

## Whakakāngia Ngā Rama — Light the Lights

**Approach:** Station

**Focus:** Connecting electrical circuits.

**Resources:** Board with two switches, battery and bulb; 6 wires with alligator clips.



### Questions/instructions:

**Read all the instructions before you start doing this task.**

In this activity you are to make a switch board work so that the switches light up a light bulb in three different ways. Imagine you are making a switch board to be used for a competition. Each switch is for a different person.

Mō tēnei mahi me hanga koe he papa hiko [switch board] hei whakakā i te pūrāma [bulb] mā ngā pana [switch] i ahu mai i ngā ara rerekē e toru. Me whakaaro noa he whakataetae tēnei. Kei te hanga papa hiko koe hei mahi mō tētahi whakataetae. He pana mā ia tangata.

1. Use the wires to join **one** switch to the battery and the light to make the light glow.

The light should only glow when you hold down that one switch.

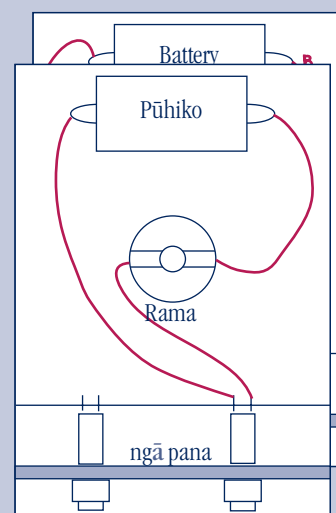
Whakamahia ngā waea ki te hono i te pana **kotahi** ki te pūhiko me te rama, kia mumura ai [glow].

Ka mumura te rama inā pēhi iho koe i taua pana kotahi.

2. Draw on the diagram where the wires go. You don't need to draw the clips.

If you have trouble with the drawing, ask the teacher to help.

Tāngia ki runga i te hoahoa kei whea ngā waea. Kaua e tāngia ngā rawhi [alligator clips]. Ki te raruraru koe, pātai atu ki te kaiako hei āwhina mōu.



wired correctly  
battery, light and  
one switch in service

% responses  
GEd MI

35 18

3. In the competition, two people are going to help each other. You need to join the switches to the light so it lights up when one **or** the other switch is pressed.

Mō tēnei mahi, ahakoa te mahi takitahi, ka taea tonu te āwhina tētahi i tētahi. Me hono ngā pana ki te rama, kia kā ai inā ka pēhia te pana **ahakoa ko tēhea**.

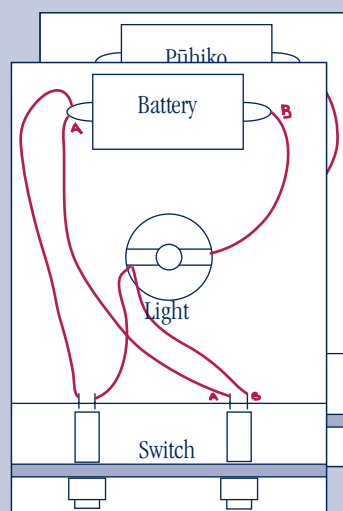
Test your switch board by pressing one switch at a time. The light should light up when you press each switch.

Whakamātauhia tō papa hiko mā te pēhi i ia pana.

Ko te tikanga ka kā te rama i tō pēhitanga i ia pana.

4. Draw on the diagram where the wires go. You don't need to draw the clips. If you have trouble with the drawing, ask the teacher to help.

Tāngia ki runga i te hoahoa kei whea ngā waea. Kaua e tāngia ngā rawhi. Ki te raruraru koe pātai atu ki te kaiako hei āwhina i a koe.



wired correctly  
two switches in parallel,  
together in series with  
battery and bulb

9 2

### Commentary:

Māori students in general education (GEd) settings scored statistically significantly higher than did Māori students in Māori immersion (MI) settings.