

Weather Activity Bag

Weather Predictor: Student Activity Guide

Have you ever wondered how a meteorologist, a scientist who studies the weather, is able to predict the weather? While filling out your weather log, you collected weather data. This can be used to predict the weather. In this activity, you will use a weather prediction wheel and weather data to predict the weather.

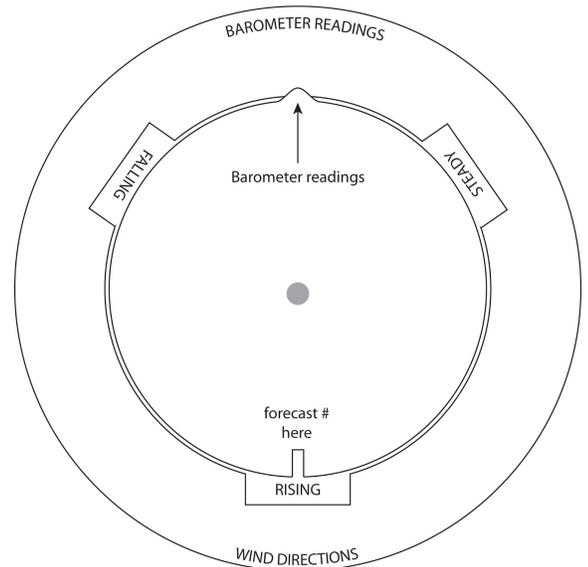
These directions will get you started. Your teacher will be in contact to guide you and provide information.

Materials From The Bag

- Weather Prediction Wheel
- Brass Fastener

Preparation

1. Carefully punch out both wheels of the Weather Prediction Wheel.
2. Stack the pieces of the Weather Prediction Wheel in the correct order. They are labeled.
3. Carefully punch the brass fastener through all three pieces of the Weather Prediction Wheel. The top and middle wheels should be able to spin.



Part 1: Exploration - Reading Barometric Pressure

The device you just created is called a weather prediction wheel.

You can move the top two wheels to determine a forecast number. That number is used at the bottom of the wheel to determine the weather prediction. Let's explore how the weather prediction wheel works.

1. Look at the Weather Prediction Wheel and record what weather data you think you will need to use to make a forecast.
2. To practice using the wheel, point the **STEADY** arrow on the middle wheel to the **West (W)** wind direction. Keep it there.
3. Look at the table at the bottom of the predictor wheel to find a forecast number that would predict rain. Move **ONLY the TOP wheel** until you find that number. Write down the barometer reading. Make sure the barometric reading arrow \hat{u} is in the **barometric reading zone**. **If you need additional help please visit (link) to show you how to use the wheel.** Repeat two more times. *What do you notice about the barometer readings?*
4. Again, look at the table at the bottom of the predictor wheel to find a forecast number that would predict clear weather. Move **ONLY the TOP wheel** until you find a prediction that would predict clear weather. Write down the barometer reading. Make sure the barometric reading arrow \hat{u} is in the **barometric reading zone**. Repeat two more times. *What do you notice about the barometer readings?*

What's happening...

A barometer is a tool that measures atmospheric pressure, also known as barometric pressure. Barometric pressure is useful in predicting the weather. You may have noticed lower barometric pressure readings often result in rainy or unstable weather, and high barometric pressure readings often result in clear weather. It is also important to know if the barometric pressure is rising, falling, or staying the same (steady.)

Part 2: Exploration - Change in Barometric Pressure

The middle wheel has tabs that indicate the barometric pressure rising, falling, or remaining steady. Find these tabs. Change in barometric pressure, the season, and wind direction are important factors when predicting the weather.

1. Move the top wheel to get forecast number 14.
2. Move both wheels together so that the barometric reading arrow \hat{u} is in the **barometric reading zone**, and the **rising** barometric pressure tab is in the **wind direction zone**.
3. Record your readings for season, direction of wind, barometric pressure, and whether the barometric pressure is rising, falling, or steady.

| Weather Forecast | Season | Direction of Wind | Barometric Pressure | Rising, Falling, or Steady |
|---|--------|-------------------|---------------------|----------------------------|
| #14 - Very unstable, slightly improving | | | | |

Part 3: Challenge

1. Moving both wheels, your challenge is to set them where they indicate that the weather will get worse or rainy. Make sure the barometric reading arrow \hat{u} is in the **barometric reading zone**, and the barometric pressure tab (rising, falling, or steady) is in the **wind direction zone**. Record the reading from the weather prediction wheel.
2. Repeat step 1 where the predictions are as follows:
 - The weather will clear this afternoon
 - It will get snowy this afternoon.
 - Changeable weather with rain.

Part 4: Weather Prediction

In this part, you will gather local weather data and use your weather prediction wheel to predict the afternoon weather where you live.

1. **In the morning before 9 am**, go to www.weather.com, place your zip code or city/state in the search button, and press enter. This will give you the local weather data. Local weather data is also available on your local tv station.
2. Record the direction of the wind, barometric pressure, and whether the barometric pressure is rising, falling, or steady. Look for arrows to indicate rising \uparrow , falling \downarrow , or steady (no arrow).
3. If today's date is between April 1 and September 1, it is "summer." If it is between October 1 and March 30, it is "winter." *What season is it?*
4. Find the **STEADY, RISING, and FALLING** tabs on the middle wheel. Using your data from above move the correct tab to the **Wind Directions** at the bottom of the page.
5. Place the correct winter or summer arrow on the current wind direction. There is only one arrow on the STEADY tab.
6. Point the **barometer readings arrow** \hat{u} on the top wheel to the current barometer reading. **Do not move the middle wheel.** Record the number you find in the "Forecast # here" slot.

What is the weather prediction for the forecast number? Observe the local afternoon weather. Compare to the forecast.