

WEEK 2 Day 1

**STEM Investigation 2:
Understanding Weight and Stability**

Children roll tennis balls in attempt to knock down an empty and a filled water bottle. Through this Investigation, children will build understanding of balance and stability with respect to the weight of an object.

Big Idea	Through using materials and interacting with them, people learn important concepts and gain skills relating to physical science, engineering and technology, and the arts.
Guiding Questions	What processes help people construct structures, ideas, and works of art? How do people use different tools and materials for different purposes?
Vocabulary	investigate weight base stability balance
Materials and Preparation	<ul style="list-style-type: none"> ● About 10 plastic water bottles (16.9 fluid ounce size) ● sand ● tape <p>Fill half the water bottles with with sand and tape them shut</p> <ul style="list-style-type: none"> ● 3 tennis balls ● painters or masking tape (or other strong tape for marking floor) ● chart paper, 2 pieces <p>On one piece of chart paper, write the focus question: What can we do to investigate how the weight of an object affects its stability? Recreate the STEM Investigation Data Sheet on the second piece of</p>

	<ul style="list-style-type: none"> chart paper. ● writing tools <p>Identify a clean floor space where children can conduct the Investigation (and the following Investigations). Set up the “bowling space.” Use tape to mark two squares on the floor where children will place the objects for each test. In addition, use the tape to mark a line on the floor where children will kneel to roll the balls (approximately 5 feet from the squares).</p> <p>Conduct the Intro to Centers in this “bowling space.”</p>
<p>Intro to Centers</p>	<p>[Conduct the Intro to Centers in the “bowling space.” Have children sit around the space.]</p> <p>Review last week’s investigation.</p> <p><i>Last week we learned about stability. What properties did we discover that helps to make something more stable?</i></p> <p>Introduce this week’s focus.</p> <p><i>This week you will investigate this focus question, What can we do to investigate how the weight of an object affects its stability?</i></p> <p>Point to the focus question and read it aloud.</p> <p><i>What words do we need to understand in this question in order to answer it?</i></p> <p>Circle the words investigate, weight, stability. Discuss these words.</p> <p><i>We can change the weight of objects to investigate what happens to their stability by adding sand.</i></p> <p><i>Which bottle do you think will be more stable, or harder to knock down?</i></p> <p>Pass around a filled bottle and an empty bottle so children can feel the difference in weight. Invite children to make predictions.</p> <p><i>As scientists in the Block Center this week, we will investigate how weight can change stability by rolling balls at the bottles. And we will record what you find out on this chart.</i></p> <p>Show the data chart.</p>
<p>During Centers</p>	<p>Children take turns setting up the bottles and knocking them over. To set up each turn, children will place one filled bottle in one square and one empty bottle in the other square on the floor. Each child will kneel on the</p>

	<p>line and roll the 3 balls in attempt to knock over both types of bottles.</p> <p>Children will record their data on the Water Bottle Data Sheet. Children will make an X under the picture when they knock over this pin.</p> <p>After children have completed the Investigation they can experiment with other objects of varying weights such as cardboard blocks vs. wooden blocks. Other ideas include a bottle only half full of sand or a bottle filled with sawdust. Ask children what they expect to see happen and why prior to investigating.</p>
Facilitation	<ul style="list-style-type: none"> ● Which bottle (or material) do you think is more stable? ● Why do you think it is more stable?
Sharing Our Research	<p><i>What can we do to investigate how the weight of an object affects its stability?</i></p> <p>Revisit the focus question.</p> <p>Children share their data by counting the X's in each category on each chart. Discuss why there might be more X's in one category.</p> <p><i>What did you notice about what makes these materials more stable?</i></p> <p>Children can share the results of explorations with other materials.</p>
Standards	<p>K-LS1-1 Use observations to describe patterns of what plants and animals (including humans) need to survive. Further explanation: Examples of patterns could include that animals need to take in food but plants do not, the different kinds of food needed by different types of animals, the requirement of plants to have light, and that all living things need water. Examples could include the pattern a bear makes when preparing to hibernate for winter, the seasonal patterns of trees losing and/or keeping their leaves. Analyzing and Interpreting Data, Organization for Matter and Energy Flow in Organisms, Patterns</p>