

Engineering with Physics in Mind!

Team Name:

Team Members:



TODAY'S ENGINEER'S CHALLENGE

*This is a four part challenge. You will be scored in four categories: **research, design, advertising, and Experimenting & Observing!** It's imperative that you listen carefully, cooperate, and work well as a team to utilize your time! The name of this engineering challenge is **Balloon Mobiles!** You will be designing a car that has the ability to travel ten or more feet! The learning objectives will include: research skills, physics (Understanding Newton's Laws of Motion), technical design, measurement, writing (Sentence identification) and parts of speech (Adjectives).*

Research! *You must compile a list of **ten to twenty facts** about Newton's laws of motion. These facts should give you the background knowledge needed to create a successful project. You may present your facts in a list, a poster, or if time allows in a google presentation. You may **only use** the resources on the **PHYSICS 101: Newton's Laws of Motion** webpage. You may visit the links under the research heading, watch the videos, and read the articles on that page. Be prepared to present your research before beginning the design phase! Your research must be presented accurately, neatly, and properly cited (include where you found your information)!*

Design! *Now, it's time to apply your research and begin the design process. First, look over the materials in the shop! Based on your research, decide what materials you will use on your design. Next, create a blue print of your project. The blueprint must be actual size and labeled accurately to gain access to the experimenting and observing phase! Each team member may design a different sail, but it is not necessary. Keep in mind, each sail must have a material list, blueprint, and advertisement in order for it to be tested!*

Advertise! *During the design phase, each design must have an advertisement. The advertisement must include four complete sentences (1 imperative sentence, 1 interrogative sentence, 1 exclamatory sentence, and 1 declarative sentence with at least 5 descriptive adjectives. The advertisements must be done neatly, accurately, and include at least two illustrations in order for you to gain access to the experimenting and observing phase!*

Experimenting & Observing! *After you have completed resource phase, design phase, and advertising phase you may test your sail or sails. After testing your sail, you must use your observations and go back to repeat the engineering process (starting at the design phase- You will not have to do another advertisement. However, you must create another blueprint and material's list.) to improve on your results.*

*** Testing window will open 15 minutes into work time and remain open during class. You may test and observe as many times as possible!**

**** Utilize your checklist! Be complete! Be neat! Make sure each part of the problem is being solved!**

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Problem Expectations, Checklist and Scoring!

Research Research and Record at least 10-20 facts neatly, accurately, and properly cited.	200 Max
Design: (Material List) Fill out a material list for each project. You may use 5 different items on each project. Items can be the same or different. Tape is not included. You may use 12 inches of tape. (Blueprint) Create a diagram/ blueprint of your project. Must be actual size, labeled accurately, and done neatly!	50 max
Advertisement: Design an advertisement that includes: 4 different kinds of sentences (Declarative, imperative, interrogative, and exclamatory), 5 adjectives , and 2 illustrations . You will be scored on the creativity of the words chosen, the neatness of the poster, and the creativity of the illustrations. * Remember adjectives are words that describe nouns. They answer the questions: what kind, which one, and how many!	50 max
Experimenting and Observations: After completing the design process, you may test and observe your project. You must then use your observation to better your project. You may do this until time is up!	1-5 points
Manners: You will be scored on how well you work, the respect you give to the students around you, your disposition, how well you clean up after yourself, and your listening skills. 50 pts	

Teamwork Strengths and Skills Grade your team 5 (high) 2 (average) 1 (Need improvement)

Cooperation (Everyone on our team listened to one another and contributed to the team's solution)	
Attitude (Everyone had a positive attitude on our team.)	
Assertiveness (Everyone got right to work!)	
Manners (Everyone treated each other with respect)	
Pride (Everyone did their best work on their part of the team's solution!)	
Safe-Responsible-Respectful (Our group met all school behavior expectations.)	
Total Points	
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MAKE A QUICK PLANNING SKETCH

* You will complete your official blueprint, research notes, and advertisement on separate sheets of paper!

Material List (Each design can only use 5 total items)

Material	Amount
Total	5 items

Sentence Resource Information! (Must include 4 sentences on your advertisement!)

Sentences may be classified according to the purpose of the speaker or writer. The four principal purposes of a sentence are described below.

1. The **declarative sentence** is used to make a statement of fact, wish, intent, or feeling.

ex. I have seen that movie twice. I wish I could go on the picnic.

2. The **imperative sentence** is used to state a command, request, or direction. The subject is always "You," even though it may not be expressed in the sentence.

ex. (You) Be on time for dinner. (You) Open the window, please.

3. The **interrogative sentence** is used to ask a question. It is followed by a question mark.

ex. Do you have a sweater? Are you having a bad day?

4. An **exclamatory sentence** is used to express strong feeling. It is followed by an exclamation point.

ex. Don't burn yourself out! Keep out! He screamed, "Help!"

You may do your blueprint on the back of this sheet!

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