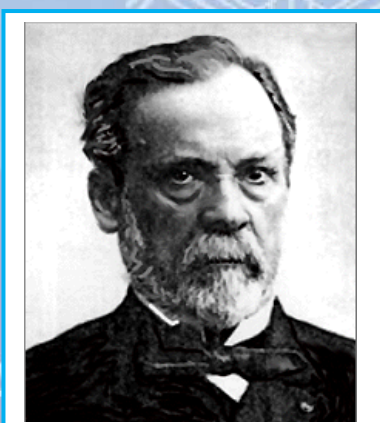
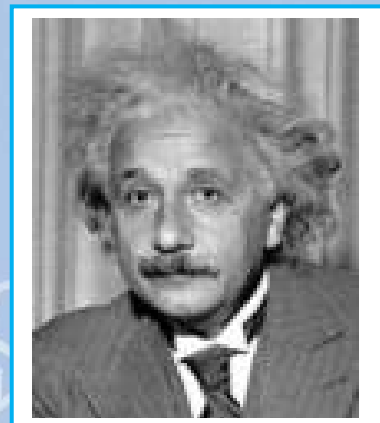




Sir Isaac Newton



Louis Pasteur



Albert Einstein

A
SCIENCE
Winter
Inquiry Land
Answer Key

Grade 6

Winter 2011-2012



Miami-Dade County Public Schools
Curriculum & Instruction

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ANSWERS

Mission: Geology How Do Chemicals Weather Rocks?

Experimental Diagram

| | |
|--------------------------|--|
| Title: | Answers may vary |
| Type of Experiment | Controlled because you are controlling the variables or treatment in one container and manipulating or changing variables in the other container, then comparing the results. (Note – not a perfect control experiment because rocks may not be exactly the same in both containers) |
| Problem Statement | How do chemicals weather rocks? (or similar) |
| Hypothesis: | Answers will vary |
| Manipulated Variable: | Chemical (vinegar) added to water |
| Responding Variable: | Wearing down of rocks |
| Control Test: | Rocks in water |
| Variables Held Constant: | Similar rocks, amount of liquid, |

Writing Your Conclusion

Directions: Write your conclusion within three paragraphs. Answer questions 1-3 in the introduction paragraph, question 4 in the body paragraph, and questions 5-7 in the conclusion paragraph.

1.

Introductory Paragraph:

State the purpose of the experiment, what was set out to prove, and explain the reasoning behind the experiment. This is where the problem statement and the hypothesis are introduced. The problem statement introduces the problem you are trying to solve and the hypothesis describes the solution that you hope to obtain after the experimentation. (***This section answers question 1: “What was investigated?” (the effects of a chemical on the breaking down or weathering of rocks)***). Continue by providing relevant information supporting or not supporting the hypothesis (***This section answers question 2: “Was the hypothesis supported or not supported by the data?” answer will vary depending on hypothesis)***). This is how the rest of the sentences in the introductory paragraph are linked. They will describe the data that was collected and the major findings of the investigation (**question 3**) that supported or did not support the hypothesis as the solution to the restated problem.

2. Body Paragraphs:

The body paragraphs support the introductory paragraph by elaborating on the different pieces of information that were collected as data that either supported or did not support the original

hypothesis. Using terms such as “as a matter of fact” or “for example” and “not only but also” for successive sentences is useful. Each finding needs its own sentence and relates back to supporting or not supporting the hypothesis. The body paragraphs may include **Question 4**, which describes how the findings compared with other researchers or groups investigating the same problem. The number of body paragraphs you have will depend on how many different types of data were collected. They will always refer back to the findings in the first paragraph. The concluding sentence can begin with a term such as “clearly” which would be followed by the statement that is true (support or non support) for the entire paragraph as it relates to the hypothesis. The commentary can include some inferences (opinions) although the major inferences should be reserved for the concluding paragraph.

3. Concluding Paragraph:

The concluding paragraph contains the major commentary about the problem statement and the hypothesis in the first paragraph of the conclusion. This is where **question 5, what possible explanations can you offer for your findings?** (**chemicals such as acids wear rocks faster. Vinegar is an acid**) can be answered. The paragraph should also include answers to **questions 6 and 7 that include what recommendations do you have for further study and for improving the experiment and some possible applications of the experiment?** (**answers will vary - example, change concentration of vinegar (dilute with different amounts of water) to see the effects of stronger and weaker acids on rocks; does the chemical affect soil and the growth of living things since weathered rocks form soil**) At the end of the paragraph the problem statement and hypothesis (introduction and thesis) is restated more specifically with an abbreviated version of the explanation of the findings to summarize the conclusion.

Earth's Greenhouse Effect

Pre-Reading Questions:

1. Recall current issues related to global warming and climate change. **Answers may vary**
2. Hypothesize what will happen if the world's climates kept getting hotter, especially over winter break. **Answers may vary: If....then....because...**

Questions:

1. Determine the author's purpose for writing the article. **To inform readers about the greenhouse effect**
2. Explain radiation. **Energy that travels through space. Example the sun heats the Earth through radiation and the heat is then radiated into the atmosphere.**
3. What part does the atmosphere play in keeping the Earth's surface temperature warm? **As the heat makes its way back to space, much of it is absorbed by greenhouse gases in the atmosphere. Greenhouse gases in the atmosphere, radiate the heat back to the Earth's surface**
4. Whose responsibility is it to regulate the amount of carbon dioxide (CO₂) released in the atmosphere? **Answers may vary. Although production of carbon dioxide (CO₂) is a natural process, people can regulate the amount of carbon dioxide (CO₂) they produced unnaturally.**
5. Develop a logical argument for reducing the use of fossil fuels, such as gasoline and coal bar-b-que. **Answers may vary**
6. How does the energy from the sun affect the temperature of the air, water, and land? **Energy from the sun increases the temperature of air, water, and land.**
7. The article discusses climate change. How is climate different from weather? **Climate is the general weather of an area over a long period of time. It also includes the seasonal changes for that area. Weather is the daily conditions in the atmosphere at a specified time and location.**
8. Write or produce a 30-60 second commercial, ad jingle, or print advertisement to increase public's awareness of the connection between increasing CO₂ emissions and climate change. **Answers may vary**

Scenarios: How Much Do You Spew?

The table below gives the pounds of CO₂ per year for each category in the worksheet calculation for each scenario. Negative numbers are given in situations where the household is producing more energy from photovoltaic (solar energy) panels than they use.

| | Jetsetter Family | Demos Family | Des Moines Family |
|-------------------|------------------|---------------|-------------------|
| Driving | 88,000 | 0 | 44,000 |
| Flying | 234,000 | 0 | 7,200 |
| Mass Transit | 0 | 0 | 0 |
| Taxi/Limo | 250 | 0 | 50 |
| Electricity | 72,000 | -3,600 | 21,000 |
| Heating Oil | 0 | 0 | 0 |
| Natural Gas | 0 | 0 | 13,002 |
| Propane | 0 | 0 | 0 |
| TOTAL | 394,250 | -3,600 | 85,252 |
| Per person | 98,563 | -1800 | 21,313 |

Reflection Questions

- Why there are such large differences in the amount of emissions. **Answers may vary – families use energy for different activities, for example, the Demo family generates their own energy and do not drive or travel anywhere. In comparison, the Jetsetter family travel everywhere.**
- The Kyoto Protocol recommended that emissions be reduced to at or below 1990 levels. That means less than 11,000 pounds of CO₂ per person per year. Look at the table and consider how many of the families are meeting that goal. **Only the Demo family**
- Which activities emitted the most CO₂ and how would you modify the scenarios to reduce CO₂ emissions. **Flying; answers will vary on modifications – possibly Jetsetter fly less frequently and maybe visit other countries by car or bus once they arrive on a different continent.**
- Brainstorm ways in which emissions might be lowered from global agreements to individual actions. **Answers may vary**

Extension

- Complete the activity worksheet for your family. You will need to collect data such as car mileage, plane flights, electric and gas bills in order to do the calculations. **Answers may vary**
- Brainstorm ways that you and your family could cut emissions. **Answers may vary**
- What would family members be willing to do or give up in order to make reductions in greenhouse gas levels? **Answers may vary**
- Are these changes easy or difficult to implement? **Answers may vary**
- Is there a cost to initiate them or is there a cost savings? **Answers may vary**

ANTI-DISCRIMINATION POLICY

Federal and State Laws

The School Board of Miami-Dade County, Florida adheres to a policy of nondiscrimination in employment and educational programs/activities and strives affirmatively to provide equal opportunity for all as required by law:

Title VI of the Civil Rights Act of 1964 - prohibits discrimination on the basis of race, color, religion, or national origin.

Title VII of the Civil Rights Act of 1964, as amended - prohibits discrimination in employment on the basis of race, color, religion, gender, or national origin.

Title IX of the Educational Amendments of 1972 - prohibits discrimination on the basis of gender.

Age Discrimination in Employment Act of 1967 (ADEA), as amended - prohibits discrimination on the basis of age with respect to individuals who are at least 40.

The Equal Pay Act of 1963, as amended - prohibits gender discrimination in payment of wages to women and men performing substantially equal work in the same establishment.

Section 504 of the Rehabilitation Act of 1973 - prohibits discrimination against the disabled.

Americans with Disabilities Act of 1990 (ADA) - prohibits discrimination against individuals with disabilities in employment, public service, public accommodations and telecommunications.

The Family and Medical Leave Act of 1993 (FMLA) - requires covered employers to provide up to 12 weeks of unpaid, job-protected leave to "eligible" employees for certain family and medical reasons.

The Pregnancy Discrimination Act of 1978 - prohibits discrimination in employment on the basis of pregnancy, childbirth, or related medical conditions.

Florida Educational Equity Act (FEEA) - prohibits discrimination on the basis of race, gender, national origin, marital status, or handicap against a student or employee.

Florida Civil Rights Act of 1992 - secures for all individuals within the state freedom from discrimination because of race, color, religion, sex, national origin, age, handicap, or marital status.

Veterans are provided re-employment rights in accordance with P.L. 93-508 (Federal Law) and Section 295.07 (Florida Statutes), which stipulates categorical preferences for employment.

Revised 9/2008