Problem within the Problem! Replacement needed for the Plastic of the Straw

ENGINEERING 1

DESIGN & INQUIRY

SCIENCE 8 JANUARY 2020

MRS. PLYTER

PLYTER.COM/SCIENCE

Name Period

Your O-Wing:

1. Your solution is your _____.
2. Three variables:
   _____
   _____
   _____
3. Two constraints:
   _____
   _____
4. Three criteria:
   _____
   _____
   _____
5. 3 Priorities: High→Low:
   _____
   _____
   _____
6. Two measureable evaluations:
   _____
   _____

Mon | *Thur* | *Fri*

9 | 10

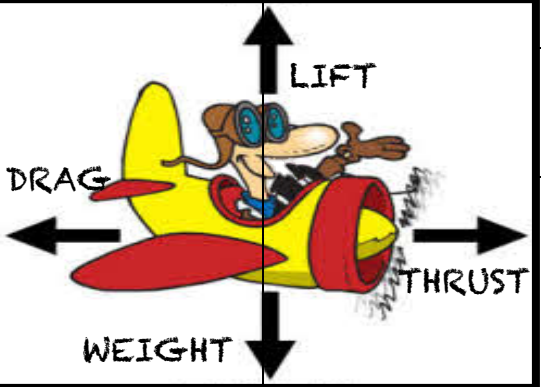
Problem:

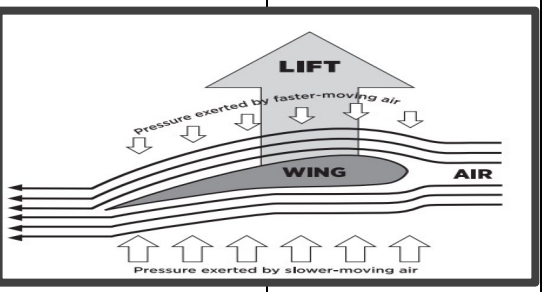
Produce a Long-Distance Attractive O-Wing **Hoop** Glider to transport 1 penny, using 2 Class Determined Variables.

Restrict & Record materials used to:

1) Card stock strips ___ ___ ___ ___ ___
2) 1 or 2 Drinking Straws ___ ___
3) Clear tape ___ ___ ___ ___ ___ ___ ___
4) 1 penny ___

Restrict trials to: designated areas and hallways.





Watch: The Wright Way

1) The 4 Forces of Flight_
2) Newton's Laws _____

LIFT:

Lift is when **less pressure above** the glider & **more pressure below** the glider causes the glider or wing to **rise, or LIFT.**

Watch: "Bernoulli's Principle" ___

Bernoulli's Principle says:

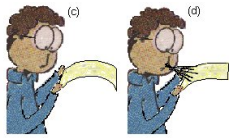
As the **speed** of a moving fluid (liquid or gas) **increases,** the **pressure** within the fluid **decreases.** **(Or, the fast air gets out of the way and allows LIFT.)**

Demonstrate

Bernoulli's Principle

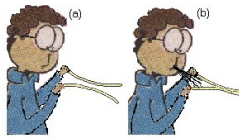
Have Checked with Materials in Hand!

1. **Try it**: Explain 1 sheet of Paper



?_____
_____

2 **Try it**: Explain 2 sheets of paper



?_____
_____

3. **Try it**: Explain: 2 Sheets of Paper.
   Same height.
   Same time.
   Drop Them.

?_____
_____

4. **Try it**: Explain:
   The 2 Pop Cans in the video.

?_____
_____

If Time:

1) Design, evaluate and demonstrate your solution for a **Weird and Wonderful "Concept Multi-Wing O-Wing"**

Draw here.

Best Gliding Distance_____

2) Set up a **Kinetic Sculpture that involves balancing.** Measure how long it will move on its own.

Draw here.

Longest Movement Time _____

Central Science:

www.plyter. com/science

Discovery Education 24yearlastf Student #
McGraw Hill Rubber Duck See Green Folder
Google Page→ Google Classroom yzbzxn
Practice Tests→MyGradebook plyter20 Student #
What2Learn
Inquiry & Engineering→The Wright Way→
1) The 4 forces of Flight
2) Newton's Laws
Physical Science→ Bernoulli's Principle

Points

Watch:

Try It:

O-Wing Data

Class Data

Your Data

Gym Flight

Handout

Calendar:

Front

Bzck

Quizzes:

Initial in COLOR

Mon_____
Tue_____
Wed_____
Thu_____
TOTAL_____

What2Learn

Initial in Color

Google Screenshot File according to directions.

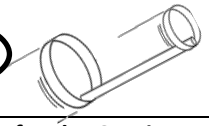
_____

Vocabulary: Terms to Know (about Engineering):

1) Write a memory note for at least 10 terms. 2) Write your Reference. 3) Do Not Write the Definition.

1) Bernoulli's Principle
2) center of gravity
3) constraint
4) criteria
5) **Design:** The plan for and/or arranging elements in such a way as best to accomplish a particular purpose.
   Memory Note: Build or draw for a particular purpose. Reference: www.vocabulary.com
6) drag
7) durability
8) **Engineering:** The application of scientific & mathematical principles to practical ends such as the design, manufacture, & operation of efficient & economical structures, machines, processes, & systems. **Memory Note:** Use science and math to design, build and/or operate structures or systems. Reference: www.thefreedictionary.com
9) evaluation
10) evolve
11) gravity
12) lift
13) priority
14) rationale
15) solution
16) thrust
17) trade-off
18) viable
19) weight
20) weight vs. mass

Objective:



1) Design and produce multiple solutions for the O-Wing problem using the given criteria, 2 class determined variables and your data.

Write Class determined variables (centimeters) here:

a) O-loop width - Front ____ Back ____
b) O-loop circumference (length) Front ____ Back ____
c) Fuselage (straw) length ____ d) Fuselage diameter ____

2) Select your Best Solution. Record your data:

Circle the Class determined variables you used.

a) O-loop width _____ b) O-loop circumference _____
c) Fuselage length ____ d) Fuselage diameter _____
e) Cargo placement ____ f) Best Practice Distance ____m

3) Demonstrate your Best O-Wing in scheduled gym flight.

Record Your Best Scheduled Gym Flight Distance **_____m**

To fly a Hoop Glider:

Hold the straw in the middle with the hoops on top and throw it in the air similar to how you might throw a dart, angled slightly up.

Your Grade for Last Week:

	Yours	Required
Objective + Grade	____	10
Calico Cat	____	10
Mitosis - Meiosis	____	30
Genome &/or Family Traits	____	5
Genetic Fingerprinting-Grizzlies?	____	30
Quizzes	____	28
What2Learn	____	10
Extra	____	
Total	_____	123

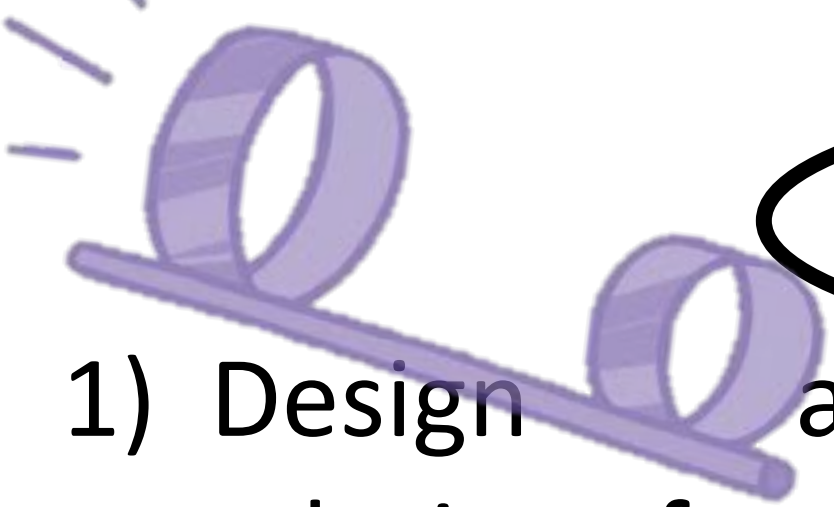
Yours / Required X 100 = your %

____ / _____X 100 = _____%

Look up your % in Gradebook ____%

Up or Down? (↑or↓?) _____

Look for blanks & Labels on Calendar!
Hand in Late! Do "If Time".



Objective

1) Design and produce multiple solutions for the O-Wing problem using the given criteria, at least 2 class variables and your data.
2) Select your Best O-Wing Solution from your data.
3) Demonstrate your Best O-Wing Solution in a scheduled gym flight.