

FLUIDS LAB PHYSICS

Name _____
Date _____ Period _____

Cartesian Diver

Squeeze bottle. What happens to the pressure in the water bottle?

What happens to the diver?

Explain what happens to the air inside the diver and why the diver does what it does?

How does a fish's air bladder work? (This allows a fish to rise and fall in depth without using its fins)

Pressure in an Inverted Cup

Invert a cup 1/2 filled with water in a container filled with water. Now use the turkey baster to completely fill the cup with water.

Why can't you fill the cup by squirting water into it?

How do you get it filled and why does this work?

Ping Pong Balls

Describe how the ping pong balls illustrate Bernoulli's Principle.

Describe how the paper and the books or the two suspended papers illustrate Bernoulli's Principle.

Surface Tension and Water Pressure (Part 1)

Invert a cup full of water with a piece of transparency to hold the water inside the cup. Calculate the pressure that the water exerts (2 ways) and compare this to the atmospheric pressure to show why the water stays put.

(over)

$P = \text{weight of water} / \text{area of transparency} = \underline{\hspace{2cm}}$ (include units)

$P = \text{density (m/v)} \times h \times g = \underline{\hspace{2cm}}$ include units)

Now invert the cup with a screen in place of the transparency. Why doesn't the water leak through the holes?

Surface Tension and Water Pressure (Part 2)

pennies in water = # of pennies in soap **and** water =

Why do more pennies fit in one container than the other?

Diffusion of Food Coloring

Hot water / cold water observation:

Time for hot water uniformity (include units)

If the diffusion rate is proportional to velocity, how much longer will it take the cold water to uniformity? Assume the cold water is 20 °C and the hot is 90 °C. (Use $\frac{1}{2} mv^2 = \frac{3}{2} k T$)

Actual time for cold water uniformity (include units)

Hydraulics

Why can pushing on one syringe cause the other to move?

If there was no friction in the syringes, how much weight could the large syringe lift if a weight of 1N was placed on the small syringe?

Viscosity

Which has a higher viscosity water or Karo's Syrup? What evidence do you have to support your answer?