Fluids Worksheet! $P=F/A$ $P=\rho gh$ $Fb=\rho Vg$ $\rho=m/V$ $Wt.=mg$ $\rho=1000\ kg/m^3$

1. A car weighs 8500 N. The wheels are missing so the force is applied over an area of 7.2 m^2. What is the pressure?

2. Atmospheric pressure is 101.3 kPa (= 1 atm.) How much force is exerted on a door that is 2.3 m tall by 0.9 m wide?

3. You dive to the bottom of the deep end of a pool, a depth of 3 m. What pressure do you feel in your ears?

4. A gimmick at a local pub has beverages served in thin flagons 1 meter tall. What is the pressure at the bottom of the container, assuming it's just water?

5. The small pool is 5 m wide by 10 m long by 1 m deep. What's the pressure at the bottom of the pool?

6. On April 10, 1963, the submarine USS Thresher was lost with all hands when it exceeded crush depth of 535 m. What is the pressure at that depth? Assume seawater density = 1030 kg/m^3.

7. What is the pressure at the bottom of the Mariana Trench? Depth = 10,900 m, seawater density approx.= 1020 kg/m^3.

8. A block of copper suspended in water experiences a buoyancy force of 13 N. What is the volume of the block?

9. A steel cylinder is suspended in water. Cylinder volume is $3 \times 10^{-6}\ m^3$. Density of steel is 7800 kg/m^3. What is the mass of the cylinder?

10. The cylinder from question #9 experiences what buoyancy force while suspended in water?