

PRESSURE

Use the resources on Mr. Hanna's website to complete the following assignment.

VOCABULARY:

- 1) PRESSURE – *a force pushing on a surface*
- 2) FLUID – *a substance with no fixed shape which yields easily to pressure (liquid or gas)*
- 3) ATMOSPHERIC PRESSURE – *the result of the air that is weighing down on a specific point*
- 4) BERNOULLI'S PRINCIPLE – *the pressure exerted by a faster moving fluid is less than the pressure of the surrounding fluid*
- 5) BUOYANT FORCE – *upward net force acting on a submerged object as a result of the difference in pressure acting on the bottom and the top of the object*
- 6) ARCHIMEDES' PRINCIPLE - *the buoyant force on an object is equal to the weight of the fluid displaced by the object*

SHORT ANSWER:

- 7) What types of substances would be considered a "fluid"?
Liquid or gas
- 8) Why does atmospheric pressure drop when you go to a higher elevation (like climbing a mountain or flying in an airplane)?
There is less air mass weighing down on you.
- 9) What is responsible for sucking your shower curtain in when you take a hot shower?
Bernoulli's principle – the warmer, faster moving fluids inside the shower have lower pressure, so the higher pressure outside the shower pushes the curtain in on you
- 10) Why do deep-sea divers need to wear special equipment to help them breathe and avoid being crushed?
Pressure increases with depth, so the high pressures deep under the sea must be balanced by the special equipment
- 11) How is the concept of density important in determining whether an object sinks or floats in a fluid?
Objects which are less dense than the fluid they're in will float; objects which are more dense than the fluid they're in will sink. That's why when you blow up a balloon it will sink, because the carbon dioxide you breathe out is more dense than the air. However, a balloon filled with helium will float because helium is less dense than air.
- 12) How does the buoyant force determine if an object will sink or float in a fluid?
In order to float, the buoyant force must be equal to the force of gravity on the object (the object's weight).
- 13) According to Archimedes' Principle, what must a boat do in order to float in water?
In order for a boat to float, it must displace enough water to equal its own weight.
- 14) Why does a tennis ball float lower in the water than a beach ball?
Because a tennis ball is heavier than a beach ball, it must displace more water to balance out the force of gravity.

