

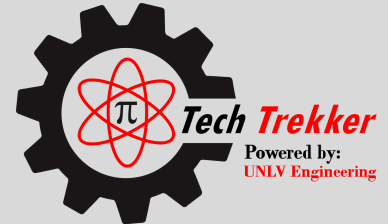
Name: _____

Cargo Ship Challenge!

UNLV

Materials Needed: Aluminum Foil, Bucket, and Water

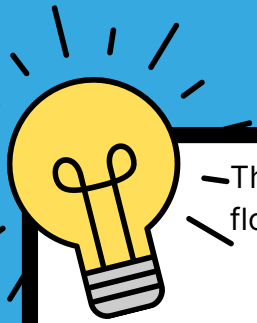
In this challenge, you will follow the actual engineering design process that engineers use to solve problems. Engineers design and build ships. On top of that, they have to figure out how to make gigantic pieces of metal float! How do you think engineers design ships to carry cargo across a river?



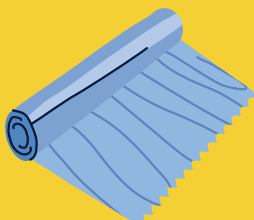
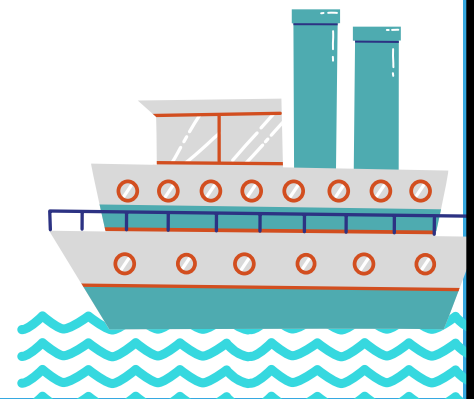
Scenario:

You are moving to Australia and you need to cross the Pacific Ocean. However, there are no flights to Australia, so you have to travel by ship.

Brainstorm



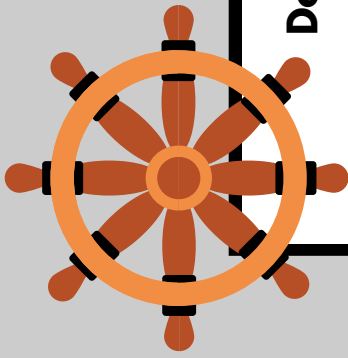
Think about the following questions: What causes ships to sink? What causes ships to float? What ships have you seen in real life? What kind of materials would be best?



Slight Change of Plans!

You just found out that the only metal your supplier can afford is a singular sheet of aluminum! You'll need to consider that material restriction into your design!





Design

Draw and plan a couple of ship designs of what you're going to build. Think about how you'll shape the aluminum foil or what shape will be created.

Design A	Design B	Design C
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Build

Now that you have designed a ship, choose one and have fun creating it!
Make sure you only use your piece of aluminum foil.



Test and Evaluate

Place your ship into the water and slowly add weight. Slowly fill your ship with marbles to test your design! How much weight did your ship hold? In this box, record what happened to your ship when it finally sank.

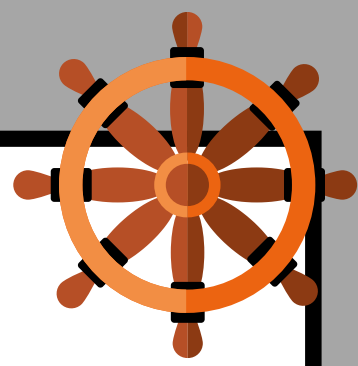
Discuss

Share with your classmates your results. What did your classmates do?
Why do you think that design worked or didn't work?



End of Session 1

Redesign



What were the problems with your design? How can you improve your design?
Draw your redesign in the box below.

Rebuild

Build your new ship based off your redesign box and have fun creating it!



Retest and Reevaluate

Place your ship into the water and slowly add weight. Slowly fill your ship with marbles to test your design! How many weight did your ship hold? In this box, record what happened to your ship when it finally sank.



Discuss

Share with your classmates your new results. What did your classmates do differently this time? Which of your classmates made the best design? Why do you think that design worked or didn't work?



Class Findings vs. Science Findings

Take notes on the scientific explanation for the boath that can hold the most weight.



Communicate the Solution

Why did your design succeed or not succeed? Which design would you want to use in the real world? Where have you seen this design in real life?



Extension

Take a picture or a screenshot of something that floats and bring a picture or printed image for next meeting!

