Name: _____ Date: _____

Weather Maps and Instruments

Science Literacy Article

For many people, each morning begins by checking out the weather forecast for the city in which they live. The **daily weather forecast** allows people to be informed of the outdoor conditions at a specific time and place.

Meteorologists use various **weather instruments** to measure and collect data on weather-related conditions. In order to forecast future weather patterns this data is displayed on a weather map. A **weather map** is a visual aid that is used to show the weather over a large area such as a city, the surrounding counties, a state, and even the entire country. Along with *temperature readings*, every weather map contains *symbols that are shorthand signs for particular weather conditions*. Common weather symbols include symbols for weather fronts, pressure systems, and precipitation.

Weather **fronts** are the boundaries between two different air masses. There are four main types of weather fronts:

1. A **warm front** is the boundary between two air masses where a warm air mass is replacing a cold air mass. Its symbol is displayed in *red* with *half circles* that point the direction the front is moving.

2. A **cold front** is the boundary between two air masses where a cold air mass is replacing a warm air mass. Its symbol is displayed in *blue* with *little triangles* that point the direction the front is moving.

3. A **stationary front** refers to a pair of air masses, neither of which is strong enough to replace the other, that stalls over an area. Its symbol is displayed in both *red and blue* with *red half circles and little blue triangles* on opposite sides.

4. An **occluded front** is a combination of two fronts that forms when a cold front catches up and overtakes a warm front. Its symbol is displayed in *purple* with *purple half circles and little purple triangles* on the same side. Each of the four types of weather front symbols can be seen below.

Warm Front	Cold Front	Stationary Front	Occluded Front
			

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Pressure systems are also always included on a weather map. Air pressure is extremely important because it has a *major influence on weather patterns*. **Air pressure** is the force per unit of area exerted on the Earth's surface by the weight of the air above. There are two main types of pressure systems:

1. **Low pressure systems** occur where the air pressure in a location is lower than the area surrounding it. These types of systems generally produce *warmer and wetter air*, with more clouds and precipitation, and causes overall *poor weather*. They are represented by a *red, capital letter "L"* on a weather map.
2. **High pressure systems** occur where the air pressure in a location is higher than the area surrounding it. These types of systems generally produce *cooler and drier air*, with clear skies and overall *nice, calm weather*. They are represented by a *blue, capital letter "H"* on a weather map.

Low Pressure	High Pressure
L	H

The various forms of **precipitation** (moisture from clouds) are commonly displayed on a weather map as well. There are four main types of precipitation:

1. **Rain** is liquid precipitation in the form of water droplets that fall from clouds.
2. **Snow** is precipitation that consists of ice crystals.
3. **Sleet** is solid precipitation in the form of ice pellets.
4. **Hail** is frozen spheres of precipitation that are much larger than sleet pellets.

Each of the four main types of precipitation has a *distinct symbol* which can be seen below (symbols may vary slightly depending on the weather map).

Rain	Snow	Sleet	Hail
			

Weather maps help to make our lives easier by providing us with a convenient glimpse of the daily conditions in our area. Without weather maps, being prepared for future events such as rain storms, extreme cold fronts, and even more dangerous conditions like tornadoes, would not be possible.

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