



**Weather World  
Pre/Post-Visit Activity Sheet**

**Air Pressure**

**Concepts:**

1. Pressure is a force, or a push, against a surface.
2. Air has a pressure of 14.7 pounds per square inch at sea level.

**Materials:**

1. Plastic sandwich bag
2. Tape
3. Plastic beverage straw
4. Some textbooks

**Directions:**

1. Place one end of the straw into the plastic bag.
2. Wrap the bag around the straw and tightly tape it.
3. Place the bag on a table and put some textbooks on top of it.
4. Slowly blow air into the bag to lift the textbooks.
5. Experiment to see how many books can be lifted.

**Explanation:**

1. Air pressure can be used to do work, such as lifting the books from the table.
2. The pressure of the air getting blown into the bag has greater force than the weight of the books pushing down on the table.
3. High Pressure (H)="happy weather" such as sunny days; Low Pressure (L)="lousy weather" such as storms.
4. When high pressure and low pressure meet, dangerous weather such as tornadoes form.

**Tornado**

**Concepts:**

1. Tornadoes are caused by unstable atmospheric conditions.
5. Tornadoes can form from thunderstorms or hurricanes.

**Materials:**

1. Clean, empty soda or water bottle with cap
2. Pitcher of water
3. Liquid soap
4. Food coloring

**Directions:**

1. Fill the bottle two-thirds with water.
2. Put one drop of liquid soap and one drop of food coloring into the jar.
6. Tightly place the cap on the bottle.
7. Spin the bottle very rapidly in your hand.

**Explanation:**

1. A vortex is a spinning column of water or air.
2. A tornado is a vortex of air. A waterspout is a vortex of water.

**Temperature**

**Concepts:**

1. Most of the world uses the Metric system for measurements. Temperature is measured in degrees Celsius (formerly called centigrade).

2. The United States uses the English system of measurement. Temperature is measured in degrees Fahrenheit.
3. To convert from degrees Celsius to degrees Fahrenheit, first multiply degrees Celsius by 9, then divide by 5, then add 32...

$$F = \frac{9}{5} (^{\circ}\text{C}) + 32$$

4. To convert from degrees Fahrenheit to degrees Celsius, first subtract 32 from degrees Fahrenheit, then multiply by 5, then divide by 9...

$$C = \frac{5}{9} (^{\circ}\text{F} - 32)$$

**Materials:**

1. Paper
2. Pencil
3. Calculator
4. Standard outside thermometer (Fahrenheit or Celsius)

**Directions:**

1. Get an outside and inside temperature reading.
2. Convert to English or Metric.
3. Take temperature readings throughout the day, or over many days.
4. Compare the differences and make the conversions.

**Explanation:**

1. The hottest temperature ever measured in the United States occurred July 10, 1913 at Greenland Ranch in Death Valley, California. The temperature was 134° F or 57° C.
2. The coldest temperature ever measured in the United States occurred January 23, 1971 at Prospect Creek Camp in the Endicott Mountains, Alaska. The temperature was -70° F or -57° C.

**Lightning:****Concepts:**

1. Thunder and lightning occur at the exact same time,
2. Sound travels slower than light, so you will see lightning before you hear thunder.
3. You can estimate how far away a lightning strike is by measuring the time between seeing lightning and hearing its thunder.

**Materials:**

1. Stopwatch or a clock that measures seconds

**Directions:**

1. When you see lightning, time the seconds it takes until you hear the thunder.
2. Divide the time by 5 to determine how many miles away the strike was. Or, divide by 3 to determine the distance in kilometers.

**Explanation:**

1. In the English system, sound travels one mile in five seconds (1088 feet per second). This speed is in air at 32 degrees Fahrenheit.
2. In Metric, sound travels one kilometer in three seconds (331 meters per second). This speed is in air at 0 degrees Celsius.