**ASHFORD PARK ELEMENTARY SCHOOL**

STEM Challenge Unit

|  |  |  |
| --- | --- | --- |
| **Grade Level: 1** | **Challenge Title: Hibernation Station** | **Duration:****90 minutes** |
| **Primary Subject Area:****Science** | **Primary Content Area:** **Life Science: Basic Needs of Living Things**  |
| **Standards Addressed in this Unit** |
| **Science** | Life Science S1L1. Students will investigate the characteristics and basic needs of plants and animals. a. Identify the basic needs of a plant. 1. Air 2. Water 3. Light 4. Nutrients b. Identify the basic needs of an animal. 1. Air 2. Water 3. Food 4. Shelter Compare and describe various animals—appearance, motion, growth, basic needs. S1CS2. Students will have the computation and estimation skills necessary for analyzing data and following scientific explanations. S1CS2. 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. b. Readily give the sums and differences of single-digit numbers in ordinary, practical contexts and judge the reasonableness of the answer. c. Give rough estimates of numerical answers to problems before doing them formally. d. Make quantitative estimates of familiar lengths, weights, and time intervals, and check them by measuring.  |
| **Mathematics** | Represent and interpret data. 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. |
| **ELA** | ELAGSE1RI10: With prompting and support, read informational texts appropriately complex for grade 1.ELAGSE1W2: Write informative/ explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure |
| **Social Studies** | SS1E2: The student will explain that people have to make choices about goods and services because of scarcity. |
| **Technology** | PebbleGo (Hibernation and Black Bears) |
| **Materials****Cardstock****Paperplates****Scraps of: fleece, flannel, wool, batting, foam, cotton, and foam board****Tape** **Dixie Cups****Animal cut-outs** | **Resources****PebbleGo (Hibernation and Black Bears)****Reading A-Z (Hibernation)****Magic School Bus (Sleeps through the Winter)****Field Trip to the Atlanta Zoo to observe animal habitats. (Students will take notes and sketch habitats in their interactive notebooks)** **Use QR Codes to gather and research information.**  |
| **Primary Content Area STEM Activity** |
| **Content Area Knowledge to be delivered before activity begins:****Students will recognize that some animals must hibernate. These animals must prepare themselves physically and find a suitable shelter in which to take their "winter nap"!** **Vocabulary Relevant for Unit:****Shelter****Insulation****Hibernation****Hibernate****Temperature****Snow****Understandings Relevant for the Unit:**Students will need to understand that animals behave differently in different seasons because their needs change during the course of a year. Some animals hibernate during the coldest weather of the year. These animals must ensure that they have found and prepared a suitable shelter for their hibernation needs.**Prerequisites**Completion of Science Unit: Basic Characteristics and Needs of an Animal**Activity:****Completed in the STEM Interactive Notebooks**Student designs, evaluations, improvements and conclusions are to be made on the left-hand side of the pages before, during, and after the STEM challenge. **Overview:**In teacher created groups, students will design a suitable shelter for animals who hibernate. Each student will assume one of the STEM team rolls as decided by their group. The shelter they create will have to be big enough to accommodate 3 animals comfortably. The shelter also must protect the animals from severe winter weather such as wind, snow, and ice.**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.**
 |
| **Secondary Content Area Activity** |
| **Aligned to the general curriculum standards**Students will write an informational booklet explaining how a hibernating animal of their choice chooses and prepares a suitable shelter for its hibernation. |
| **Additional Comments or Considerations**  |