Name: _____ Section: _____

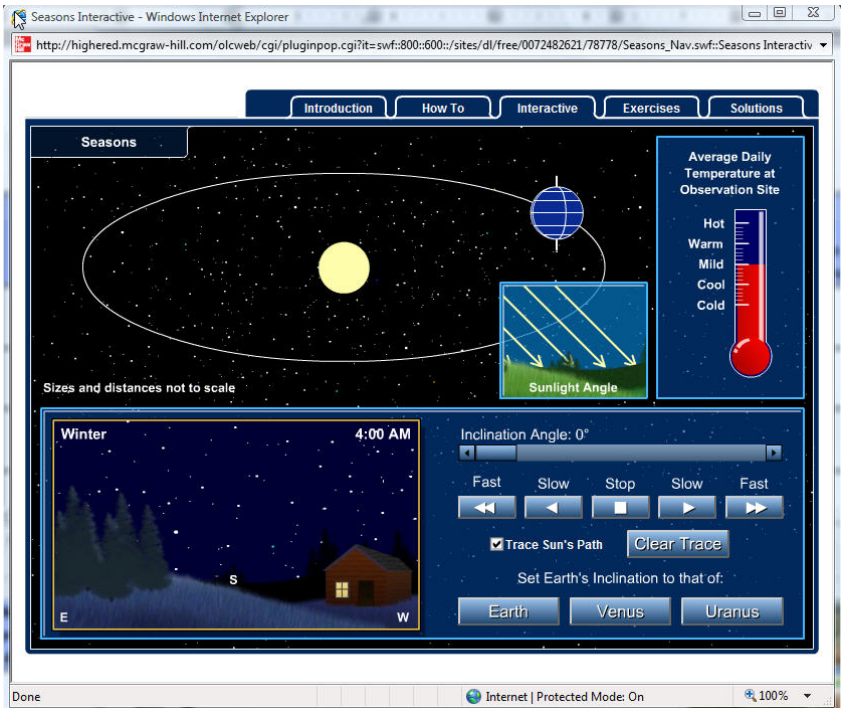
Seasons Simulation – Internet Activity

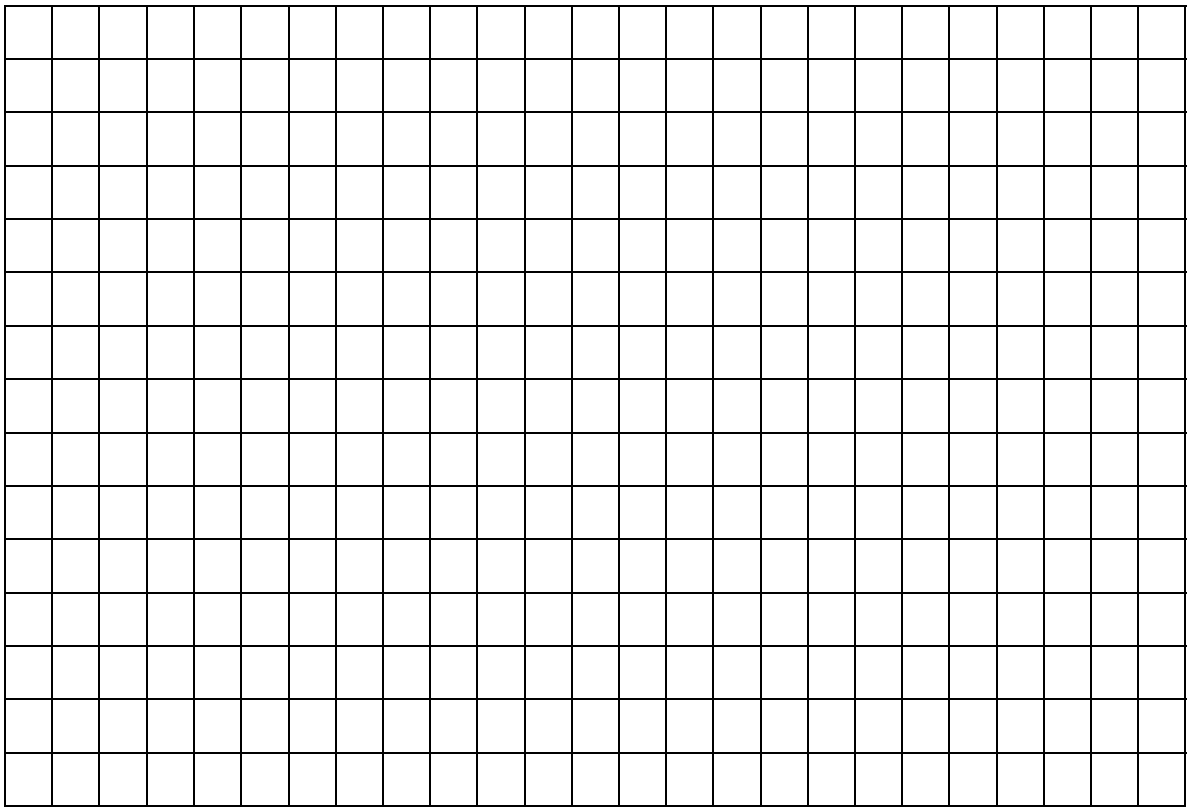
Seasons Interactive

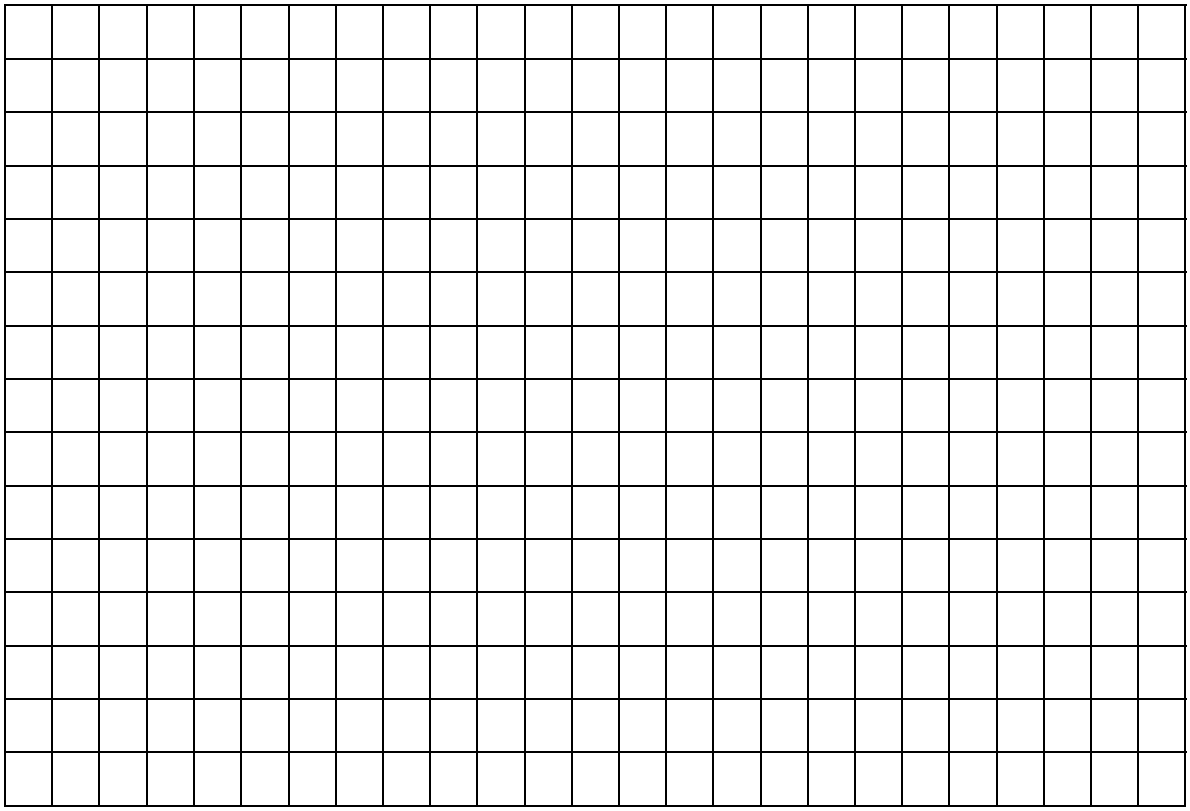
(http://highered.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::800::600::/sites/dl/free/0072482621/78778/Seasons_Nav.swf::Seasons%20Interactive)

Directions: Working in groups (3-4 students), click on the link above. Once at the interactive simulator you should:

- Click on the tab labeled "Introduction" and read the accompanying information.
- Click on the tab labeled "How to" and read the accompanying information.
- Click on the tab labeled "Interactive" and familiarize yourself with the simulator by allowing it to go through one complete cycle, while taking note of any changes (average daily temperature, angle of sunlight, etc.).
- Manipulate the simulator's controls and complete the attached chart.
- Using the attached page (or Microsoft Excel), create a double line graph comparing the "Inclination Angle" (x-axis) and the "Average Daily Temperature" for summer and winter (y-axis). You should designate reasonable numerical values for the Hot, Warm, Mild, Cool, and Cold temperature descriptions (i.e. each line equals five degrees Fahrenheit).
- Using the attached page (or Microsoft Excel), create a double line graph comparing the "Inclination Angle" (x-axis) and the shortest and longest periods of daylight (y-axis).
- Complete the attached questions. This may require you to return to the simulator and readjust the settings.







Questions:

1. What patterns/trends do you notice on your graph comparing the inclination angle to the average daily temperatures for summer and winter?

2. What patterns/trends do you notice on your graph comparing the inclination angle to the longest and shortest periods of daylight?

3. When the inclination angle is 0^0, what do you notice about the "seasons" (average temperatures, amount of daylight, sunlight angle)?

4. Change the inclination angle to 23^0 (Earth's inclination angle) and allow one complete revolution to take place. What happened to the "seasons" (average temperatures, amount of daylight, sunlight angle) compared to the 0^0 angle?

5. What is the smallest inclination angle that can lead to a twenty-four hour period without sunlight?

6. Change the inclination angle to 86^0(Uranus' inclination angle) and allow one complete revolution to take place. What happened to the "seasons" (average temperatures, amount of daylight, sunlight angle) compared to Earth's 23^0 angle? What is the longest period of time in which nighttime exists on Uranus?

7. Throughout this activity, you have been making observations and gathering data based on location "X." As you know, this area is located in the northern hemisphere. Describe how your observations and data would be different if your location was in the southern hemisphere.

8. Based on the data you have collected, which of the factors below is more important when it comes to determining the temperature for a location? Explain your reasoning.
    - The total number of hours of daylight
    - The height/angle of the Sun in the sky

9. Keeping in mind the challenges people face when creating models that mimic/represent real-life occurrences accurately (in this case the seasons), list and explain any examples of how this interactive model **mis**represents reality.

Inclin-ation Angle	Sun's Path (High) (Medium) (Low) Summer Winter		Average Daily Temperature (Hot, Warm, Mild, Cool, Cold) *each increment (line) on the thermometer equals 5°F* Summer Winter		Sunlight Angle (High) (Middle) (Low) Summer Winter		Shortest period of daylight in hours	Season with the shortest period of daylight	Longest period of daylight in hours	Season with the longest period of daylight
0°										
15°										
30°										
45°										
60°										
75°										
90°										