

Name: _____

Buoyant Boats

Introduction: *The United States Navy is looking for a few good engineers who can build a new fleet of efficient ocean-faring vessels, and they are requesting you and your team of highly skilled engineers! As an engineer, it will be your duty to investigate what makes an efficient, speedy and buoyant boat. Happy sailing!!!*

Essential Question: *How do engineers use science and engineering to design efficient boats?*

Tentative Schedule and Due Dates:

Project Timeline		
Day 1	June 10	<ul style="list-style-type: none">Collecting Data on Control BoatTypes of Boats/Parts of Boat Research
Day 2	June 11	<ul style="list-style-type: none">Penny Lab ActivityWhat is buoyancy?How are buoyancy and density related?
Day 3	June 12	<ul style="list-style-type: none">IDD and Experimental Boat Proposal Documentation
Day 4	June 13	<ul style="list-style-type: none">IDD & Experimental Boat Proposal Documentation DueBuilding Boats
Day 5	June 16	<ul style="list-style-type: none">Collecting DataChart Paper Write-up
Day 6	June 17	<ul style="list-style-type: none">Data Share-OutFinal Proposal Documentation
Day 7	June 18	<ul style="list-style-type: none">Proposal Document Due
Day 8	June 19	<ul style="list-style-type: none">Boat Building → Based off Proposal Document
Day 9	June 20	<ul style="list-style-type: none">Boat Races!!!!



Rubrics:

Investigation Design Diagram/Experimental Boat Proposal

Outcomes	NY	MS	ES
2: Plan: I can make deliberate plans, reflect upon and revise my plans so that I am able to achieve my goals.	<p><input type="checkbox"/> One or both of my documents are missing or not fully completed</p> <p><input type="checkbox"/> During work periods, I am often off task</p> <p><input type="checkbox"/> I have missed deadlines</p>	<p><input type="checkbox"/> I turn-in the IDD and Experimental Boat Proposal documents fully completed, but may need to revise some portion</p> <p><input type="checkbox"/> During work periods, I am on task most of the time, but may need some teacher redirection</p> <p><input type="checkbox"/> I have met ALL of my deadlines</p>	<p><input type="checkbox"/> I turn-in the IDD and Experimental Boat Proposal documents fully completed</p> <p><input type="checkbox"/> During work times; I am on task and needs no teacher redirection.</p> <p><input type="checkbox"/> I have met ALL of my deadlines</p>
6: Discern: I can read scientific information in order to discern details, patterns and trends.	<input type="checkbox"/> I am unable to make a connection between the text and the question I am investigating.	<input type="checkbox"/> I demonstrate an understanding of the text by summarizing how the textual evidence relates to my investigation; however, the evidence I choose could be stronger	<input type="checkbox"/> I demonstrate a strong understanding of the text by providing powerful quotes and information that relates directly to my investigation.

Racing Boat Proposal Documentation

Outcomes	NY	MS	ES
5: Conclude: I can make a thoughtful scientific conclusion by using scientific models, graphs and other evidence.	<p>I was unable to explain my reasoning for the way I engineered and built my final boat, because I could not</p> <p><input type="checkbox"/> Using evidence from the data of my classmates</p> <p><input type="checkbox"/> Using scientific knowledge, content, vocabulary</p>	<p>I have explained my reasoning for engineering and building my finalized boat:</p> <p><input type="checkbox"/> Using evidence from the data of my classmates</p> <p><input type="checkbox"/> Using scientific knowledge, content, vocabulary</p>	MS Criteria AND I have provided a detailed explanation of the positives of my boat design and the negatives of my boat design (<i>cost-benefit analysis</i>)
3: Be Precise: I can use accurate scientific language and vocabulary while using appropriate writing conventions.	<p>My writing DOES/IS NOT:</p> <p><input type="checkbox"/> Organized</p> <p><input type="checkbox"/> Grammar Errors that make it difficult to express my thoughts</p> <p><input type="checkbox"/> Provide details relevant to my purpose</p>	<p>My writing is/has:</p> <p><input type="checkbox"/> Well-organized</p> <p><input type="checkbox"/> Few Grammar Errors</p> <p><input type="checkbox"/> Details that are relevant to my purpose</p>	<p>My writing is/has:</p> <p><input type="checkbox"/> Organized in a formalized way (TIED, etc.)</p> <p><input type="checkbox"/> No Grammar Errors</p> <p><input type="checkbox"/> The details and information flow through my writing</p>