



# The Global Climate

## Teacher Page

Students practice FCAT skills while learning about global climate change.

**GRADE LEVEL:** 6<sup>th</sup> - 8<sup>th</sup> grades

### ACADEMIC OUTCOMES/LESSON OBJECTIVES:

- Students will read a selection introducing them to the concept of global climate change.
- Students will respond to FCAT-Style questions and prompts in Reading, Writing, Math, and Science.

### SUNSHINE STATE STANDARDS ASSESSED:

- (LA.6.4.2.3) writes informational/expository essays (e.g., process, description, explanation, comparison/contrast, problem/solution) that include a thesis statement, supporting details, and introductory, body, and concluding paragraphs. (LA.7.4.2.3, LA.8.4.2.3) writes in a variety of informational/expository forms (e.g., summaries, procedures, instructions, in; specialized informational/expository essays (e.g., process, description, explanation, comparison/contrast, problem/solution) that include a thesis statement, supporting details, an organizational structure particular to its type, and introductory, body, and concluding paragraphs.
- (LA.6.2.2.2) uses information from the text to answer questions related to the main idea or relevant details, maintaining chronological or logical order. (LA.7.2.2.2) Uses information from the text to state the main idea and/or provide relevant details. (LA.8.2.2.2) synthesizes and uses information from the text to state the main idea or provide relevant details.
- (MA.D.1.3.1) describes a wide variety of patterns, relationships, and functions through models, such as manipulatives, tables, graphs, expressions, equations, and inequalities.
- (SC.D.2.3.2) knows the positive and negative consequences of human action on the Earth's systems.

### RESOURCES:

Florida Project Learning Tree Web site - <http://www.sfrc.ufl.edu/plt/>

Florida Department of Education Web site - <http://www.firn.edu/doe/>

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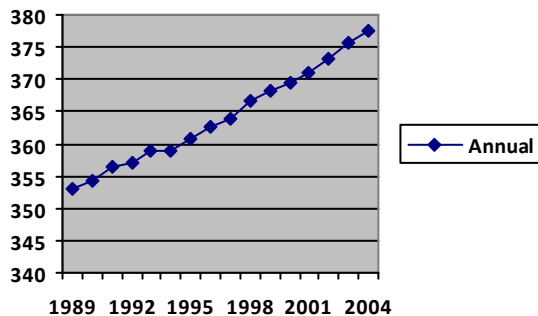
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### Answer Key:

1. LA.6.4.2.3, LA.7.4.2.3, LA.8.4.2.3 Use the 6-Point Writing Rubric.
2. Use the 4-Point Math Rubric for Extended Response questions.  
MA.D.1.3.1 Example of a Top Score Response:



*Part B:* CO<sub>2</sub> levels for the next year will be around 380 ppm because each year, the average levels raise approximately 2 ppm.

3. Use the 2-Point Science Rubric for Short Response questions.  
SC.D.2.3.2 Example of a Top Score Response:  
Alternative energy sources that will not increase the amount of CO<sub>2</sub> in the atmosphere include solar energy and hydroelectricity. Solar energy uses silicon panels to convert light energy into electricity without creating any CO<sub>2</sub>. Hydroelectricity converts the potential energy of falling water into mechanical energy that spins a turbine and generates electricity. No CO<sub>2</sub> is created in either of these processes.
4. b) LA.6.2.2.2, LA.7.2.2.2, LA. 8.2.2.2

Name:

Date:



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### WRITING

1. Approximately 80% of carbon dioxide emissions are caused by fossil fuel combustion from automobiles and other machines. Think about the number of automobiles being driven every day and the damage these emissions are causing to our environment. Write to persuade your city's mayor that he should encourage the use of mass transportation by making the city bus system free.

*NOTE: Write your response to question 1 on another sheet.*

### Mauna Loa Atmospheric CO<sub>2</sub> Concentrations

Since 1958, scientists have measured the amount of CO<sub>2</sub> (carbon dioxide) in the Earth's atmosphere from a site on the Mauna Loa volcano in Hawaii. This site is one of the best locations in the world for measuring CO<sub>2</sub> because there are no plants or human activities nearby to influence the CO<sub>2</sub> measurements. The Mauna Loa data are considered to be a precise record of the concentration of atmospheric CO<sub>2</sub> in the region.

Atmospheric CO<sub>2</sub> Concentrations 1958–2004

Year	May	Oct.	Annual
1958	317.50	–	–
1959	318.29	313.34	315.98
1960	320.03	313.83	316.91
1961	320.58	315.31	317.65
1962	321.01	315.42	318.45
1963	322.24	315.99	318.99
1964	322.23	316.87	–
1965	322.16	317.30	320.03
1966	324.07	318.10	321.37
1967	325.00	319.39	322.18
1968	325.57	320.25	323.05
1969	327.38	321.78	324.62
1970	328.07	323.07	325.68
1971	328.92	323.56	326.32
1972	330.07	325.20	327.46
1973	332.48	327.18	329.68
1974	333.09	327.37	330.25
1975	333.96	328.34	331.15
1976	334.87	328.94	332.15
1977	336.74	331.16	333.90
1978	338.01	332.54	335.50
1979	339.47	333.86	336.85
1980	341.46	336.01	338.69
1981	342.91	336.85	339.93
1982	344.13	337.86	341.13
1983	345.75	339.99	342.78
1984	347.43	341.35	344.42
1985	348.93	342.80	345.90
1986	350.21	344.17	347.15
1987	351.84	346.36	348.93
1988	354.22	348.88	351.48
1989	355.67	349.99	352.91
1990	357.16	351.18	354.19
1991	359.34	352.21	355.59
1992	359.66	353.31	356.37
1993	360.28	353.98	357.04
1994	361.68	355.99	358.88
1995	363.79	357.75	360.88
1996	365.41	359.60	362.64
1997	366.79	360.77	363.76
1998	369.29	364.23	366.63
1999	371.00	365.12	368.31
2000	371.82	366.73	369.48
2001	374.02	368.09	371.02
2002	375.55	370.24	373.10
2003	378.35	373.00	375.64
2004	380.63	374.24	377.38

CO<sub>2</sub> Concentrations expressed in parts per million.

Source: Scripps Institution of Oceanography, 2005, Atmospheric CO<sub>2</sub> concentrations. Accessed September 9, 2005 from <http://cdiac.esd.ornl.gov/ftp/trends/co2/maunaloa.co2>.



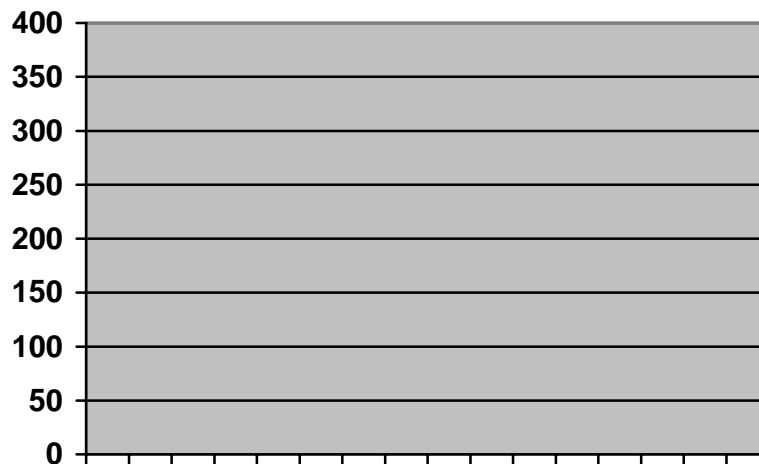
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### MATH

2. The table titled, "Mauna Loa Atmospheric CO<sub>2</sub> Concentrations," shows the amount of measured CO<sub>2</sub> in the atmosphere. *Part A:* Make a line graph of the annual averages for the last decade in the table. Be sure to title your graph, label the axes, and accurately graph the data. *Part B:* On the lines below, write 1 to 2 sentences predicting the annual average for 2007.



THINK  
SOLVE  
EXPLAIN

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Name: \_\_\_\_\_ Date: \_\_\_\_\_



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## *Student Handout*

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### SCIENCE

3. Earth's atmosphere contains carbon dioxide (CO<sub>2</sub>) and many other gasses. The fossil fuels burned in automobiles, power plants, and industries increase the amount of CO<sub>2</sub> in the earth's atmosphere. Name and describe two alternative energy sources that will NOT increase the amount of CO<sub>2</sub> in the atmosphere.

READ  
INQUIRE  
EXPLAIN

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### READING

4. Based on information in the table titled "Mauna Loa Atmospheric CO<sub>2</sub> Concentrations," why was the Mauna Loa location chosen to collect CO<sub>2</sub> concentration level data?
- It is on a volcano in Hawaii that vents CO<sub>2</sub> gas on a regular basis.
  - There are no forests or human cities nearby to influence CO<sub>2</sub> levels.
  - Hawaii's climate makes it a popular destination for scientific research.
  - The testing site is located high above the calcium carbonate in the ocean.

Name:

Date: