

My Science Journal

Lower School Science 5th Grade

Climate Change



Name: _____

How's The Weather Been?

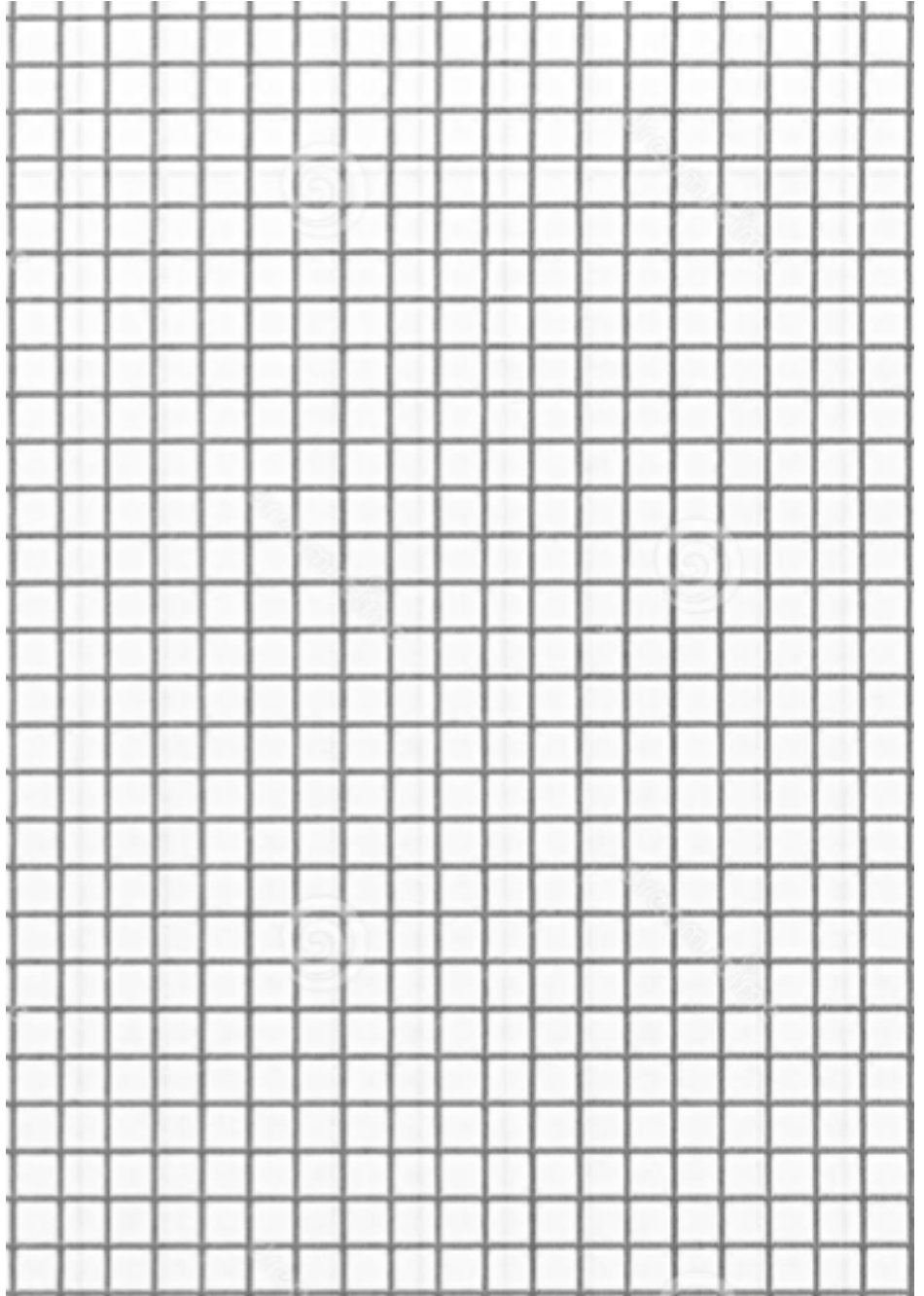
Graphing Local Temperature Data



1. Label your X axis "Date". Label your Y axis "Temperature, °F"

2. Plot the data collected of the daily temperature over the last two weeks. Connect your data points neatly with a **green** line.

3. Plot the average temperature for these same days on the graph. Connect these dots with a black line.



KEY

Discussion Questions:

Use your graph to answer the questions below IN COMPLETE SENTENCES.

1. How did the **actual** daily temperature data compare to the **average** daily temperatures? Be specific with examples.

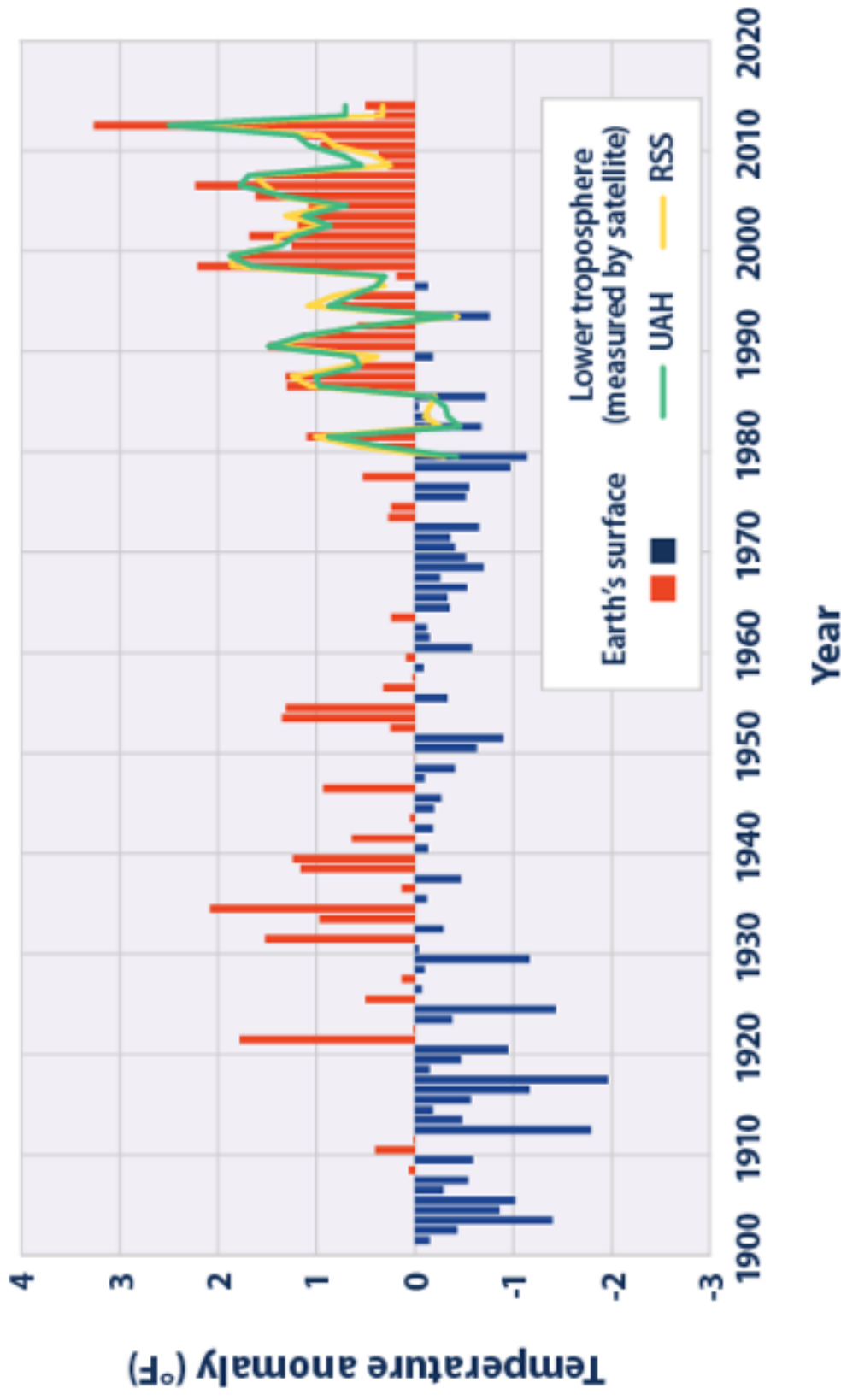
2. What does it mean when someone talks about '*typical*' October weather?

3. Was our weather the last two weeks '*typical*' for this time of year? Explain how you know.

4. If the daily temperature is above the average temperature for one week, do you think that is a sign of climate change? Why or why not?

Looking for Patterns in Temperature Data

Temperatures in the Contiguous 48 States, 1901–2014



Data source: NOAA (National Oceanic and Atmospheric Administration). 2015. National Centers for Environmental Information. Accessed April 2015. www.ncei.noaa.gov.

For more information, visit U.S. EPA's "Climate Change Indicators in the United States" at www.epa.gov/climatechange/indicators.

Discussion Questions:

1. What do you notice when you look at the graph?

2. For each year below, was the overall temperature warmer or colder than expected?

In 1928, the year bubble gum was invented _____
In 1934, the year the first cheeseburger was created. _____
In the year that you were born. _____

3. During what decade were the temperatures often colder than expected? _____

4. What patterns do you notice in the data for the last 15 years?

5. As a scientist, what do you think about the patterns you described in #4?

"Is The Earth's Climate Changing?"

Using the data collected by the United States EPA (Environmental Protection Agency), prepare evidence to answer this question. You may choose any four cards at your table to write about.

Card #_____ gives information about _____.

When I look at this card, I notice that _____

What this tells me is _____

Card #_____ gives information about _____.

When I look at this card, I notice that _____

What this tells me is _____

Card #_____ gives information about _____.

When I look at this card, I notice that _____

What this tells me is

Card #_____ gives information about _____.

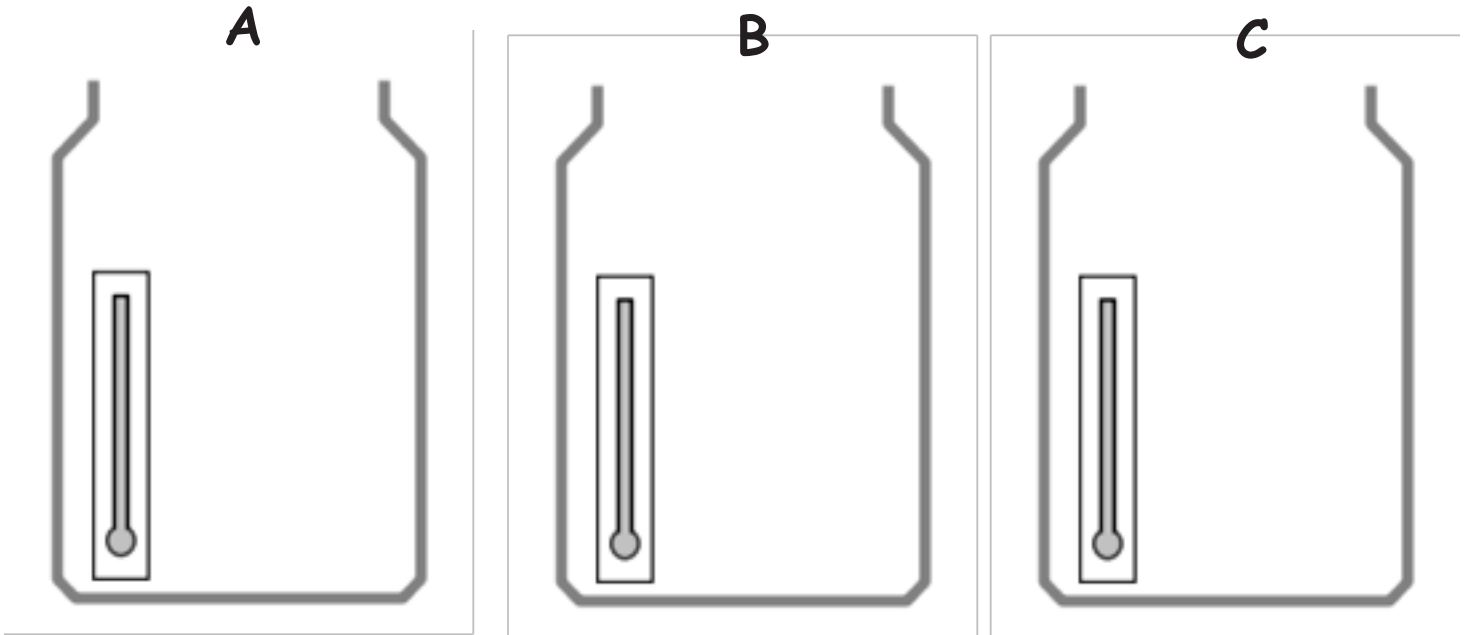
When I look at this card, I notice that _____

What this tells me is

Now it is time to answer the question of the day: "Is the Earth' Climate Changing?"

The Greenhouse Effect: How Does It Work?

Draw in all necessary details to show how the experiment was set up for today's class:



1. What is the air inside each jar supposed to represent?

2. What is the purpose of Jar A?

3. How is the air in Jar B different from the air in Jar C?

4. Predict what you think will happen when all three jars are left in the sunlight for one hour.

Discussion:

Use the information and patterns in our data chart and graph to answer the questions below:

1. What happened in Jar A? Why do you think this happened?

2. What happened in Jar B? Why do you think this happened?

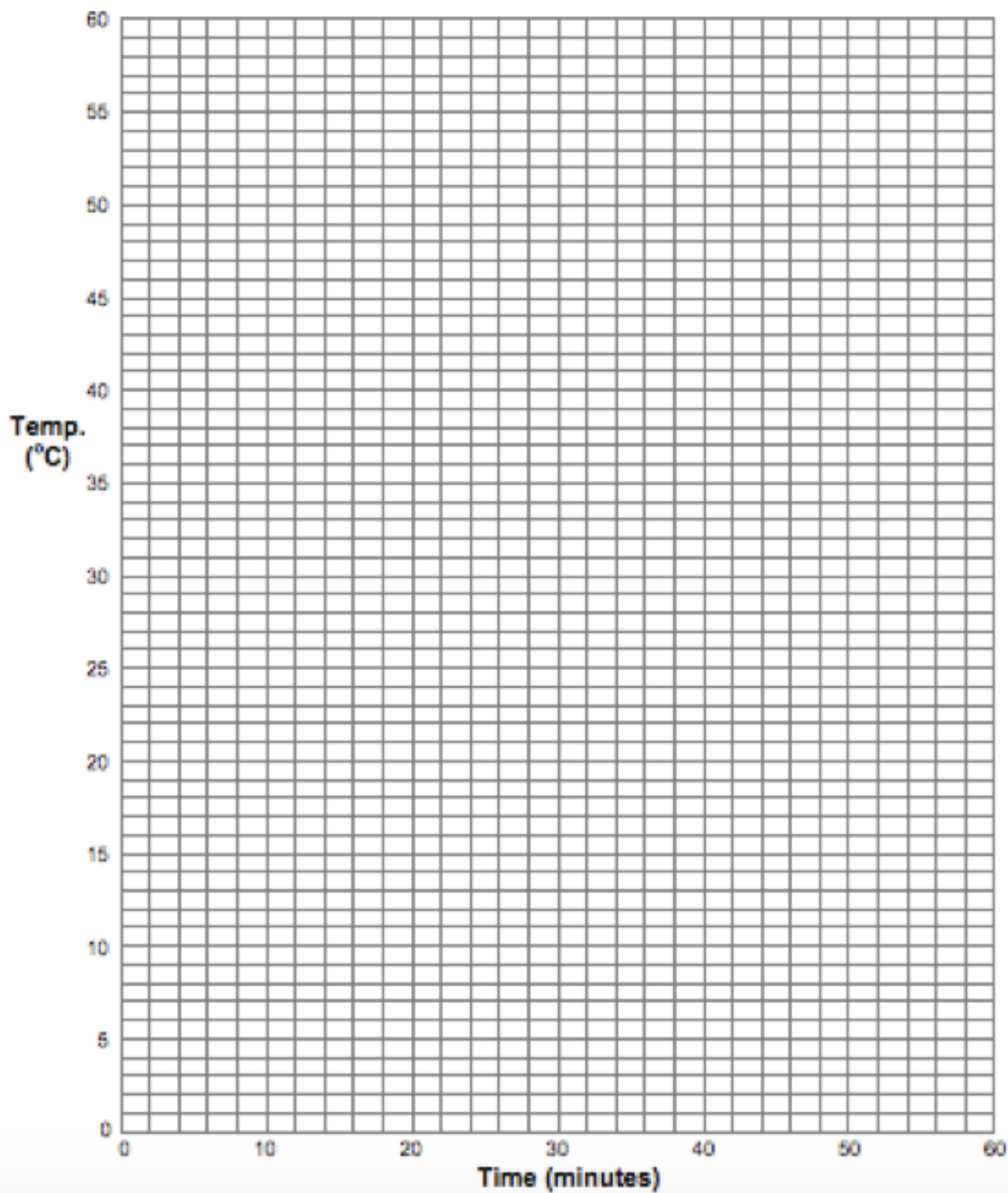
3. What happened in Jar C? Why do you think this happened?

4. What do you think would happen if the sun was shining on the entire earth all day, every day? Why?

Our Data

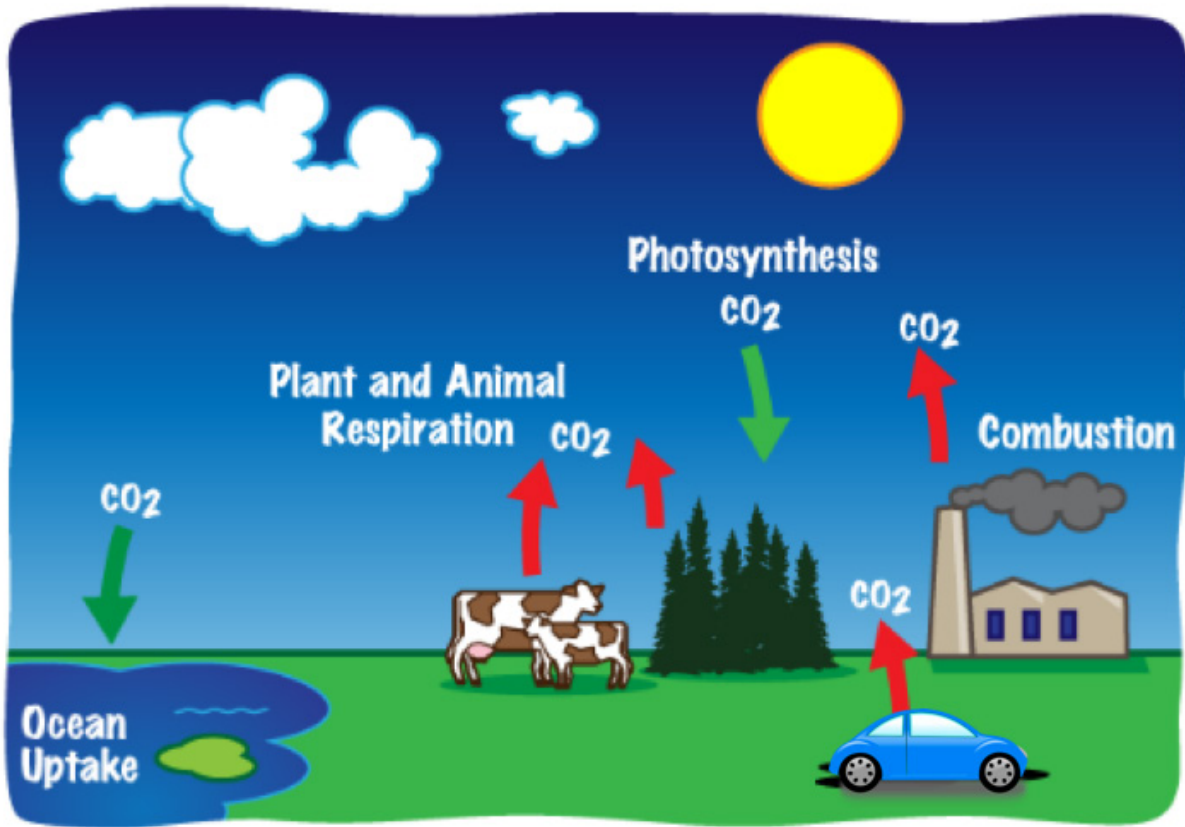
Time	Temperature in Jar A (Celsius)	Temperature in Jar B (Celsius)	Temperature in Jar C (Celsius)

Graph our Greenhouse Effect data here:



Carbon Dioxide and YOU!

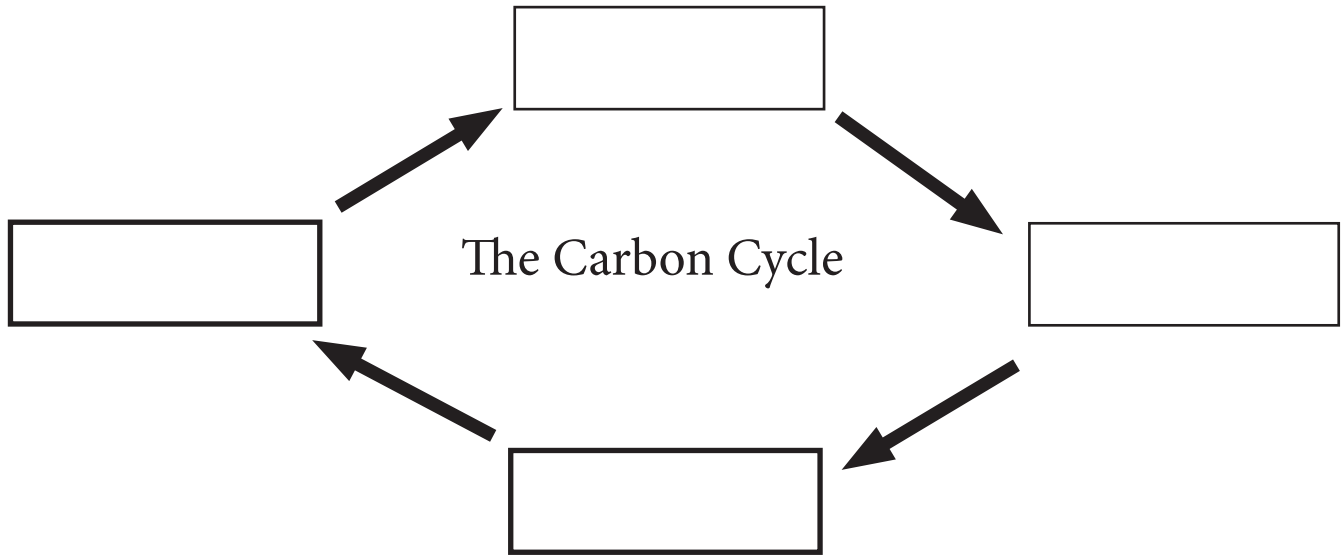
In the picture below, activities that USE carbon dioxide have **green** arrows. Activities that GIVE OFF carbon dioxide have **red** arrows.



Activities that take CO ₂ OUT of the air	Activities that ADD CO ₂ to the air

Please Pass The Carbon!

1. What is the natural cycle that carbon dioxide moves through on the planet?



2. Name three OTHER processes besides the one in the cycle, that ended up affecting the cycle. Explain how each process changed the cycle.

a. _____

b. _____

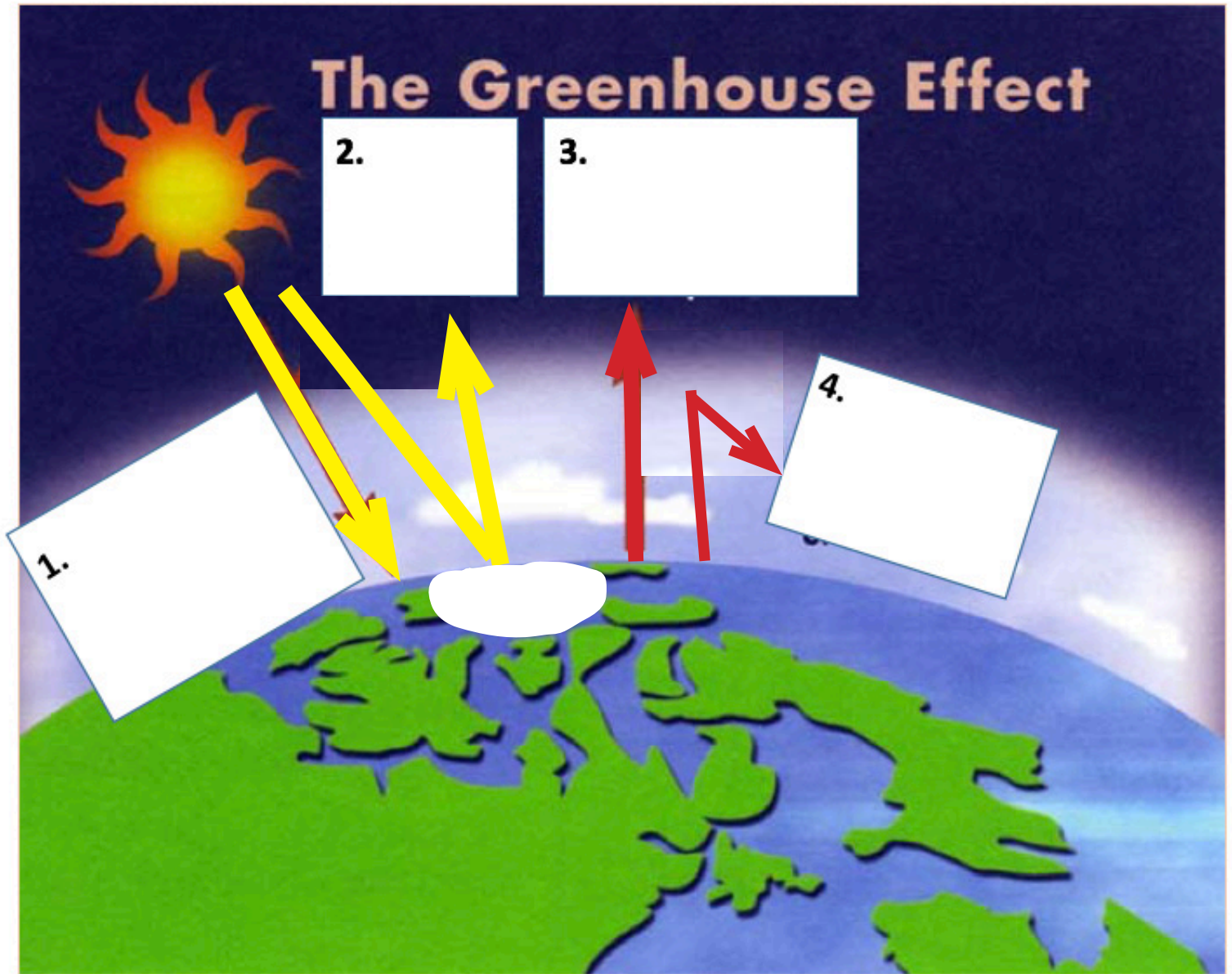
c. _____

3. What was different at the end of the game than from the beginning?

4. What is the connection between these changes in the carbon cycle and climate change?

The Greenhouse Effect: What IS it?

1. Fill in the four boxes, to show the main processes that happen to cause the Greenhouse Effect.



The Greenhouse Effect is important because _____

The Greenhouse Effect: Explaining it to my 2nd grade buddy

Now YOU'RE the Teacher!

1. With your science partner talk through explaining how the Greenhouse Effect works.

First, _____

2. How would you explain the way that human beings have affected the Greenhouse Effect?

4. Be creative. In the space below, draw pictures with labels that you can use to help explain your thinking about the Greenhouse Effect and how humans have changed things.

5. Use Explain Everything to create a video teaching your 2nd grade buddy about The Greenhouse Effect!

Melting Glaciers: What's the Problem?

1. Where is there year-round ice on the planet?

2. What is a glacier?

3. What are the two kinds of glaciers?

_____ and _____

4. Climate scientists need to be able to make predictions.

Land-locked versus ocean icebergs: Which will cause the greatest rise in sea level when melted?

Design an experiment that will help to figure this out. Sketch your own ideas in the space below. Later you will share them with your group in a brainstorm.

Melting Glaciers: What's the Problem?

Design Your Own Experiment

Question to be answered: _____

Prediction: _____

Procedure: In the space below, draw a diagram of your experiment. Describe, step-by-step, what you did after setting up your experiment.

Data: What did you observe? Be specific.

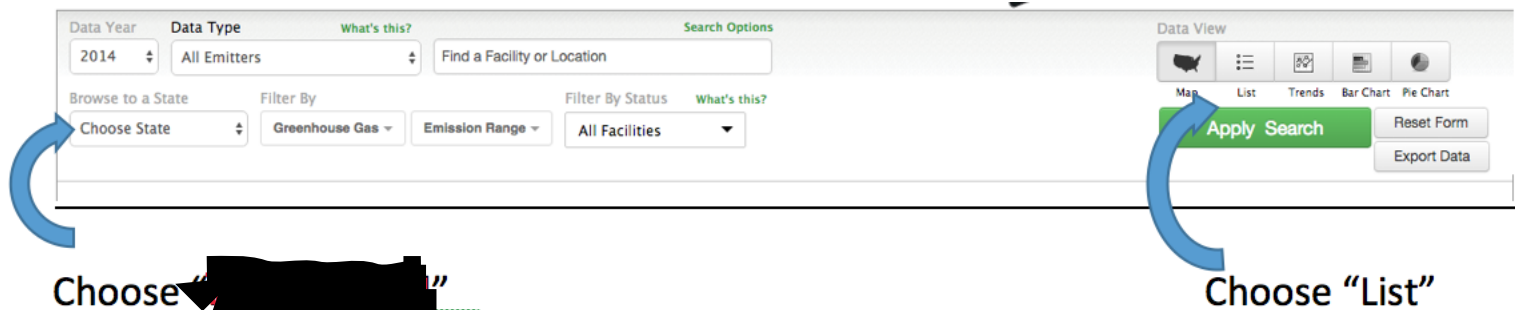
Conclusion: What did find out about your question?



Who's the Culprit?

Greenhouse Gas Polluters in Our Community

Go to the following website: <https://ghgdata.epa.gov/ghgp/main.do>

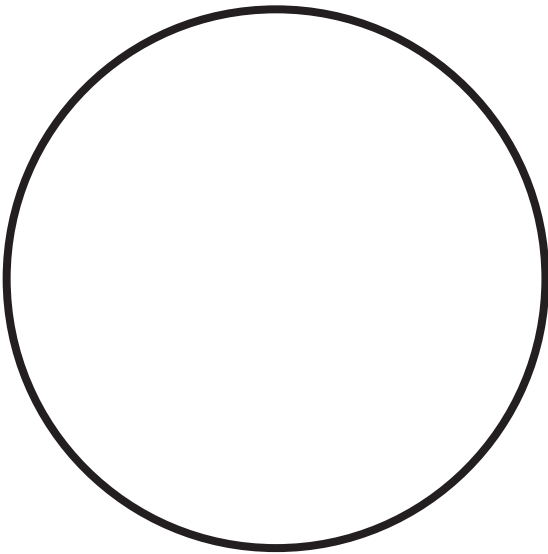


The screenshot shows the EPA Greenhouse Gas Data website interface. It includes a search bar, filters for Data Year (2014), Data Type (All Emitters), and a search field. There are also filters for Browse to a State (Choose State), Filter By (Greenhouse Gas), Emission Range, and Filter By Status (All Facilities). The Data View section shows options for Map, List, Trends, Bar Chart, and Pie Chart. A green 'Apply Search' button is visible. Two blue arrows point to the 'Choose State' dropdown and the 'List' button, with labels 'Choose "[REDACTED]"' and 'Choose "List"' respectively.

1. List the top 10 facilities that emit greenhouse gases, in order from most to least:

Name of Facility	GHG Emissions (metric tons)	Function
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

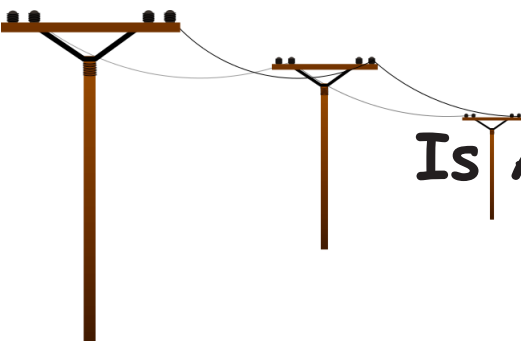
2. Click on "Pie Chart" under Data View. Sketch the graph below, including names and numbers:



2. What do you notice, as you look at the data?

3. Where there any companies that surprised you? Why?

4. What questions do you have, after looking at the data?



Is All Electricity Created Equal?

Today your group will learn more about the different sources that provide electricity to your home and to our classrooms. By learning about these different ways that electricity is made, you will be able to make educated choices as an adult about where you want your own electricity to come from.

(Answer this question fter you fill in the chart )

Imagine you are an adult and you could choose one or more of these sources for the energy to power your home. What would you choose and why?

Sources of Electricity for

PROS	Energy Source	CONS

What's A Carbon Footprint?

1. What is a person's carbon footprint?

2. What are the main categories of activities that add to a person's carbon footprint? Put them in the top row of the chart below.

3. As you look through the resources at your table, write down suggestions you can

1.	1.
2.	2.
3.	3.
4.	4.
5.	5.
6.	6.



find for reducing your carbon footprint. Write each one in the correct column.

1.	1.
2.	2.
3.	3.
4.	4.
5.	5.
6.	6.

Taking Action as Ethical Leaders

The US releases more carbon dioxide than any other country, even though we only have 5% of the world's population. If everyone lived the way we did, it would take 5 earths to provide enough resources for everyone.

For the average US family, 50% of our CO₂ emissions come from heating/cooling, 25% from transportation, 25% from electricity use.



Our Driving Question:

"What should we, as [REDACTED] students, do about the predictions for climate change in our future?"

Taking Action as Ethical Leaders

My ideas:

Our group's best ideas:

What we need to do to put our idea into action:

Final Reflection



1. What were three things you learned during this science unit?

2. Look back through the pages of this journal. What was one part of the unit that you especially liked? Why did you like it? _____

3. What was something that was more challenging for you during this unit? What made it challenging? _____

4. How has your thinking about the world changed after finishing this science unit? Be specific. _____
