

## Lesson 4: The Wind

### Getting Started

#### ✿ Questions to Explore

- How does weather affect living things?
- Why do we study and observe the weather?
- How is weather measured?
- Why does the weather change?



#### Facts and Definitions

- **Wind** is air moving in the environment.
- Wind speed is measured with an instrument called an **anemometer**.
- A **weather vane** (or wind vane) is a tool that shows the direction the wind is blowing.

#### ⦿ Skills

- Investigate and describe how moving air interacts with objects. (S)
- Describe weather using quantitative measures of temperature, wind direction, wind speed, and precipitation. (S)

#### ✂ Materials

- |                                                                                    |                         |
|------------------------------------------------------------------------------------|-------------------------|
| • "Weather Vane" pg (kit)                                                          | • paper clip (kit)      |
| • <i>The Kids' Book of Weather Forecasting</i> by Mark Breen and Kathleen Friestad | • paper plate (kit)     |
| • blow dryer* (Activity 1 - optional)                                              | • pencil (kit)          |
| • cardboard (kit)                                                                  | • push pin (kit)        |
| • colored pencils or markers                                                       | • ruler (kit)           |
| • compass (kit)                                                                    | • Science Journal (kit) |
| • glue                                                                             | • scissors              |
| • kite                                                                             | • scrap of paper (kit)  |
| • large book* (Activity 1 - optional)                                              | • small leaf            |
| • marker                                                                           | • small stick           |
| • modeling clay (kit)                                                              | • straight pin (kit)    |
|                                                                                    | • straw (kit)           |

#### Introduction

In this lesson, your child will learn about wind and how to measure its speed and direction. He will also create his own weather vane. The first activity will introduce your child to the concept of wind.

Ask your child to describe a windy day. How does he know whether a day is windy or not? What might he observe on windy days?

Reminder:

1. Fill out your weather log each day as outlined in Lesson 1.
2. Record the air pressure as outlined in Lesson 2.
3. Take four temperature readings during the day for the daily temperature experiment as outlined in Lesson 3.

### Activities

#### Activity 1: Finding Wind

Give your child the following: small leaf, scrap of paper, paper clip, piece of cardboard, and a small stick. Let your child experiment with different ways to move the objects without touching them. He might blow on them, use a blow dryer, close a large book to create a small air current, or make a fan from paper and fan them. Encourage him to think of as many ways as possible to move the objects without touching them. Share some ideas he did not try and let him experiment with them. Ask him the following questions:

- Which objects moved most easily? (the lighter objects)
- Which objects were most challenging to move? (the heavier objects)
- Which method moved the objects the farthest distance? (the one that moved the air the strongest)
- Which method moved the objects the shortest distance or not at all? (the ones that moved the air the least)

Explain that **wind**, or air moving in the environment, can cause objects to move. The stronger the wind is blowing, the farther it can move objects. Also, it takes a very strong wind to move heavy objects. The wind during a hurricane or tornado can be strong enough to move a car and even a house.

#### Reading and Questions

Ask your child to read the following pages in *The Kids' Book of Weather Forecasting*:

p. 46 ("Wind: Always Stirring Things Up")

p. 48 ("Ask Mark!")

p. 58 ("Breeze or Gale?")

Then he should answer the following questions.

1. Why is it helpful for farmers and others to know the direction the wind is blowing?  
*Winds from certain directions can indicate what kind of weather is coming (wind from the north can mean colder weather, for example).*
2. What is the name of the scale that is used to measure wind strength?  
*The Beaufort scale is used to measure the strength of wind.*
3. Look at the descriptions on p. 58. What is the difference between a breeze and a gale?  
*A breeze is a gentler, lower-speed wind. A gale is a stronger, more damaging wind.*

### Activity 2: Measuring the Wind

Two of the most important things about wind are the following:

- how fast it is blowing
- the direction it is blowing

Wind direction is measured using a weather vane/wind vane or a windsock. Wind speed is measured using an **anemometer**, and then it is compared to the Beaufort Scale.

Go outside with your child and help him determine the speed of the wind based on the descriptions on p. 58 of the book. Over the next four days, he can determine the speed of the wind in the same way and record it on the "Measuring the Wind" activity page (using the Beaufort Scale). Encourage him to record the environmental clues he observes.

Read the paragraph on the top of p. 47 to your child, and see if he can answer the two questions (answers are on the bottom right of the page). Tell him that he will make a weather vane in the next activity, but first he will try to determine the direction of the wind on his own.

You may need to use a compass (if you don't have a compass, your smart phone may have one, or you can find a free one online) to determine which direction is north. Then your child can either draw a compass rose on the ground with chalk using the "Compass Rose" activity page as a guide, or he can put the page on the ground and stand on it. If the wind is light, he may be able to weigh the paper down with rocks.

Have your child turn until he feels he is facing directly into the wind. (If the air is very slight, it may help to stick a wet finger in the air and see which side feels cooler.) He can use the compass rose to figure out which direction he is facing. This will be the wind direction. He can record the direction on the "Measuring the Wind" activity page.

Once your child makes his weather vane, he can use that and the compass rose to help determine wind direction. If he did not draw the directions on the ground with chalk, help him find a way to mark where north is. For the next four days he can record the wind direction beside the wind speed on the "Measuring the Wind" page. Does he see a pattern? If the wind usually comes from the same direction, it is called the prevailing wind.

### Activity 3: Make Your Own Weather Vane

Explain to your child that a weather vane is a useful tool for forecasting weather because certain winds tend to bring good weather, while others often bring rain or colder temperatures. A weather vane gives clues about what to expect: Winds from the west are likely to indicate fair weather, while winds from the east are likely to signal that rain or snow is coming. If your child is interested in knowing more about the types of weather that different winds bring, tell him to read p. 50 in the book.

For this activity, your child will create his own weather vane. Have your child follow the directions on the "Make Your Own Weather Vane" page. Assist him as needed..

*Note: Your child should save the weather vane for the final project.*

### Wrapping Up

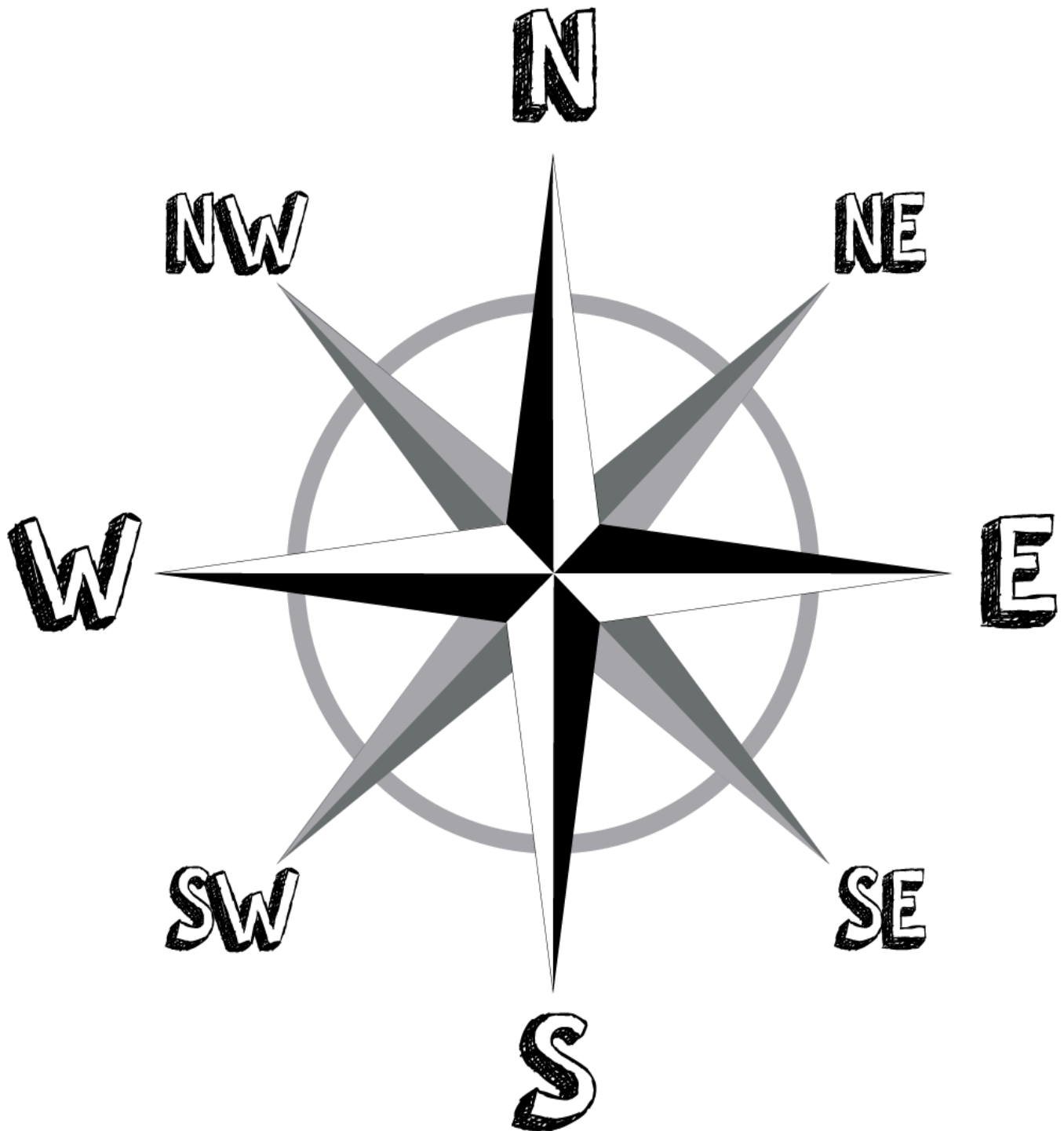
As your child records the wind for the next five days, ask him to notice the way wind affects how the weather feels. Encourage him to consider wind speed as he recommends an outdoor activity for each day in his weather log.

### Life Application

Go on walks outside with your child on windy days. Encourage him to stand still and feel the wind. In his journal, he can describe how the wind feels. Tell him to watch for signs of wind, such as leaves and branches moving or flags flapping.

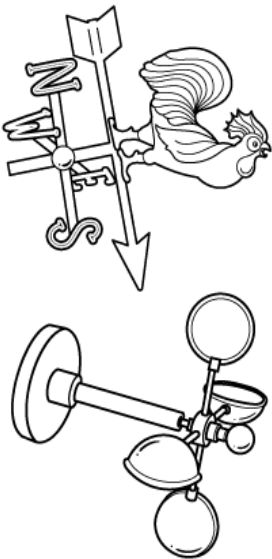
If you have a kite, go to the park and fly it. Discuss how the wind helps the kite to move and why you can't fly a kite without wind.

# Compass Rose



# Measuring the Wind

**Directions:** Measure the wind for five days. Record the wind speed using the Beaufort Scale on p. 58 of the book. Write down the clues you used to decide the wind speed. Record the direction the wind is coming from.



|       | WIND SPEED | CLUES | WIND DIRECTION |
|-------|------------|-------|----------------|
| DAY 1 |            |       |                |
| DAY 2 |            |       |                |
| DAY 3 |            |       |                |
| DAY 4 |            |       |                |
| DAY 5 |            |       |                |

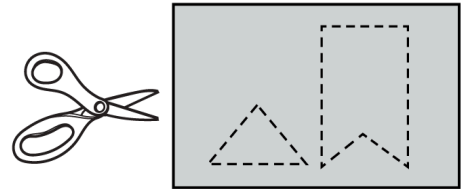
# MAKE YOUR OWN WEATHER VANE

## Materials:

- card stock
- scissors
- marker
- pencil with a new eraser
- modeling clay
- ruler
- glue
- paper plate
- plastic drinking straw
- push pin and a straight pin

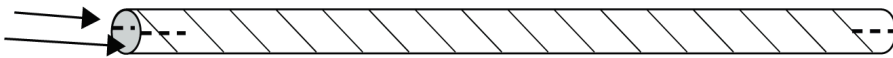
## Directions:

1. Cut out the arrow point and arrow tail from the card stock.

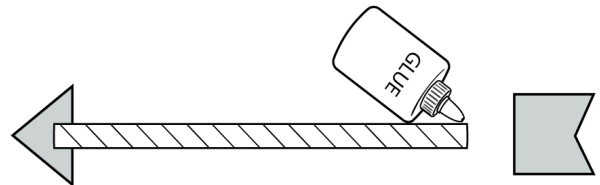


2. Make 1 cm cuts at the ends of each plastic drinking straw.

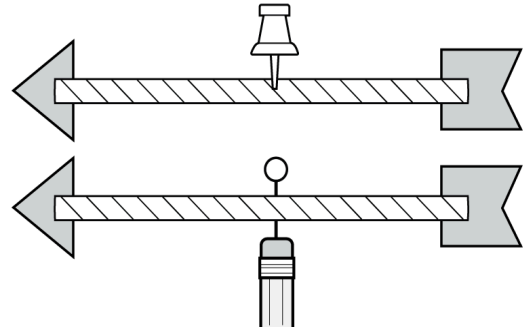
cut two slits on each side of the straw and at each end



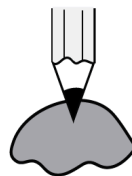
3. Dab a small amount of glue in the slits at the end of the straw, and then slide the arrow point and arrow tail into the cuts in the straw.



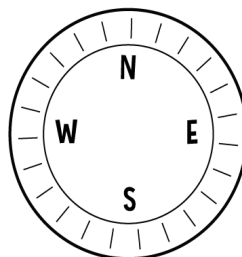
4. Push the clear push pin through the middle of the straw to make a hole and remove. Now push the straight pin through the hole that was made into the eraser of the pencil. Using the push pin creates a larger hole so the straw can spin freely on the straight pin.



5. Stick the other end of the pencil into a lump of clay; this will be your base.



6. Mark north, south, east, and west on the paper plate.



7. Put the clay on the paper plate.

8. Test out your weather vane: Blow on the vane and make sure that the arrow can spin freely.

