

Name _____

Contents

*Make sure you have all the materials before you start the experiment.

Other items to prepare air blower and tape measure.

Introduction
* Use scissors or other tools to carefully cut out the material attached to the frame.

Production A Assembling the wind car

○ Attach the tires to the car body.

Cut carefully.

Slowly insert the iron shaft firmly and deeply.

If the tire becomes loose

* Put a cellophane tape on the iron shaft and insert it into the tire.

○ Attach the sail (small) to the car body.

Make a crease.

Scale bar
Sail (small)

Front Back

CAUTION

- Please operate the wind cars, rubber cars, and propeller cars on flat, safe and wide areas that do not have wind or other vehicles.
- Do not overstretch the rubber band, or it may be severed.
- Do not aim or flick the rubber band at anyone.
- Please be careful when handling the items, as they may cause injury.
- Please listen carefully to the teacher's advice before using the tools.
- Before starting, be sure to read the instructions carefully.

Production B Assembling the launch pad

*Check if the axis will turn when assembled.

○ Insert the switch (top) into the hole in the switch (bottom).

Switch (top)
Switch (bottom)

View from the side
Securely fit the part shown in the diagram.

Hole

○ Attach the axle, switch, and lever to the rail.

Lever
Switch
Rail
Axle

Fit the rails so that the **claws** are tight.

View from the top
Place as shown in the diagram.

The mechanism of the wind

Introduction ★ **Let's make the wind car move.**

- Use a fan to blow air into the sail and move the wind car.

* Test it on flat ground with no wind around.

* To make the wind car move slower, attach a weight to the car body.

Fan

Marble Clay
Weights around us

★ Let's make the car run and write down our observations.

Experiment 1 **Wind strength and movement**

- Hook the switch to the car body and blow air using the air blower.

If the switch looks like the one shown in the diagram, push the area as indicated by the arrow, and put the switch back in place.

View from the side

Tighten the claws of the switch firmly into the groove at the rear of the vehicle.

*Fix to the floor with cellophane tape.

The claws come off when you press it, and the car starts moving.

Air blower

Draw a starting line with tape (50cm from the air blower), and align the car's front.

- Move the wind car and see if there is a difference in the distance it travels when the wind is weak and when it is strong.

Put a marking at where the car stopped.

Weak wind
Strong wind

Marker

		When the wind is weak		When the wind is strong	
Distance	1 st time	m	cm	m	cm
	2 nd time	m	cm	m	cm
	3 rd time	m	cm	m	cm
Summary					

Let's do it! **Sail size and movement**

- Let's find out if there is a difference in the car's speed depending on the size of the sail.

Sail (small)
Sail (big)
Sail (large)

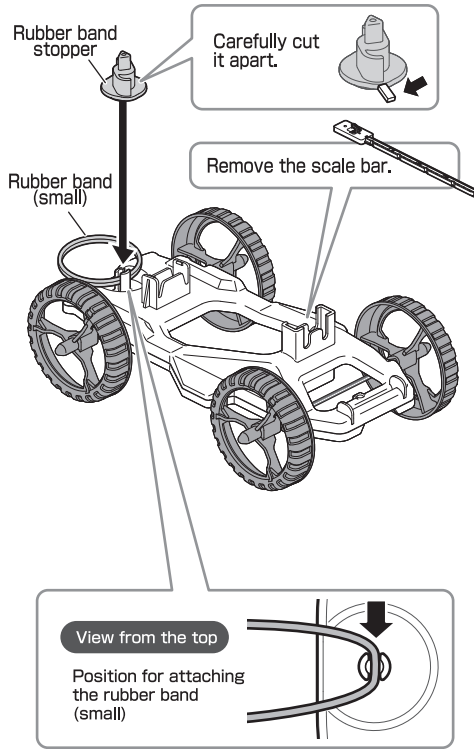
The strength of the air blower should be the same.

		Sail (small)		Sail (large)	
Distance	1 st time	m	cm	m	cm
	2 nd time	m	cm	m	cm
	3 rd time	m	cm	m	cm
Summary					

Rubber mechanism

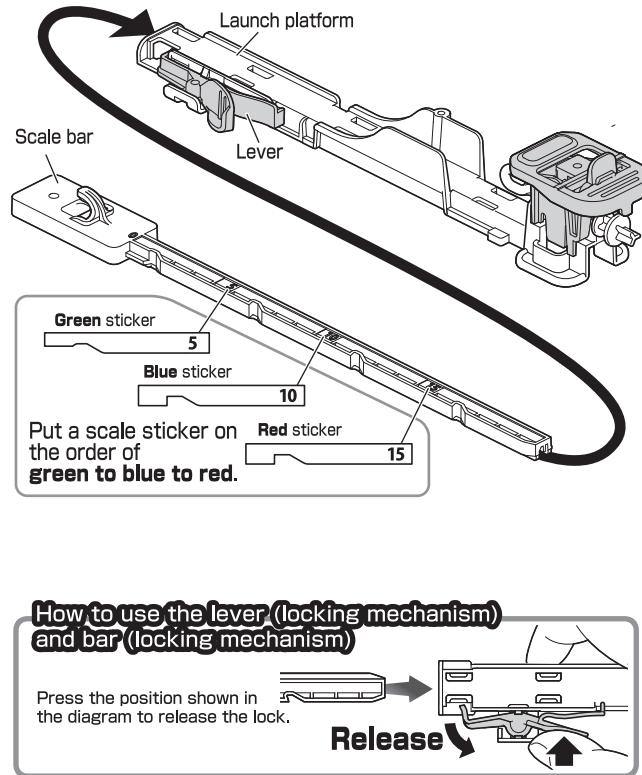
Production C Assembling a rubber car

- Attach one rubber band (small) to the car body and fasten it with a rubber band stopper.



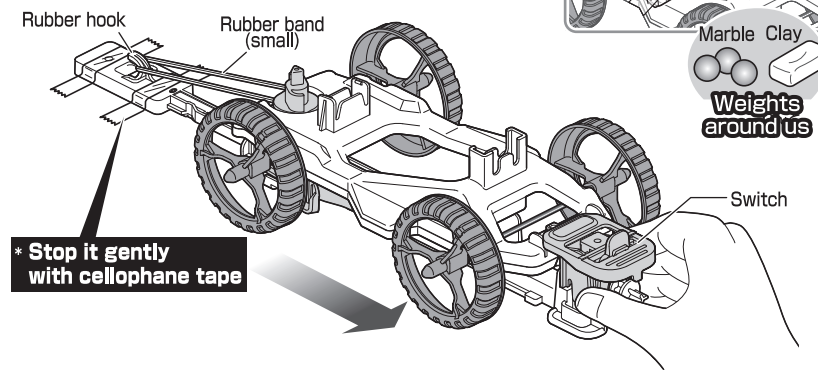
Production D Attaching the scale bar to the launch platform

- While checking the lever lock, insert the scale bar into the launching platform.



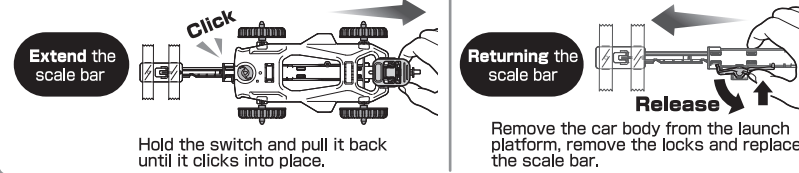
Introduction Let's make the rubber car move!

- Hook the rubber band (small) onto the rubber strap of the launch platform and pull back with the switch.
- Hook the claws of the switch to the body of the car.
- Pull back with the switch.



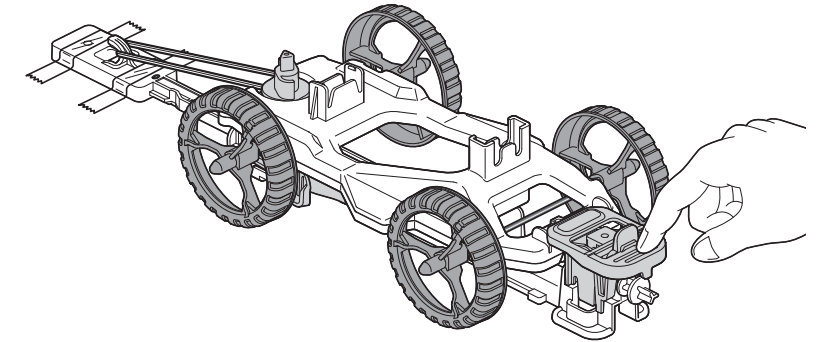
★ Write about your observations about the movement of the car.

How to use the launch platform



Experiment 2 Stretching the rubber band and movement

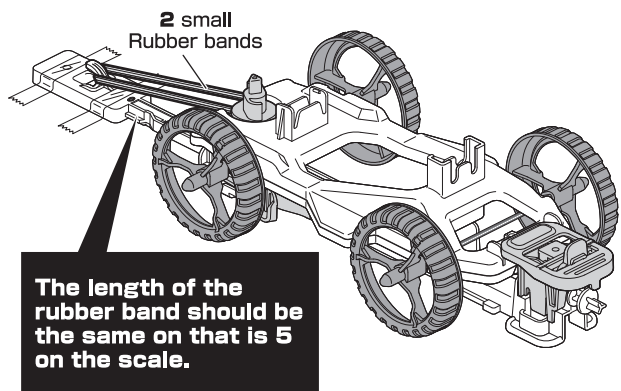
- Find out if there is a difference in the distance travelled depending on how long you have stretched the rubber band.



		When you stretch to 5		When stretched to 10		When stretched to 15	
Distance	1 st time	m	cm	m	cm	m	cm
	2 nd time	m	cm	m	cm	m	cm
	3 rd time	m	cm	m	cm	m	cm
Summary							

Experiment 3 Number of rubber bands and movement

- Compare the difference in the distance travelled when you use 1 rubber band and 2 rubber bands.

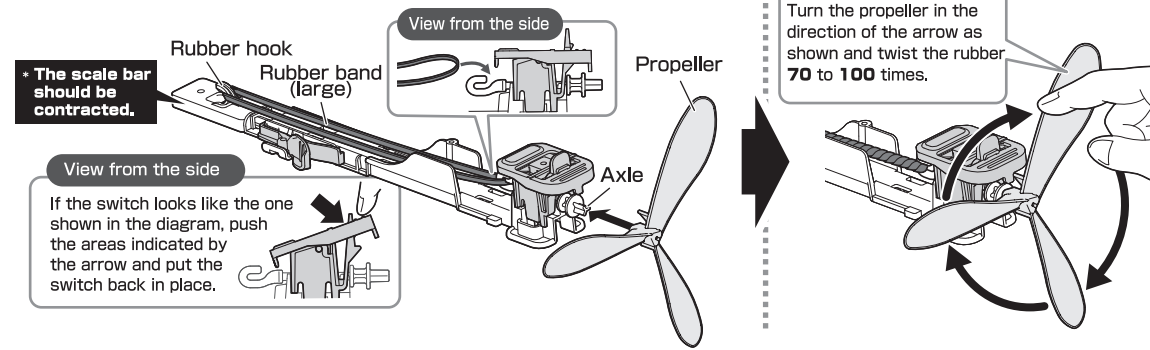


		When there is only 1 rubber band		When there are 2 rubber bands	
Distance	1 st time	m	cm	m	cm
	2 nd time	m	cm	m	cm
	3 rd time	m	cm	m	cm

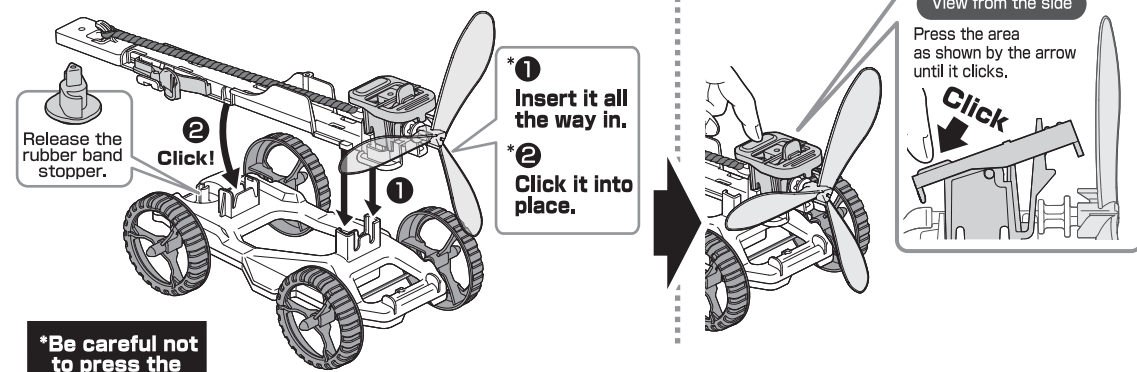
Summary

Let's do it! Let's make a propeller car move!

- Put the rubber band (large) on the propeller and twist the rubber band.



- Attach the launch pad to the car body, press the switch and get it moving.

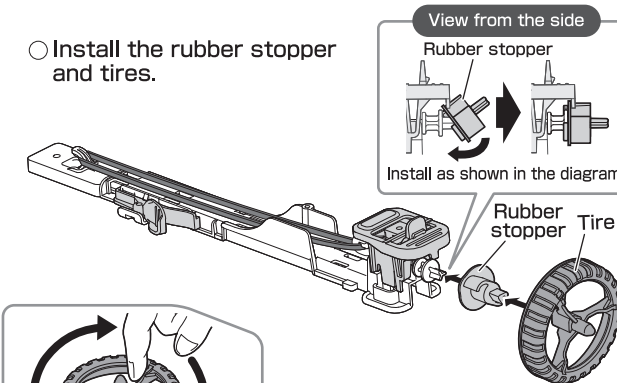


*Be careful not to press the switch.

*Do not twist the rubber for more than 100 times.

Let's spin the top

- Install the rubber stopper and tires.



Twist the rubber band 30 to 50 times, turning it in the direction as shown.

*When spinning, turn the top upwards.

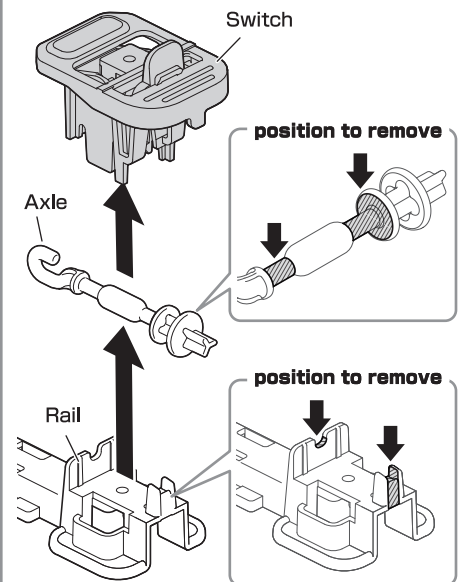
- Press the switch to spin the top.

Push the switch at a height as close to the floor as possible.

*Do not twist the rubber band for more than 50 times.

If the rotation is slow

Remove the switch from the rail and remove the dirt and dust as shown in the diagram.



*Remove dirt or dust with a soft cloth.