

Summer Science Enrichment Packet

Rising 8th Graders



**Prince George's County Public Schools
Division of Academics
Department of Curriculum and Instruction**

Note to The Students and Parents/Guardians

This calendar consists of daily activities to extend the learning beyond the school year. Be sure to keep track of your experiences in a science journal. (Suggested Journal: Wide-Ruled or College-Ruled Composition Book)

Some practices that Rising 8th Grade students should understand include:

1. Asking questions (for science) and defining problems (for engineering)
2. Developing and using models
3. Planning and carrying out investigations
4. Analyzing and interpreting data
5. Using mathematics and computational thinking
6. Constructing explanations (for science) and designing solutions (for engineering)
7. Engaging in argument from evidence
8. Obtaining, evaluating, and communicating information

Activities (Weeks: 1-4, Monday - Friday) This month you will focus on the work of scientists and the importance of caring for our water sources.

<p>Day 1</p> <p>Write a scientific explanation describing why it is important for scientists to study our world.</p>	<p>Day 2</p> <p>Journal Entry: How do scientists use mathematics to explain the world around them?</p>	<p>Day 3</p> <table border="1"> <thead> <tr> <th colspan="4">Length Conversion Table of Common Units</th> </tr> <tr> <th></th> <th>mm</th> <th>cm</th> <th>m</th> </tr> </thead> <tbody> <tr> <td>1 millimeter (mm)</td> <td>1</td> <td>0.1</td> <td>0.001</td> </tr> <tr> <td>1 centimeter (cm)</td> <td>10</td> <td>1</td> <td>0.01</td> </tr> <tr> <td>1 meter (m)</td> <td>1000</td> <td>100</td> <td>1</td> </tr> <tr> <td>1 kilometer (km)</td> <td>1000000</td> <td>100000</td> <td>1000</td> </tr> </tbody> </table> <p>Use the table above to make the following conversions in your journal:</p> <p>600 millimeters = _____ meters 0.35 meters = _____ millimeters 1,050 meters = _____ kilometers</p>	Length Conversion Table of Common Units					mm	cm	m	1 millimeter (mm)	1	0.1	0.001	1 centimeter (cm)	10	1	0.01	1 meter (m)	1000	100	1	1 kilometer (km)	1000000	100000	1000	<p>Day 4</p> <p>Scientists often take data that they have collected in a data table format and convert the data into a graph. Draw a model of a sample bar graph and label the features of the graph such as the $-x$ and $-y$ axis, the title, scale, legend/key, etc.</p>	<p>Day 5</p> <p>In a class of 28 students, 12 students take the bus to school, 10 students walk, and 6 students ride their bicycles. In your journal, create a bar graph to display this data. Be sure to refer to your model from Day 4. After completing the graph for Day 5, review the model from Day 4. If any labels are missing, be sure to update your model.</p>
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<p>Day 6</p> <p>Hydroponic Garden Hydroponic gardens are planned for future space flights and as a way to grow plants in cold climates. After researching these gardens, explain why hydroponic gardens are a good choice for each of these situations. Then, identify two more situations in which hydroponic gardens would be a good choice and explain why.</p>	<p>Day 7</p> <p>In your journal, answer the following questions about the Water Cycle in complete sentences. Include an illustration.</p> <ul style="list-style-type: none"> • Most of the water that evaporates on the earth comes from which source? • What is the source of energy for the hydrologic or water cycle? • How does the temperature impact the water cycle? 	<p>Day 8</p> <p>Create a product label in your journal for bottled drinking water, explaining to consumers why water is a precious resource.</p>	<p>Day 9</p> <p>Using the formula, Density = mass/volume, calculate the density of the following one liter samples of ocean water:</p> <ul style="list-style-type: none"> • Sample A has a mass of 1.01 kg • Sample B has a mass of 1.50 kg. <p>Be sure to include units on the answers. Which sample would likely have the higher salinity (concentration of salt)? Explain your answer in your journal.</p>	<p>Day 10</p> <p>Think about the water that comes out the tap in the kitchen or in the bathroom. Is it freshwater or saltwater? How do you know?</p> <p>Research the composition of tap water and list the ingredients.</p>																								

<p>Day 11</p> <p>According to a research study, the average shower uses 9.5 liters of water per minute. Use mathematics to answer the questions below. Be sure to show your work and include units in your responses.</p> <p>1) How much water is used in a seven-minute shower?</p> <p>2) How much water would be saved per day if a person took a five-minute shower instead of an eight-minute shower and showered twice a day?</p>	<p>Day 12</p> <p>The concentration of iron in a water sample is 500 parts per million. Write this concentration as a fraction in your journal.</p>	<p>Day 13</p> <p>View the simulation at the site below. Write a scientific explanation to explain how the lake changes as the water flowing into the lake increases. Include how the changes may impact the organisms that live in the lake ecosystem.</p> <p>http://learn.genetics.utah.edu/content/gsl/water/</p>	<p>Days 14 and 15</p> <p>People have different thoughts about the importance of conserving water. Make a list of at least four questions that you could ask someone about their thoughts related to water and water conservation. Interview at least two people and record their responses to the questions. How are their thoughts similar? Different? Did you learn anything new?</p>
<p>Days 16 and 17</p> <p>News Report:</p> <p>Something strange has happened to the local pond. It is covered with green scum and dead fish are floating on the surface. Write a news report explaining to the public what has happened. Remember to use your journal. Draw and label a diagram of this pond for your report.</p> <p>Use the link provided to gain background information: http://healthvermont.gov/enviro/bg_algae/bgalgae_fact.aspx.</p>	<p>Day 18</p> <p>Water is an important resource for all life. Explain how water is used by living organisms.</p>	<p>Days 19 and 20</p> <p>Saving water is more important than ever. Create a poster explaining why saving water is essential to the environment. Use items around your home to design your poster. Share your findings with others.</p>	

Activities (Weeks: 5-6, Monday – Friday) This month you will focus on the impact the environment has on animals.

Days 21, 22, and 23 The data listed below represents the number of threatened animal species in 2016 according to the International Union for Conservation of Nature Red List: Amphibians-2,068, Arachnids-166, Birds-1,460, Corals-237, Crustaceans-732, Fish-2,359, Insects-1,268, Mammals-1,194, Mollusca-1,984, and Reptiles-1,079. Create a data table to display this information in a different format. Insert the data in numerical order listing the species with the most threatened number of animals first. Choose one group and research at least three specific animals on this list. Record three facts for each in your journal along with the data chart.		Days 24 and 25 Design an experiment to determine how an owl’s diet varies at different times of the year. Give an example of a hypothesis you could test with such an experiment. Consider what the independent variable would be. Consider what would be measured. Include the things that you would you would control. Record your experiment in your journal. Check out the link below. http://kidwings.com/virtual-pellet/		
Day 26 Sloths are animals that are known for their slow movements. Read the text to find out what protects sloths from predators. Create a list in your journal. http://kids.nationalgeographic.com/animals/sloth/-sloth-beach-upside-down.jpg	Day 27 Visit the website below to answer the two journal questions. https://www.usbg.gov/insects-garden Journal Questions: How can you identify insects from other animals? How do different insects grow? Give at least two examples.	Day 28 Video about earthworms: https://www.youtube.com/watch?v=l-zc_1vjLnI Write three facts that you learned about earthworms.	Day 29 Suppose 33 percent of the 50 tons of wood produced in one year by a forest is consumed by termites and other insects. How many tons do the insects eat? Record your answer in your journal.	Day 30 Write a scientific explanation to explain how insects are important to humans.