HIED

**Honors Introduction to Engineering Design**

**Supply List:**
- You absolutely need a flashdrive!
- 1 inch 3-ring binder
- Loose leaf- lined paper
- 10 dividers
- Pencils
- Pens
- Inch and cm steel ruler
- Calculator with standard deviation functions
- PLTW Engineering Notebook (you can buy one from me for $3 in first week)

**Summer Work 2017: Due: First day of class**

   Answer the following questions:
   1. What are 2 design challenges engineers face when designing toys?
   2. List the safety criteria for toys.
   3. What happens to the toys if they do not meet the safety criteria? Give one example.
   4. How are toys tested?
   5. List the tests and what they test for.
   6. How do engineers design virtual toys?

   1. Write a brief summary of how a fish and bone inspired a car design.

   1. List the steps involved in bringing an idea for a toy into a child's home.
Supply List:
A Flashdrive!!!
- 1 inch 3-ring binder
- 3 hole-lined paper
- 10 dividers
- Pencils
- Pens
- Steel ruler
- Calculator with sine, cosine, tangent functions
- PLTW Engineering Notebook (you may already have one or you can buy one from me for $3)

Summer Work:
I. Watch the "Bridges of New York" documentary at (link below).
1. Which bridge do you travel over most often?
2. How do engineers use triangles in their bridge designs? Be complete and thoughtful in your answer. More research may be needed.

1. How are robots used in the workplace?
2. What are the robots features that make it so effective?

1. List the steps of development of the robotic arm.
2. Was Enable's robotic arm design patented? Why?
3. Would you like to be part of the Enable the Future and the work they do? Join the 3-D Print Club!

IV. Watch the National Geographic Video "I Didn't Know That: How Rockets Work" at http://video.nationalgeographic.com/video/i-didnt-know-that/idkt-how-rockets-work (link below).
1. If we made a rocket with only water under pressure to act as "fuel" how would it propel itself forward?
2. Which of Newton's Laws does this illustrate?

V. Read the article on bridge failure of the Nipigon Bridge at https://www.cbc.ca/news/canada/thunder-bay/nipigon-river-bridge-closed-transcanada-1.3397831 (link below). Answer the following questions in complete sentences:
1. Who wrote the article? Is this a reliable source?
2. Where is the Nipigon Bridge?
3. Why does it's failure impact the people in the area so badly?
4. What went wrong?
5. What can be done to correct the problem?

Bring this completed assignment to our first class in the fall. See you then! Have a great summer!