The Problem:

- Design a boat out of aluminum foil that will hold the most number of pennies and still stay afloat.

Jobs:

Everyone has a part to play during the competition, they ensure that everyone contributes to a successful Penny Boat Challenge.

Captain:

- You are the only one who will design, build, and add pennies to your boat.

Spotter:

- You will help keep count of the numbers of pennies added to the boat. On every 10th penny, hold up one finger as a tally mark.
- Once you reach 50 pennies - hold up your hand and loudly say “50!”
- If you reach 100, hold up both hands and loudly say ‘100!’ and so on…
- The first Spotters will be people near the end of the order, then once you have completed your turn as Captain, you can be a Spotter for anyone.

Dryers and Sorters:

- Two people at a time (the dryers) will hold a towel open, sorters will add wet pennies to the towel.
- Dryers will slide the pennies up and down the towel until they are dry.
- Sorters will add the dried pennies to a dry towel on the ground and spread out the pennies.
- Dry Pennies will be placed into cups and handed to Captains.
- Sorters will give Mrs. LaRosa dry pennies when needed.
- These are VERY IMPORTANT Jobs - DRY pennies are essential to the challenge, we will need more dryers and sorters towards the end of the class period.

Supporter:

- If you have already competed, and are not needed to be a spotter, dryer, or sorter, it is important to give those who are still competing your full attention and support.

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Design Process:

1. You will receive 2 pieces of practice foil that measure approximately ¼ of the size of your final boat.
2. Use these pieces of foil to test different boat designs.
3. Check your boats for ‘sea worthiness’ in the tank
   a. Add 3-5 small rubber stoppers
      ■ does your boat stay upright?
      ■ is your boat taking in water?
4. Make modifications and try a second boat.
5. Take notes on your test boats to help you design your official boat.
6. Once you are ready - ask for a piece of 30x30 foil.
7. Build your boat according to your plans.
8. Test for ‘sea-worthiness’ using only 2 of the large sized stoppers.
9. When your boat is done, see Mrs. LaRosa for:
   a. a post-it note with a number on it - this will determine when you launch
   b. to take your photo with your boat and number

Rules:

- Construct your boat using only one piece of the heavy duty aluminum foil
  ○ The foil measures 30 cm x 30 cm
  ○ You will not receive replacement foil for any reason
    ■ rips and tears will happen if you are not careful designing your boat
- Mrs. LaRosa will add your boat to the tank. This will prevent your boat from sinking the other boat in the tank.
  ○ There might be 2 boats in each tank depending on sizes and time
- You must have a spotter. The spotter will help you keep count and call out intervals of 50 pennies. They will also look for signs of water entering the boat.
- Slowly add pennies to your boat. Once water enters the boat, or if any part of the boat touches the bottom of the container, your turn is over.
  ○ Only captains can add pennies to the boat once it is in the water.
- Mrs. LaRosa is the only one who will remove the boat from the water.
  ○ This will prevent other boats from being bumped and sunk.
- Mrs. LaRosa will also be the official counter if the current record is broken.

Prediction: __________________________ Result: __________________________

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Notes & Reflection: Write about the strategies you used to solve this problem. What worked, what didn’t, and what would you change if you did this again? What did you learn?