

To teachers We have prepared worksheets to accompany the experiments in the instructions, which you can copy and use in your teaching.



Let's turn on the light (Type B) Worksheet

Name _____ Year _____ Class _____

How can the miniature bulb be lit?

Experiment 1 Turn on the miniature bulb

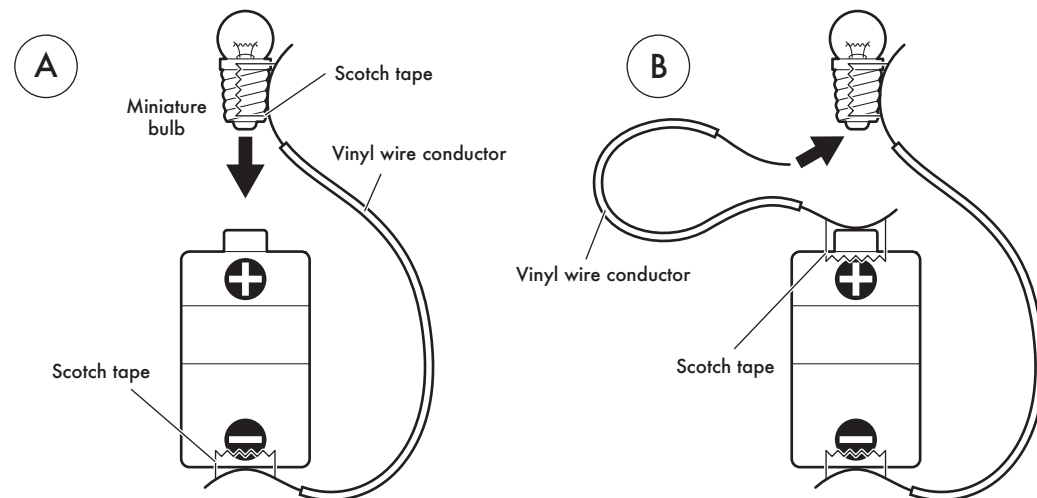
- Find out how to connect the wires to the different parts of the battery to turn on the light.
- Check if the light is on even if the direction of the battery is reversed.

☆ In the boxes, write ○ when the light is on and X when it is not.

method of connecting						
prediction						
results	X	X	X	○	○	○

Experiment 2 Turn on the light without a socket

- You can find out how to connect the battery and the wire to which part of the miniature bulb to turn on the light.

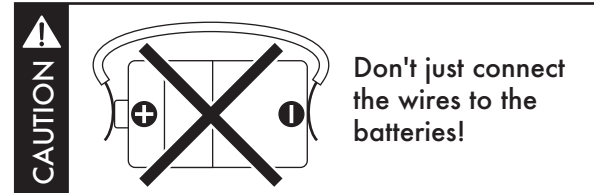
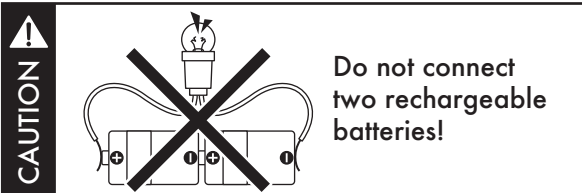


☑ A Does the miniature bulb come on?

Prediction	Result
Light up / Does no light up	Light up / Does no light up

☑ B Does the miniature bulb come on?

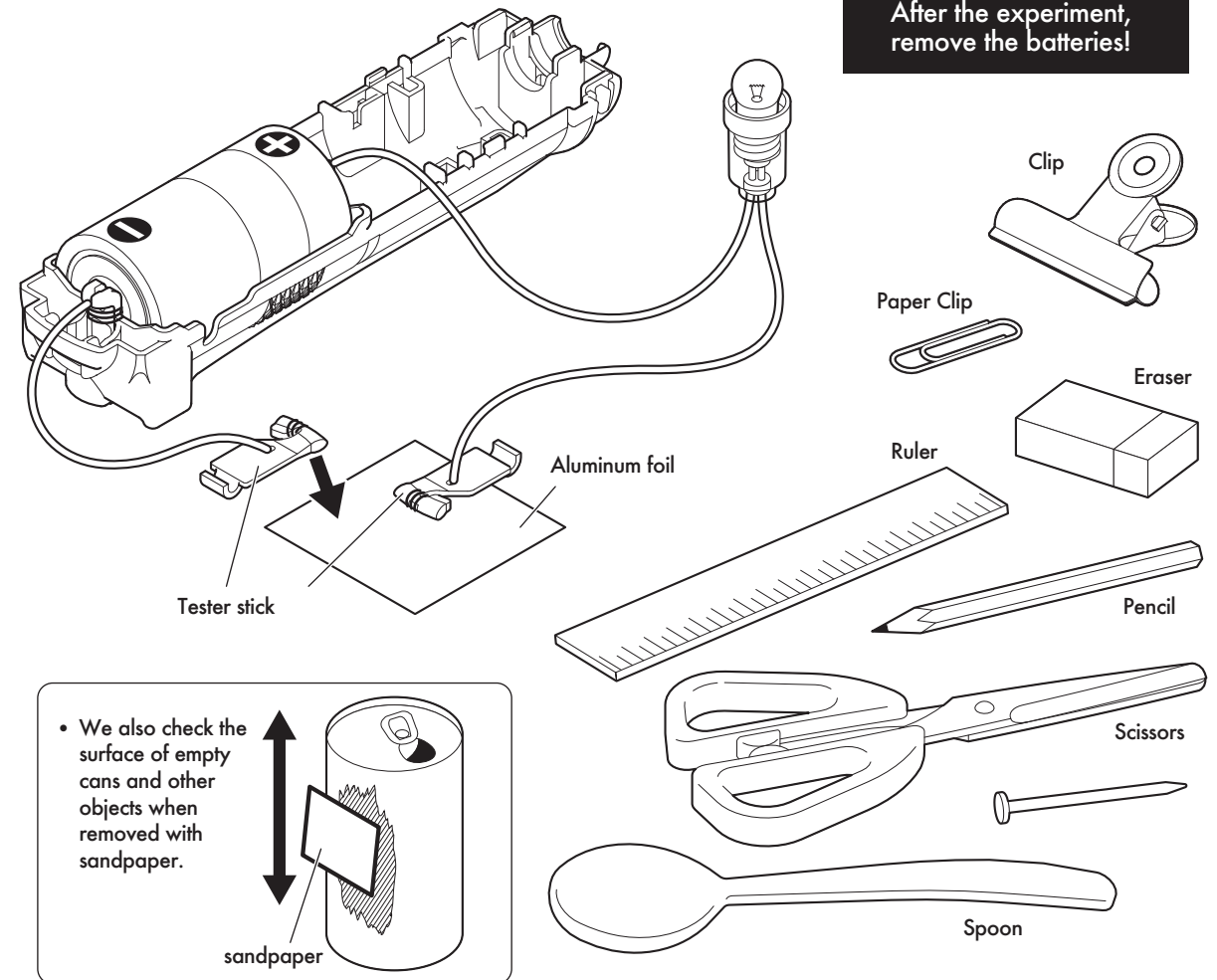
Prediction	Result
Light up / Does no light up	Light up / Does no light up



Let's find out what lights up and what doesn't.

Experiment 3 Things that conduct electricity and things that don't (tester experiment)

- Connect the wires as shown in the diagram and determine which ones light up and which ones don't.



After the experiment, remove the batteries!

☑ In the boxes below, write ○ for the ones that light up and X for those that don't.

Checklist	Prediction	Result	Checklist	Prediction	Result
Aluminum foil		○	Nail		○
Clip		○	Scissors (part of the blade)		○
Paper clip		○	Scissors (handle)		X
Eraser		X	Spoon		○
Pencil		X	Empty can		X
Ruler		X	Empty bottle with surface peeled off		○



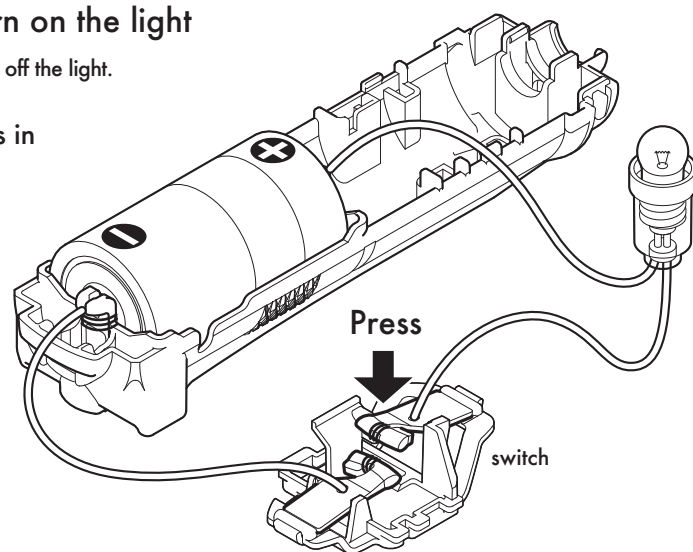
4 Connect the switch and turn on the light

• Connect the switch shown in the figure to turn on or off the light.

- Let's think about what state the switch is in when the light comes on.

<Example>

When you push the tester stick in, the wires that had been separated from each other touched, and light came on.



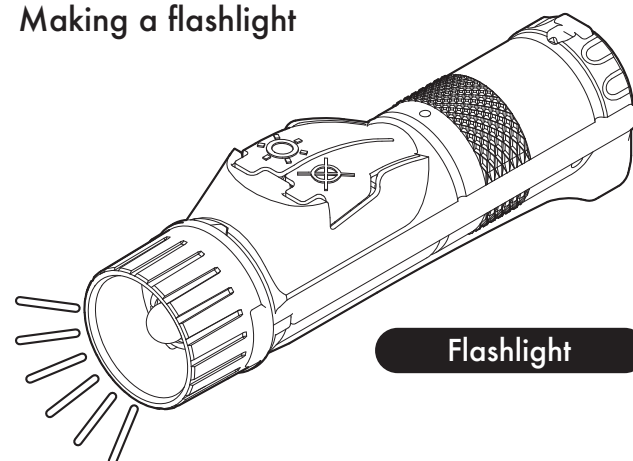
- Let's see what kinds of things we can find around us to turn on the lights.

<Example> Flashlight, etc.

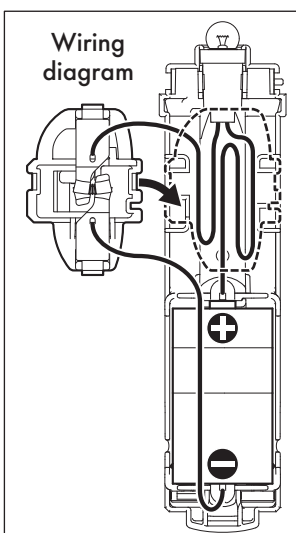
Let's try to make something that uses the mechanism of light.



A Making a flashlight



Flashlight



Wiring diagram

- Write the words in the empty space below to indicate the cause and how to fix the problem when the light does not shine.

Cause	Solution
Are the wires connected in the wrong way?	➡ Look at the wiring diagram above to see and check how the wires are connected.
Are the wires damaged or disconnected?	➡ Check to see if any of the wires are broken or disconnected.
Is the light bulb in the socket loose?	➡ Check and Rotate the light bulb into the socket.
How are the wires or switches connected to the batteries?	➡ Connect the battery to the wire or the conductor of the switch.
Are the batteries weak?	➡ Change to new batteries.



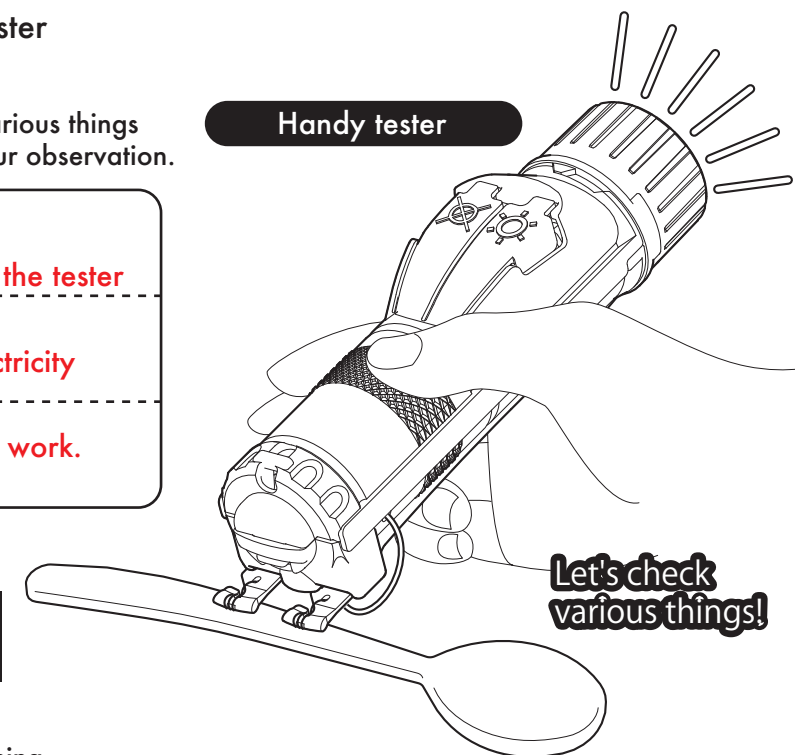
B Making a handy tester

- With a handy tester, let's test various things around you and write down your observation.

<Example>

If there is anything between the tester rods that do not conduct electricity even a little, the light will not work.

Handy tester



After experiments, be sure to remove the battery!

- Write your impressions of learning.

Each person fills in their own opinions.

E.g., The tester test was fun because we could find out what conducts electricity, and I enjoyed it because I could find out what conducts electricity and what doesn't.

- You can cut out the illustrations and use them in your notebooks for further study.

