Interactive Trail *Draft 4*

The trail begins at the Ela Sanctuary Information Station

Answer all questions in your notebook.

Exercise 1

Station 1

Weather Watchers

(This exercise does not work well if it is raining or snowing.)

The weather determines, to a great degree, how well we prosper on spaceship earth. The average weather in a given location, over a long period of time is called **climate.** Our ability to survive in any place on earth depends upon the climate. In fact, our ability to survive as a **species** depends upon the global climate of spaceship earth.

You will be taking **meteorological** (weather) observations at different locations and getting a better look at the climate in a very small area. The study of weather in a small area is called a **microclimate** study.

1. Go to station 1 and do the followings:
2. Use a thermometer to take the air temperature of this location. This is called the **dry bulb** (DB) temperature. In your note draw a table similar to the one shown below to keep track of the weather conditions at different stations. You will complete the table as you work through this exercise and other stations. You will

Location	Description	DB Temp	WB Temp	Change in Temp to reach the Dew Point	RH	Wind Speed	Wind Direction	Wind Chill Factor or Heat Index	% Cloud Cover

need about seven rows in your table. *Questions 1-6 follow standards (4-1.02, 5-1.05, 4-1.-4, 5-1.07, 5-4.22)*

3. Use the **sling psychrometer** to find the **wet bulb** (WB) temperature. The sling psychrometer is the thermometer with a cotton ball tied over the bulb of the thermometer. Dip the cotton ball in the water and swing the thermometer around in a circle in front of you and read the temperature every 30 seconds until the temperature on the thermometer reaches its lowest point. (This may take two or three minutes.) **Evaporation** causes the temperature to drop and this is the same reason you feel cool when you get out of the shower. Record this number in the table.

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4. **Relative humidity** (RH) is a comparison of the amount of moisture in the air compared to the amount of moisture the air could hold at a specific temperature. The higher the relative humidity, the greater the chance of rain, sleet, hail or snow. Use the RH chart to find the RH at Station 1.

5. Drop a handful of fine sand or dust to see which way the wind is blowing. Use your compass to determine the direction that the wind is blowing ***from, to the nearest 10°.*** Record this number in the table.

6. The **wind speed** is usually measured in miles per hour. Use the **anemometer** to determine the wind speed at Station 1 and record this number in the table. Below the table, lists three examples of helpful wind and three examples of harmful wind.

7. The **wind chil**l factor is how cold the temperature feels on the surface of your skin when the wind is blowing. The faster the wind is blowing the colder the temperature on your skin. If the temperature is below 40° use the Wind Chill Chart to determine the wind chill at Station 1.

8. The **heat index** is the measure of discomfort at various temperatures when the relative humidity is considered. The higher the humidity, the more discomfort you will feel. Use the heat index chart to determine the heat index if the temperature is above 70°. Record this number in the table. You may wish to use cloud chart to identify the type of clouds that are present. This is optional.

9. the amount of **cloud cover** is the fraction of the sky that is covered by clouds. To determine the amount, pretend to slide all of the clouds that are present into one part of the sky and estimate what fraction of the sky is covered by clouds. Record this fraction in the table. *(4-7.03, 5-7.04)*

10. Repeat steps 2 through 10 at Stations 2, 3, 6 and 8 and answer the questions that follow.

    Several different weather factors will decrease the chance of a wildfire burning out of control. You will hear firefighter say, “The fire is making a run”. The following weather factors will help determine the possibility of the fire making a run.

    Temperatures less than 70° will help to slow the fire.
    Relative humidity greater than 20% will slow the fire.
    Wind speed less than 3 mph will slow the fire.
    Wind direction will determine where it is safe to fight the fire.

A high heat index will cause more fire fighters to become sick.
A cloud cover of greater than 50% will help slow the fire

11. Pretend that you are the one who will inform the fire crews of the weather conditions in which they will begin to fight the fire. Write a report describing the conditions you recorded at station 1 and explain how there conditions could affect the fire or the fire fighter.