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Hopatcong Borough Schools

Press Release

The Great Hopatcong Boat Challenge & Mini Regatta

FOR IMMEDIATE RELEASE, March 23, 2017

Cynthia Randina, Hopatcong Superintendent of Schools, Announces

The Hopatcong High School Science Department put together The Great Hopatcong Boat Challenge that was held on March 7th & The Mini Regatta which was held on Tuesday March 21st. The Hopatcong Boat, Sink or Swim Challenge mission was to build a boat that could hold the most weight. Students were paired in groups of two to four students. Each team was provided with the following supplies which included a 10 inch piece of duct tape, a paper cup, a ten inch strip of plastic and ten straws to put their boats together. Almost all of the boats that were created were able to hold at least a 50 gram mass (50 pennies) for more than 10 seconds. The winning team had well over 300 pennies held in their boat for over 10 seconds.

The Mini Regatta was an additional event planned for students with a different goal of building a boat with limited materials in one hour that could travel across a small pool of water. The materials included tape, plastic cups, plastic wrap, straws, a plastic coke bottle, tongue depressors, and plastic spoons, masses for ballast, hot glue and rubber bands. The students assembled groups that competed and were timed in regards to how fast their boat travelled across the pool.

The science department members who attended which consist of Jim McDonald, Pete Oesen, Joanne Carr, Stephanie Martinez motivated students throughout their hour of construction. During the session Mr. Pete Oesen served as the Master of Ceremonies. The staff and students volunteered their time for this evening so that they could all embark on a learning opportunity that embraces the STEAM initiatives. Overall the students expressed having loving both of the events and requested to make sure that the events are planned again next year.

The Great Hopatcong Boat Challenge

SINK OR SWIM – DAY TIME Challenge

Objective/Challenge:

Design and build a boat, with the materials provided, that will float the most mass without sinking.

Materials (per group)

- 10 inches of duct tape
- 1 - paper cup
- 10-inch strip of plastic wrap
- 10 straws
- Masses (probably pennies) to test boat

******You may get one new set of materials for a redesign. *****
*****But must return all original materials******

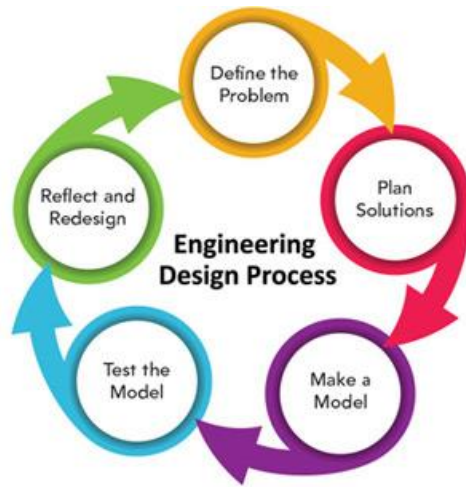
Testing

1. Boat will be placed in water.
2. One single 50 g mass will be placed on the boat.
3. The boat must stay afloat for a minimum of 10 seconds.
4. The testing will continue by adding pennies to the boat until it sinks.

The Winner

Whichever team holds the most mass for a minimum of 10 seconds wins.





Brainstorm & Design

Look at your Materials and think about the questions below. Then sketch your ideas on a piece of paper or in your design notebook.

1. How will you make a boat that floats well enough to support a heavy load without sinking?
2. Should your boat be a platform (e.g., a raft or barge) or an open boat (e.g., a rowboat or canoe)?
3. What's the best way to make your boat waterproof?
4. How big do you need to make your boat to hold the most mass?

Build, Test, Evaluate & Redesign

Use the Materials to build your boat. Then test it by floating it in a container of water and adding pennies, one at a time. When you test, your design may not work as planned. When engineers solve a problem, they try different ideas, learn from mistakes, and try again. The steps they use to arrive at a solution is called the **Engineering Design Process**. Study the problems and then redesign. For example, if the boat:

- sinks easily—Increase its ability to float. When you set your boat in water, notice how it sinks down a bit, pushing aside some water. The water pushes right back, pressing on the boat's bottom and sides. The force from these pushes is called buoyancy. To change your boat's buoyancy, experiment with the boat's width and the height of its sides.
- leaks a lot—See if the straws are filling with water or if the plastic wrap is separating.
- tips easily—Check how near the weights are to each other. A boat can get tippy when one part is heavier than another.

Hopatcong High School

Mini Regatta

Objective/Challenge:

Design and build a “boat”, with the materials provided, that will travel a certain distance in the shortest amount of time.

Materials (per group)

- 20 inches of duct tape
- 2 plastic cups
- 20-inch strip of plastic wrap
- 20 straws
- 1 20-ounce Coke bottle
- 10 Tongue depressors
- 2 Plastic Spoons
- Masses for ballast
- Hot Glue(only to be used as fastener)
- 5 Rubber Bands

Pre-Planning

- You may research prior to or during competition
- You can bring whatever knowledge you have but no extra materials.

Building

- All teams will have approximately one hour to build

Rules

- Only materials listed may be used
- Boat must be self-propelled
- Overall dimensions of boat may not exceed 12inches x 12 inches

Testing

5. Boat will be placed in water.
6. The timer will start when you let go of boat.
7. The timer will stop when your boat reaches the opposite end of the pool.

The Winner

Whichever team travels the distance in the shortest amount of time wins