

Third Grade – Trimester One

Earth Science Design Challenge

Background/Scenario:

Atlantic City's famous *Candy Castle* has been a preferred destination to both tourists and locals who visit the resort. This well-known family-owned store has been in business for over 50 years, preparing homemade fudge, taffy, and decadent pastries. They are notorious for their delicious gourmet fudge, which is cooked in an old-fashioned copper kettle to give it a rich, creamy taste.

Located on the Atlantic City boardwalk, just north of the Taj Mahal Casino, *Candy Castle* has always been a popular destination for all ages. But on October 29, 2012, Atlantic City was hit hard by Hurricane Sandy. Homes and businesses were destroyed up and down the boardwalk by hurricane-force wind gusts, surf, and flooding. Overall, the Jersey Shore suffered the most severe winds and surf from Superstorm Sandy, and the most damage from the storm. Unfortunately, like many other small businesses along the shore, the *Candy Castle* was completely destroyed by the storm.

Problem Statement:

As the Jersey Shore continues to rebuild from Superstorm Sandy, the *Candy Castle* and other small businesses along the boardwalk plan to rebuild as well. As civil engineering consultants, you have been asked to work with business owners and building architects to design a barrier as a solution to the hazard of high winds.

Requirements:

- * Engineers must work in a small groups
- * Engineers must design a barrier that will withstand up to a Category 5 Hurricane (wind gusts up to 155mph).

Constraints:

- * only use assorted construction materials provided
- * you have 3 class periods to complete the challenge

Design Challenge

Day 1:

_____ Step 1: **Brainstorm** method of solving the problem paying attention to the barrier design.

_____ Step 2: **Make a drawing** of your barrier.

Day 2:

_____ Step 3: **Build** the barrier.

_____ Step 4: **Test and evaluate**

Day 3:

_____ Step 5: **Redesign and Reflect**

_____ Step 6: **Communicate** outcomes (present to class)