

# STEM Showdown

An Adelaide University, School of Education  
STEMpire program

## Play Dough Power Failure

Name: \_\_\_\_\_

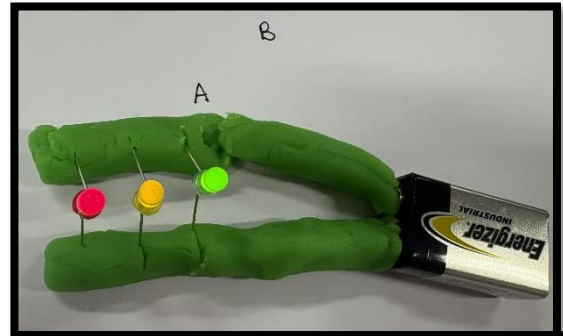
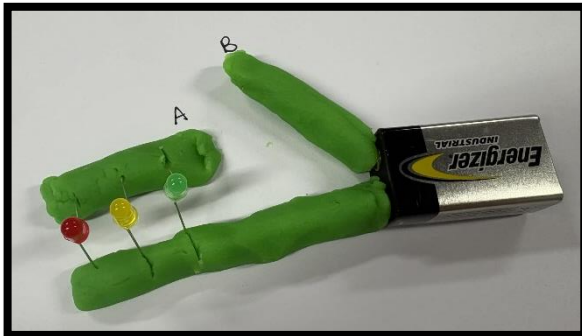
*The STEM Showdown is a series of STEM challenges to solve by the end of the season. You can complete the tasks individually or in small groups (up to 3 people). Make sure you write all the names of the people in your group above. The student with the most tasks completed over the season will be crowned the Adelaide University STEM Showdown Champion. Good Luck.*

### Play Dough Power Failure

The school has had a power failure. You will need to find something to complete the circuit to power the emergency lighting, the LEDs (Light Emitting Diodes).

#### Your Task

- Make the circuit below and then connect the play dough to make sure all the lights are working (You may need to flip the LED around if it isn't working).



- **Get your circuit checked if the lights don't all work.**
- Test objects between A and B to see if they can light up the LEDs.
- Record which objects work and which ones don't.



Record your conductors (objects that let the LED light up) and insulators (objects that don't turn the LED on) in the list below.

| Conductors (Turn the LED on) | Insulators (LED stays off) |
|------------------------------|----------------------------|
|                              |                            |
|                              |                            |
|                              |                            |
|                              |                            |

What object would you choose to switch the lighting back on and why?

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| STEM Showdown Umpire Comments | Completed (STEM Showdown Umpire to sign) |
|-------------------------------|--|
|                               |  |

### Extension Task 1

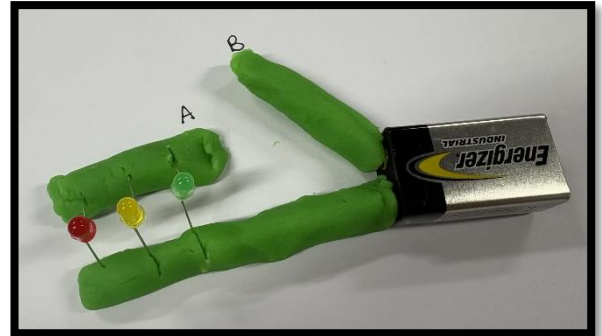
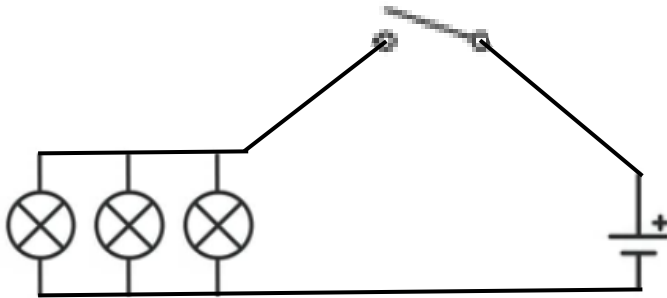
Rearrange the playdough and LEDs to make new circuits.  
How many of the following can you make?

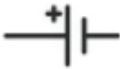



| Circuit | Function – What does it do?   | Umpire to sign when completed |
|---------|---|-------------------------------|
| 1       | Make the red light work from a switch while the yellow and green lights stay off. |                               |
| 2       | Make the red light work with one switch and the green light work from another.    |                               |
| 3       | Make a play dough character that has two working lights as eyes.                  |                               |
| 4       | Make up your own unique circuit design.   |                               |

### Extension Task 2

For extra points try drawing one of the circuits that you made using symbols.

The emergency lighting circuit would look like this:



| Description | Symbol  |
|-------------|---|
| Battery     |  |
| LED         |  |
| Wire        |  |
| Switch      |  |



| STEM Showdown Umpire Comments | Completed (STEM Showdown Umpire to sign) |
|-------------------------------|--|
|                               |  |

**Make sure you hand up your signed sheet to the umpire at the end of the session to have your points allocated to the leaderboard**