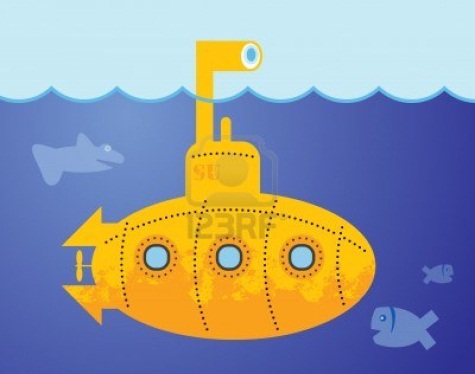
Design your own underwater craft: Student Instructions 

Imagine you are an engineer for Virgin Oceanic or WHOI. You and your team must develop a submersible that can reach Challenger Deep, 10,900 meters below the surface. Draw up a blueprint to show your design idea. Include a list of materials needed to build your submersible. The blueprint should indicate what parts are made of what materials if more than one type of material is used. Remember, a person and lots of cameras and other equipment must fit in there too! Incorporate ways for the passenger to see out and be able to record video while submerged.

\*\*\*You will **present** your Blueprint to the class and explain WHY you chose your materials and design.

First, recall your answers to these **questions**:

1. What do you, the designer, need to know about the machine before you can be sure it is safe to put in the water?
2. How can you find this information without actually putting the machine in the water?
3. If it does float, what must be done in order to make it sink?
4. How do you know how much weight should be added?
5. What must be done to make the machine quickly return to the surface?

Next, Fill out the back of this sheet in order to have a plan for your blue print

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| Materials: What kinds of materials support buoyancy?  What kinds of materials will resist pressure? WHY? |  |
| Shape: What shapes are most buoyant?  What shapes best resist pressure?  How do you know? |  |
| Where will the pilot sit?  What equipment is in there with him/her?  How much space should there be in order to stay buoyant and resist pressure? |  |
| Orientation: What orientation (vertical/ horizontal) will be most buoyant and resist pressure? WHY? |  |
| Equipment and power source: Will your sub be tethered to a battery, or have a portable battery?  How will the batteries be housed? |  |
| Release mechanisms: What if you have to drop weight? How can this be done quickly? |  |