

Monday, Jan 23/Wed, Jan 25/Mon Jan 30

1. Finish the 8 Brain Pop Videos and Review Quizzes related to Matter. (Open document in Google Classroom to see the assignment and list of videos.)
2. Place your first and last name on your Brain Pop Review Quiz Answer sheet in the right corner (assign 73).
3. Turn your paper into me as soon as you finish.

Discovery Ed Density Activities **(Assignment #75)**

- Sign into Discovery Education (button is on WLMS homepage)
 - a. Student **Username** is -----wcp+student id#
 - b. Student **Password** is-----student id #
- Once in Discovery Education, in the SEARCH space type in “Measuring Density” (video)
<https://app.discoveryeducation.com/learn/videos/886a0ecd-33ac-4a5b-a184-fb5c91fe2a07?hasLocalHost=false>
- Watch the video segment called “Measuring Density”. It is 3 min and 19 seconds long (3:19).
- Answer the following questions in complete sentences on notebook paper (assignment #75)
 1. Define density.
 2. How do you find the mass of an object?
 3. How do you find the volume of a rectangular shaped object?
 4. How do you find the volume of an odd or irregular shaped object?
 5. What formula do you use to find the volume of a regular shaped object?
 6. What formula do you use to find the density of an object?
 7. What is the density of water?
 8. If an object has a density of less than 1 g/cm³, will it float or sink in water?
 9. If an object has a density of more than 1 g/cm³, will it float or sink in water?
- In the search button, type “Explaining Density” (video segment 5:25)
- Watch the video segment called Explaining Density then do the following:
 1. Draw the density column or density tower with the 5 liquids in it. Label the liquids and color them appropriately (later if you don't have colored pencils with you.)
 2. Draw the objects in the liquids in their appropriate positions. Label the objects.
 3. Do research to find the densities of the 5 liquids that are in the density tower. Label the densities of each liquid next the name of each liquid.
 4. Predict what you think the density of each object is based on the position that it landed in the layers. Record your prediction next to the name of the object.
- In the search button, type “Sink or Float?” (Exploration)
- Complete the exploration and record three things you learned from this exploration.
- Watch the video called “Setting up the Tower” (5:52)
- Watch a short video about the lightest and lowest density solid on the planet: AEROGEL
 - <https://www.youtube.com/watch?v=kHnen2nSmDY>
 1. Describe 3 physical properties of aerogel.
 2. Describe 2 ways that it is used or might be used in the future.
- **Creative Connections**---Read the directions attached to Weebly. Try to build a density tower at your house. Try dropping some objects in your tower. Make an answer key to your tower. Take a picture of you with your successful tower. Email me the photo or print it and bring it in.

CREATIVE CONNECTIONS

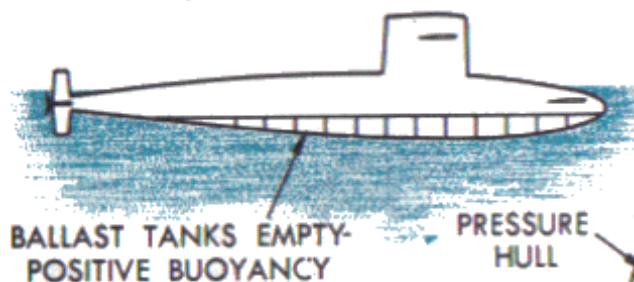
1. **DENSITY COLUMN** - Many liquids and solids differ in their *densities*. Instill your *creative* abilities and *apply* what you have learned in class by *creating* a **Density Column**.

- Do research on the density of liquids and solids and build a **liquid column** that has at least **4 different liquids** in it that **separate into 4 distinct layers** in your column.
- If you want to challenge yourself even more, do some research on various objects and find **at least two different objects with different densities** that **would float on two different layers** in your Density Liquid Column.
- Place those objects in your liquid column and make sure they float on different layers.
- Provide an **answer key** to your Density Column. **Draw your Liquid Column** and **label it** with the following:
 - The name of the liquid layers
 - The name of the objects
 - The density of each liquid layer
 - The density of each object
- This activity works best (and you use a lot less liquid) if you use a very narrow tube or container such as a medium size test tube or graduated cylinder.
- Either bring your Density Column to class or take a photo of your column (with you in the picture either standing or sitting next to the column you made). Print your photo and bring it into class with your answer key!

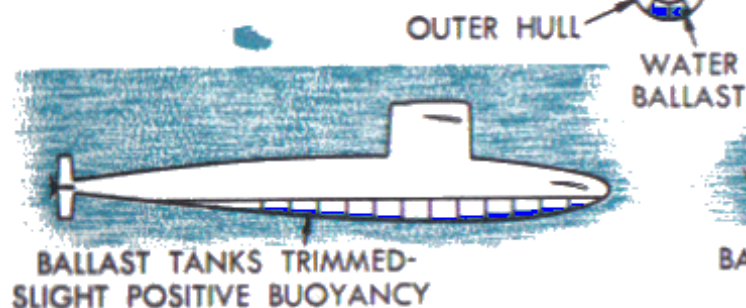
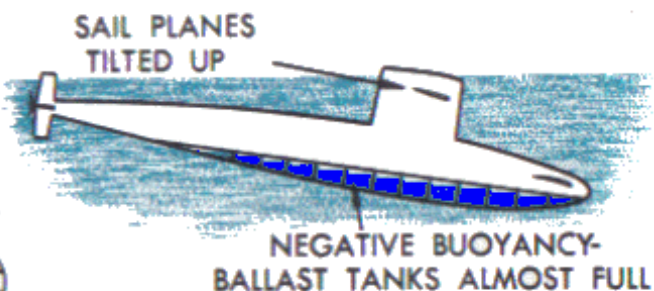
2. **BUILD A SUBMARINE** – create a submarine that has the ability to first float in water, sink, then float again. You should be able to demonstrate the floating, sinking and floating again within 3 minutes and without having to take your submarine out of the water.

- Since you are not allowed to remove your submarine from the water to get it to sink and float, you are allowed to attach tubing etc. to your submarine to help in operating it (to get it to sink then float again).
- Bring your submarine into school. I will allow you to either demonstrate it during class or Smart Block. If you would rather make a video of the operation of your submarine, you are welcome to do that as well.
- See diagrams on next page to help you understand the operation of a submarine.

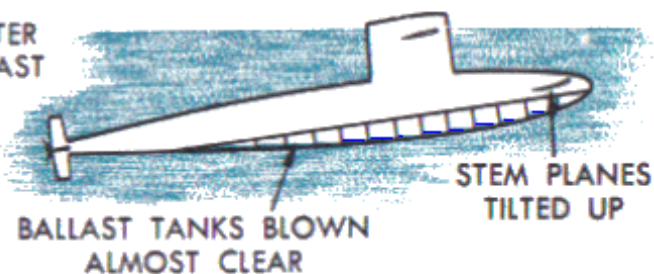
A. RUNNING ON THE SURFACE



B. SUBMERGING

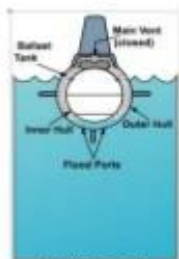


C. RUNNING SUBMERGED

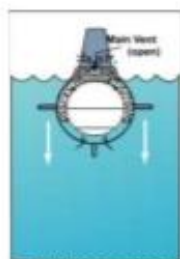


D. SURFACING

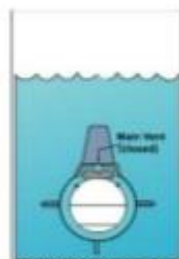
How does it work?



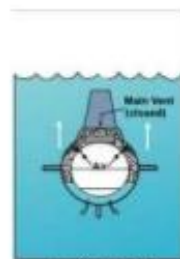
surfaced



submerging



submerged



surfacing

- A submarine resting on the surface has **positive buoyancy**, which means it is less dense than the water around it and will float. At this time, the ballast tanks are mainly full of air.
- To submerge, the submarine must have **negative buoyancy**. Vents on top of the ballast tanks are opened. Seawater coming in through the flood ports forces air out the vents, and the submarine begins to sink.
- The submarine ballast tanks now filled with seawater is denser than the surrounding water. The exact depth can be controlled by adjusting the water to air ratio in the ballast tanks. Submerged, the submarine can obtain **neutral buoyancy**. That means the weight of the submarine equals the amount of water it displaces. The submarine will neither rise nor sink in this state.
- To make the submarine rise again, compressed air is simply blown into the tanks forcing the seawater out. The submarine gains **positive buoyancy**, becomes less dense than the water and rises.