SCIENCE TEACHING MATERIALS

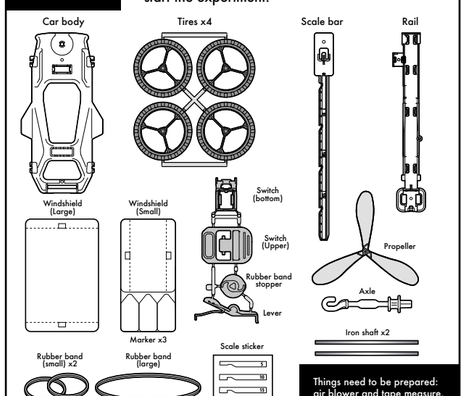
Wind and rubber band mechanisms (Type DXII)

Compliant with the new course of study of the Ministry of Education, Culture, Sports, Science and Technology

Name	Year	Class

Contents

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



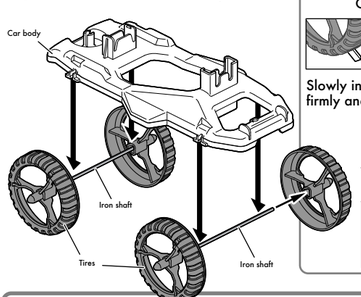
Things need to be prepared: air blower and tape measure.

Introduction

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

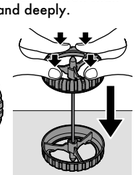
Production A — Assembling the wind car

○ Attach the tires to the car body.



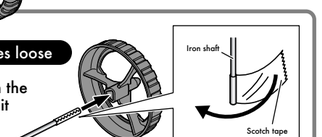
Cut carefully.

Slowly insert the iron shaft firmly and deeply.

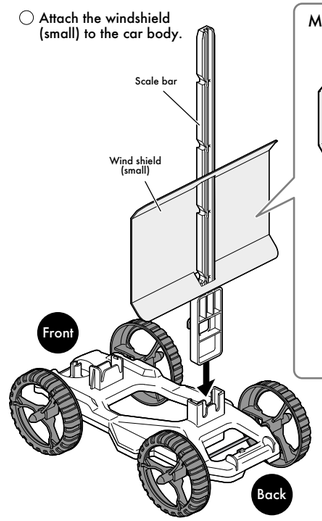


If the insertion becomes loose

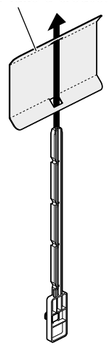
* Put a Scotch tape on the iron shaft and insert it into the tire.



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



Make a crease.



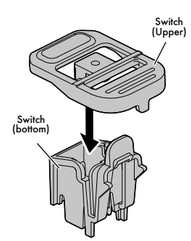
CAUTION

- Wind cars, rubber cars, and propeller cars should be driven on a flat, windless, safe, and wide area, free from cars and motorbikes.
- 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.

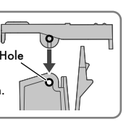
Production B — Assembly of the launching pad

*To see if the axis will turn when assembled.

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

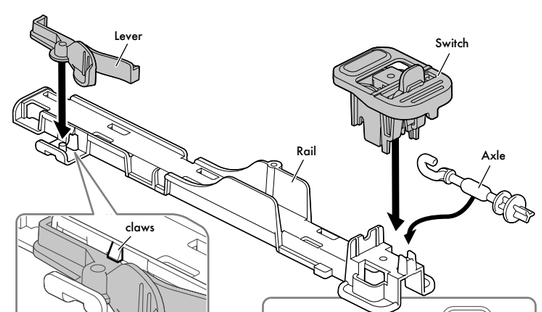


View from the side



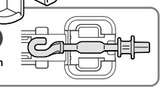
Securely fit the part shown in the diagram.

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



Fit the rails so that the claws are tight.

View from the top



Place as shown in the diagram.

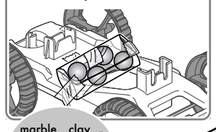
The mechanism of the wind

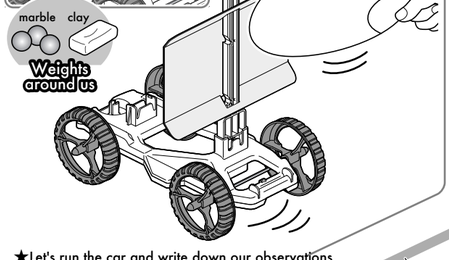
Introduction ★ Let's make the wind car move.

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

* Test it on flat ground with no wind around.

* If you want to make the wind car run shorter, attach a weight to the car body.





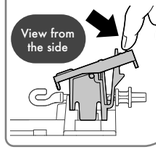
★Let's run the car and write down our observations.

Experiment 1 — Strength of wind and movement of car

- Hook up the switch to the car's body and let the air blower blows.

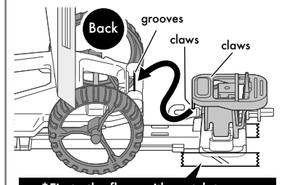
If the switch looks like the one shown in the diagram, push the area as indicated by the arrow; and put the switch back in place.

View from the side



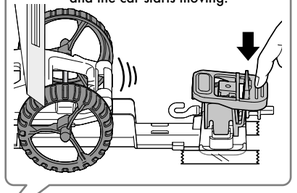
Draw a starting line with tape 50cm from the air blower, and align the vehicle's front.

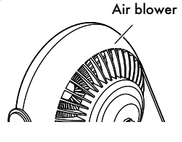
Tighten the claws of the switch firmly into the groove at the rear of the vehicle.



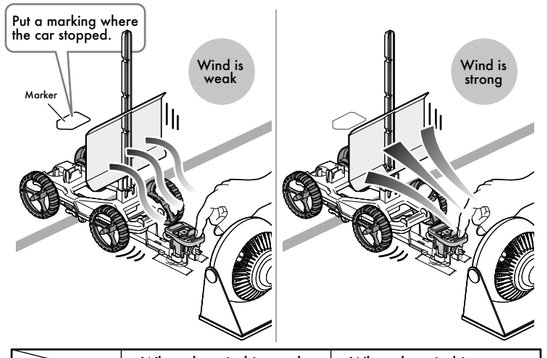
*Fix to the floor with scotch tape.

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





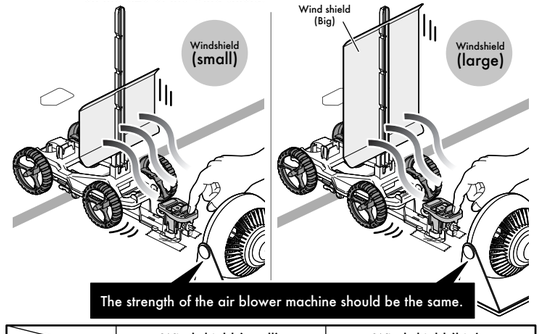
- Move the wind car and see if there is a difference in the distance it travels when the wind is light and when it is strong.



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

Let's do it! The size of the windshield and how it affects the movement of the car

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

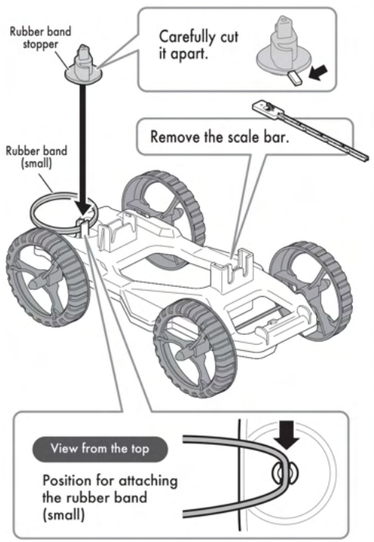


The strength of the air blower machine should be the same.

		Wind shield (small)		Wind shield (big)	
Distance	1st time	m	cm	m	cm
	2nd time	m	cm	m	cm
	3rd time	m	cm	m	cm
Summary					

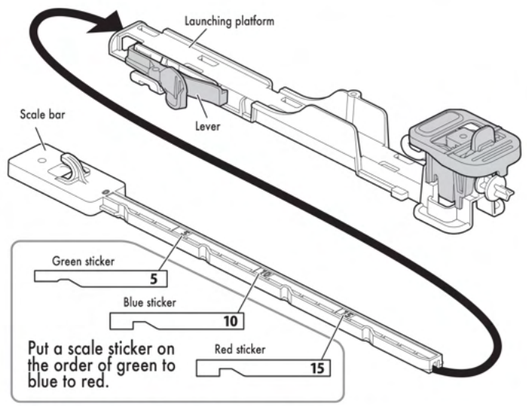
Production C Assembling a rubber car

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



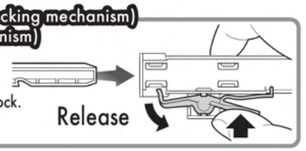
Production D Attaching the scale bar to the launching platform

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



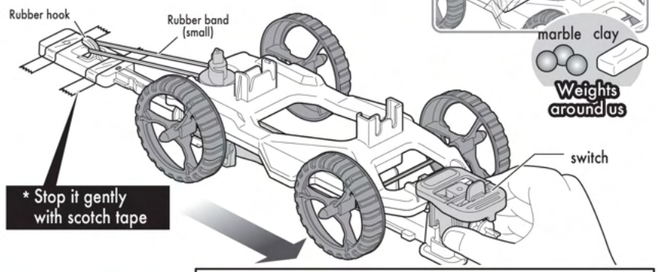
How to use the lever (locking mechanism) and bar (locking mechanism)

Press the position shown in the diagram to release the lock.



Introduction ★ Let's move the rubber car!

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

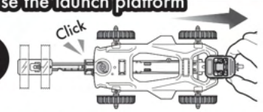


* If you want to reduce the running distance of the car, attach a weight to the car body.

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

How to use the launch platform

Extend the scale bar



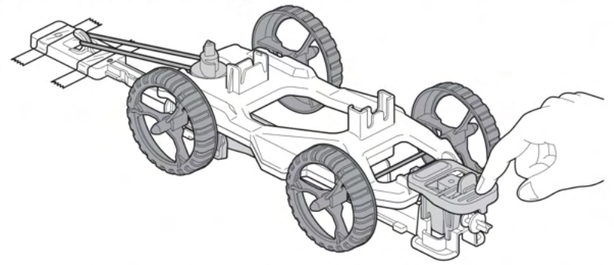
Hold the switch and pull it back until it clicks into place.

Returning the scale bar

Remove the vehicle body from the launch platform, remove the locks and replace the scale bar.

Experiment 2 How to stretch the rubber band and how to move the car

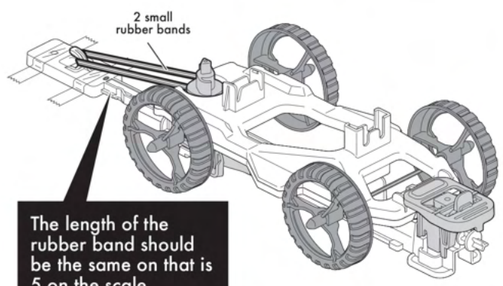
• Find out if there is a difference in the running distance when the rubber is stretched short and when it is stretched long.



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

Experiment 3 Number of rubbers band and how the car moves

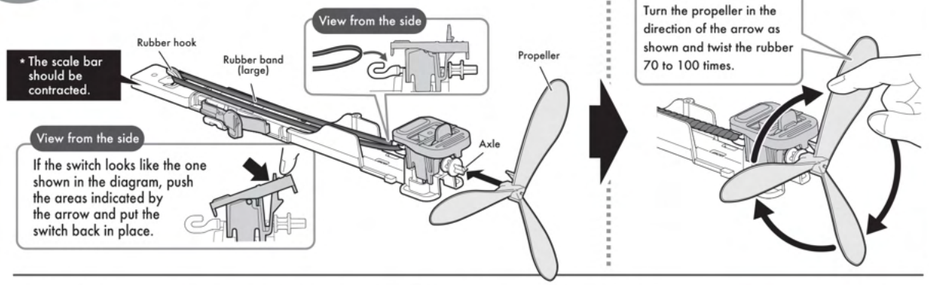
• Use 2 small rubber bands to see if there is a difference in the distance the car runs compared to 1 rubber band.



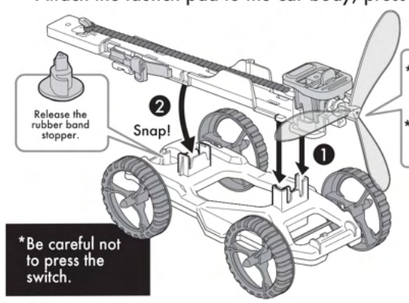
		When there is only 1 rubber band		When there are 2 rubber bands	
Distance	1st time	m	cm	m	cm
	2nd time	m	cm	m	cm
	3rd time	m	cm	m	cm
Summary					

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

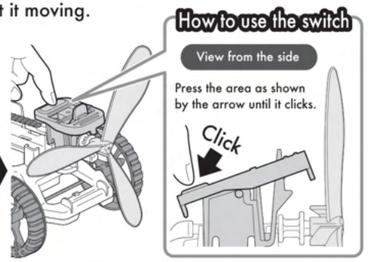
◯ Put the rubber band (large) on the propeller and twist the rubber band.



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



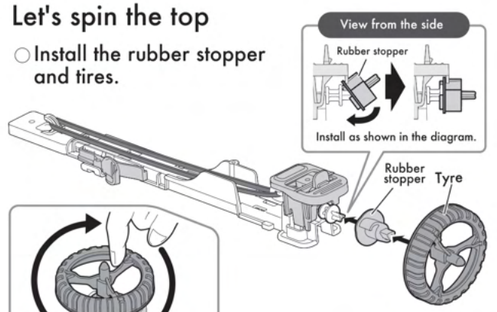
How to use the switch



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

Let's spin the top

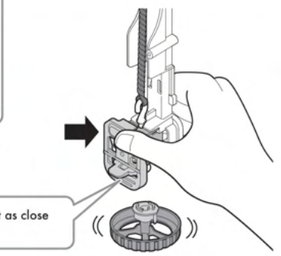
◯ Install the rubber stopper and tires.



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.

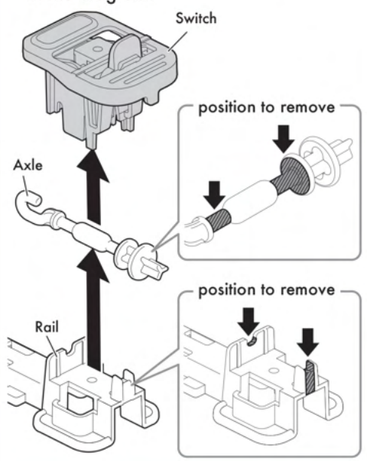


Push the switch at a height as close to the floor as possible.

*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.