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# THE LEARNING BOOKLET

— FOR THE WEATHER STATION —

*Read to be inspired!*



**WARNING:**  
**CHOKING HAZARD** - Small parts,  
Not for children under 3 years.

AGES **8+**





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## WARNING MESSAGE

### GENERAL WARNING

*Before you begin, please read through the instructions together with your children. Make sure you understand the safety messages. Please keep the packaging and instructions, as they contain important information.*

*This kit is designed for children over 8 years of age.*

*CHOKING HAZARD - Small parts, not for children under 3 years.*

*Children should have parental supervision when assembling the product.*

*Please clean the product with a clean cloth when necessary.*

### OTHER WARNINGS

#### **Using a screwdriver**

*You must always be supervised by an adult when using a screwdriver. The metal may have sharp edges that can cause injury.*

# 1 | WARNING MESSAGE





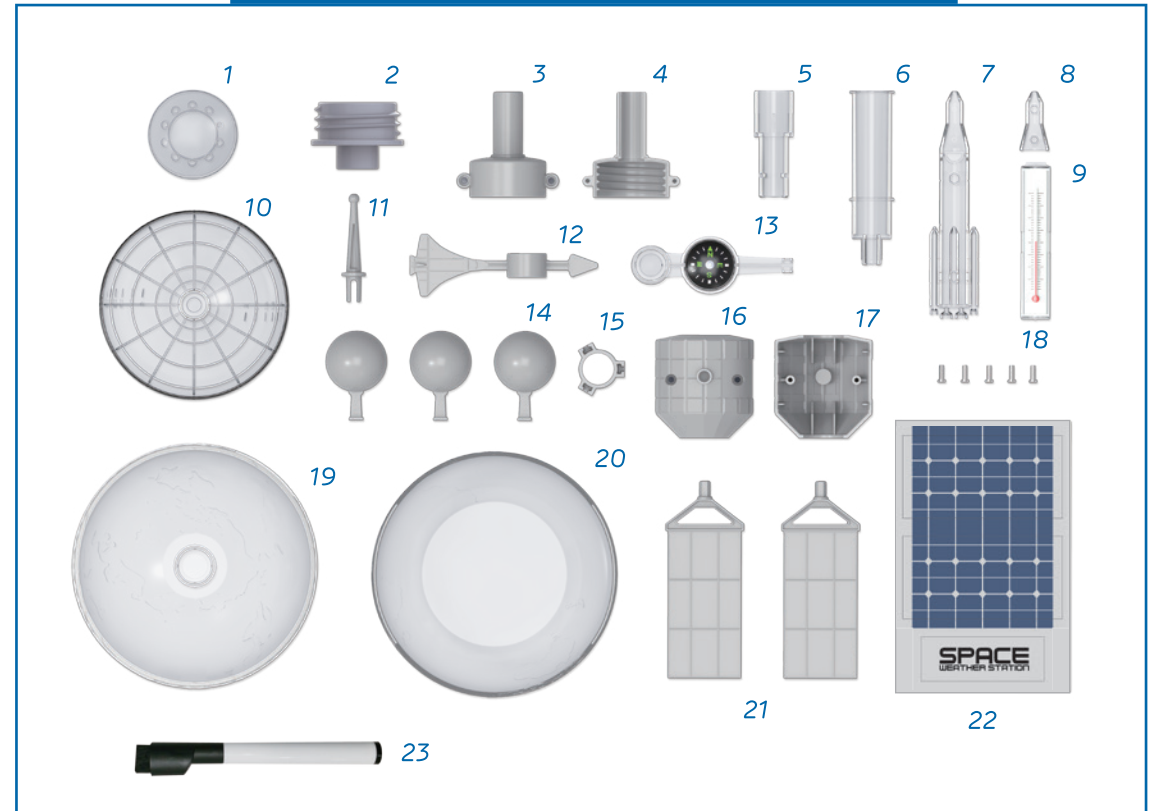
*Read to be inspired!*



# 2 | PACKAGE CONTENTS



## Package Contents



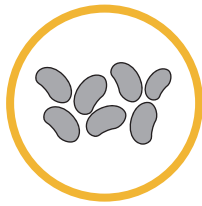
Conforms to ASTM D-4236

Serial	Name	Quantity	Serial	Name	Quantity
1	Sprinkler	1	13	Compass	1
2	Anemometer Base	1	14	Anemometer Wind Collectors	3
3	Anemometer Stand 1	1	15	Wind Collectors Stand	1
4	Anemometer Stand 2	1	16	Satellite Body A	1
5	Weather Vane Stand	1	17	Satellite Body B	1
6	Satellite Stand	1	18	Screw	4 + 1(spare)
7	Thermometer Back Panel	1	19	Northern Hemisphere	1
8	Thermometer Cover	1	20	Southern Hemisphere	1
9	Thermometer Box	1	21	Solar Panel	2
10	Rain Gauge	1	22	Stickers	1
11	Rain Gauge Piston	1	23	Doodling pen	1
12	Weather Vane	1			

### Necessary but not included



Plant



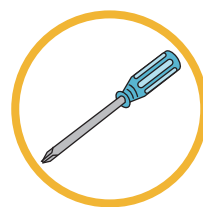
Beans



Soil

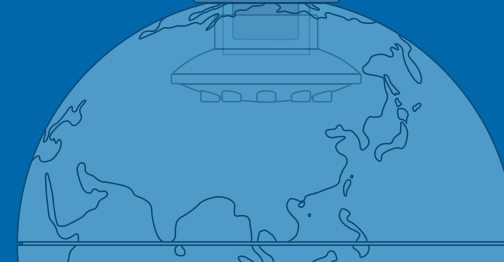
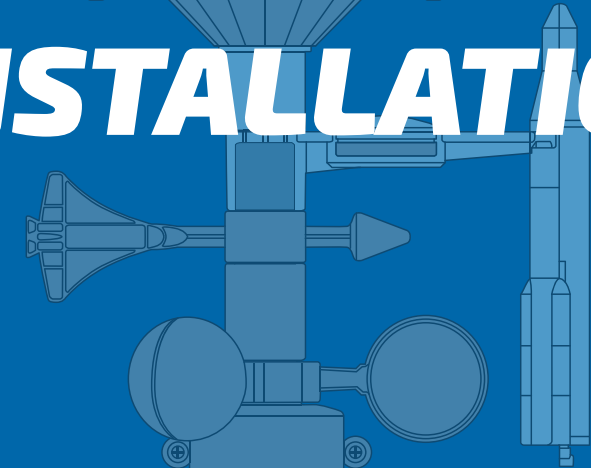
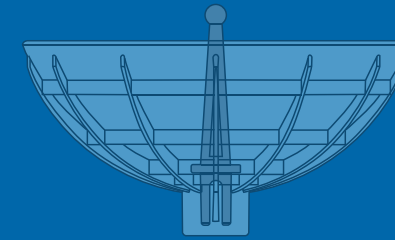


Water

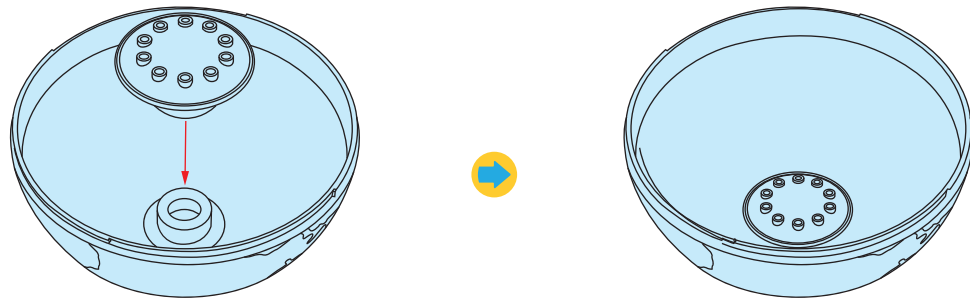
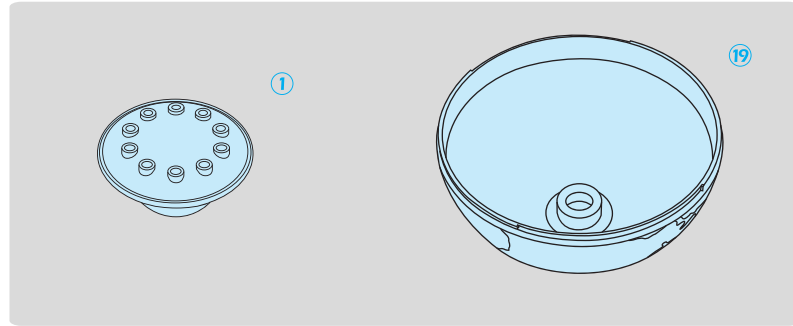


Cross-head screwdriver

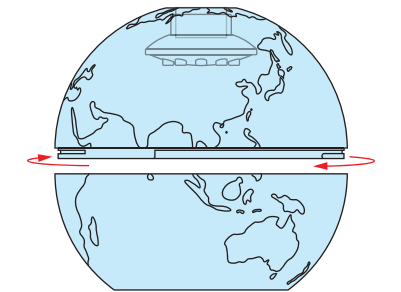
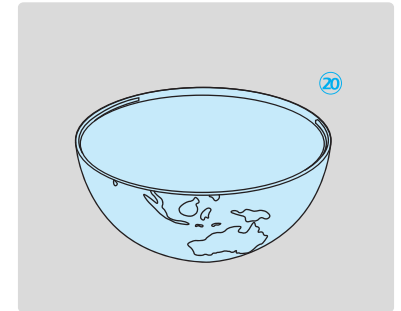
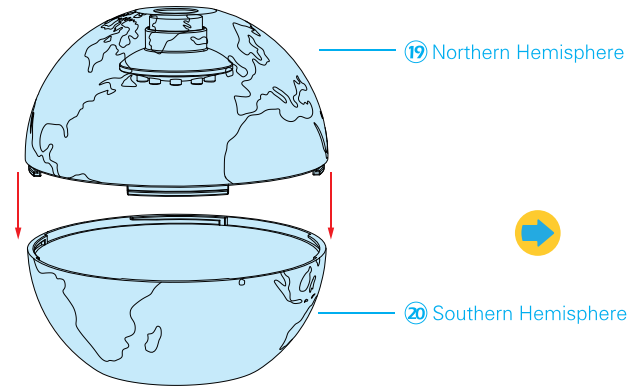
# 3 | INSTALLATION



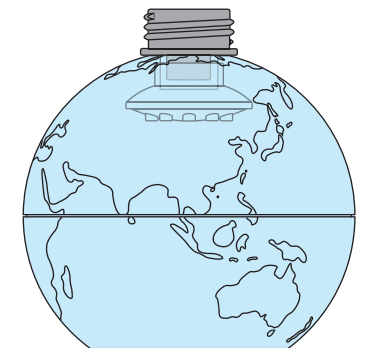
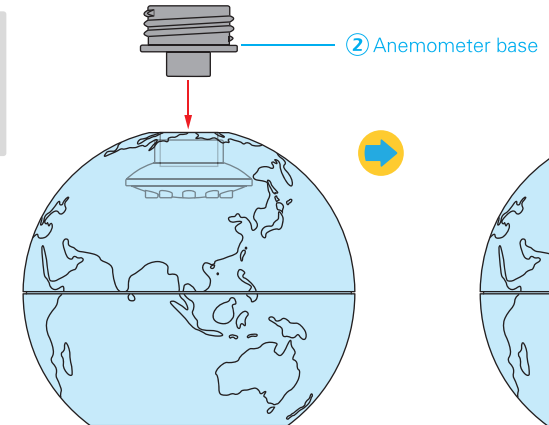
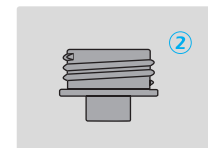
1 Plug the Sprinkler into the Northern Hemisphere as illustrated.



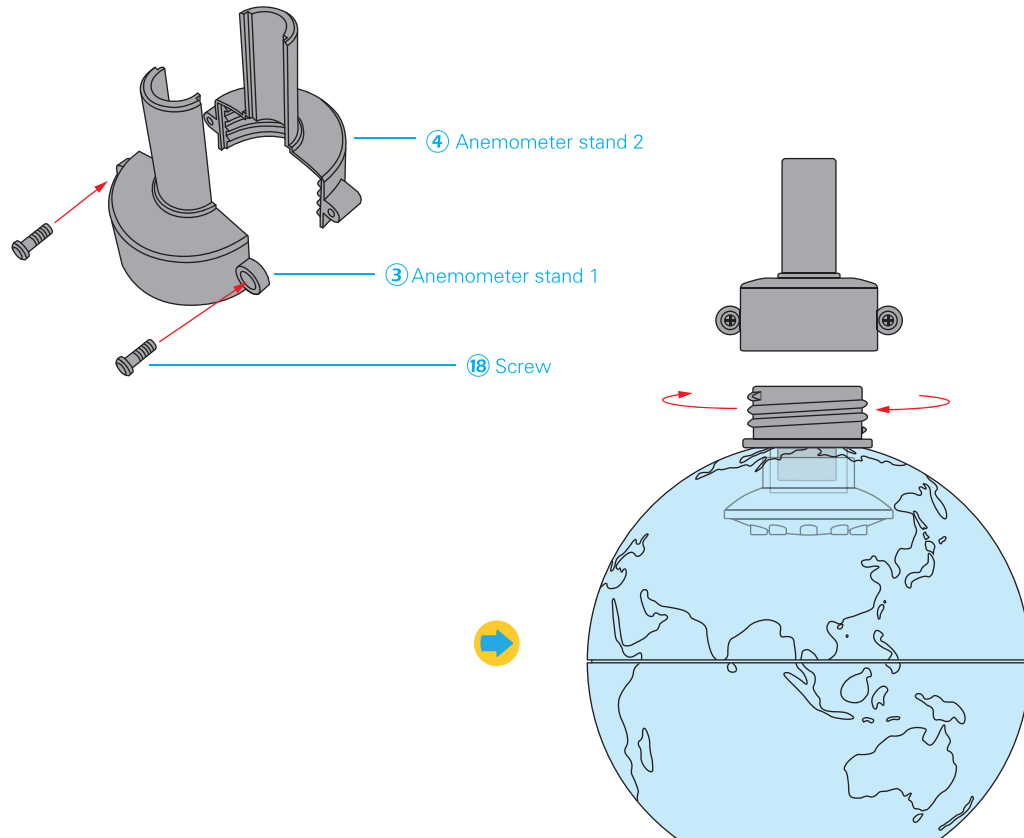
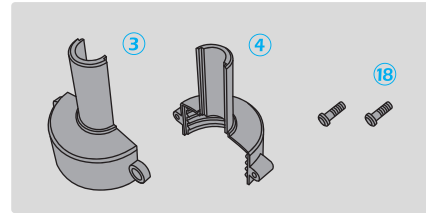
2 Insert the Northern Hemisphere into the Southern Hemisphere. Please make sure the map is aligned. Rotate clockwise and lock them in.



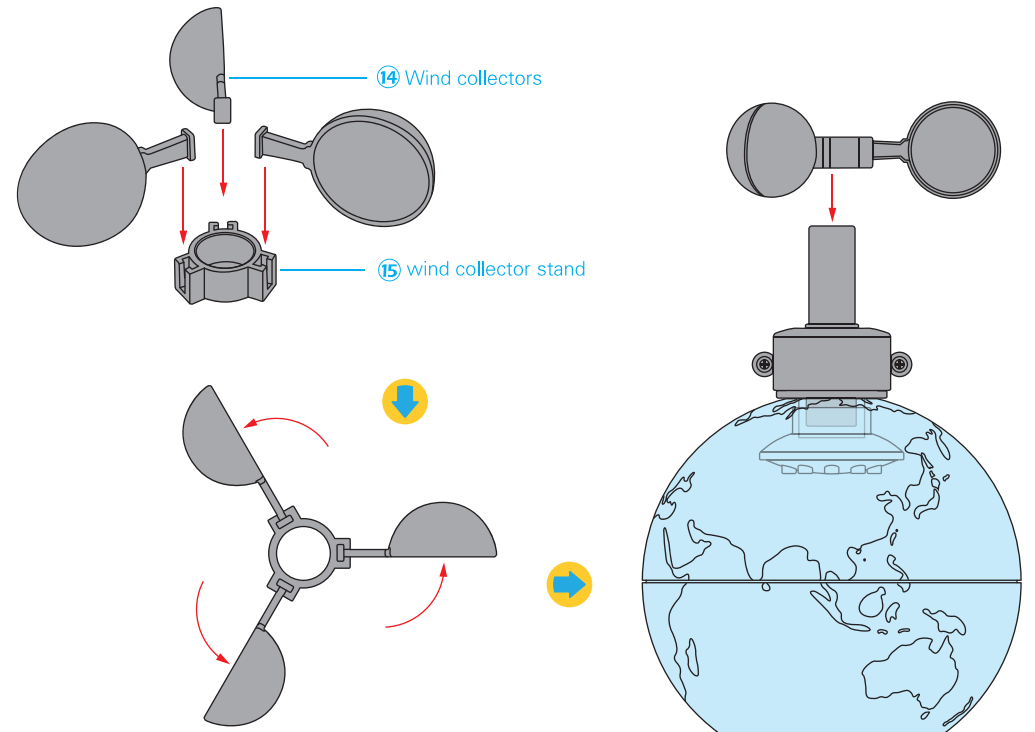
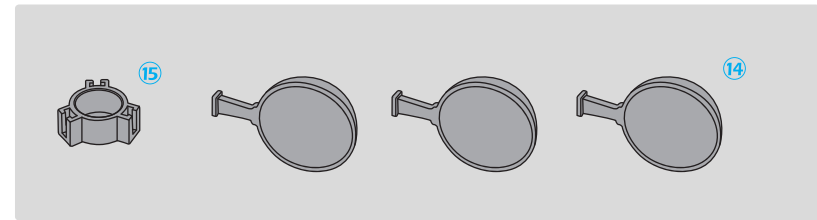
3 Plug in the Anemometer Base.



- 4 Screw Anemometer Stand 1 and 2 together. Then attach them clockwise into the globe.

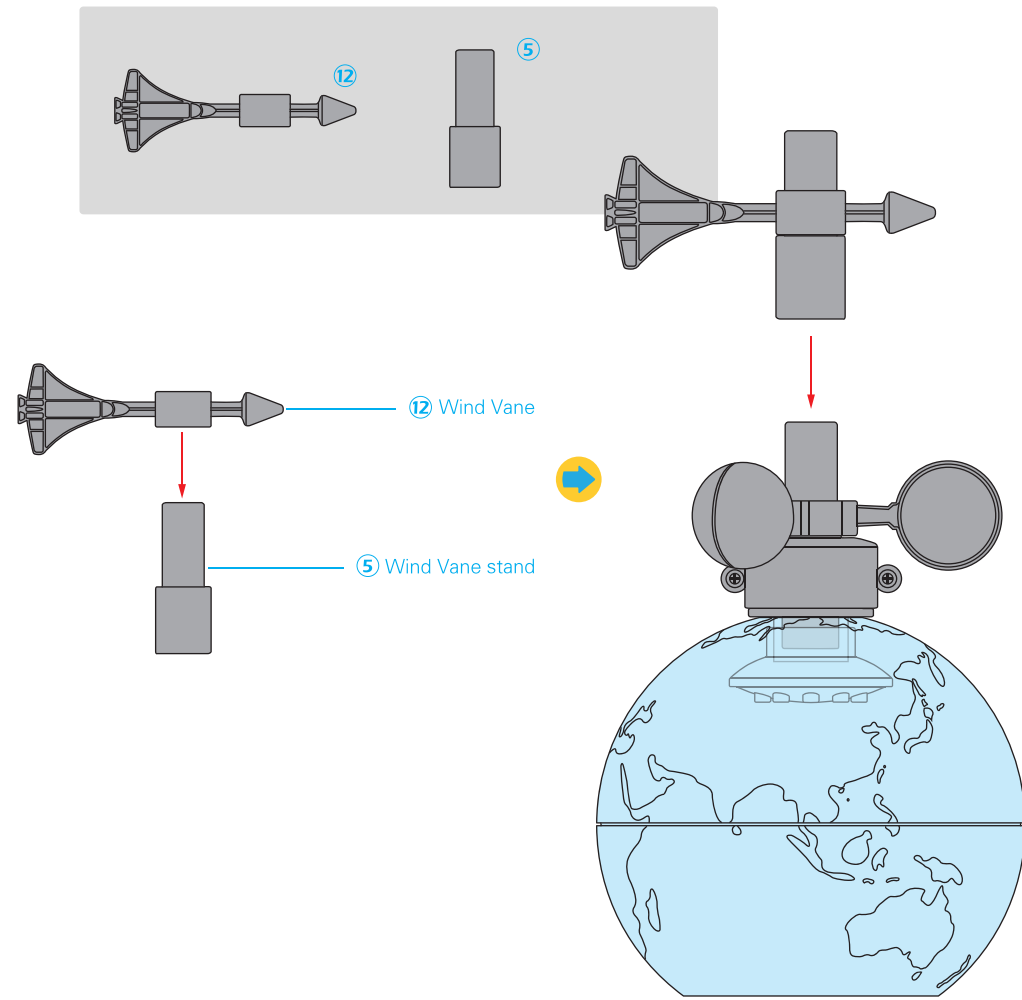


- 5 Insert the three Wind Collectors into the Wind Collector Stand. Please make sure they are facing the same direction. Plug into the Anemometer Stand as illustrated.

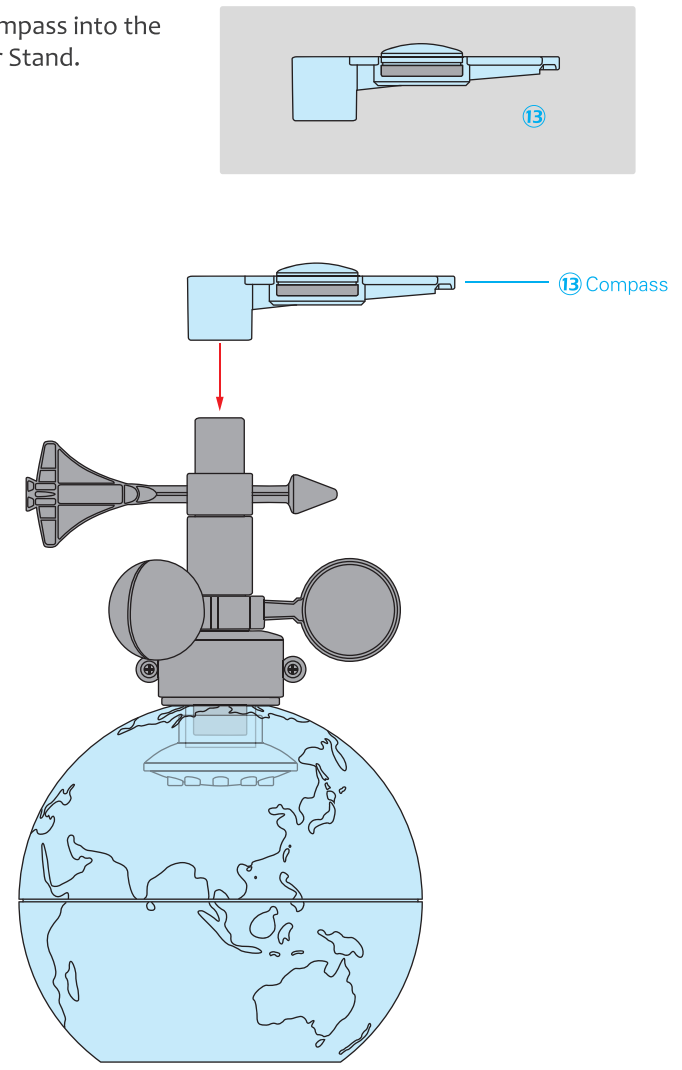




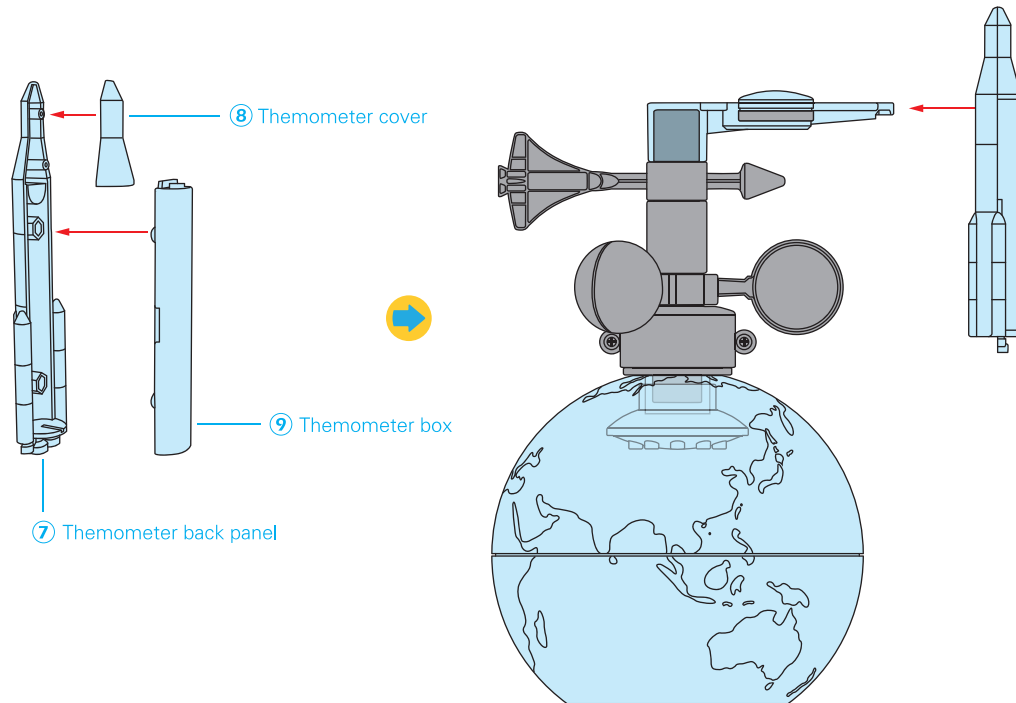
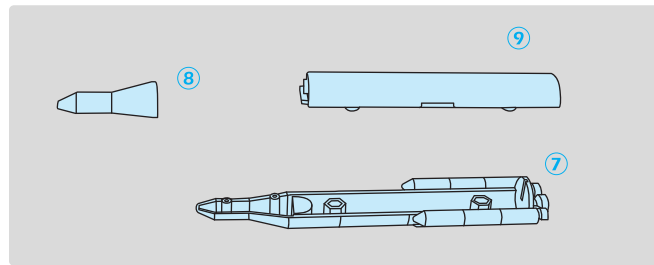
6 Insert the Weather Vane into the Weather Vane Stand. Insert them into the Anemometer Stand as shown.



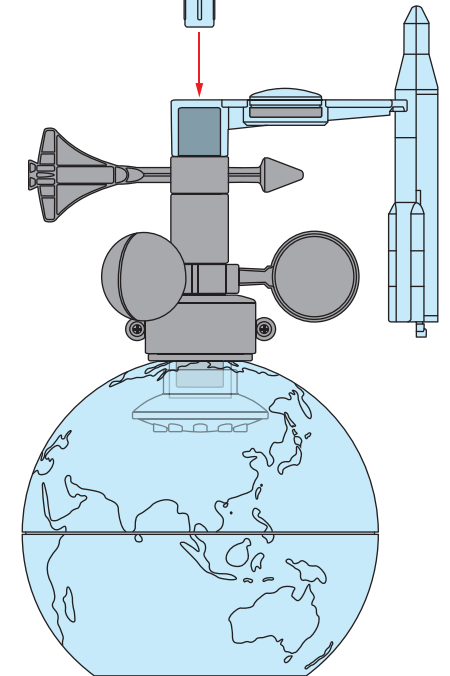
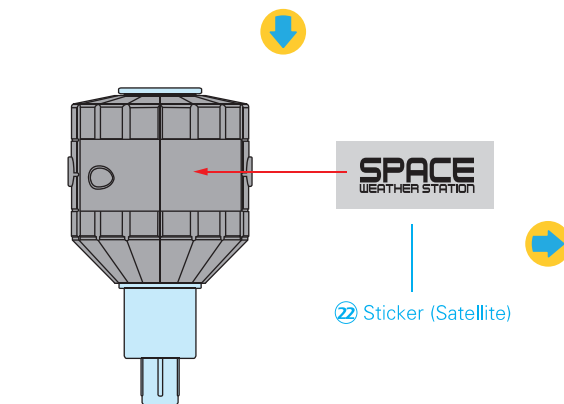
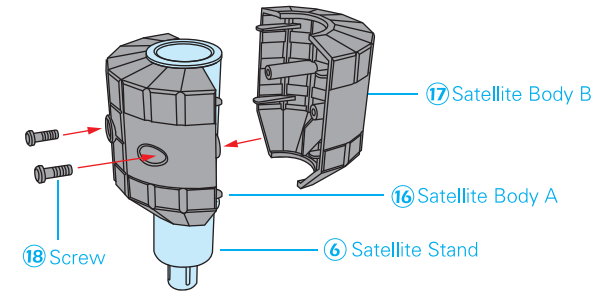
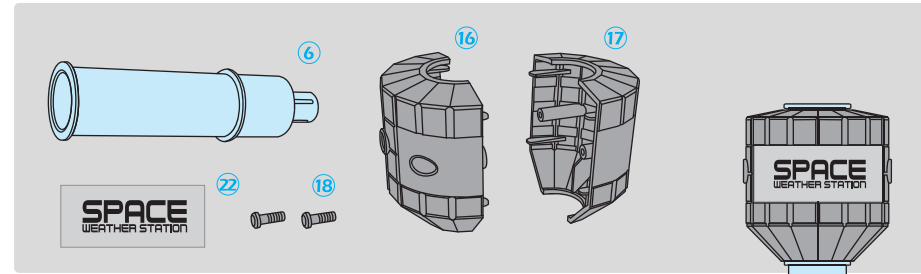
7 Insert the Compass into the Anemometer Stand.



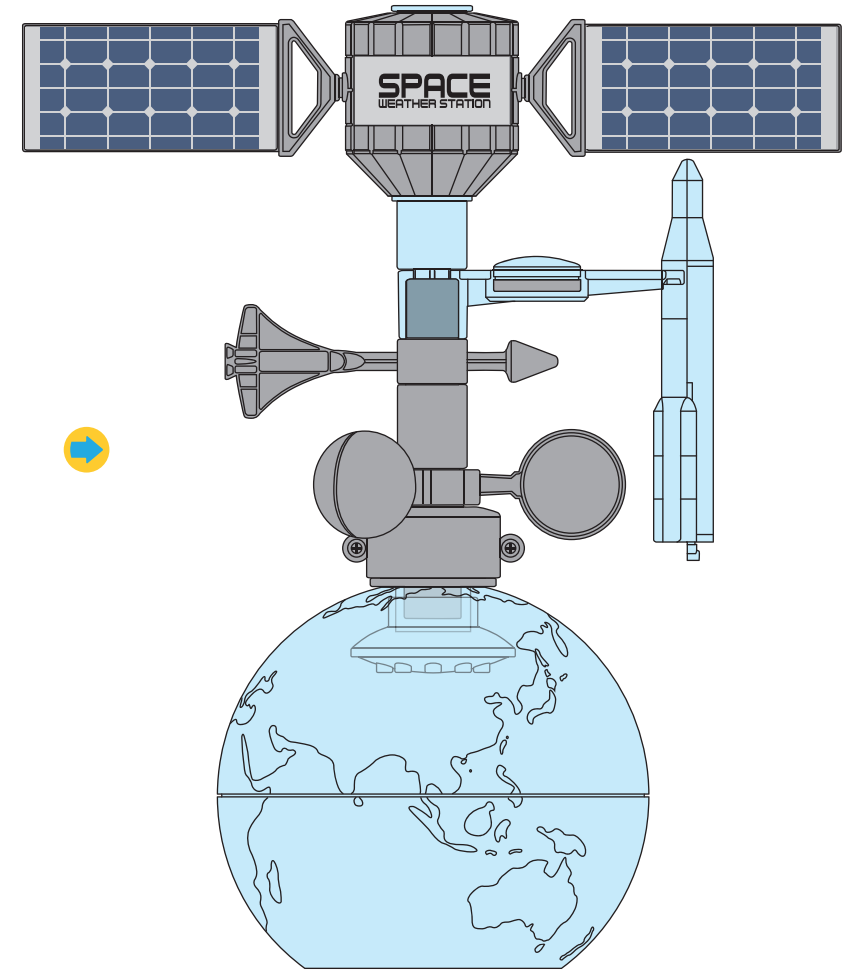
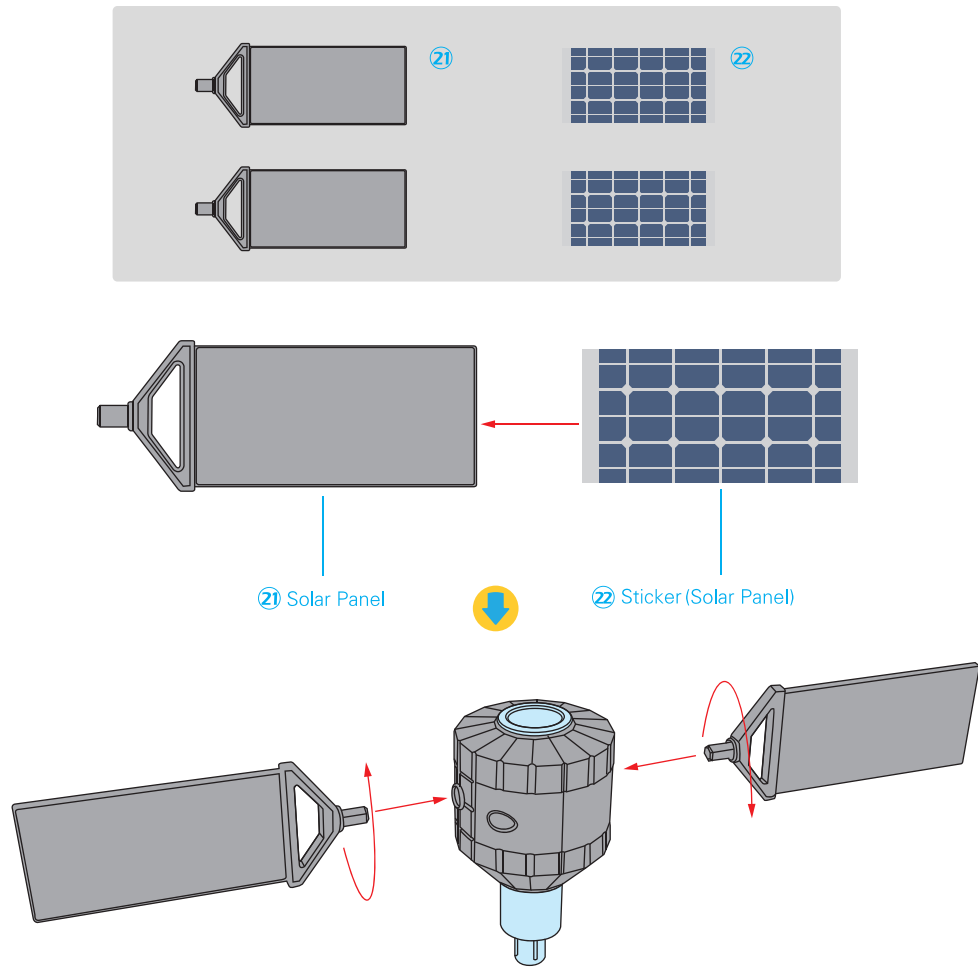
- 8 First, plug in the Thermometer Box and the Thermometer Cover into the Thermometer Back Panel. Insert them into the Compass Stand as illustrated.



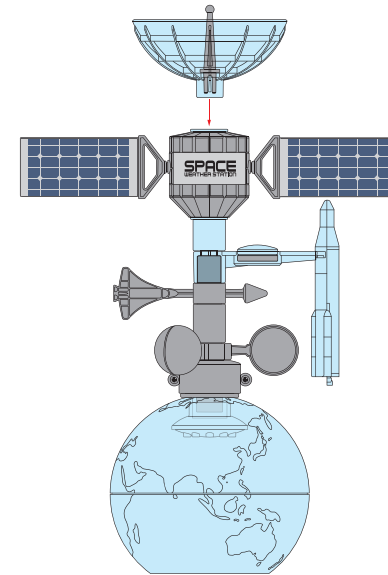
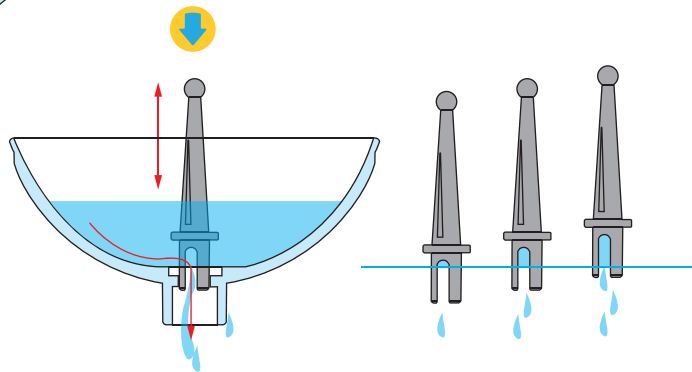
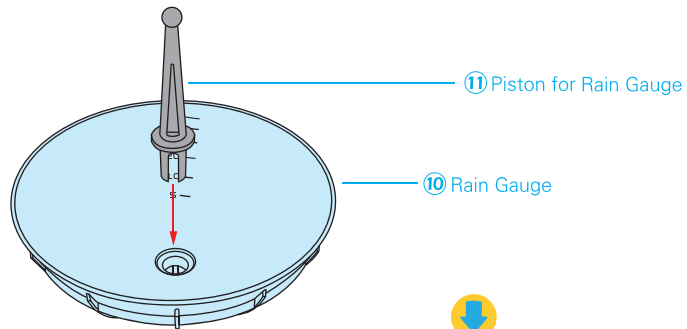
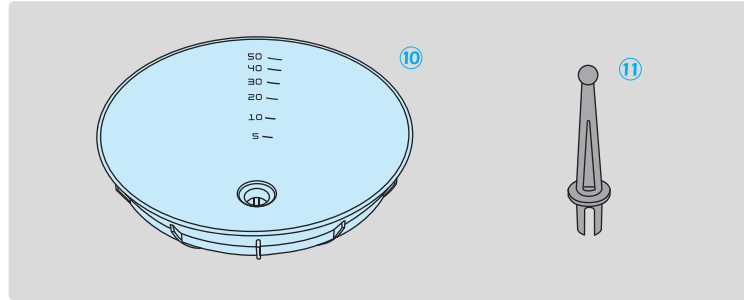
- 9 Sandwich the Satellite Stand with the Satellite Body A and B, and attach them with screws. You can use the sticker provided for decorations. Insert them as illustrated.



10 Apply the stickers onto the Solar Panels.  
Plug them into the Satellite at preferred angle.



- 11 Plug the Piston into the Rain Gauge and insert them into the top of the Satellite. You can adjust the piston vertically to seal or release the collected rain to simulate the process of precipitation.



*Dear Little Scientist,*

Congratulations!

You have just completed building your own Space Weather Station. Now let's begin to learn some basic knowledge about Weather.

Cheers,

Chief Scientist of PlaySTEAM

# 4 | ACTIVITIES



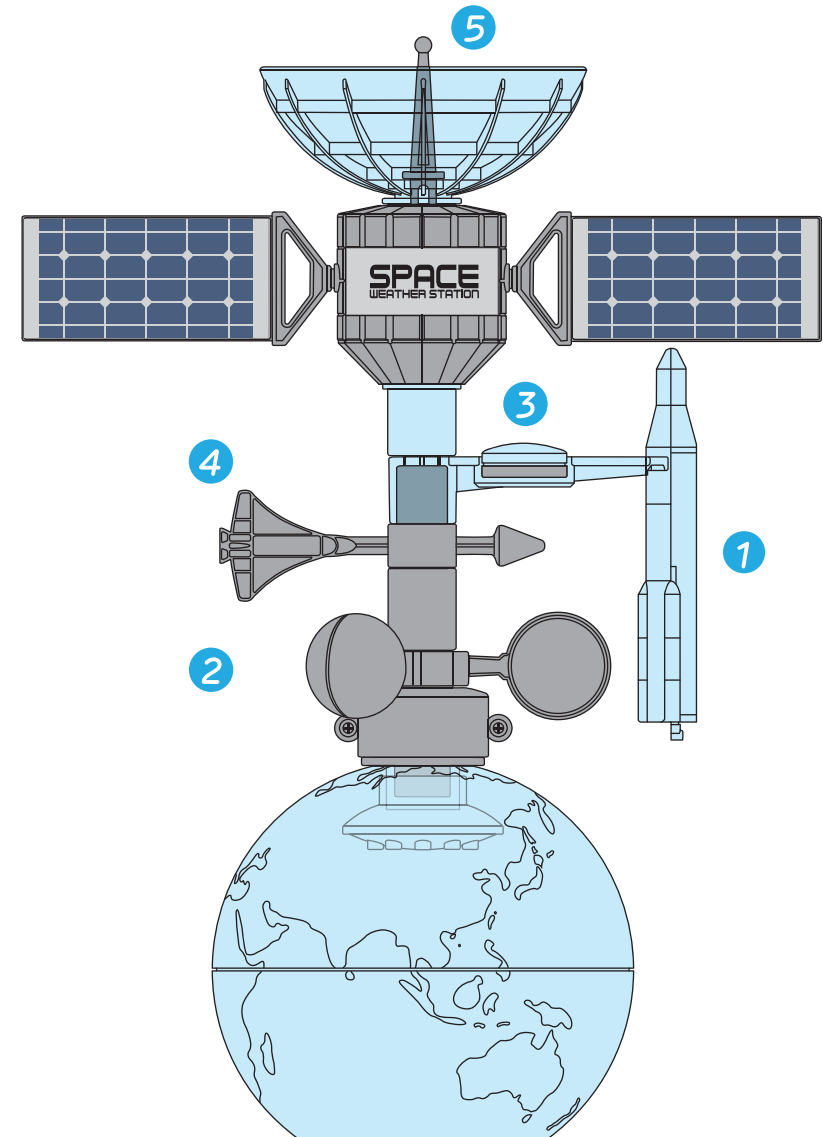
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# Understanding the Instruments

Scientists utilize different kinds of instruments to measure the weather. It is your first task to learn how to use them.

- 1 Thermometer**  
A Thermometer is a tool to measure the temperature. In most cases, there are two measurement scales, namely Celsius and Fahrenheit. The longer the index the higher the numerical value, which means a higher temperature.
- 2 Anemometer**  
An Anemometer is a device for measuring wind speed. It is a standard weather station instrument.
- 3 Compass**  
A Compass is a very useful tool to determine orientation. There is a diagram that indicates North, South, East and West. It can be used together with the Weather Vane to determine wind direction.
- 4 Weather Vane**  
A Weather Vane is used for detecting wind direction. The arrow points at the direction that the wind comes from. By referencing the Compass, we can precisely determine the pole of wind direction.
- 5 Rain Gauge**  
A Rain Gauge is an instrument that collects and measures the amount of precipitation. The amount of precipitation should be measured by a set period of time, for example 20mm per hour.











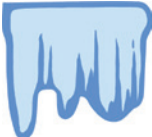




## UNDERSTANDING WEATHER

Many of us love sunny days, while there are still other kinds of weather.

Let's learn more terms about how to describe different weather conditions and how you feel about them.



## WEATHER GUIDE

 sunny	 cloudy	 partly cloudy	 rainy
 windy	 snowy	 lightning	 stormy
 foggy	 hail	 tornado	 icy
 cold	 warm	 hot	 rainbow

## RECORD YOUR OWN WEATHER REPORT

We have learned how to use instruments to measure the weather and how to describe them by using different terms.

Why not give it a try to record your own 7 Day Weather Report?



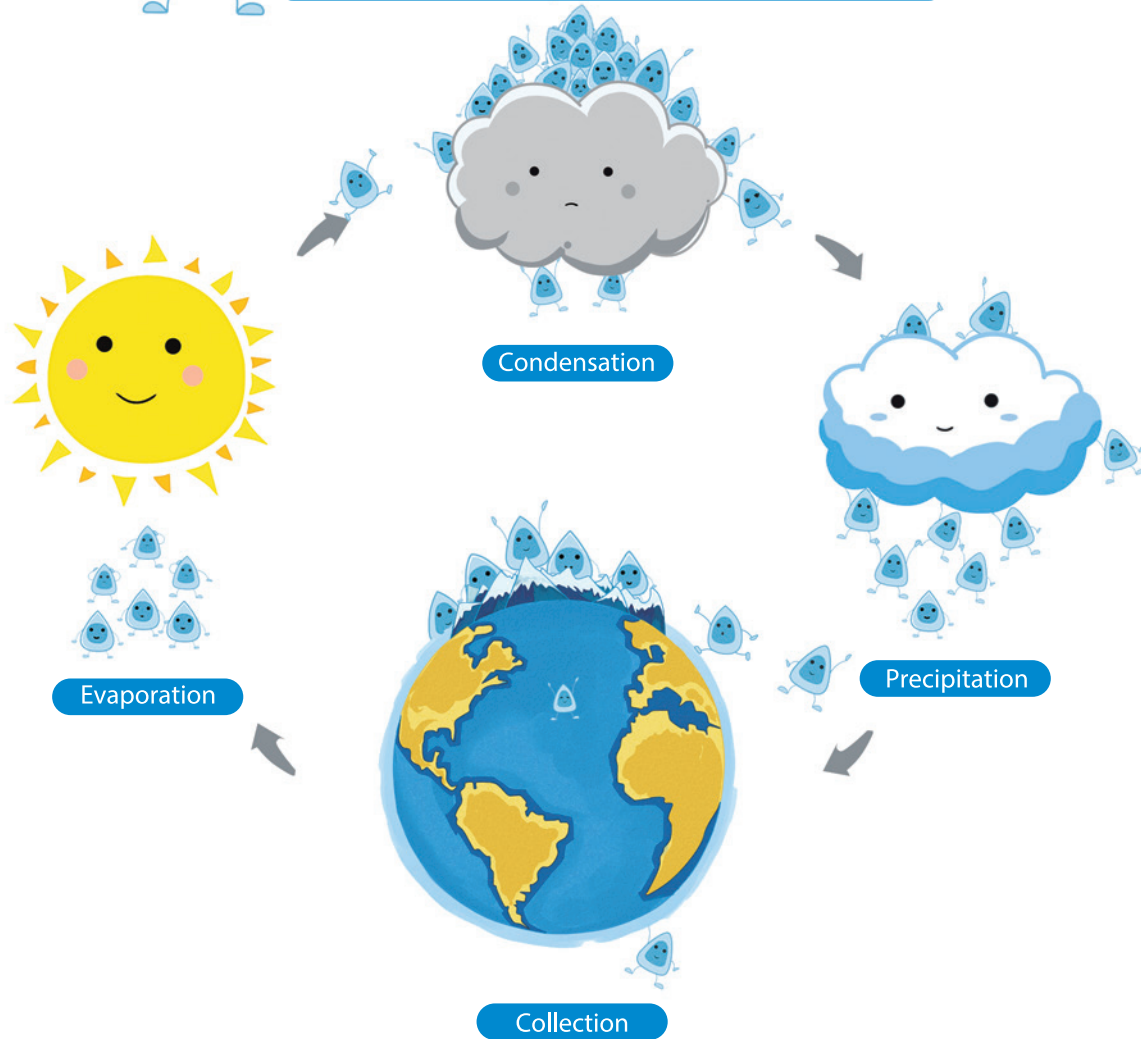
## MY WEATHER REPORT!

Date	Weather	Temperature (C/F)	Wind Speed (Strong/ Medium / Weak)	Wind Direction (North, East South, West)	Rainfall (mm)





## Basic Knowledge about the Water Cycle



Evaporation is when the Sun heats up the groundwater and turns it into gas. This gas is called water vapor. They form the clouds in the sky.

As they go upward and meet cold air in the sky, they become liquid water droplets again. This process called Condensation.

When more and more water droplets condense, they become too heavy to stay in the sky and fall down as rain, snow, or hail. This is called Precipitation.

The water is then collected into oceans, lakes or underground. This process is called Collection. They are then heated and evaporated all over again.

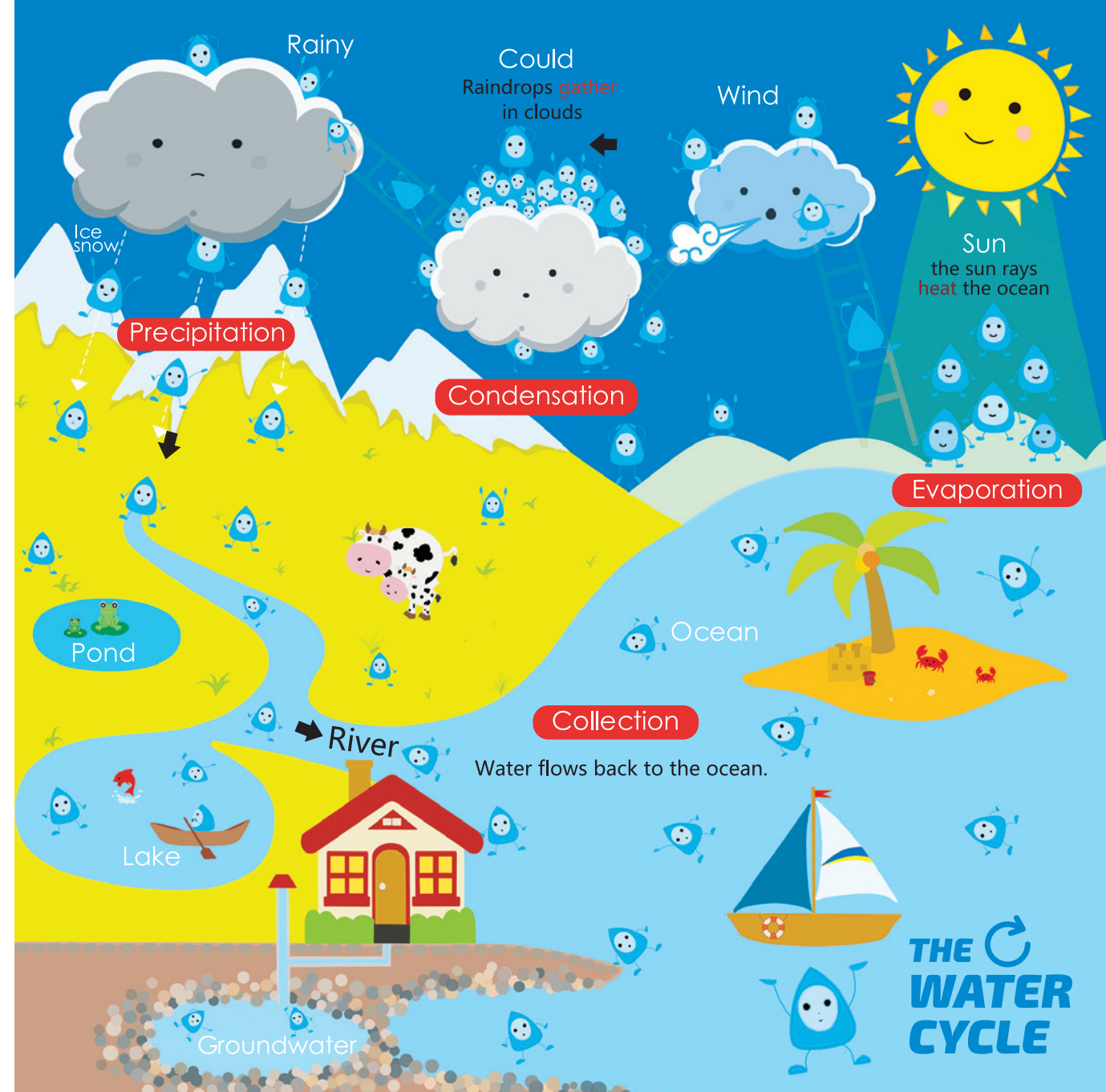
***This is the amazing Water Cycle.***



## More about the Water Cycle

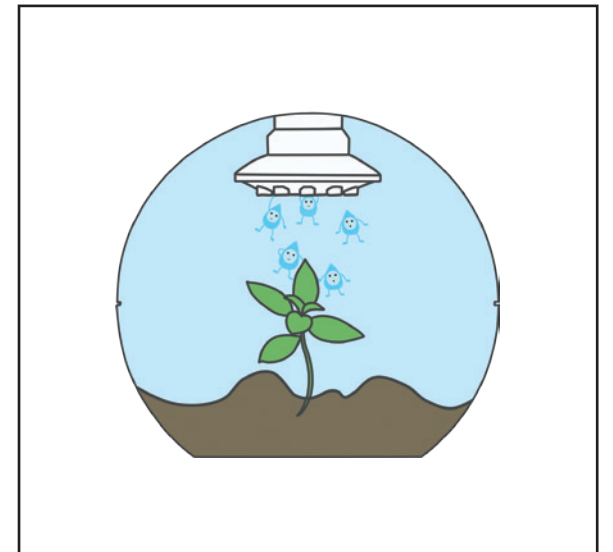
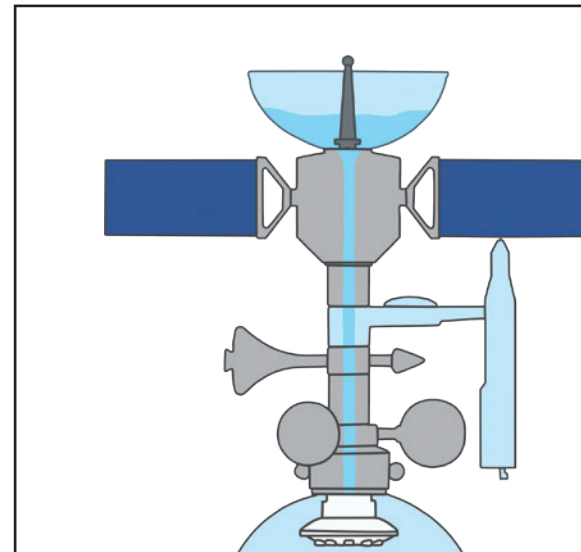
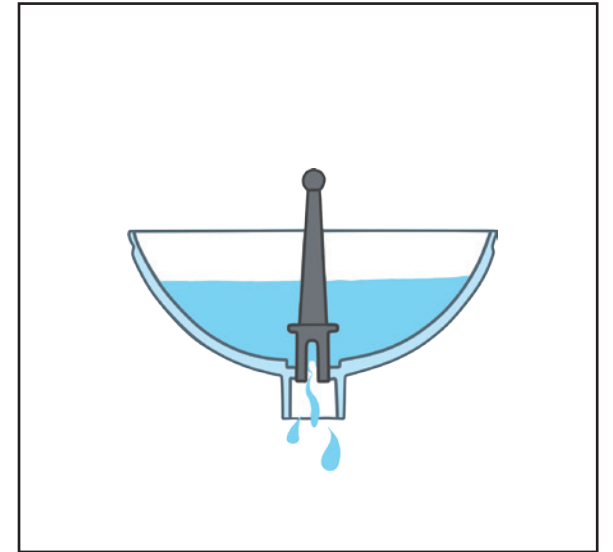
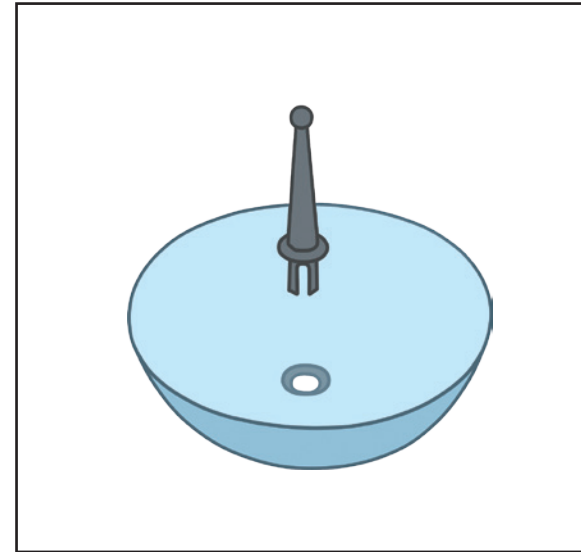
We can gain a deeper understanding from the illustration on the process of the water cycle.

Let's watch the journey of the water droplets.

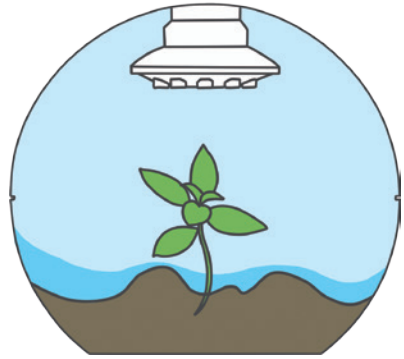


## **SIMULATION OF THE WATER CYCLE**

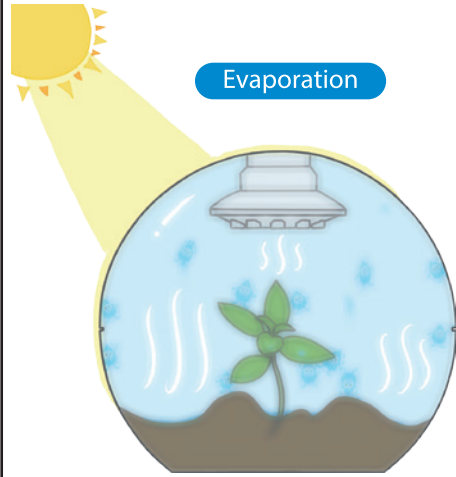
Prepare a small cup of water and a towel.  
Place the Weather Station on a flat surface.  
Before starting, please make sure the piston is closed.  
If not, please push it downward gently.  
Slowly pour the water into the Rain Gauge until it is full.  
Unplug the piston as illustrated.  
Observe how the water falls into the Globe from the Sprinkler.  
Wow! It is RAINING.  
Do not pour in too much water, or it will flood your terrarium.  
Please use the towel to absorb extra water.



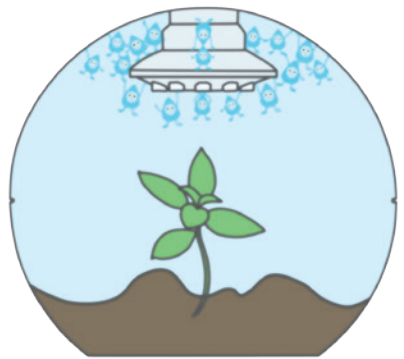
Collection



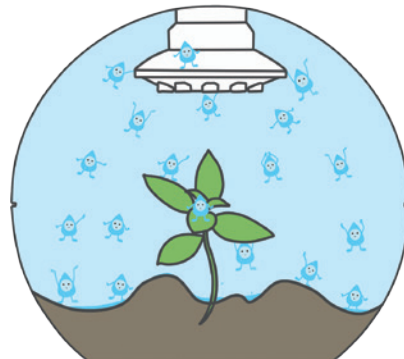
Evaporation



Condensation



Precipitation



After a period of time or when the temperature is high enough, the water will be vaporized and the Globe will have FOG inside.

This process is called Evaporation.

As the warm environment continues, the Fog will change into water droplets and condense on the wall of the Globe.

It is what we have learned earlier- Condensation.

Because of the increased weight of the water droplets, they will fall from the ceiling and Precipitation will occur.

***NOTE***

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**NOTE**

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