

The mechanism [Type NR] of electricity

Name _____

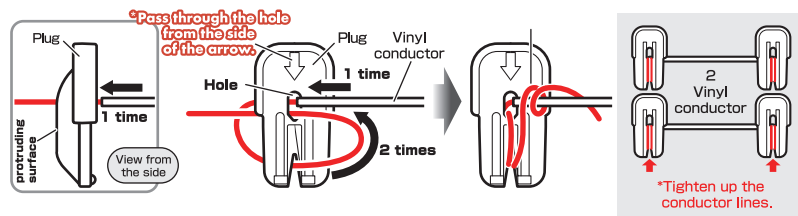
Get ready for the experiment!

Preparation
2A

Attaching the plug

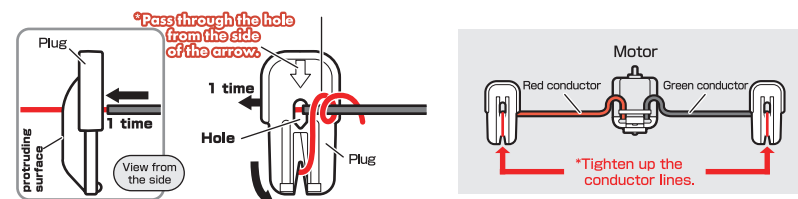
1 Attach a plug to the vinyl conductor

- Pass the vinyl strips through the hole in the plug twice, and twist tightly so that it does not come loose.



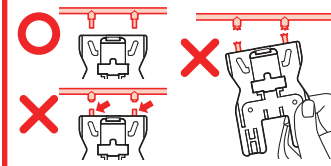
2 Attach the plug to the motor

- Pass the vinyl strips through the hole in the plug once, and twist tightly so that it does not come loose.



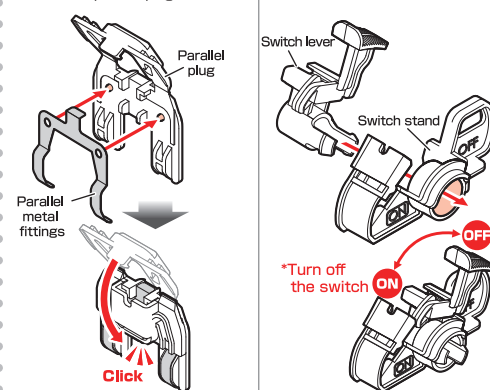
Introduction

- Do not tear off the parts attached the frame by hand. Cut them carefully with scissors.



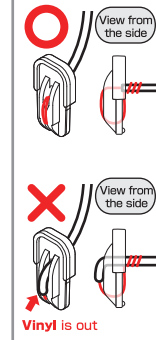
Assembling parallel plugs and switches

- Insert the parallel metal fittings into the parallel plug.
- Insert the switch lever into the switch stand.



Caution

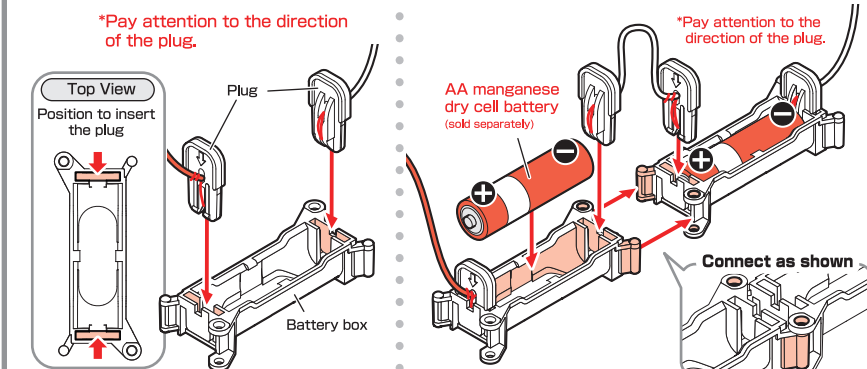
- Be careful not to let the vinyl out of the conductor.



How to use plug / parallel plug and battery box

- Please use manganese batteries for this material.
- Please make sure to remove the batteries after learning.

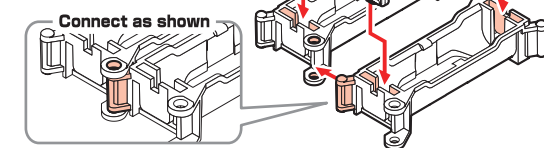
- Insert the plug into the battery box.



Parallel connection of batteries

- Insert the plug into the parallel plug, and insert it into the battery box connected to the side.

- Pay attention to the orientation of the plug and parallel plug.

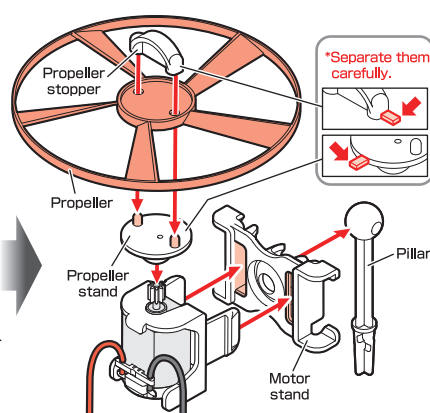
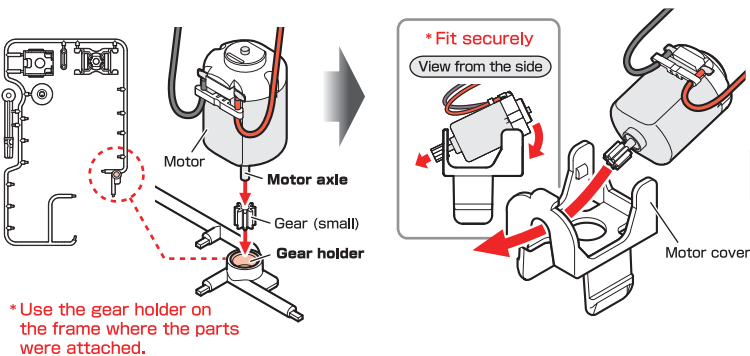


- Beware of short circuits
- Always remove the battery before inserting the parallel plug.

Preparation
2C

Attach the propeller to the motor

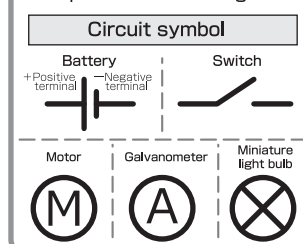
- Put the gear (small) into the gear holder and push the motor axle in.
- Attach the motor to the motor cover.



Let's Try Representation of a circuit

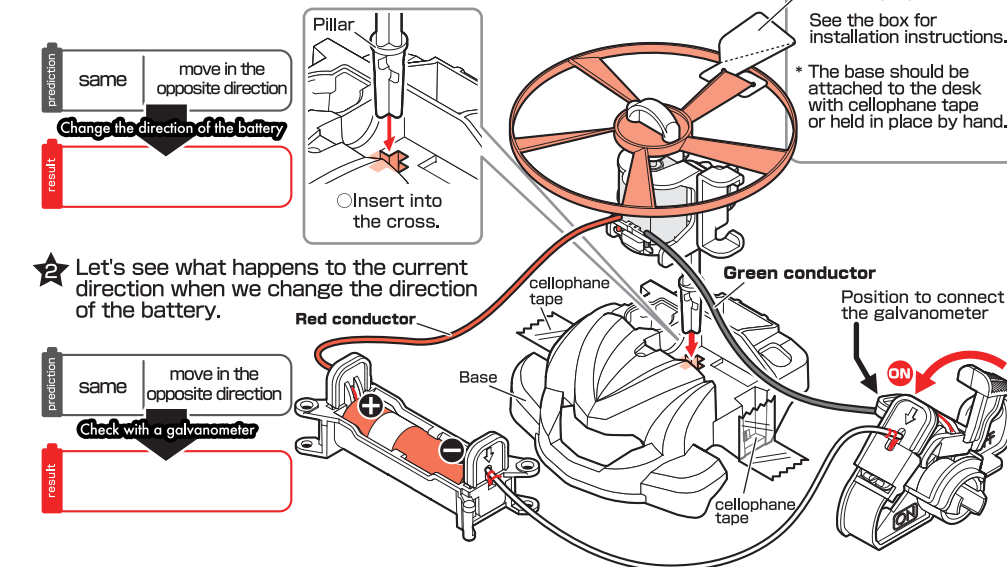
- Using symbols to represent circuit diagrams makes it easier to see how they are connected.

- Let's use the symbols below to represent a circuit diagram!

Experiment
1

Find out which way the batteries are connected and how the current flows!

- Let's see what happens to the direction of rotation of the motor when we change the direction of the battery.



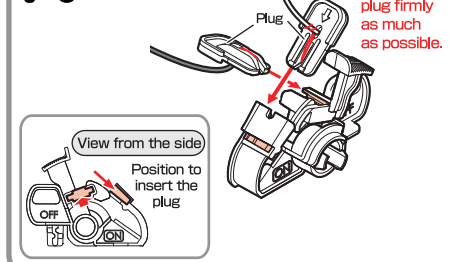
Propeller mount

(Remove from the flap of the box.)

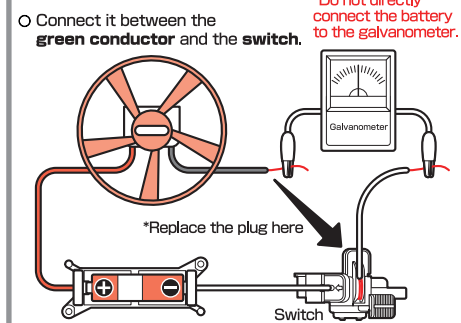
- It can be fitted such that it is easy to see how the propeller turns. See the box for installation instructions.

- The base should be attached to the desk with cellophane tape or held in place by hand.

How to connect the plug and switch

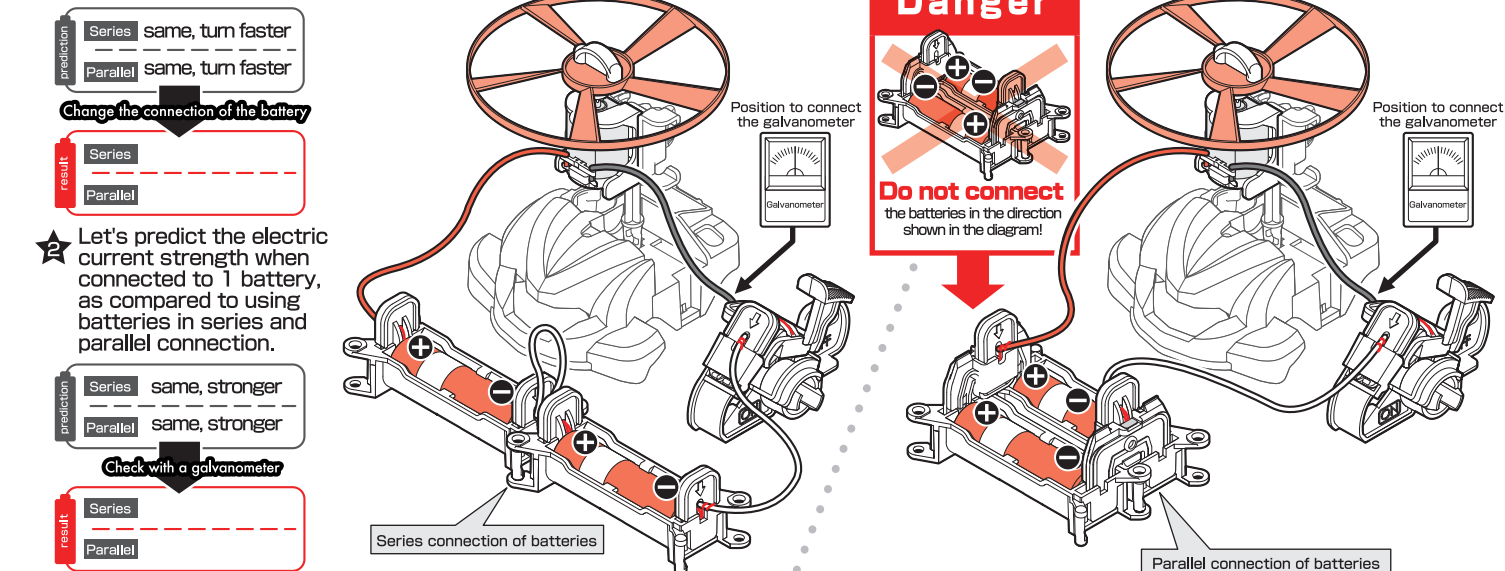


How to connect a galvanometer

Experiment
2

Find out how strong the electric current is by changing how the batteries are connected!

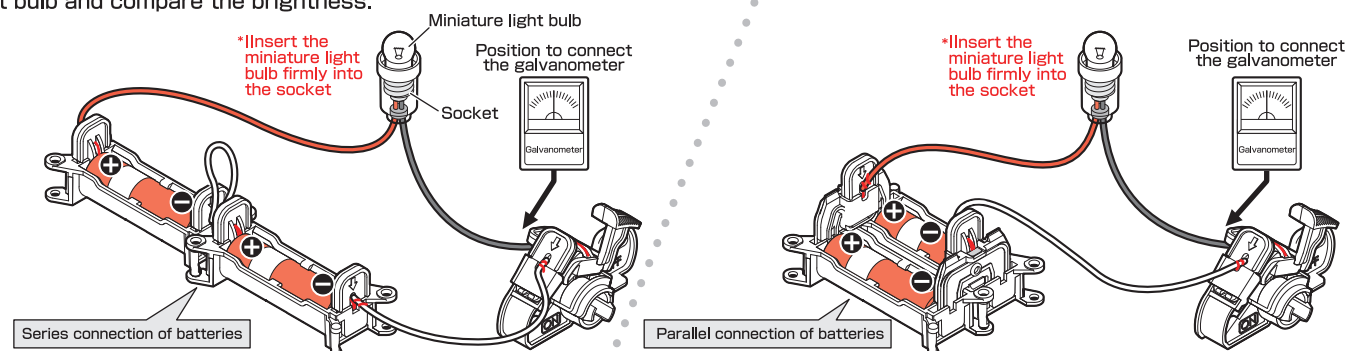
- Let's predict the motor speed when connected to 1 battery, as compared to using batteries in series and parallel connection.



Let's Try

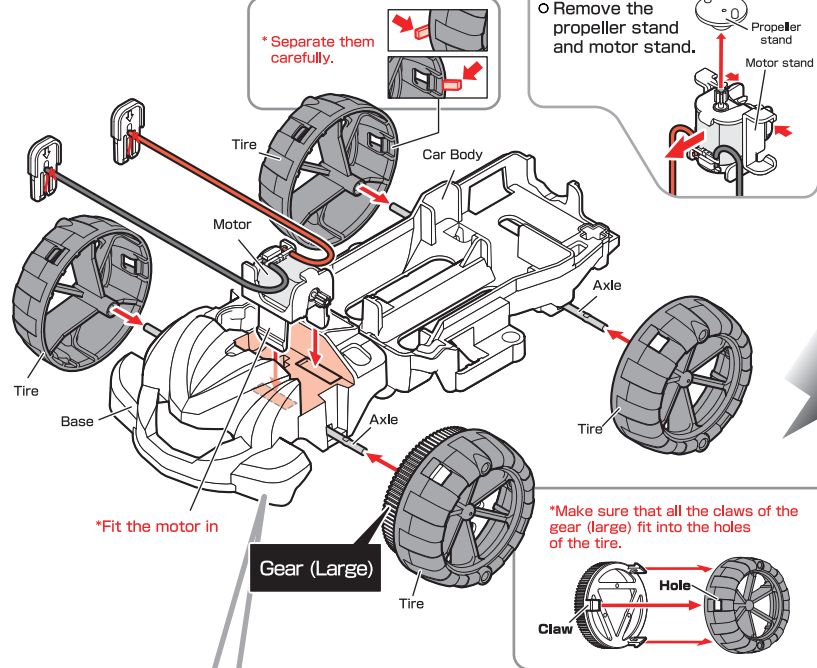
Let's find out how to connect a battery and the brightness of a miniature light bulb!

- Let's change the motor to a miniature light bulb and compare the brightness.



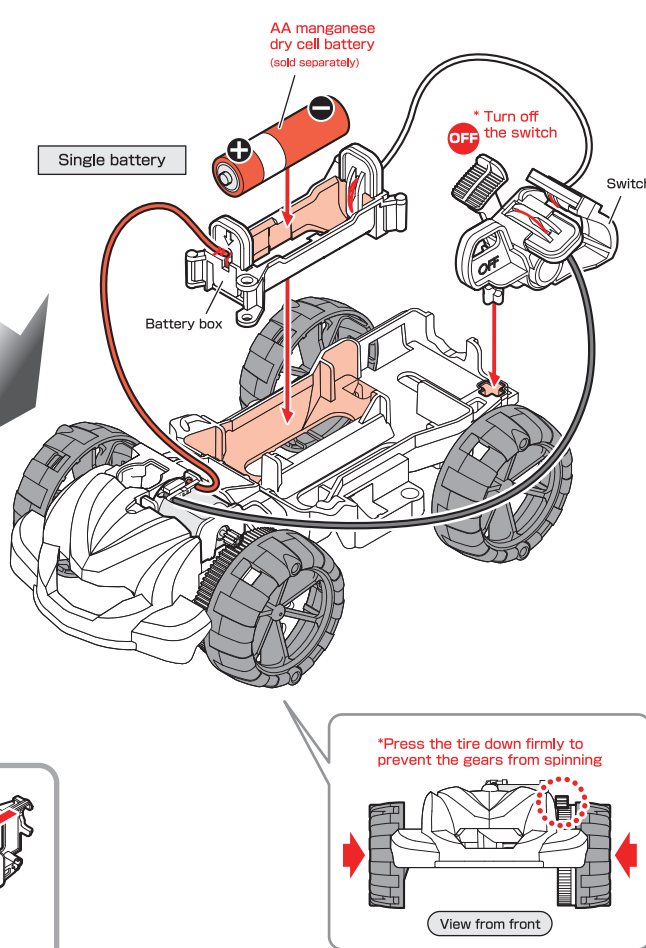
STEP 1

- Combine the base with the car body and attach the tires.



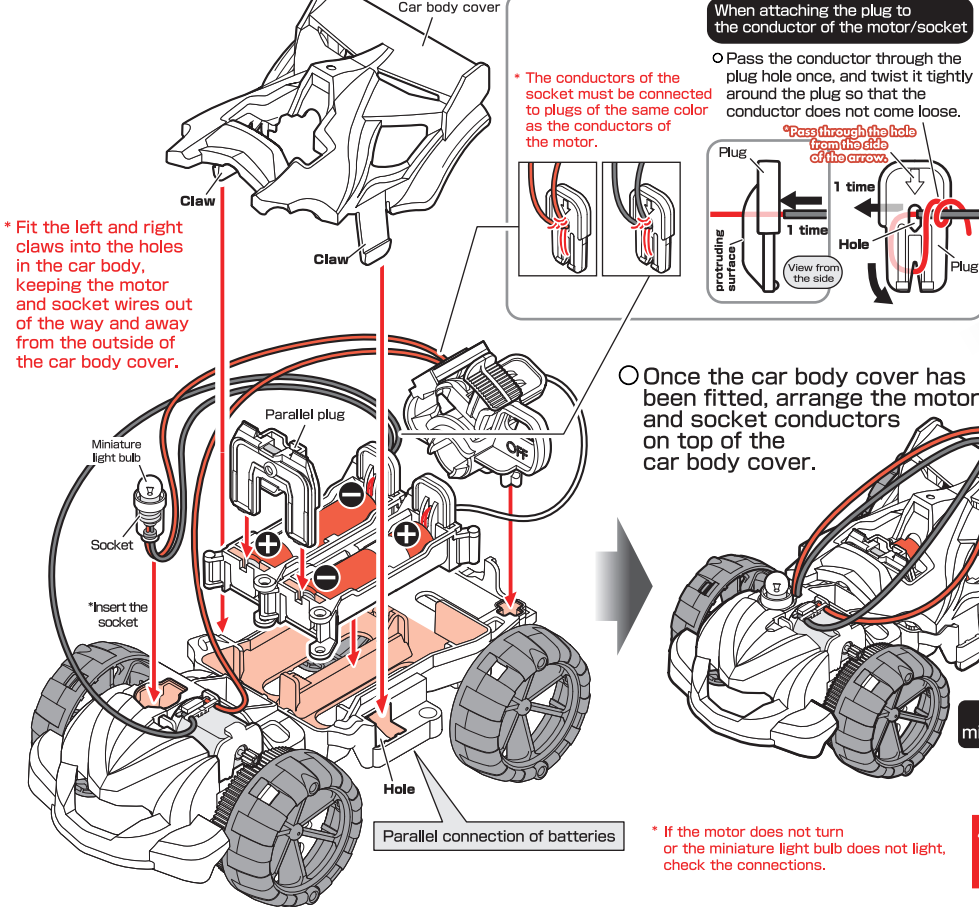
STEP 2

- Attach the battery box and switch to the car body.



Let's Try Equip the motor car with miniature light bulb, and let's make it move!

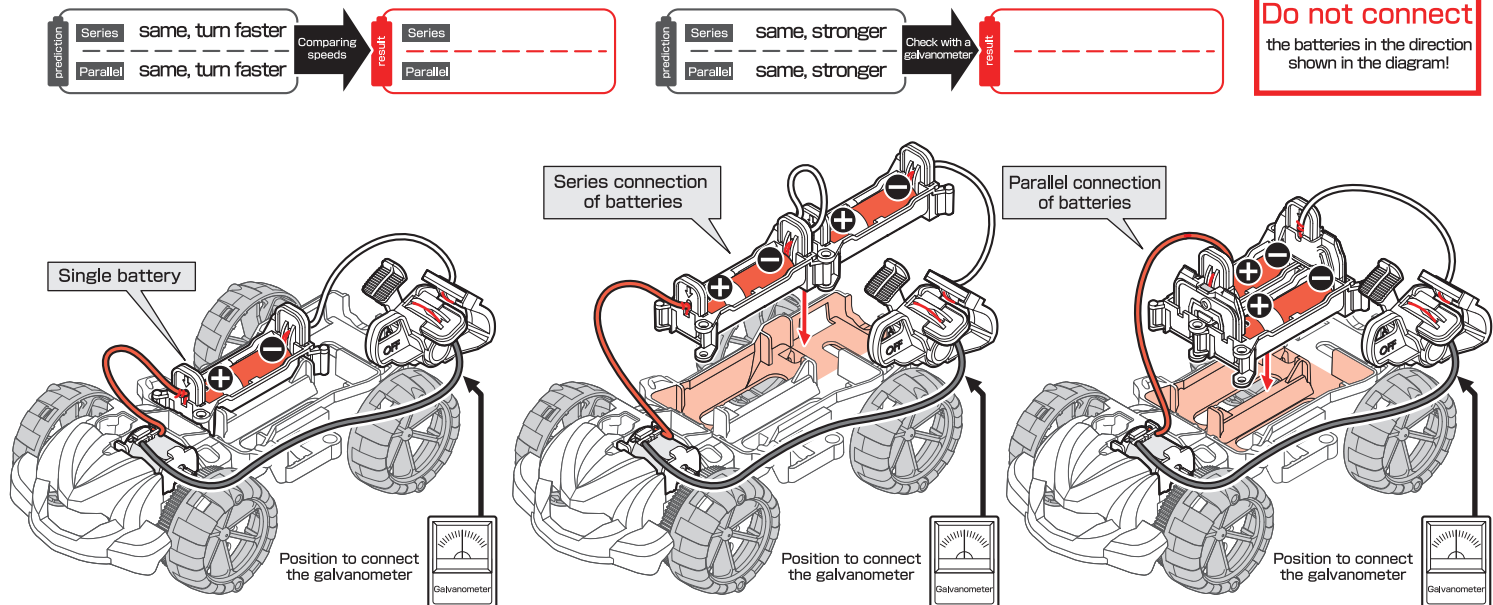
- Connect the batteries in series, and fit the socket (miniature light bulb) into the car body cover.



- Caution**
- Use manganese dry cell batteries for this teaching material. Alkaline batteries and rechargeable batteries have a large amount of current. If you accidentally connect the + and - terminals of the battery directly, the battery and the conductors may become hot, resulting in burns or a fire.
 - Please read the instructions on the battery carefully before use.
 - Do not use different batteries (manganese, alkaline, rechargeable, etc.) or mix new and old batteries. Doing so may cause leakage of fluid or leaks.
 - Please do not drop the battery or subject it to a shock.
 - Do not put small parts in your mouth.
 - Be careful when handling conductors and sharp parts, as they may cause injury.
 - Always hold the metal fitting on a flat surface. If you hold the edge of the metal fitting, you may cut your hand.
 - Do not connect more than three batteries to the miniature bulb.
 - Be sure to remove the battery when you have finished testing or learning.

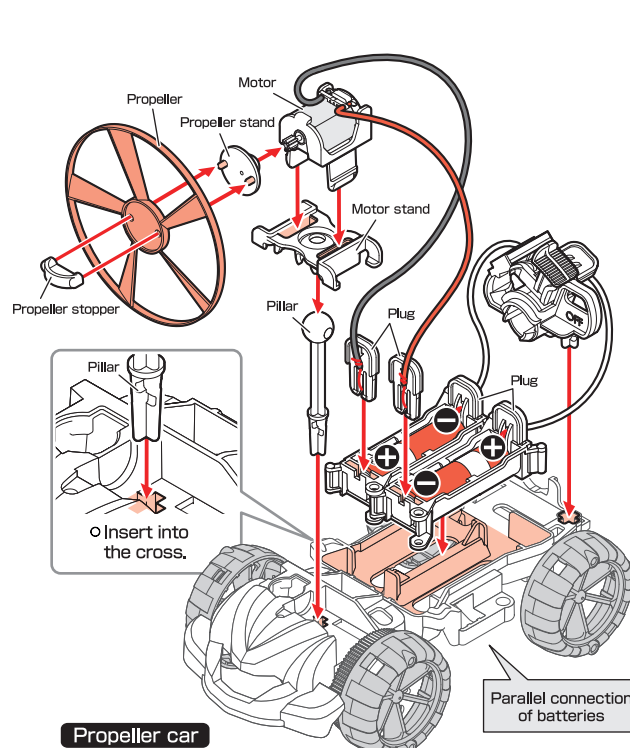
Experiment 3 Let's check the strength of the electric current using a motor car!

- ★ Let's predict the speed of the motor car when connected to 1 battery, as compared to using batteries in series and parallel connection.
- ★ Let's predict the electric current strength of the motor car when connected to 1 battery, as compared to using batteries in series and parallel connection.



Let's Try Let's make a propeller car run!

- Assemble by removing the motor and socket, and orientating the batteries and wire connections.



Let's Try Fly the propeller

- Change the direction of the battery so that the wind is blowing downwards.

