

Tuesday Challenge

Weather Station Creation

Weather Vane



Rain Gauge



Thermometer



Weather Chart

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	
Temperature								
Wind direction								
Rainfall								
Weather								
Weather symbols	 Sunny	 Partly cloudy	 Cloudy	 Thunder	 Rain	 Snow		

Rain Gauge

How is rainfall measured?

Materials:

Empty two-liter plastic bottle
Scissors
A few handfuls of clean pebbles, gravel, or marbles
Masking tape
Water
Ruler
Permanent marker
Rainy weather
Paper and pencil



Procedure:

1. Carefully use the scissors to cut the top of the bottle off at the wide part just below where it begins to get narrow. (Please get permission before using scissors or any cutting implement.)
2. Put the pebbles in the bottom of the bottle—these will help keep it from getting blown over if it's windy.
3. Turn the top of the bottle upside down—make sure there's no cap on it! It's going to act like a funnel—and place it in the bottom part of the bottle, pointing downward. Line up the cut edges and tape them together so the top part is held firmly in place.
4. Use a long piece of tape to make a straight vertical line from the top edge of the bottle to the bottom. Use the marker to draw a line on the vertical piece of tape just a little above the top of the pebbles. This will be the bottom of your rain gauge.
5. Set the ruler against the vertical tape so that the "0" line lines up with the bottom mark. Use the marker to mark every quarter-inch (or, if you want to get fancy, every eighth-inch) along the piece of tape. Then label the inches from bottom to top. (Alternatively, you can mark centimeters and half-centimeters instead.)
6. Set the bottle on a level surface and pour some water in until it reaches the bottom mark. Your rain gauge is now ready to go!
7. Put the rain gauge outdoors—you'll need to pick a really good spot! You want somewhere level that's open to the sky and that's not likely to get too windy, where the gauge isn't likely to be disturbed. There shouldn't be anything hanging over the gauge that could either block any rain or make extra raindrops drip into the bottle (like a tree or a power line or the edge of a roof). Pay attention to the forecast. On a day that you're likely to get rain, make sure the water in the bottom hasn't evaporated below your bottom mark; if it has, refill it to that mark.
8. If it rains within 24 hours, check your gauge and see how high the water is now. That's how much rain has fallen in the last day! On your piece of paper, make a note of the date and the amount of rain. Then read the newspaper or go online and find out the official amount of rainfall in your area for the day and make a note of it—see how closely your figure matches the official one!
9. Repeat steps 7-9 for several rainy days.

Weather Vane

How is wind direction measured?

Materials:

Paper cup
Pencil
Straw
Pin
Paper plate
Construction
Paper scraps
Tape



Procedure:

1. Poke a sharpened pencil through the bottom of a paper cup.
2. Insert a pin through the middle of a drinking straw and into the eraser of the pencil.
3. Make a cut approximately 1 inch deep on each end of the straw, making sure to go through both sides of the straw. (Please get permission before using scissors or any cutting implement.)
4. Cut small squares or triangles of construction paper and slip one into each end of the straw. (You could also just tape the papers to the straw.)
5. Place your wind vane onto a paper plate or piece of paper with the directions marked and tape it there.
6. Using a compass or GPS, find out which direction is North and adjust the North on your weather vane towards North.
7. You will need to weigh down or attach the weather vane to the outdoor surface so that it does not blow away.

Thermometer

How is temperature measured?



Higher temperatures produce greater levels of energy, which allow molecules to move faster. You can see this in action by placing a straw inside a bottle filled with liquid. When the liquid gets hotter, it is sucked up farther and farther into the straw. Using a digital thermometer you can then measure how hot it is by determining where the liquid sits inside the straw.

Materials:

Bottle

Straw

Clay (play dough also works)

Rubbing alcohol

Water

Food coloring

Permanent marker

Outdoor thermometer

Procedure:

1. Fill a third of the bottle full of a mixture of 50% alcohol and 50% water.
2. Dye the liquid red or another fun color so you can easily see the level inside the straw.
3. Suspend the straw inside the bottle with clay, leaving a small amount in the water, but don't allow it to touch the bottom of the bottle.
4. Make sure the top of the bottle is sealed with clay
5. Set the bottle outside and track its temperature with a digital thermometer.
6. The hotter the bottle gets, the farther up the liquid reaches inside the straw.
7. After examining how high the liquid reaches at each temperature reading, mark the lines of each temperature on the bottle with a permanent marker.

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