

CLIMATE & WEATHER



WARNING — Science Education Set. This set contains chemicals and/or parts that may be harmful if misused. Read cautions on individual containers and in manual carefully. Not to be used by children except under adult supervision.

What's in your experiment kit:



Checklist: Find – Inspect – Check off

✓ No.	Description	Qty.	Item No.
<input type="checkbox"/>	1 Transparent half-spheres	2	706346
<input type="checkbox"/>	2 Die-cut cardboard sheet	1	706376
<input type="checkbox"/>	3 Globe sticker sheet	1	706378
<input type="checkbox"/>	4 Transparent plastic sheet for basin	1	706381
<input type="checkbox"/>	5 Cork stopper	1	071118
<input type="checkbox"/>	6 Pins	5	706382
<input type="checkbox"/>	7 Wooden sticks	3	020042
<input type="checkbox"/>	8 Incense cones	5	706385
<input type="checkbox"/>	9 Balloon	1	701060
<input type="checkbox"/>	10 Black disk	1	706387
<input type="checkbox"/>	11 Black equator strip	1	706442
<input type="checkbox"/>	12 Tubing	1	706384
<input type="checkbox"/>	13 Thermometer with case	1	232105
<input type="checkbox"/>	14 Petri dish	1	700408
<input type="checkbox"/>	15 Sponge	1	000585
<input type="checkbox"/>	16 Tealight containers	3	706377
<input type="checkbox"/>	17 Paper clips	4	020040
<input type="checkbox"/>	18 Pipette	1	232134
<input type="checkbox"/>	19 Clay (50 g)	1	000588
<input type="checkbox"/>	20 Rubber band	2	529122
<input type="checkbox"/>	21 Drinking straw	1	704257
<input type="checkbox"/>	Polystyrene foam tray holding:		706373
<input type="checkbox"/>	22 Sphere with indentations	1	
<input type="checkbox"/>	23 Hemispheres	2	
<input type="checkbox"/>	22 Ramp	1	

Additional things you will need:

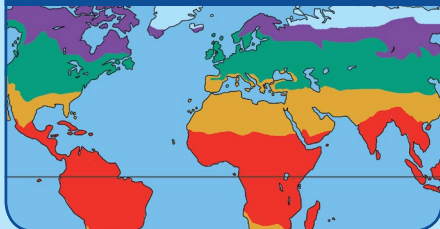
Craft glue, flashlight, paper, tape, felt-tip pen, table lamp, empty plastic bottle, insulated flask (e.g. Thermos), watch, lighter, scissors, knife, ink, white bowl, salt, plastic wrap, baking powder, vinegar, paper towels, teaspoon

Any materials not contained in the kit are marked in *italic script* in the "You will need" boxes.

→ Please check all the parts against the list to make sure that nothing is missing.

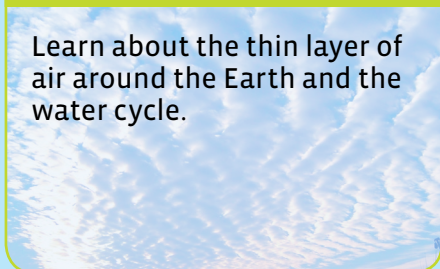
→ If you are missing any parts, please contact Thames & Kosmos customer service.

The Climate System Pages 4 to 10



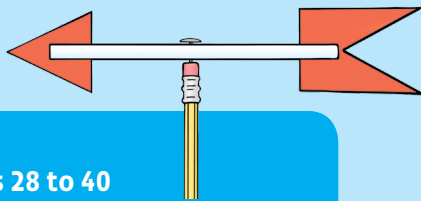
Atmosphere and Hydrosphere Pages 11 to 20

Learn about the thin layer of air around the Earth and the water cycle.



Heat, Pressure, and Temperature Pages 21 to 27

Explore the role Earth's heat reservoirs and air pressure play on the weather.

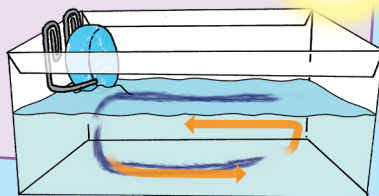


Wind Pages 28 to 40

Learn why the winds blow.

Ocean Currents Pages 41 to 43


Model ocean currents
in a basin of water.



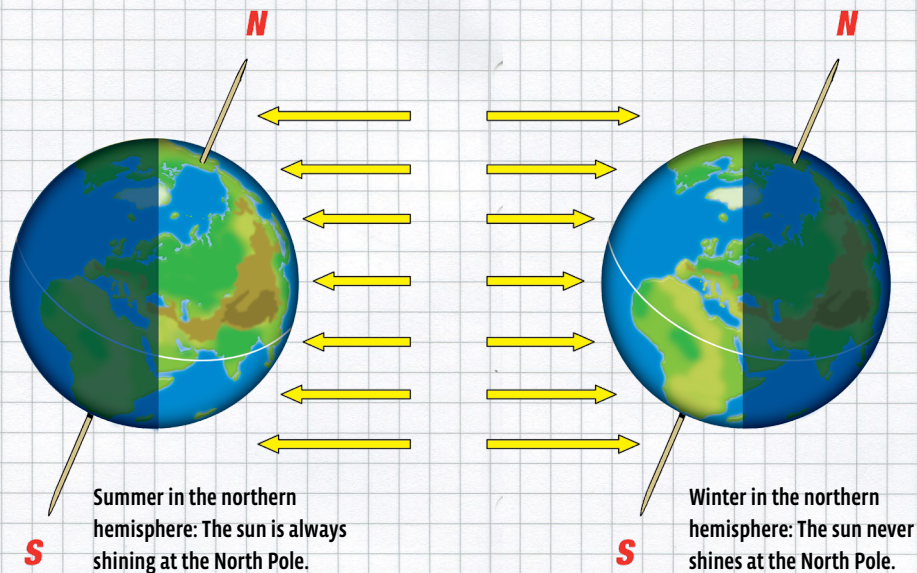
Climate Change Pages 44 to 48

Experiment with
carbon dioxide
gas.



 You will find supplemental information on pages 9, 10, 13, 14, 16, 17, 23, 24, 26, 33, 39, 40, and 48.

Summer and Winter



At the North and South Poles, the varying paths of the sun have the greatest effect. There, half a year will go by without the sun sinking under the horizon or rising above it. Polar night or polar day lasts for months.

At the equator, on the other hand, the sun's position hardly varies over the course of a year. There are practically no seasons, and for the entire year day and night are almost equally long, namely about 12 hours.

SOLAR RADIATION

You have probably noticed how strong an effect the sun's angle can have on the temperature over the course of a single day. If you are sitting in the sun at noon on a summer day, you will quickly get hot. With the approach of evening on the same day, as the sun gradually sinks to the horizon and its rays are coming from the side rather than above, it will be just pleasantly warm.

You can also tell what the position of the sun is by looking at your shadow. In the morning, your shadow is very long. As noon approaches, it gets shorter and shorter until the sun reaches its highest point. Then, you can hardly see your shadow anymore. As the day wears on, it will get longer again until the sun sets.



EXPERIMENT 11

Build a simple barometer

YOU WILL NEED

- empty glass jar, or empty coffee or soup can
- scissors
- rubber balloon
- rubber bands
- pin or toothpick
- drinking straw
- paper and pen

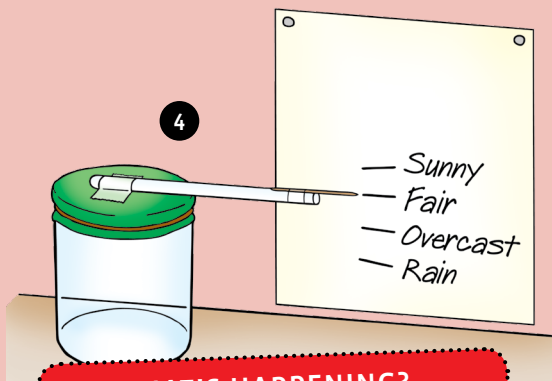
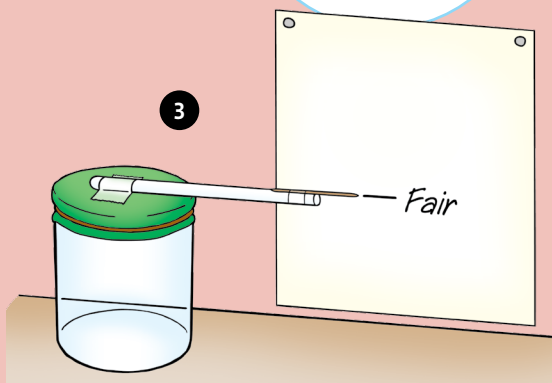
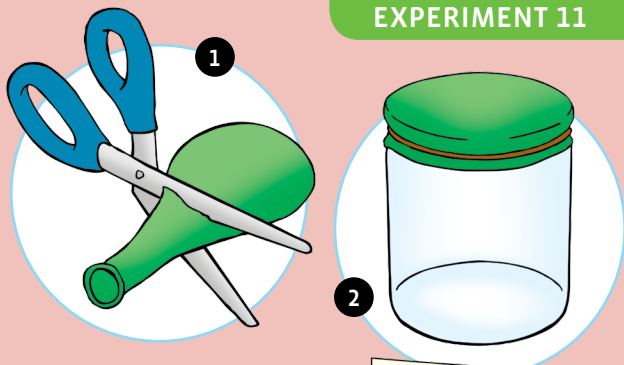
HERE'S HOW

1. Blow up the balloon to stretch it out. Cut the neck off of the balloon. Stretch the larger top portion over the top of the jar, creating an airtight seal.

2. Secure the balloon in place with a couple of rubber bands.

3. Tape your pin (or toothpick) onto one end of your drinking straw. Tape the other side of your straw securely to the center of the balloon. Place a piece of paper on the wall and move your barometer next to it. Set this away from direct sources of heat and sunlight. Record your initial measurement by marking the paper at the exact pin point and noting the day's weather.

4. Continue to mark the weather periodically throughout the week.
Do you see any patterns? What is the weather usually like when the pin points upward, and what is the weather usually like when it points downward?



→ WHAT'S HAPPENING?

Higher pressure pushes the balloon into the jar and moves the pin point upward. Lower pressure does the opposite. You should see that higher pressure relates to nicer weather, while lower pressure relates to stormy or rainy weather. See the next page for an explanation of why this happens.