Happy Thursday!!!

Agenda:
1. Turn in PhET Changes in the Earth's Atmosphere: Experiment #1
2. PhET Changes in the Earth's Atmosphere Experiment #2

HW: PhET Changes in the Earth's Atmosphere: Experiment #2
   Scatter Graph
   Questions 1 and 2
Experiment #2: What effect does changing the composition of the atmosphere have on the temperature?

The composition of the Earth’s atmosphere has changed in predictable patterns over the history of the planet due to natural cycles. Since the industrial revolution, humans have added a new variable to the equation. Around 1800, humans began burning large amounts of hydrocarbons (fossil fuels ie. coal, oil, gas) that had been buried deep in the earth. Humans have also recently begun to drill for, recover, and release large amounts of methane into the atmosphere. The net result is a measurable change in the amount of carbon dioxide and methane in the atmosphere.

In this experiment, you will measure the way that the temperature of the atmosphere responds to different amounts of atmospheric gasses.

Procedure: Open the “Greenhouse Effect” tab on the top of the simulation. Experiment with changing the variables on the right until you have a feel for how the simulation functions.

Run-1 Settings:
Atmosphere: 1750
Thermometer: Fahrenheit
Speed: Fast
Greenhouse Gas Composition: *Record values on lab write up.
Hit the “Reset All” button (answer “yes” to reset all?) Make a data table to record Temperature (F) and Time (seconds). (See sample table to the right.) Record the starting temperature at 0 seconds. Hit the play button and then use a timer to pause the simulation every 10 seconds until you have a total of 60 seconds. Record the temperature at each pause.

Make new data tables and repeat the experiment with the “Run-2 and Run-3” settings below.

**Run-2 Settings: (new data table)**
Atmosphere: “Today”
Thermometer: Fahrenheit
Speed: Fast
Greenhouse Gas Composition: *Record values on lab write up.

**Run-3 Settings: (new data table)**
Atmosphere: “Lots” (Adjustable concentration)
Thermometer: Fahrenheit
Speed: Fast
Graphing: Make a scatter graph showing Temp. vs. Time. Plot all three runs on the same graph. Draw your best-fit straight line or smooth curve through each data set. Include a key.

Questions: Complete the graph above and then answer question #1-2 directly on your graph. Complete questions #3 and #4 on a separate piece of graph paper.

1. How much different was the concentration of CO$_2$ and CH$_4$ in 1750 than the present? (Include evidence to support claims)

2. Describe the relationship between greenhouse gases and the temperature of the atmosphere. (Include evidence to support your claims.)