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Word Generation - Unit 1.08

## Focus Words

attribute | cycle | hypothesis | project | statistics

## Weekly Passage

Global climate statistics suggest that the average temperature of the earth's surface is increasing. For example, the warmest ten years of the 20th century were between 1985 and 2000. Another statistic indicates that surface temperatures have risen by about 1°F since the late 1800s. Though this change may seem small, it has raised the ocean level by an estimated 4 to 8 inches. This is because more snow and ice are melting into the sea. Many scientists support the hypothesis that global warming is linked to heavier storms, floods, and other extreme weather. They attribute these changing environmental conditions to human activities like driving cars that use a lot of gas. Scientists believe that people contribute to global warming through burning fossil fuels (coal, oil, and natural gas). Such activities increase certain gases that trap the sun's energy inside the atmosphere and warm the earth. This is called the greenhouse effect.

Scientists say that the current warm period is not just part of the earth's natural

climate cycle. This trend does not fit the usual pattern of warm periods followed by cool periods. Scientists project that temperatures will keep rising if we continue to ignore the impact of our activities.

Should people be allowed to drive SUVs? Should companies be allowed to make them? Should the government invest in exploring other energy sources? Who is responsible for preventing future destruction?

### TEACHER

Reading Comprehension/Discussion Questions:

- ▶ What are some statistics that show that the average temperature of the Earth's surface is increasing?
- ▶ To what do scientists attribute changes in environmental conditions?
- ▶ What hypothesis do scientists have about how people contribute to global warming?
- ▶ What do scientists project will happen in the future?
- ▶ What should be done to stop global warming?

## Unit 1.08

# Global warming: What should be done?

## Focus Word Chart

Word	Meaning	Forms			Related Words
		Inflectional	Basic Word Classes	Prefixes/ Suffixes	
attribute	(v.) - to assign; to attach; to associate	attributes attributed attributing attribute (n.)		attribution attributable attributor	tribute tributary
cycle	(n.) - repeated pattern	cycles (pl.) cycle (v.) cycling cycled		recycle cyclic cyclical bicycle tricycle	cyclone
hypothesis	(n.) - informed guess	hypotheses	thesis	hypothesize (v.) hypothesizes hypothesizing hypothesized	
project	(v.) - to predict; to estimate	projected projects projecting project (n.)		projection projectile	dejected inject eject adjective
statistics	(n.) - numerical information		statistic	statistical statistically statistician	status

# Global warming: What should be done?

## Problem of the Week



Scientists agree that global warming is a serious problem. They **attribute** rising temperatures to human activities such as driving cars, heating buildings, and cutting down forests. However, most Americans are not convinced. In 2010, only 50% of Americans agreed that global warming was caused by humans. An almost equal number, 46%, had a different **hypothesis**: they attributed higher temperatures to the earth's natural **cycle**.

Climate data helps us understand our climate and **project** what will happen to it in the future. The National Climatic Data Center began collecting climate data in 1880. Here are some **statistics**.

- ▶ The warmest years on record were 2010 and 2005, with a global temperature (land and ocean) of 58.12° Fahrenheit
- ▶ All 12 of the warmest years on record have occurred since 1997.
- ▶ The average global temperature for 1901–2000 was 57° Fahrenheit.
- ▶ The last time the yearly average was below 57° was 1976.

**Option 1:** Based on the statistics above, which of the following is true?

- A) Average yearly temperatures fell over the last two decades.
- B) Average yearly temperatures appear to be rising.**
- C) Each year, the average yearly temperature increases.
- D) The average yearly temperature varied widely throughout the 20<sup>th</sup> century.

**Option 2:** Scientists project that temperatures will rise by 5.4° Fahrenheit by the end of the 21<sup>st</sup> century. Based on the statistics above, would this increase be more or less dramatic than the one we saw during the 20<sup>th</sup> century? Explain.

**Answer:** This increase would be much more dramatic than the increase we saw during the 20<sup>th</sup> century. We know this because a temperature of 58.12°, the record high temperature, is only 1.12° higher than the 20<sup>th</sup> century average.

**Math Discussion Question:** Scientists around the world agree that global warming is a big problem. Climate **statistics** support the **hypothesis** that dangerously high temperatures are caused by humans. Experts **project** catastrophic flooding and famine if humans don't limit greenhouse gasses. Still, almost half of Americans believe that high temperatures are part of a natural climate **cycle**. To what do you **attribute** this gap between scientific evidence and people's beliefs? What would it take to convince Americans to take global warming seriously?

# Global warming: What should be done? Debating the Issue



# GO!

## I. Get ready...

Pick one of these positions (or create your own).

**A** Individual people should take responsibility for reversing the effects of global warming. It is not the government's fault that people drive SUVs and waste electricity. People should buy better cars and more efficient electrical appliances in order to slow down or stop global warming.

**B** The government should take responsibility for reversing the effects of global warming. Congress should pass laws making it illegal to drive SUVs and forcing companies to do everything they can to reduce greenhouse gas emissions. The government should also pay for research on alternative energy sources such as wind and solar power.

**C** Big companies should take responsibility for reversing the effects of global warming. They are the ones who are burning most of the fossil fuels and producing SUVs and other vehicles that harm the environment. Companies should develop alternate sources of energy and produce vehicles and appliances that do not contribute to greenhouse gasses.

**D** No one needs to take responsibility for global warming. Instead, we should be finding ways to adapt to the changes in our climate by preparing for big storms and moving houses and communities away from coastlines.

**E** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## 2. Get set...

Be ready to provide evidence to back up your position during your class discussion or debate. Jot down a few quick notes:

\_\_\_\_\_  
\_\_\_\_\_

Be a strong participant by using phrases like these.

*In my experience . . .*

*that's similar to what I think too...*

*What makes you think that?*

*When I re-read the text, it reminded me...*

### TEACHER

Whatever the debate format, ask students to use academically productive talk when arguing their positions. In particular, students should provide reasons and evidence to back up their assertions. It may be helpful to read these sample positions to illustrate some possibilities, but students should be encouraged to take their own positions about the issue at hand.

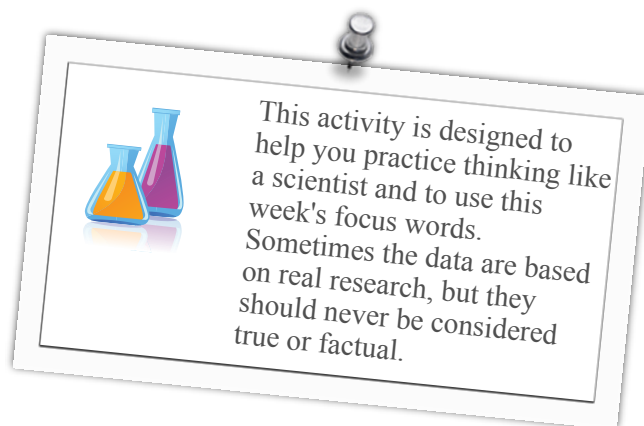
## Unit 1.08

# Global warming: What should be done? Science Activity

Professor Kahn's students know that scientists **attribute** global warming to human actions. They know that conserving resources helps fight the problem. Jordyn is reading some **statistics** out loud. "Turning off lights in empty rooms can cut energy use by 20%," she says.

"Wait," says Daniella. "I heard that lights need a big surge of energy to turn on. So if you're leaving a room for just a little while, the **cycle** of turning the light off and on again uses more electricity than just leaving the light on."

Is this true? Professor Kahn's class decides to find out.



### Question:

What saves more energy: always turning lights off in empty rooms, or only turning them off if they will stay off for an hour or more?

### Hypothesis:

The class **projects** that families who always turn lights off in empty rooms will save more energy.

### Materials:

- ▶ 200 families
- ▶ Electric bills

#### TEACHER

##### Real Research

-This Scientific American article states that even with power-saving fluorescent bulbs, the energy surge required for startup is equal to only a few seconds of regular use. It suggests turning lights and other electrical appliances off whenever they are not being used.

Matson, J. (2008, March 27). Does turning fluorescent lights off use more energy than leaving them on? Scientific American. Retrieved on November 6, 2009 from <http://www.scientificamerican.com/article.cfm?id=turn-fluorescent-lights-off-when-you-leave-room>

**Procedure:**

1. After one month of normal electricity use, get the electricity bills from all 200 families.
2. For the next month, ask 100 families to always turn lights off when they leave a room.
3. For the next month, ask 100 families to only turn lights off if the light will stay off for an hour or more.
4. After one month of the experiment, get the electricity bills from all 200 families again.
5. Calculate the average electricity bill for each group before and after the experiment.

**Data:**

	Families who always turned lights off when leaving a room	Families that turned lights off if they will stay off for an hour or more
	Average bill amount	Average bill amount
Month 1 (before experiment)	\$112.88	\$115.15
Month 2 (after experiment)	\$91.04	\$100.30

**Conclusion:**

Is the hypothesis supported or not by the data?

Supported

What evidence supports your conclusion?

Families that always turned lights off saved more more on their electricity bills than families that only turned lights off if they would stay off for an hour or more.

How would you make this a better experiment?

Encourage students to consider sample size, number of trials, control of variables, whether the procedure is a true measure of the question, whether the experiment can be repeated by other scientists, data collection and recording systems, and other potential explanations for the outcome. Students should understand that these simple experiments represent the beginning of an exploration, not the end. If time permits, have students suggest how the experiment could be strengthened, emphasizing the use of the target words in the discussion.



## Writing Prompt:

What should be done to prevent global warming?

Support your position with clear reasons and specific examples. Try to use relevant words from the Word Generation list in your response.

### Focus Words

attribute | cycle | hypothesis | project | statistics

#### A tool to help you think about your own writing!

Remember you can use focus words from any of the WG Units.

Check off what you accomplished:

##### Good Start

- ☐ Stated my own position
- ☐ Included 1 focus word

##### Pretty Good

- ☐ Stated my own position clearly
- ☐ Included 1-2 arguments
- ☐ Included 1-2 focus words

##### Exemplary

- ☐ Stated my own position clearly
- ☐ Included 1-2 arguments
- ☐ Included 1 counterargument
- ☐ Used 2-5 focus words

#### TEACHER

Ask students to write a response in which they argue a position on the weekly topic.

Put the writing prompt on the overhead projector (or the board) so that everyone can see it. Remind students to refer to the word lists in their Word Generation notebooks as needed.

[illegible]