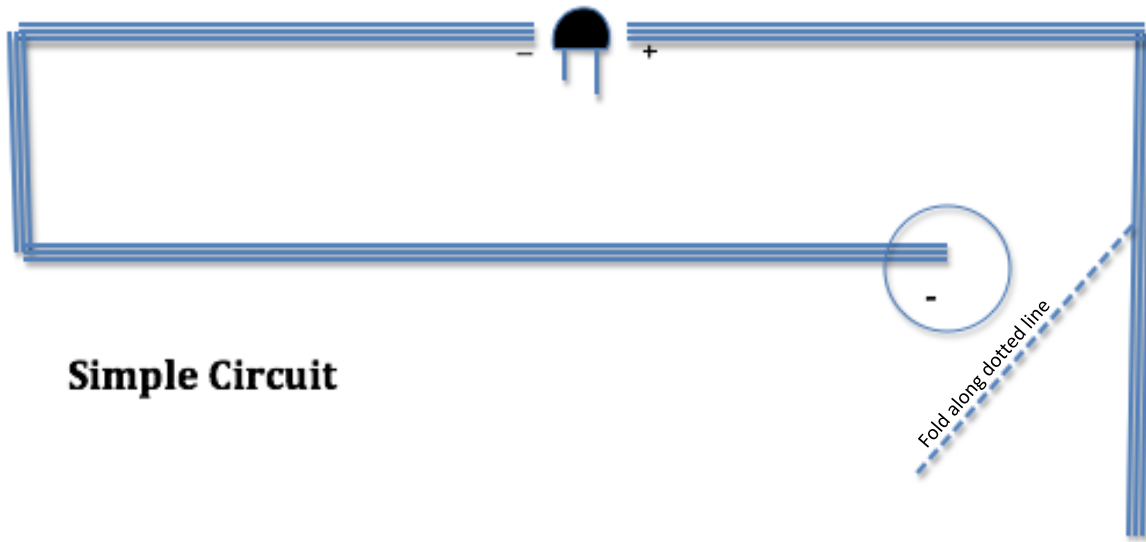


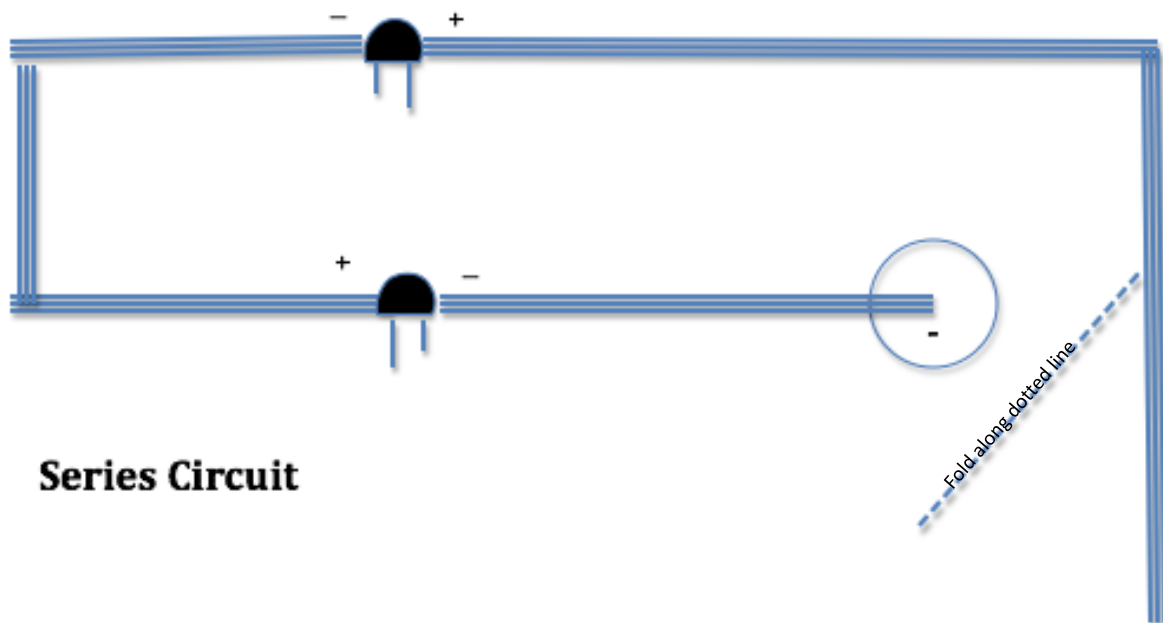
Group Members _____ Electric Art- Iteration 1



Group Members _____ Electric Art- Iteration 1

Directions:

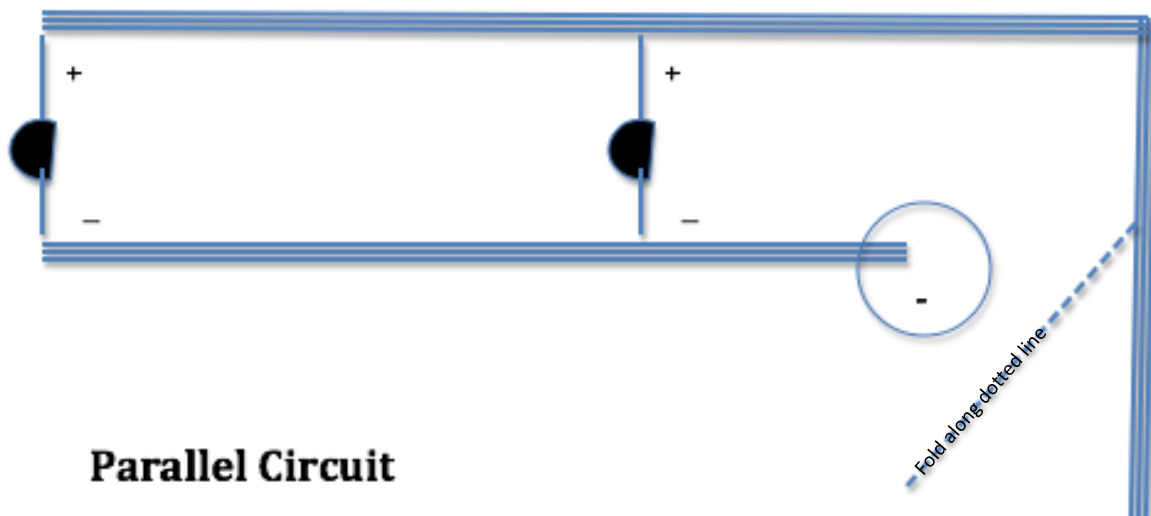
- Did your 2 lights light up? _____
- Were they as bright as in a simple circuit? If not, how could you make them bright? _____
- Show the flow of electricity with an arrow and label on the template.
- Label the components of the circuit: power source, load, switch, and pathway.



Group Members _____ Electric Art- Iteration 1

Directions:

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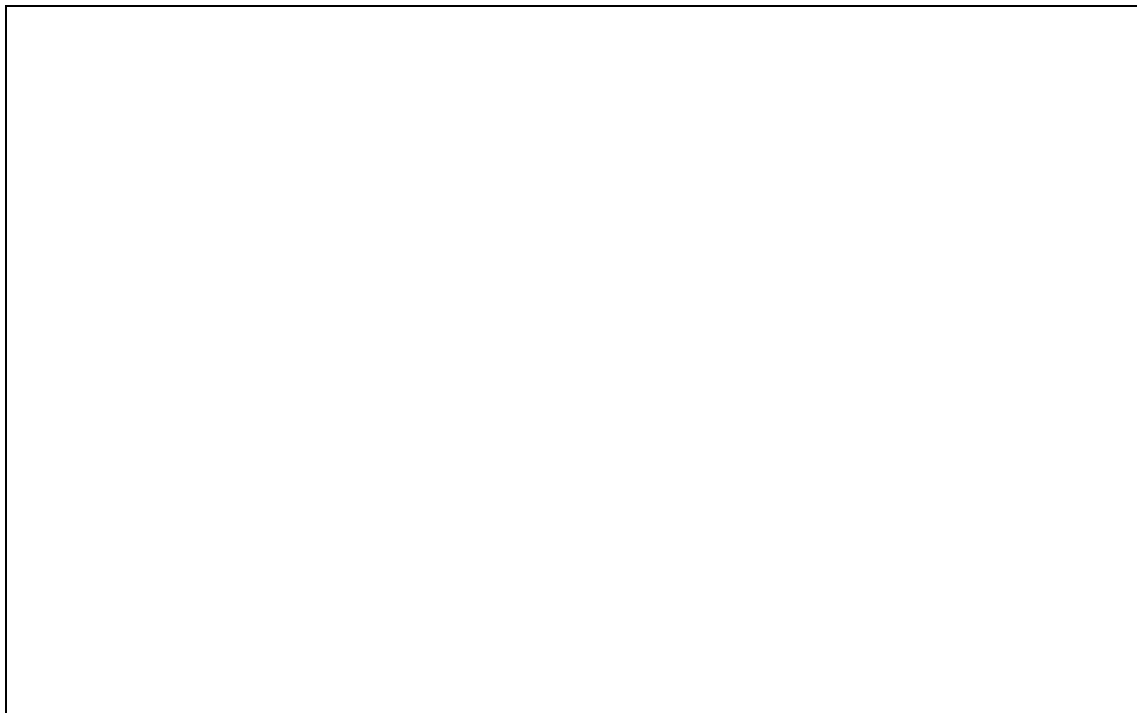
Name _____ Electric Art- Iteration 2

Check List:

My design uses:

- A battery _____
- A LED light bulb _____
- Copper tape _____
- Has a switch _____

1. Draw and label your electric art circuit.
2. Label: Copper tape, LED light, battery, switch, current flow (use arrows).



How does your design work? (Make sure to discuss the energy transformations)

Who is going to receive your electric art?

Why do you think they will like your electric art?

Grouping Information:

For electric art iteration 1 (electric art templates): have students work in groups of 3 so each student can complete one electric art template (simple, series and parallel)

For electric art iteration 2 (making electric art cards): have each student work on their own project, but encourage them to help each other with both the technical and social dimensions of their design.

Supply Information:

	How much:	Where to buy:
Copper Foil Tape with Conductive Adhesive - 6mm x 15 meter roll	3 rolls per Class of 30 students	https://www.adafruit.com/product/1128
Cardstock	1 piece per student	Craft stores, school supply stores, online
10 MM LED light bulbs	2 light bulbs per student	https://www.adafruit.com/product/846
CR2032 3V Lithium Coin Batteries	1 battery per student	You can buy these in stores, but also in bulk from Amazon.com. They can only be shipped via ground transportation so order ahead of time.
Classroom craft supplies and equipment (scissors, tape, markers, crayons, etc..) *Have students re-use the light bulbs and batteries from electric art iteration 1 in their electric art iteration 2 to conserve materials.		

Post-Electric Art Interview Questions and Rubric

Ask students these questions to be able to complete the feedback rubric:

1. For whom, did you make your electric art card?
2. What do you think they will like about it?
3. Will you please explain and show me how it works?
4. What was your process for figuring out how to make the electric art card?

*Teachers can ask each students these questions or students can interview each other and fill out their own self-evaluation rubric.

Big Ideas	Criteria	Is this present?	Feedback:
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			No Evidence	Evidence Present	Strong Evidence	
Engineering for Sustainable Community Principles	Uses community members' ideas in engineering	Modified design based on classmate, community member and teacher feedback				
		Tailored the social and technical aspects of the card for its intended purpose (Made the card in a way they knew the person they were giving it to would like it.)				
Energy Practices	Designing Solutions	Utilized social design aspects to help solve problem				
		Designed a working circuit				
Energy Content knowledge	Types of Energy	Explained that the battery was the source of energy				
	Energy Flow	Labeled the components of a circuit (switch, pathway, light or load, battery)				
	Energy Transformation	Explained/labeled the direction of electricity flow through the parallel or series circuit				
		Explained how energy was transferred in the circuit				