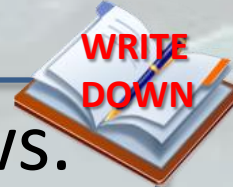


A white sports car is shown driving through water, creating a large splash. In the background, a person is visible in a small boat. The scene is set against a light blue, hazy background.

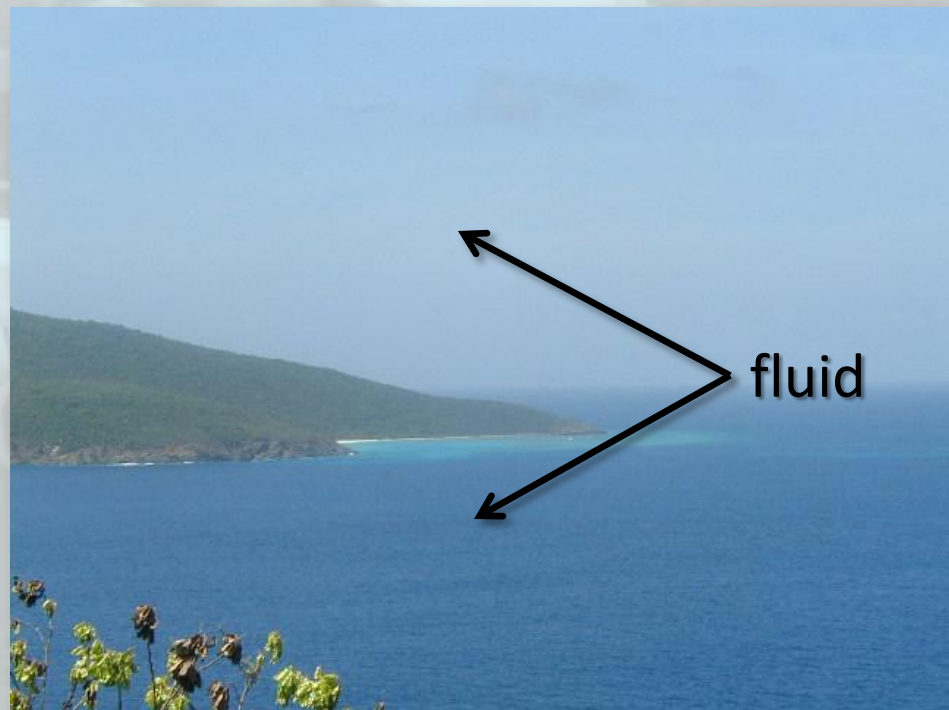
Pressure in a Fluid

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What's a FLUID?



- A fluid is anything that flows.
- Fluids include:
 - Liquids
 - and*
 - Gases
- Examples
 - Water
 - Air



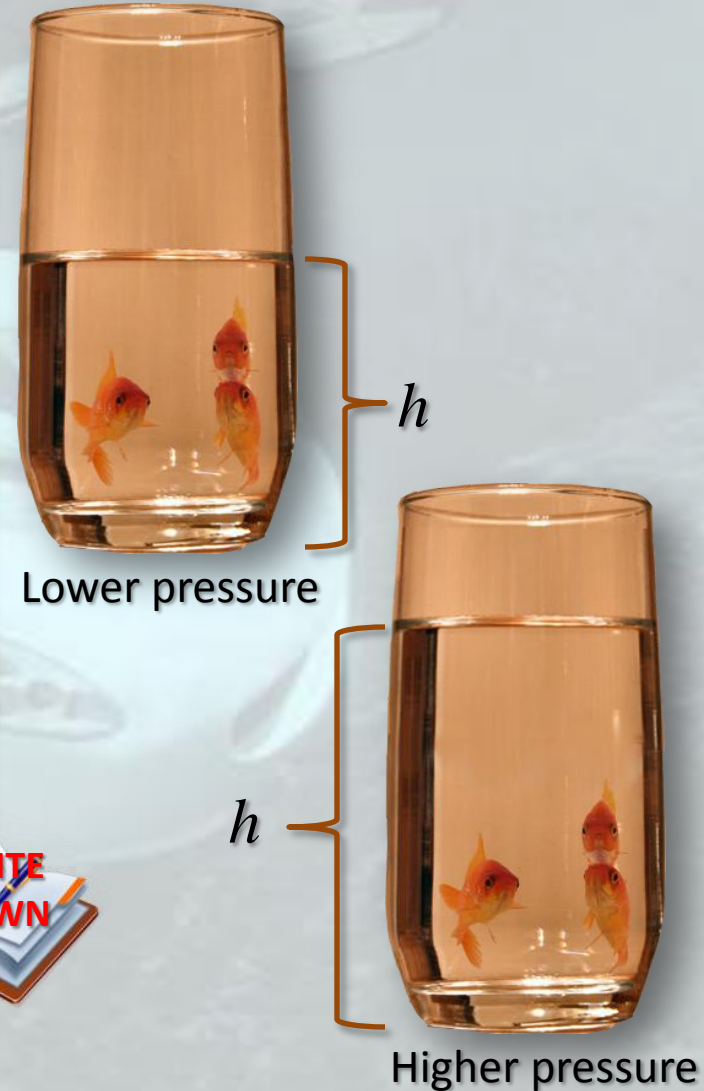
FLUIDS HAVE WEIGHT

- Imagine some goldfish in a glass of water on a balance.
- The water has weight.
- The weight of the water is pressing down on the fish.
- If you add water, the weight and height of the water increases.
- So does the pressure on the fish!



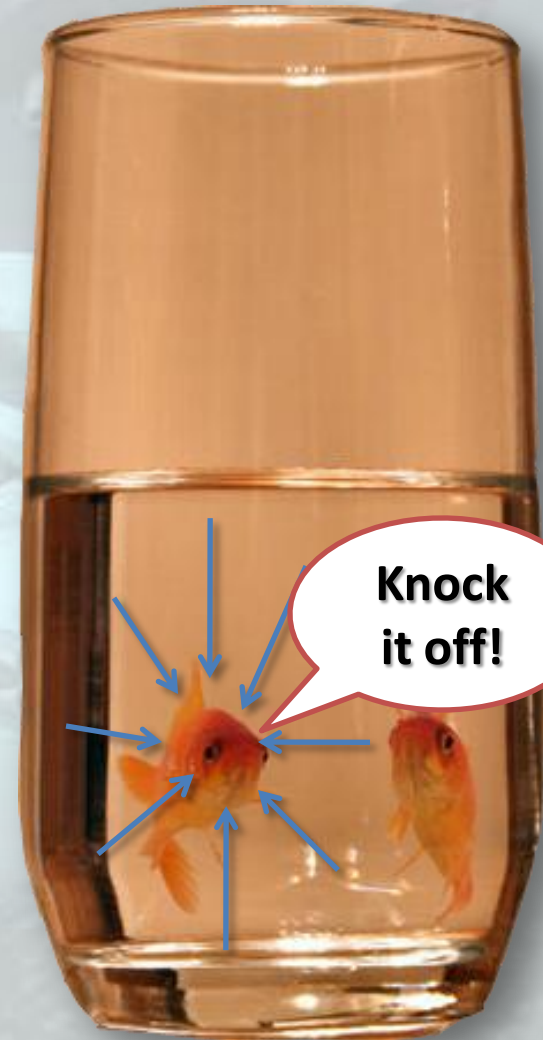
PRESSURE and FLUID HEIGHT

- The higher the column of fluid is, the more it weighs and the greater the pressure it exerts.
- The deeper you go in a fluid, the more the fluid above you weighs, and the greater the pressure is.



DIRECTION OF PRESSURE

- Pressure in a fluid is exerted in all directions at right angles to the surface it is exerted on.



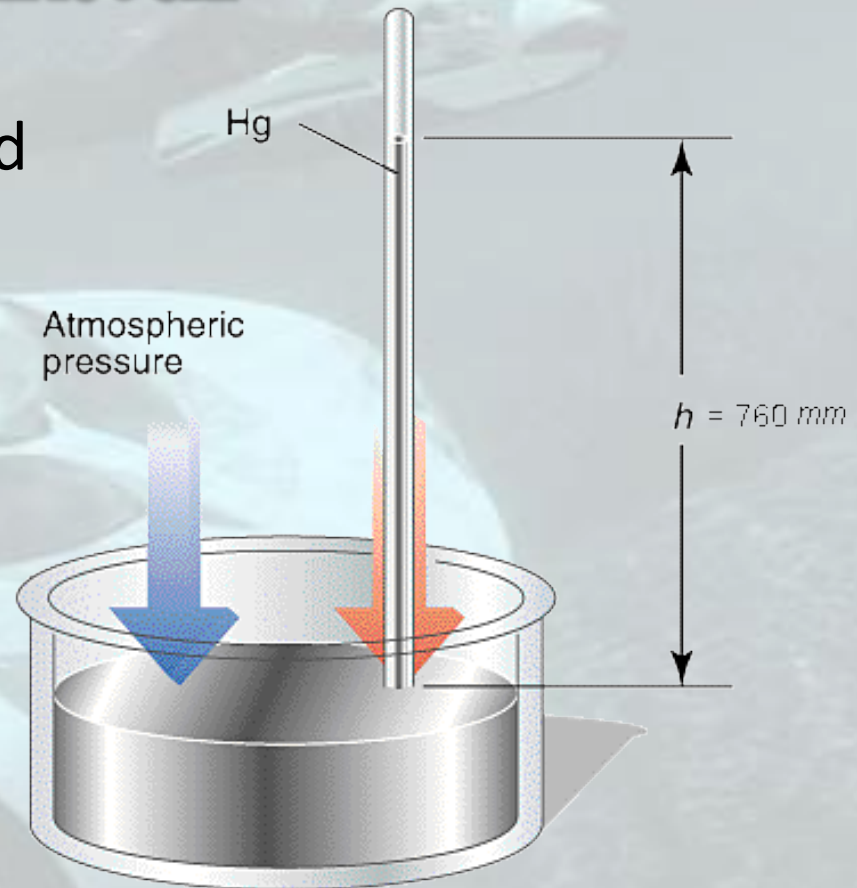
AIR PRESSURE

- Atmospheric pressure = pressure produced by the weight of the blanket of air surrounding earth (also called air pressure).
- The higher you go in the air, the lower the pressure is.
- Barometer = device for measuring air pressure



The Barometer

- Evangelista Torricelli invented the mercury barometer in 1643 by inverting a mercury filled glass tube into a dish of mercury.
- He found that air pressure could support a column of mercury 760 *mm* high.
- This knowledge was helpful in quantifying the relationship between the pressure on a gas and its volume.



Note: Standard atmospheric pressure is $760 \text{ mm Hg} = 1 \text{ atm} = 101.3 \text{ kPa}$