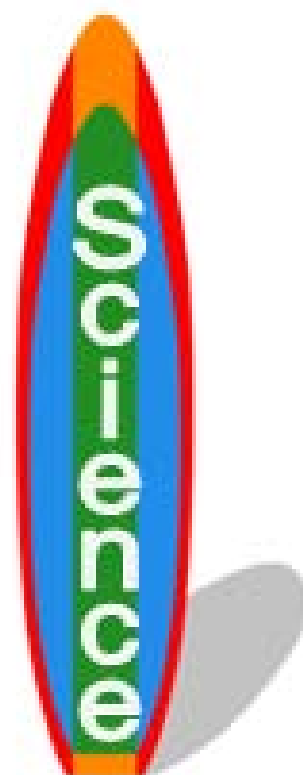




Ready, Set, Go Mission Possible



SENIOR HIGH



Curriculum and Instruction
Division of Mathematics, Science, & Advanced Academic Programs

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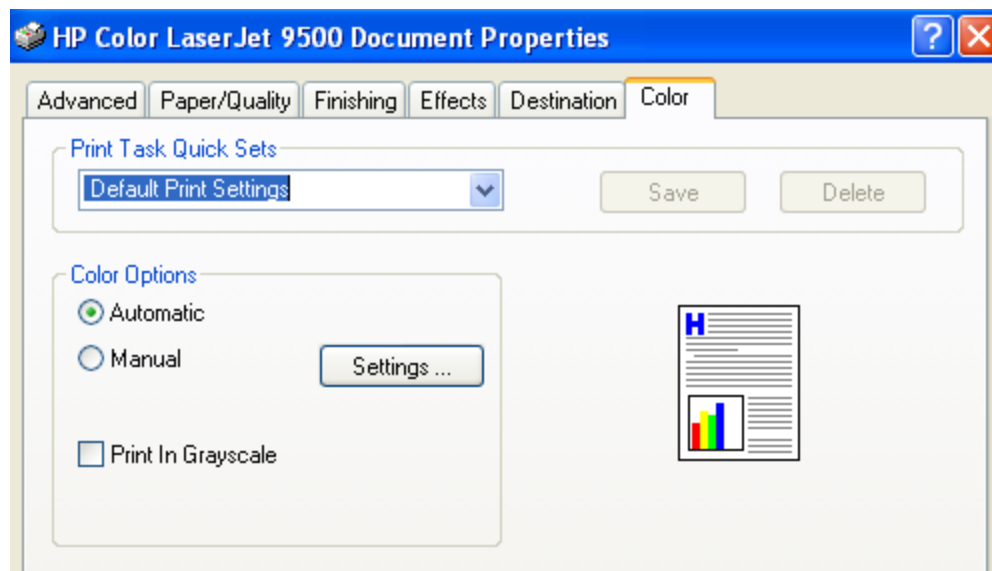
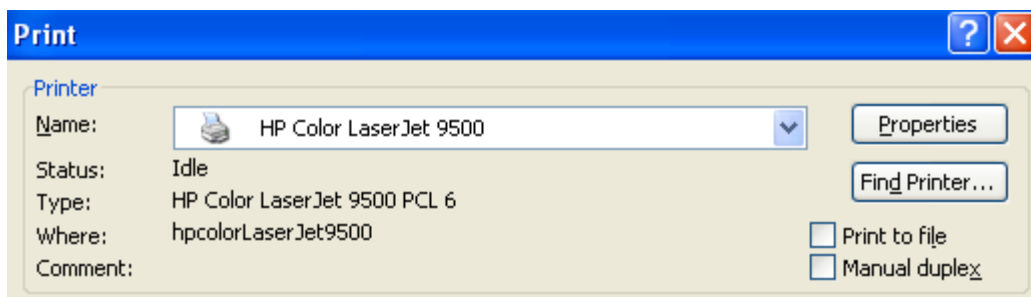
Administrative Director

Division of Mathematics, Science, and Advanced Academic Program

Welcome to the Miami-Dade County Public School's Summer Fun packets. These fun activities are designed to help promote learning throughout the summer break. The activities are divided by grade levels and curriculum content – Social Studies, Science, Mathematics, and Reading/Language Arts. Educational web-links are also included with all packets. Please be sure to supervise your child while they are using the internet.

In addition to the fun packets, it is strongly recommended that you encourage you child to continue to read at least 30 minutes each day. Support for reading includes: Barnes & Nobles' *Summer Reading Journal* <http://bn.com/summerreading> and Miami-Dade Public Library's *Wild About Reading Summer Reading Adventure* <http://www.mdpls.org>. In addition, *Ticket to Read* is available through the Student Portal: <http://www.dadeschools.net/students/students.htm>.

In an attempt to conserve paper and ink, if you wish to print these activities, they are combined using a little space as possible and no color except for the links on this page and this note. If you wish to avoid printing in color, please select "Print in grayscale" on your printer's properties/color tab located on the "Print" screen. See the figures below.



TITLE: Chemistry at Home

DESCRIPTION:

Chemistry is everywhere. Go around your house and look at all cleaning substances, medicines, and packaged foods and list all the chemicals on the labels. Go to the Internet research and gather information about the selected chemical substances. Find out its uses, favorable and/or adverse effects, and any other information about these chemicals. Use the table below or create a similar table to record the results of your research. Make sure to look for each substance/chemical's *Material Safety Data Sheet* (MSDS)

(Example <http://www.mallbaker.com/Americas/catalog/default.asp?searchfor=msds>)

Chemical Substance	Food, medicine, or cleanser containing the chemical	Uses or Adverse Effects

Subject	Standard(s)	Your Mission
Biology	<p><u>Life Science:</u> 14: Organization and Development of Living Organisms</p> <p>17: Interdependence</p> <p><u>Nature of Science:</u> 1: The Practice of Science</p> <p>4: Science and Society</p>	<p>Using the instructions above focus your chemical search to medicines and food products. Review the chemical content of the selected substances and describe their effects on animal (and human) life. Be sure to describe in detail the positive and/or negative effects of the selected chemical on specific life forms/systems (i.e., pets, humans, respiratory system, digestive system, etc.). When writing your response address the following:</p> <ol style="list-style-type: none"> 1. Describe the chemical/substance 2. Provide explanations, or descriptions of effects on life forms (be specific), 3. Generate explanations that explicate or describe ways of minimizing effects (if negative) or improving quality of life (if positive), 4. Use appropriate evidence and reasoning to justify these explanations to others, 5. Communicate results of scientific investigations by following appropriate writing methods and skills. (Power Writing, Parts of a Lab Report, etc.)
Earth/ Space Science	<p><u>Earth and Space Science:</u> 6: Earth Structures</p> <p>7: Earth Systems and Patterns</p> <p><u>Nature of Science:</u> 1: The Practice of Science</p> <p>4: Science and Society</p>	<p>Using the instructions above, focus your chemical search to energy producing/consuming machines (batteries, air conditioner, etc.) and waste products (trash and recyclables). Review the chemicals used or produced as a result of their function (e.g., chemicals used by the air conditioner, disposable batteries, or the decay of plastics, and their detrimental effects on the environment). Be sure to describe in detail the positive and/or negative effects of the selected chemical on our environment. When writing your response address the following:</p> <ol style="list-style-type: none"> 1. Describe the chemical/substance 2. Provide explanations, or descriptions of effects on life forms (be specific), 3. Generate explanations to the following questions: <ol style="list-style-type: none"> a. What spheres of Earth will the chemical impact? (e.g., geosphere, hydrosphere, atmosphere, etc.) b. Explain how the chemical will react with the environment and how the environment will change as a result. c. What is the lifetime of the chemical? d. Generate explanations that describe ways of minimizing effects of the chemical and improving the quality of life, 4. Use appropriate evidence and reasoning to justify these explanations to others,

Subject	Standard(s)	Your Mission
		5. Communicate results of scientific investigations by following appropriate writing methods and skills. (Power Writing, Parts of a Lab Report, etc.)
Chemistry / Physics	<p><u>Physical Science:</u> 8: Matter 10: Energy</p> <p><u>Nature of Science:</u> 1: The Practice of Science</p>	<p>Using the instructions above, focus your chemical search to any substance around your home. Identify each substance and describe the following: When writing your response address the following:</p> <ol style="list-style-type: none"> 1. Describe the chemical/substance 2. Provide explanations, or descriptions of effects on life forms (be specific), 3. Generate explanations to the following questions: <ol style="list-style-type: none"> a. Does it occur in nature or is it man-made? b. What is its original physical state (solid, liquid, or gas)? c. What other chemicals does it react with and what are the products formed? d. In the reaction described in (3), explain what type of chemical reaction is produced and if it releases or absorbs energy. e. Create a Lewis-dot diagram of your chemical. f. Describe favorable or adverse effects caused by ingestion or exposure to this chemical. 4. Use appropriate evidence and reasoning to justify these explanations to others, 5. Communicate results of scientific investigations by following appropriate writing methods and skills. (Power Writing, Parts of a Lab Report, etc.)

TITLE: Food Chain and the Energy Pyramid

DESCRIPTION:

Photosynthesis explains how energy from the sun is captured by green plants and used to make food. Most of this energy is used to carry on the plant's life activities. The rest of the energy is passed on as food to the next level of the food chain. An energy pyramid shows how the amount of useful energy that enters each level — chemical energy in the form of food — decreases as it is used by the organisms in that level. Remember, that cell respiration “burns” food to release its energy, and in doing so, produces ATP, which carries some of the energy as well as heat, which carries the rest. ATP is then used to fuel countless life processes. The consequence is that even though a lot of energy may be taken in at any level, the energy that ends up being stored there — which is the food available to the next level — is far less. Scientists have calculated that an average of 90% of the energy entering each step of the food chain is “lost” this way (although the total amount in the system remains unchanged). Therefore, as you move up the food chain, there is less energy available. Animals located at the top of the food chain need a lot more food to meet their energy needs.

Observe and read about Energy Pyramids by doing some Internet research (e.g., http://biocab.org/energy_pyramid.html). You can see that because of the energy requirements for each organism at each step of the energy pyramid, it takes a lot of producers to support a few top consumers.

For this fun activity, you will use a soft drink as the energy that is transferred from each trophic level in a particular ecosystem.

Procedures:

Select animals in an ecosystem (make sure to account for producers, consumers, and decomposers). Place a pitcher and five glasses of different sizes on the kitchen counter. Label each glass with a different organism in the selected ecosystem's food chain (e.g., a plant, an insect, a sparrow, a hawk, and a mushroom), while the pitcher will represent the abiotic surroundings. You will need a 2 L bottle of your favorite soft drink and an eyedropper. Twenty drops of liquid from the eyedropper equals 1 milliliter, therefore 10 drops equal 0.5 ml. (**Hint: keep track of the drops added to each glass**). Distribute the soft drink as follows:

1. The energy supplied by the Sun is determined by the 2 L of soft drink.
2. Transfer 10% of the energy supplied by the Sun to the producers. Calculate how many milliliters is 10% of 2 L and the corresponding number of drops.
3. The extra root beer that the Sun does not give to the producers is the amount of energy transferred to the abiotic surroundings (about 90%); so pour the remaining root beer into the pitcher.
4. Transfer 10% of the original 10% stored by the producers into the glass for the primary consumers. Calculate the amount of milliliters and the number of drops corresponding to 10% of the amount in the glass of producers.
5. Secondary consumers will receive 0.1% of the original energy supplied to the producers or 10% of the energy stored by the primary consumer. Calculate the amount of milliliters and the number of drops.
6. Tertiary consumers will receive 10% of the energy stored by the secondary consumers. Calculate the amount of milliliters and the number of drops.
7. Detritivores will receive 10% of the stored energy of the tertiary consumer. Calculate the amount of milliliters and the number of drops.

Note that we are assuming that all the organisms in this food chain are eaten by another organism with the exception of the tertiary consumer that dies and transfers its stored energy to the decomposers (detritivores).

Subject	Standard(s)	Your Mission
Biology	<p><u>Life Science:</u> 14: Organization and Development of Living Organisms 17: Interdependence 18: Matter and Energy</p> <p><u>Nature of Science:</u> 1: The Practice of Science 4: Science and Society</p>	<p>After conducting the procedures described above answer the following questions:</p> <ol style="list-style-type: none"> 1. What ecosystem did you choose? Describe the organisms and define their role in the food chain (producer, consumer, etc.) 2. Explain the process of photosynthesis at a molecular (and cellular) level. Elaborate on the process by assigning different steps and describe how energy from the Sun is used. 3. Provide a full chemical equation(s) describing the process of photosynthesis. 4. Describe how the transfer of energy occurs in the food chain from Sun to decomposer. (Make sure to provide proper explanations as to how and how much energy is used and transferred) 5. Explain why it is important to protect an ecosystem from an energy point of view. (i.e., what happens if an organism gets sick or dies out; or what happens if an invasive species takes over, etc.) 6. Explain what occurs to all the energy that is unused in the food chain. 7. Use appropriate evidence and reasoning to justify these explanations to others, 8. Communicate results of scientific investigations by following appropriate writing methods and skills. (Power Writing, Parts of a Lab Report, etc.)
Earth/ Space Science	<p><u>Earth and Space Science:</u> 5: Earth in Space and Time 7: Earth Systems and Patterns</p> <p><u>Nature of Science:</u> 1: The Practice of Science 4: Science and Society</p>	<p>After conducting the procedures described above answer the following questions:</p> <ol style="list-style-type: none"> 1. What ecosystem did you choose? Describe the organisms and define their role in the food chain (producer, consumer, etc.) 2. Describe the weather and topographic properties of this ecosystem. 3. Describe how the transfer of energy occurs in the food chain from Sun to decomposer. (Make sure to provide proper explanations as to how and how much energy is used and transferred) 4. Explain what occurs to all the energy that is unused in the food chain. 5. Use appropriate evidence and reasoning to justify these explanations to others, 6. Communicate results of scientific investigations by following appropriate writing methods and skills. (Power Writing, Parts of a Lab Report, etc.)

Subject	Standard(s)	Your Mission
Chemistry / Physics	<p><u>Physical Science:</u> 8: Matter</p> <p>10: Energy</p> <p><u>Nature of Science:</u> 1: The Practice of Science</p> <p>4: Science and Society</p>	<p>After conducting the procedures described above answer the following questions:</p> <ol style="list-style-type: none"> 1. What ecosystem did you choose? Describe the organisms and define their role in the food chain (producer, consumer, etc.) 2. Explain the process of photosynthesis at a molecular level. Elaborate on the process by assigning different steps and describe how energy from the Sun is used. 3. Provide a full chemical equation(s) describing the process of photosynthesis. 4. Describe how the transfer of energy occurs in the food chain from Sun to decomposer. (Make sure to provide proper explanations as to how and how much energy is used and transferred) 5. Explain what occurs to all the energy that is unused in the food chain. 6. Explain how it is possible to satisfy the first law of thermodynamics (conservation of energy). Be explicit and descriptive. 7. Use appropriate evidence and reasoning to justify these explanations to others, 8. Communicate results of scientific investigations by following appropriate writing methods and skills. (Power Writing, Parts of a Lab Report, etc.)

TITLE: Extreme Life Styles - What Are the Limits?

DESCRIPTION:

Read the following on-line written materials about life in extreme environments: (Be sure to examine the link labeled *Punishing Environments* at the beginning of the article and the link labeled *Images of Extremophiles* at the end of the article.)

- "Extremophiles" from the Virtual Museum of Bacteria:
<http://www.bacteriamuseum.org/cms/Evolution/extremophiles.html>
 This article provides a great deal of background information into the names and life styles of many extremophiles found on Earth.
- "Introduction to the Archaea" from UC Berkeley's Museum of Paleontology:
<http://www.ucmp.berkeley.edu/archaea/archaea.html>

Subject	Standard(s)	Your Mission
Biology	<p><u>Life Science:</u> 14: Organization and Development of Living Organisms</p> <p>17: Interdependence</p> <p>18: Matter and Energy Transformations</p> <p><u>Nature of Science:</u> 1: The Practice of Science</p> <p>4: Science and Society</p>	<p>Answer the following questions (Use appropriate evidence and reasoning to justify these explanations)</p> <ol style="list-style-type: none"> 1. What are the three primary branches of the tree of life? 2. In which branch(es) of the tree of life do we find plants and animals? 3. In which branch(es) do we find single celled organisms that lack a nucleus? 4. Which is the highest temperature at which life become too extreme for eukarya? 5. How do halophiles adjust their structure to cope with life in extremely salty conditions? 6. What is unique about the cell walls of archaea? 7. What would a halophile do to adapt to a change in the salinity of the solution in which it was living? 8. Which extremophiles use inorganic carbon in anaerobic respiration to produce organic carbon and the by-product CH₄?
Earth/ Space Science	<p><u>Earth and Space Science:</u> 6: Earth Structures</p> <p>7: Earth Systems and Patterns</p> <p><u>Nature of Science:</u> 1: The Practice of Science</p> <p>4: Science and Society</p>	<p>Answer the following questions (Use appropriate evidence and reasoning to justify these explanations)</p> <ol style="list-style-type: none"> 1. What is the name of the organism thought to live at the greatest temperature? At what temperature does it live? Where does it live? 2. What is thought to happen at temperatures above 150°C that prevents all life forms from existing above this temperature? 3. List the different species that scientists have found living in the extremely cold Antarctic sea-ice. 4. How do organisms live without freezing in extremely cold environments? 5. At what temperature do <i>Polaromonas vacuolata</i> grow best? At what temperature does life begin to become too warm for <i>Polaromonas vacuolata</i>?

Subject	Standard(s)	Your Mission
Chemistry / Physics	<p><u>Physical Science:</u> 8: Matter</p> <p>10: Energy</p> <p><u>Nature of Science:</u> 1: The Practice of Science</p> <p>4: Science and Society</p>	<p>Answer the following questions (Use appropriate evidence and reasoning to justify these explanations)</p> <ol style="list-style-type: none"> 1. What range of values in pH does an acidophile prefer? What about an alkaliphile? 2. Do acidophiles have high acidity in their cells? Explain why or why not. 3. Create a list of the most extreme conditions that life has been found to exist in here on Earth. Include information about extreme temperatures, pH, elevation limits, light levels, radiation exposure, size, and oxygen availability. If possible, try to list an example organism that lives at each extreme. Use additional paper. 4. Which extremophiles use inorganic carbon in anaerobic respiration to produce organic carbon and the by-product CH₄? 5. What is the electron acceptor utilized by all hyperthermophiles in metabolism? 6. Is the electron acceptor from the previous question an energy source or a carbon source? Is it oxidized or reduced?

TITLE: Hurricane Research. Part 1

DESCRIPTION:

Hurricane hunters fly into the middle of storms to provide information about the characteristics of the hurricane. This information is valuable for scientists to predict the strength of the hurricane. Your project is to investigate and research (using the Internet) what exactly do hurricane hunters do, the type of instrumentation that they use, the data that they collect, and how do they use this data.

Subject	Standard(s)	Your Mission
Biology	<p><u>Life Science:</u> 17: Interdependence</p> <p><u>Nature of Science:</u> 1: The Practice of Science 4: Science and Society</p>	<p>When writing your response address the following:</p> <ol style="list-style-type: none"> 1. Describe the job of a hurricane hunter. 2. Provide explanations, or descriptions of the type of work and specific tools hurricane hunters use (be specific). 3. Generate explanations to the following questions: <ol style="list-style-type: none"> a. How do hurricanes impact aquatic life? Terrestrial life? b. Explain how hurricanes are affected by climatic changes and how these affect ecosystems. c. How is energy connected to hurricanes? d. Formulate an energy pathway (how is energy transferred) from the conditions that lead to the formation of a hurricane through to the conditions that lead to the annihilation of a hurricane. 4. Use appropriate evidence and reasoning to justify these explanations to others. 5. Communicate results of scientific investigations by following appropriate writing methods and skills. (Power Writing, Parts of a Lab Report, etc.)
Earth/ Space Science	<p><u>Earth and Space Science:</u> 6: Earth Structures 7: Earth Systems and Patterns</p> <p><u>Nature of Science:</u> 1: The Practice of Science 4: Science and Society</p>	<p>When writing your response address the following:</p> <ol style="list-style-type: none"> 1. Describe the job of a hurricane hunter. 2. Provide explanations, or descriptions of the type of work and specific tools hurricane hunters use (be specific), 3. Generate explanations to the following questions: <ol style="list-style-type: none"> a. What geological conditions must occur for a hurricane to form? b. Explain how hurricanes are affected by climatic changes and how these affect geologic features. c. How is energy connected to hurricanes? d. Formulate an energy pathway (how is energy transferred) from the conditions that lead to the formation of a hurricane through to the conditions that lead to the annihilation of a hurricane.

Subject	Standard(s)	Your Mission
		4. Use appropriate evidence and reasoning to justify these explanations to others. 5. Communicate results of scientific investigations by following appropriate writing methods and skills. (Power Writing, Parts of a Lab Report, etc.)
Chemistry / Physics	<p><u>Physical Science:</u> 10: Energy</p> <p><u>Nature of Science:</u> 1: The Practice of Science 4: Science and Society</p>	<p>When writing your response address the following:</p> <ol style="list-style-type: none"> 1. Describe the job of a hurricane hunter. 2. Provide explanations, or descriptions of the type of work and specific tools hurricane hunters use (be specific), 3. Generate explanations to the following questions: <ol style="list-style-type: none"> a. Explain how hurricanes are affected by climatic changes. b. How is temperature and energy connected to hurricanes? c. Formulate an energy pathway (how is energy transferred) from the conditions that lead to the formation of a hurricane through to the conditions that lead to the annihilation of a hurricane. d. Relate how kinetic energy of hurricane can cause so much damage. 4. Use appropriate evidence and reasoning to justify these explanations to others. 5. Communicate results of scientific investigations by following appropriate writing methods and skills. (Power Writing, Parts of a Lab Report, etc.)

TITLE: Hurricane Research. Part 2

DESCRIPTION:

Scientists are able to predict the path and the behavior of hurricanes by the use of computerized equipment. Data of the trajectory of the previous hurricanes is input into the computer and this data allow them to predict future path of hurricanes. Your project consists of the following:

1. Go to the internet and find the path of all major hurricanes in the last 20 years.

Subject	Standard(s)	Your Mission
Biology	<p><u>Life Science:</u> 17: Interdependence</p> <p><u>Nature of Science:</u> 1: The Practice of Science 4: Science and Society</p>	<p>When writing your response address the following:</p> <ol style="list-style-type: none"> 1. Analyze the hurricane paths and the regions they have affected. 2. Describe the ecosystems the hurricanes have impacted. 3. Explain how each ecosystem in question 2 has been affected/changed as a result of the hurricanes. 4. Generate explanations to the following questions: <ol style="list-style-type: none"> a. Can you tell which type of hurricane had the biggest impact on any one ecosystem? b. Make a graph of the strength of these hurricanes over time. c. Describe any major changes over time? d. What conclusions or generalizations can you make? 5. Use appropriate evidence and reasoning to justify these explanations to others. 6. Communicate results of scientific investigations by following appropriate writing methods and skills. (Power Writing, Parts of a Lab Report, etc.)
Earth/ Space Science	<p><u>Earth and Space Science:</u> 6: Earth Structures 7: Earth Systems and Patterns</p> <p><u>Nature of Science:</u> 1: The Practice of Science 4: Science and Society</p>	<p>When writing your response address the following:</p> <ol style="list-style-type: none"> 1. Analyze the hurricane paths and the regions they have affected. 2. Describe the coastal regions the hurricanes have impacted. 3. Explain how each coastal region in question 2 has been affected/changed as a result of the hurricanes. 4. Generate explanations to the following questions: <ol style="list-style-type: none"> a. Can you tell which type of hurricane had the biggest impact on any one region? b. Make a graph of the strength of these hurricanes over time. c. Describe any major changes over time? d. What conclusions or generalizations can you make? 5. Use appropriate evidence and reasoning to justify these explanations to others.

Subject	Standard(s)	Your Mission
		6. Communicate results of scientific investigations by following appropriate writing methods and skills. (Power Writing, Parts of a Lab Report, etc.)
Chemistry / Physics	<p><u>Physical Science:</u> 10: Energy</p> <p><u>Nature of Science:</u> 1: The Practice of Science</p> <p>4: Science and Society</p>	<p>When writing your response address the following:</p> <ol style="list-style-type: none"> 1. Analyze the hurricane paths and the regions they have affected. 2. Make a table describing hurricane strength and period of time of occurrence. 3. Can you find any correlations from your table? 4. Make a graph of the strength of these hurricanes over time. 5. Describe any major changes over time? 6. Can you tell which type of hurricane had the largest amount of kinetic energy? Explain 7. Relate any other conclusions or generalizations that you find. 8. Use appropriate evidence and reasoning to justify these explanations to others. 9. Communicate results of scientific investigations by following appropriate writing methods and skills. (Power Writing, Parts of a Lab Report, etc.)

TITLE: Hurricane Research. Part 3

DESCRIPTION:

Many factors affect the strength and direction of the hurricanes. Sometimes we hear that a storm may gain force as they approach certain atmospheric conditions. In this activity, you will investigate various factors that affect hurricane strength. Please review the previous assignments Hurricane Research Part 1 – Part 2.

Subject	Standard(s)	Your Mission
Biology	<u>Life Science:</u> 17: Interdependence <u>Nature of Science:</u> 1: The Practice of Science 4: Science and Society	When writing your response address the following: 1. Analyze the hurricane paths and all the regions they have affected. 2. Explain if there is a correlation between the type of ecosystem impacted by a hurricane and its strength. 3. Explain how the biogeochemical cycles are affected by hurricanes. 4. Do these cycles affect hurricane strength? Explain. 5. Relate any other conclusions or generalizations that you find. 6. Use appropriate evidence and reasoning to justify these explanations to others. 7. Communicate results of scientific investigations by following appropriate writing methods and skills. (Power Writing, Parts of a Lab Report, etc.)
Earth/ Space Science	<u>Earth and Space Science:</u> 6: Earth Structures 7: Earth Systems and Patterns <u>Nature of Science:</u> 1: The Practice of Science 4: Science and Society	When writing your response address the following: 1. Analyze the hurricane paths and all the regions they have affected. 2. Explain if there is a correlation between the oceanic currents and hurricane strength. 3. Explain if there is a correlation between the oceanic temperatures and hurricane strength. 4. What type of wind - high altitude or shearing winds can keep a hurricane from growing or affect its strength? 5. What geological feature may affect hurricane formation or strength? 6. What gives a hurricane its characteristic pinwheel shape that we see when we look at satellite images? 7. Use appropriate evidence and reasoning to justify these explanations to others. 8. Communicate results of scientific investigations by following appropriate writing methods and skills. (Power Writing, Parts of a Lab Report, etc.)

Subject	Standard(s)	Your Mission
Chemistry / Physics	<p><u>Physical Science:</u> 10: Energy</p> <p><u>Nature of Science:</u> 1: The Practice of Science 4: Science and Society</p>	<p>When writing your response address the following:</p> <ol style="list-style-type: none"> 1. Analyze the hurricane paths and all the regions they have affected. 2. Make a table describing hurricane strength, size and time of occurrence. 3. Can you find any correlations from your table? 4. Make a graph of the strength of these hurricanes over time and another graph showing size of hurricane over time. 5. Compare both graphs and describe what size correlates to strongest hurricane. 6. Is there high or low pressure in the center of the storm? 7. What effect does a larger difference in pressure from the outer edge of the hurricane to the center have on the wind speed? 8. Use appropriate evidence and reasoning to justify these explanations to others. 9. Communicate results of scientific investigations by following appropriate writing methods and skills. (Power Writing, Parts of a Lab Report, etc.)

TITLE: The Ecology of the Everglades**DESCRIPTION:**

South Florida has a rich ecology in its National Everglades. Through this activity, you will learn about the ecology and the natural habitats of many species in South Florida. There are two ways to approach this activity, the best one is to take a tour through the Everglades to learn about all the different species; however, if this is not possible, you can find all the information online. Go to <http://www.nwf.org/everglades/> and click on virtual tours. Tag along the Everglades virtual explorer for a tour through Everglades National Park and meet the plants and animals that call this region home! Record your findings in the table below. Use additional paper to write your findings and answer the question in the second table.

Habitats of the Everglades	Major species, features, and observations
Hardwood hammocks	
Pinelands	
Freshwater Marl Prairie	
Cypress	
Freshwater Slough	
Mangroves	
Costal Prairie	
Marine/Estuarine (Florida Bay)	

Subject	Standard(s)	Your Mission
Biology	<p><u>Life Science:</u> 14: Organization and Development of Living Organisms</p> <p>15: Diversity and Evolution of Living Organisms</p> <p>17: Interdependence</p> <p><u>Nature of Science:</u> 1: The Practice of Science</p> <p>4: Science and Society</p>	<p>Answer the following questions (Use appropriate evidence and reasoning to justify these explanations)</p> <ol style="list-style-type: none"> 1. Compare the ecosystems in the Everglades and elaborate on the following: <ol style="list-style-type: none"> a. the distribution of life within each ecosystem b. weather conditions c. the carrying capacity d. biodiversity and impact caused by climate changes, human activity, and invasive species. 2. Describe some of your favorite species (plant and animal) in each of the ecosystems, and describe differences in their general structures.
Earth/ Space Science	<p><u>Earth and Space Science:</u> 6: Earth Structures</p> <p>7: Earth Systems and Patterns</p> <p><u>Nature of Science:</u> 1: The Practice of Science</p> <p>4: Science and Society</p>	<p>Answer the following questions (Use appropriate evidence and reasoning to justify these explanations)</p> <ol style="list-style-type: none"> 1. Compare the ecosystems in the Everglades and elaborate on the following: <ol style="list-style-type: none"> a. the distribution of life within each ecosystem b. geological features c. weather conditions 2. Research changes in the Florida ecosystems over time. <ol style="list-style-type: none"> a. Have the geological features of Florida changed? b. Have the species changed? c. Explain factors that have led to changes in Florida ecosystems.
Chemistry / Physics	<p><u>Physical Science:</u> 8: Matter</p> <p>10: Energy</p> <p><u>Nature of Science:</u> 1: The Practice of Science</p> <p>4: Science and Society</p>	<p>Answer the following questions (Use appropriate evidence and reasoning to justify these explanations)</p> <ol style="list-style-type: none"> 1. Compare the ecosystems in the Everglades and elaborate on the following: <ol style="list-style-type: none"> a. The distribution of life within each ecosystem b. Environmental conditions from a chemical perspective. (i.e., nutrient distribution, soil composition, acidity or alkalinity of soil and water, etc.) 2. Research the environmental changes in the Florida ecosystems over time. <ol style="list-style-type: none"> a. How has the environment in Florida ecosystems changed (focus on the chemical perspective if possible)? b. Have the species changed? c. Explain factors that have led to changes in Florida ecosystems. d. Describe current environmental effects that threaten the current state of Florida ecosystems.

TITLE: The Inventor in You

DESCRIPTION:

Inventions often come about because there is a need for something. Most of the time, inventions are really simple tools (machines) that someone has developed or improved after recognizing a need for the product. Keeping in mind that you would like to invent something simple, take a few days to look around your home for some tool that could be improved, or identify a task that may require a tool or machine to perform. Go to the internet and research information and possible inventions related to your choice of tool or idea. Once you begin to gathering of information, begin to design your changes or new product. Things to keep in mind are the following:

1. Has the idea been developed already?
2. Has the improvement been made?
3. Is there a patent for this idea? (Perform a patent search)
4. Will the improvement or new design be feasible to make and easy to use?
5. Will the device benefit anybody (human, plant or animal)?
6. Is the design and development cost effective?

Subject	Standard(s)	Your Mission
Biology	<u>Nature of Science:</u> 1: The Practice of Science 4: Science and Society	Using the instructions above focus your invention on some biological or medical device (e.g., wheelchair ramp, pill dispenser, etc.). Prepare a composition book (log book) where you will maintain a diary of all your actions performed related to this activity: <ol style="list-style-type: none">1. Review the content of the selected sources of information. Keep track of all sites visited by copying the actual webpage visited followed by a brief description of the information obtained.2. Be sure to describe in detail the positive and/or negative effects of your idea or improvement. (Why are you doing it?)3. Generate explanations that explicate or describe ways of improving the quality of life.4. Use appropriate evidence and reasoning to justify these explanations.5. Communicate results of scientific investigations by following appropriate writing methods and skills. (Power Writing, Parts of a Lab Report, etc.)
Earth/ Space Science	<u>Nature of Science:</u> 1: The Practice of Science 4: Science and Society	Using the instructions above focus your invention on some environmental or “green” device (e.g., uses solar energy, made of recycled materials, etc.). Prepare a composition book (log book) where you will maintain a diary of all your actions performed related to this activity: <ol style="list-style-type: none">1. Review the content of the selected sources of information. Keep track of all sites visited by copying the actual webpage visited followed by a brief description of the

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		<p>information obtained.</p> <ol style="list-style-type: none"> 2. Be sure to describe in detail the positive and/or negative effects of your idea or improvement. (Why are you doing it?) 3. Generate explanations that explicate or describe ways of improving the quality of life. 4. Use appropriate evidence and reasoning to justify these explanations. 5. Communicate results of scientific investigations by following appropriate writing methods and skills. (Power Writing, Parts of a Lab Report, etc.)
Chemistry / Physics	<p><u>Nature of Science:</u> 1: The Practice of Science 4: Science and Society</p>	<p>Using the instructions above focus your invention on some device that incorporates moving parts (e.g., uses of simple machines, wheel and axle, motors, etc.).</p> <p>Prepare a composition book (log book) where you will maintain a diary of all your actions performed related to this activity:</p> <ol style="list-style-type: none"> 1. Review the content of the selected sources of information. Keep track of all sites visited by copying the actual webpage visited followed by a brief description of the information obtained. 2. Be sure to describe in detail the positive and/or negative effects of your idea or improvement. (Why are you doing it?) 3. Generate explanations that explicate or describe ways of improving the quality of life. 4. Use appropriate evidence and reasoning to justify these explanations. 5. Communicate results of scientific investigations by following appropriate writing methods and skills. (Power Writing, Parts of a Lab Report, etc.)

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.

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