**ASHFORD PARK ELEMENTARY SCHOOL**

STEM Challenge Unit

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| **Grade Level: 1st** | **Challenge Title: Rain Gauge** | **Duration: 90 minutes** |
| **Primary Subject Area:****Water Cycle and Weather** | **Primary Content Area:** **Science** |
| **Standards Addressed in this Unit** |
| **Science** | S1E1. Obtain, evaluate, and communicate weather data to identify weather patterns. a. Represent data in tables and/or graphs to identify and describe different types of weather and the characteristics of each type. b. Ask questions to identify forms of precipitation such as rain, snow, sleet, and hailstones as either solid (ice) or liquid (water). c. Plan and carry out investigations on current weather conditions by observing, measuring with simple weather instruments (thermometer, wind vane, rain gauge), and recording weather data (temperature, precipitation, sky conditions, and weather events) in a periodic journal, on a calendar, and graphicallyS1CS2. Students will have the computation and estimation skills necessary for analyzing data and following scientific explanations. a. Use whole numbers in ordering, counting, identifying, measuring, and describing things and experiences.S1CS3. Students will use tools and instruments for observing, measuring, and manipulating objects in scientific activities. a. Use ordinary hand tools and instruments to construct, measure, and look at objects. b. Make something that can actually be used to perform a task, using paper, cardboard, wood, plastic, metal, or existing objects. c. Identify and practice accepted safety procedures in manipulating science materials and equipment. |
| **Mathematics** | MGSE1.MD.4 Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.MGSE2.MD.3 Estimate lengths using units of inches, feet, centimeters, and meters. |
| **ELA** | ELAGSE1RI10: With prompting and support, read informational texts appropriately complex for grade 1.ELAGSE1W7: Participate in shared research and writing projects (e.g., exploring a number of “how-to” books on a given topic and use them to write a sequence of instructions). ELAGSE1W8: With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. |
| **Social Studies** | SS1H1 The student will read about and describe the life of historical figures in American history. 1. Identify the contributions made by these figures
2. Describe how everyday life of these historical figures is similar to and different from everyday life in the present
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| **Technology** |  Brainpop, PebbleGo, Youtube, Weather websites |
| **Materials**Clear plastic container about 8-10 inches high Small pebbles or marbles Measuring Gauge (laminated)12-inch plastic rulerBlank weather charts | **Resources**BrainPopPebbleGOWeather ChannelCareer Day, Meteorologist visit  |
| **Primary Content Area STEM Activity** |
| **Content Area Knowledge to be delivered before activity begins:****Students will need to understand: how to observe, and measure with simple weather instruments****Vocabulary Relevant for Unit:**precipitation, rain gauge, temperature, condensation, evaporation,**Understandings Relevant for the Unit:**The water cycle**Prerequisites**completion of water/weather unit, exposure to measurement**Activity:****Completed in the STEM Interactive Notebooks**designs, evaluations and conclusions on the left side pages after completion of the rain gauge activity**Overview:**Place several pebbles into the container and add water until it is about one-inch deep. (Measure with the 12-inch ruler.) Paste the laminated “measuring gauge” to the side of the container. The bottom line should be at the one-inch water level. Note: The pebbles and water will make the container steady against wind and the one-inch of water will provide a base level for measurements. Place the rain gauge outside on a level surface. Make sure it is away from any overhanging tree branches or building eaves. Students can monitor the gauge every day. Have them measure the rainfall at about the same time each day. Instruct the students to record their readings on the “My Weather Report” chart. To Measure Rainfall To accurately measure the rainfall, the student must be at eye level with the top of the water. Have him or her subtract the previous day's reading from the new reading to determine how much rain fell each day. Make sure students keep the original one inch of water in the container in order to measure accurately. Weather Symbols Measuring Gauge Sunny Partly Cloudy Cloudy Rainy Thunder Storms Windy Snowy Foggy Smoggy **Engineering Design Process:****Ask Steps*** **Student will describe the problem in their own words.**
* **Students will receive materials to analyze in relation to the problem presented.**
* **Students will determine constraints.**

**Imagine Steps*** **Students will brainstorm ideas and explore the materials.**
* **Students may work individually before collaborating as a group to share original ideas.**

**Plan Steps*** **Students will draw their plans and include information specific to the problem.**
* **The group will collaborate to come up with one idea to be included in the individual STEM Interactive Notebooks.**

**Create Steps (according to the STEM problem)***

**Improve Step*** **Students will analyze the group design for strengths and weakness and begin the EDP to rework the design.**
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| **Secondary Content Area Activity** |
| **Aligned to the general curriculum standards**Students will collect data and record it in a journal or calendar, comparing amounts of rain during the course of the year. |
| **Additional Comments or Considerations**  |