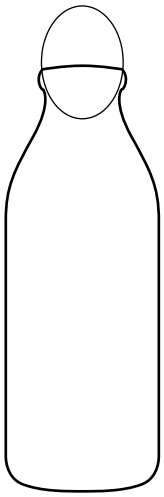
Name _____ Date _____ Class _____

WHAT CAUSES WIND?



Preliminary Observations

What do you think will happen to the egg on top of the bottle that you were observing? Why?

Relationship between temperature and pressure

1. What happened to the egg on top of the bottle you were observing?

2. Why did this happen?

3. On the drawing, label pressure areas just before the egg moves into the bottle.

4. How does this pressure difference relate to wind?

Bag Experiment

5. Could you blow the bag up when it was under the book?
6. Why or why not?

Two Balloon Experiment

7. Why is it hard to blow up a new balloon?

8. When a balloon breaks, do you think the balloon material is very thin or thick?

9. Why does a small balloon always blow up an identical large balloon?

10. How does the balloon experiment demonstrate wind patterns?

Build a Barometer Experiment

11. In terms of differences in air pressure, explain what happens to the barometer from one day to the next day.

12. A column of air, one square inch in cross section, measured from sea level to the top of the atmosphere would weigh approximately 14.7 pounds. If you think about how many square inches your body has, that is a lot of weight! Why don't we feel it?

Bernoulli's Principle Experiments

13. Why did the paper rise when air was blown across the top of it?

AIR CAN EXERT A FORCE

14. Land and water heat and cool at different rates. Land heats and cools much faster than water. In coastal areas and areas near large lakes, this phenomenon causes the direction of winds to change at different times of the day and night. Based on what you now know about the relationship between temperature and pressure and how this creates conditions for wind, *circle the correct word in the sentences below and then draw arrows on the diagrams to show which ways the wind will blow.*

    a. On sunny days, in the morning, the Sun heats the land more quickly than it heats the nearby ocean. Because of this, the air over the land will **rise / fall** and the pressure over the land will **increase / decrease**. Because of this, the wind will blow **toward / away from** the ocean and **toward / away from** the land.

On Diagram 1 below, draw in arrows to show where air is rising and falling and in which direction the wind will flow.

    b. In the evening, when the sun goes down, the land will cool down, which cools the air above it. Because of this, the air over the land will **rise / fall** and the pressure over the land will **increase / decrease**. Because of this, the wind will blow **toward / away from** the ocean and **toward / away from** the land.

INDICATE THE WIND DIRECTION

Label high & low pressure areas

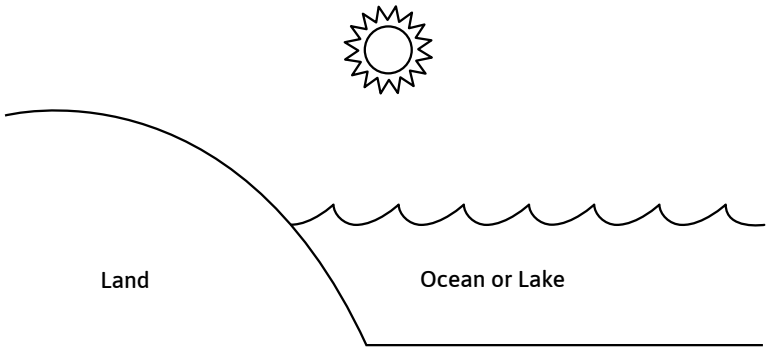


Diagram 1: 11am on a sunny day

On Diagram 2 below, draw in arrows to show where air is rising and falling and in which direction the wind will flow.

INDICATE THE WIND DIRECTION

Label high & low pressure areas

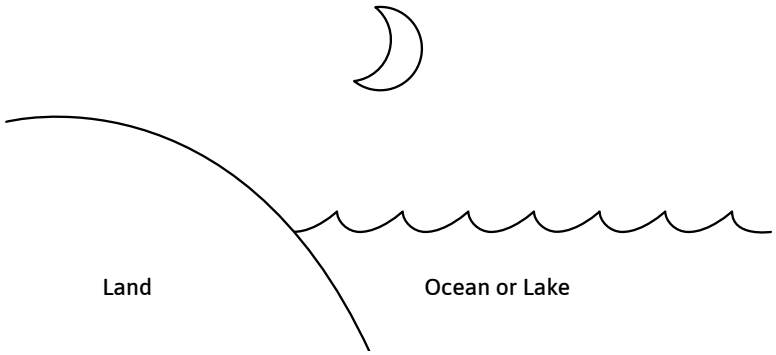


Diagram 2. 11pm on a clear moonlit night

Label the map with High and Low Pressure. Where is air rising? Falling?

Optional: Go online to find air pressure maps. What is the barometric pressure at your school?