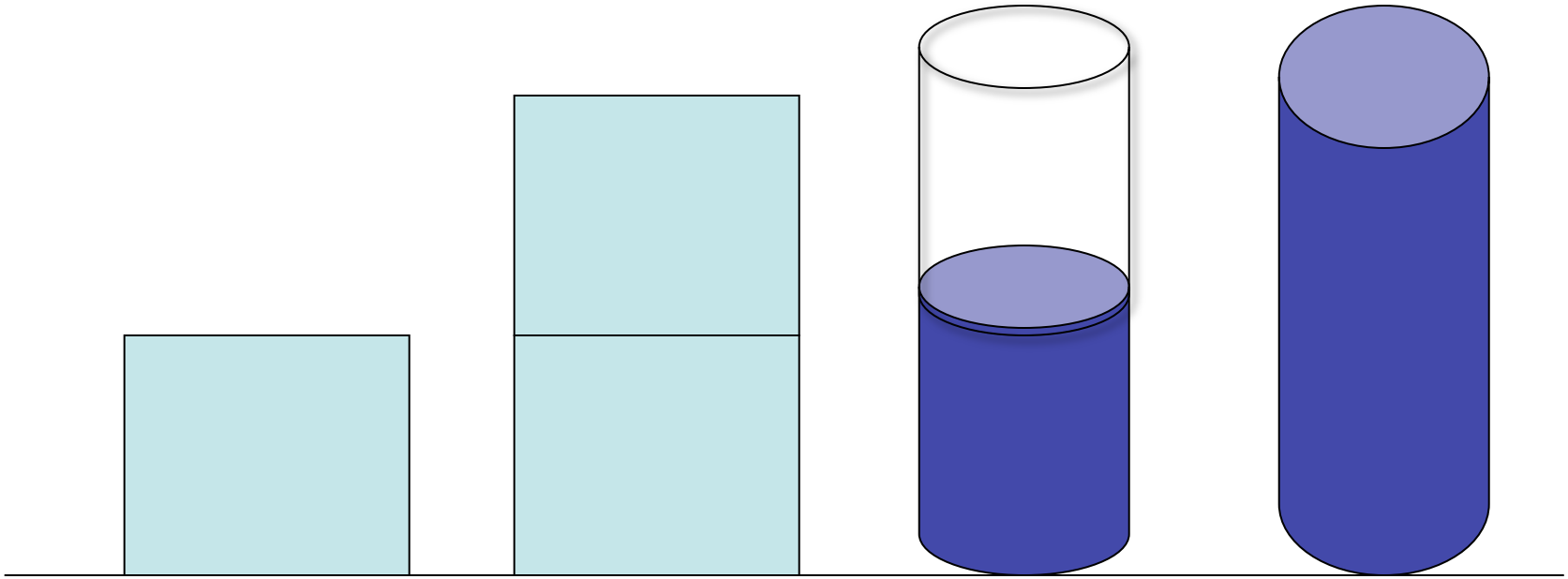
Thursday, April 28

- Do Now: Worksheet
- Notes: Will it Float?
- Lab Discussion
- Coke versus Diet Coke
- Ticket to Leave
- Homework: Re-read the packet (Hewitt ch 19) and your notes from today. Come to class tomorrow with questions.

Will it float?

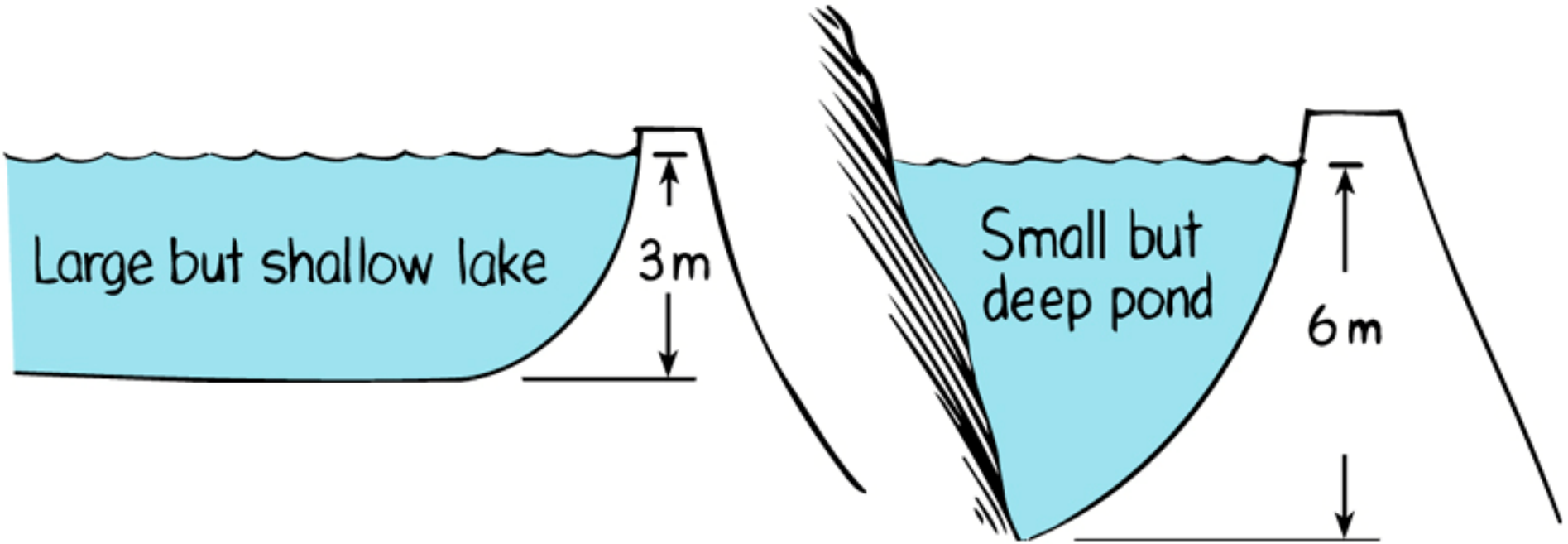
Liquid pressure

- Pressure is defined as the force per unit area.



Density and Depth alone determine pressure

- Pressure due to liquid = weight density x depth
- Weight density is weight/volume



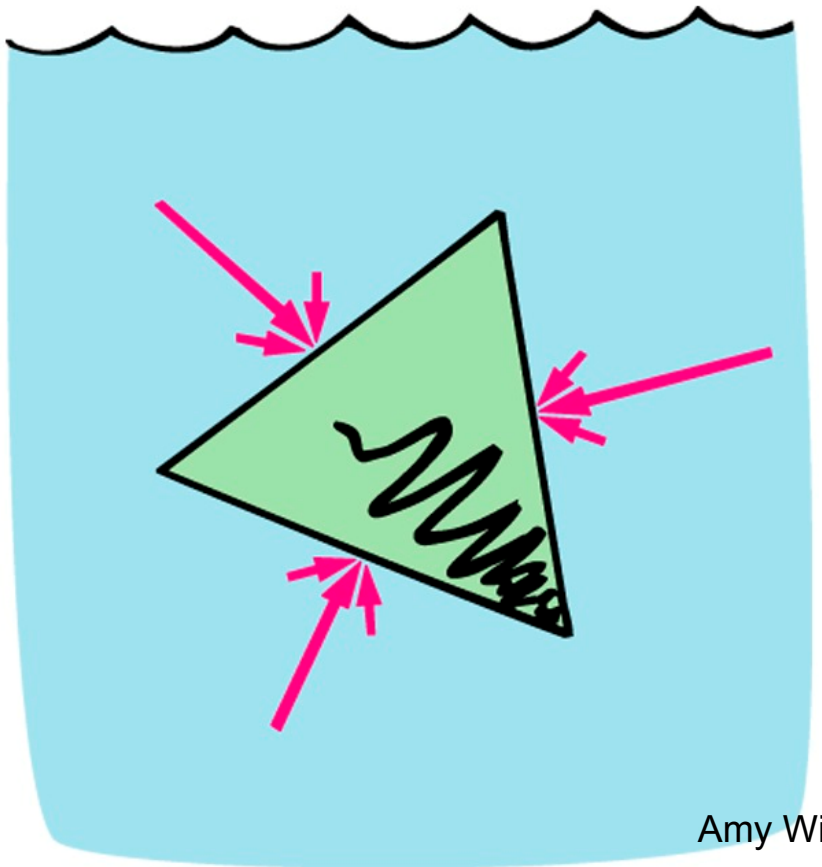
Therefore…

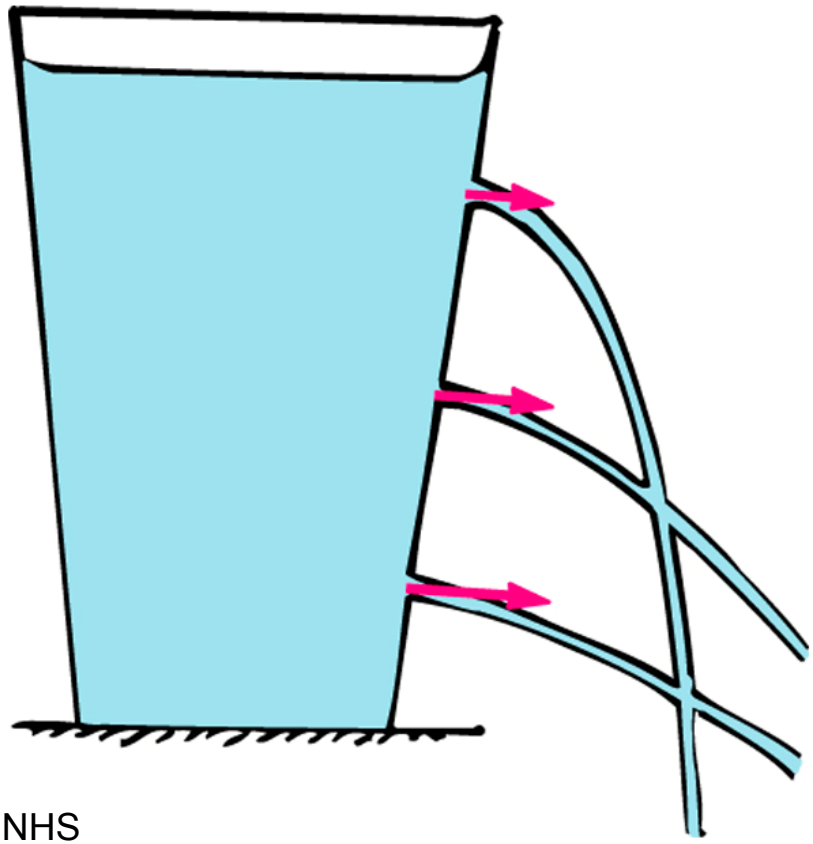
- At a given depth, a given liquid exerts the same pressure against ANY surface.

Questions

- Which dam must withstand the greatest pressure?
  - One with a huge, but shallow, reservoir behind it.
  - One with a deep river behind it
- Where must a dam be strongest?

Liquid pressure against a surface

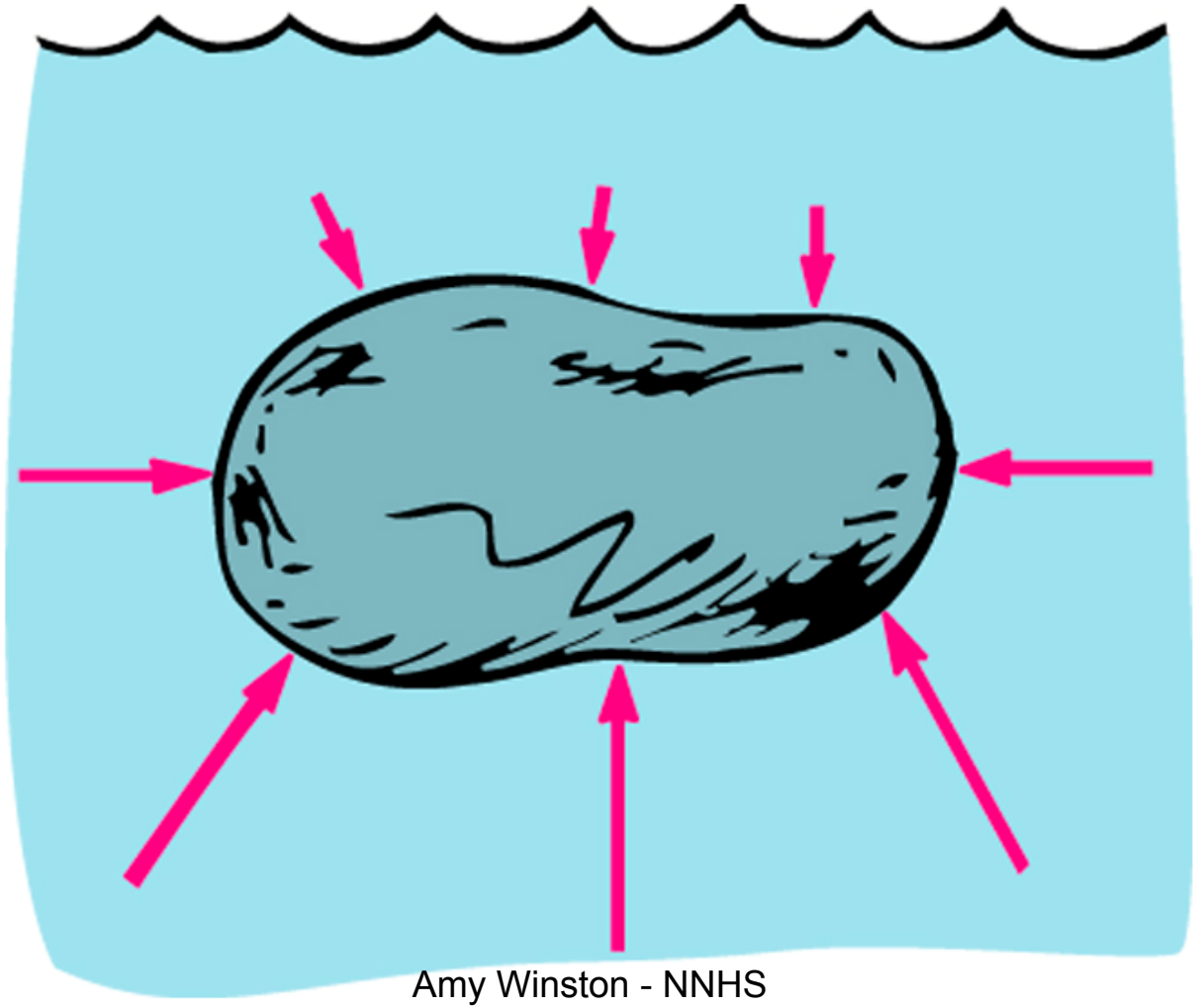




Buoyancy

- The apparent loss of weight of objects when submerged in a liquid.
- The upward force that a liquid exerts on a submerged object.

A net force



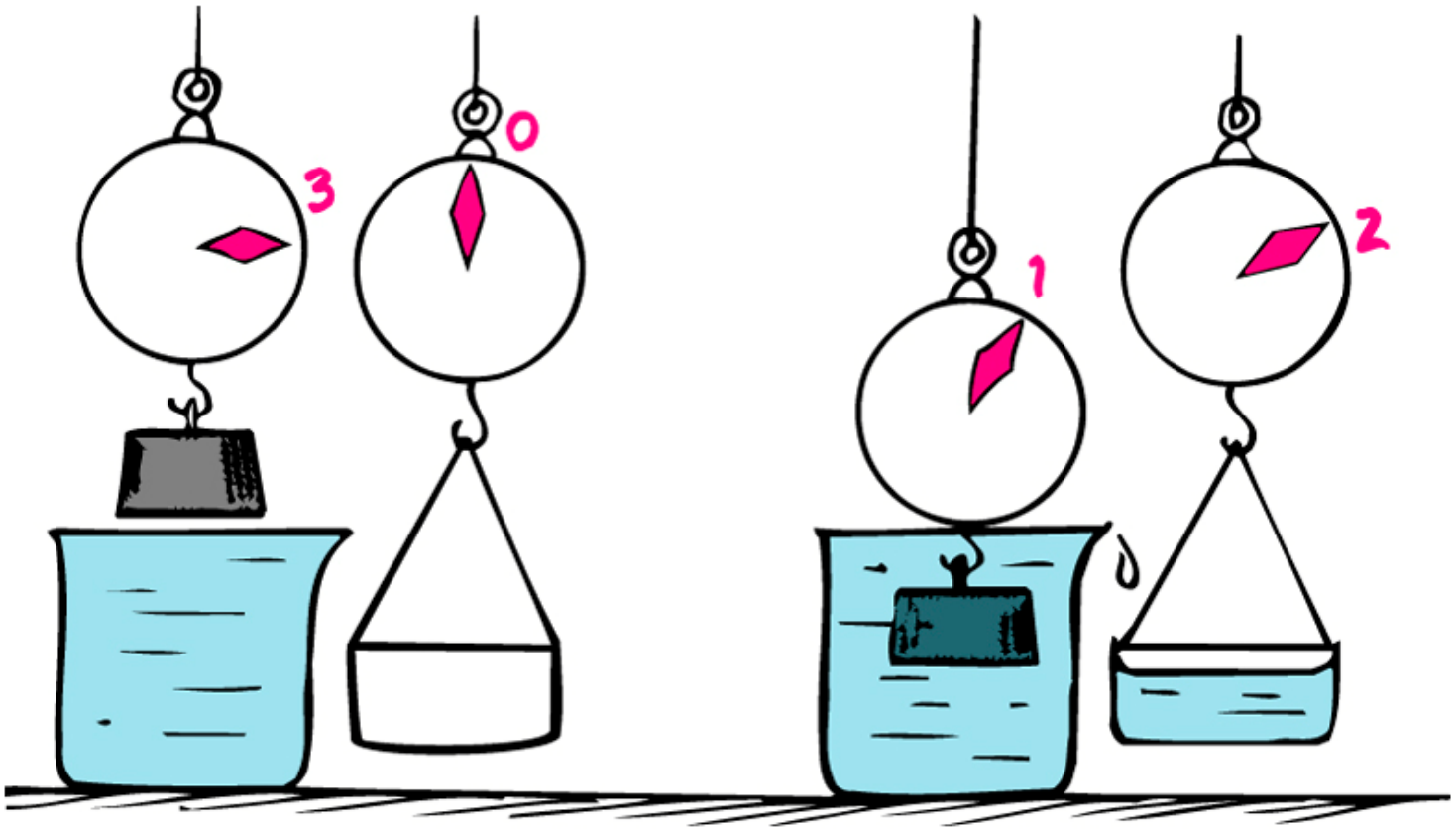
Amy Winston - NNHS

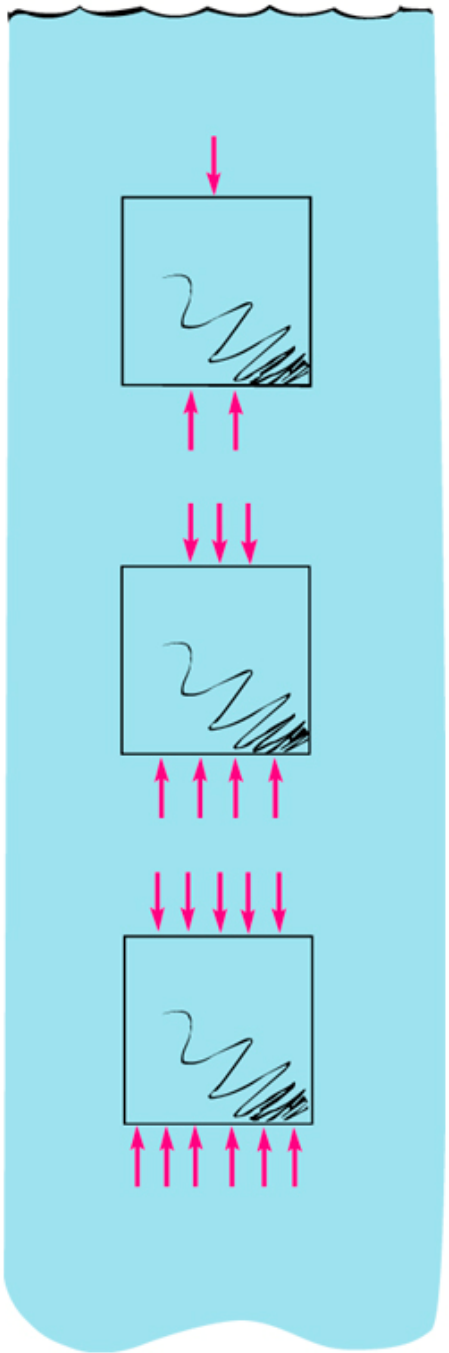
Note

- A fully submerged object displaces a volume of water equal to its volume.

Archimedes Principle

- An immersed object is buoyed up by a force equal to the weight of the fluid it displaces
- Valid for both liquids and gases.
- Immersed = partially or completely submerged





- In which position is the buoyant force the greatest?

Questions

- A 1-liter container filled with mercury has a mass of 13.6kg and weighs 133N. When it is submerged in water, what is the buoyant force on it?

- A stone is thrown into a deep lake. As it sinks deeper and deeper into the water, does the buoyant force on it increase, decrease or remain unchanged?

Summary

- A submerged object's volume, not its weight, determines the buoyant force on it.

Floating versus Sinking

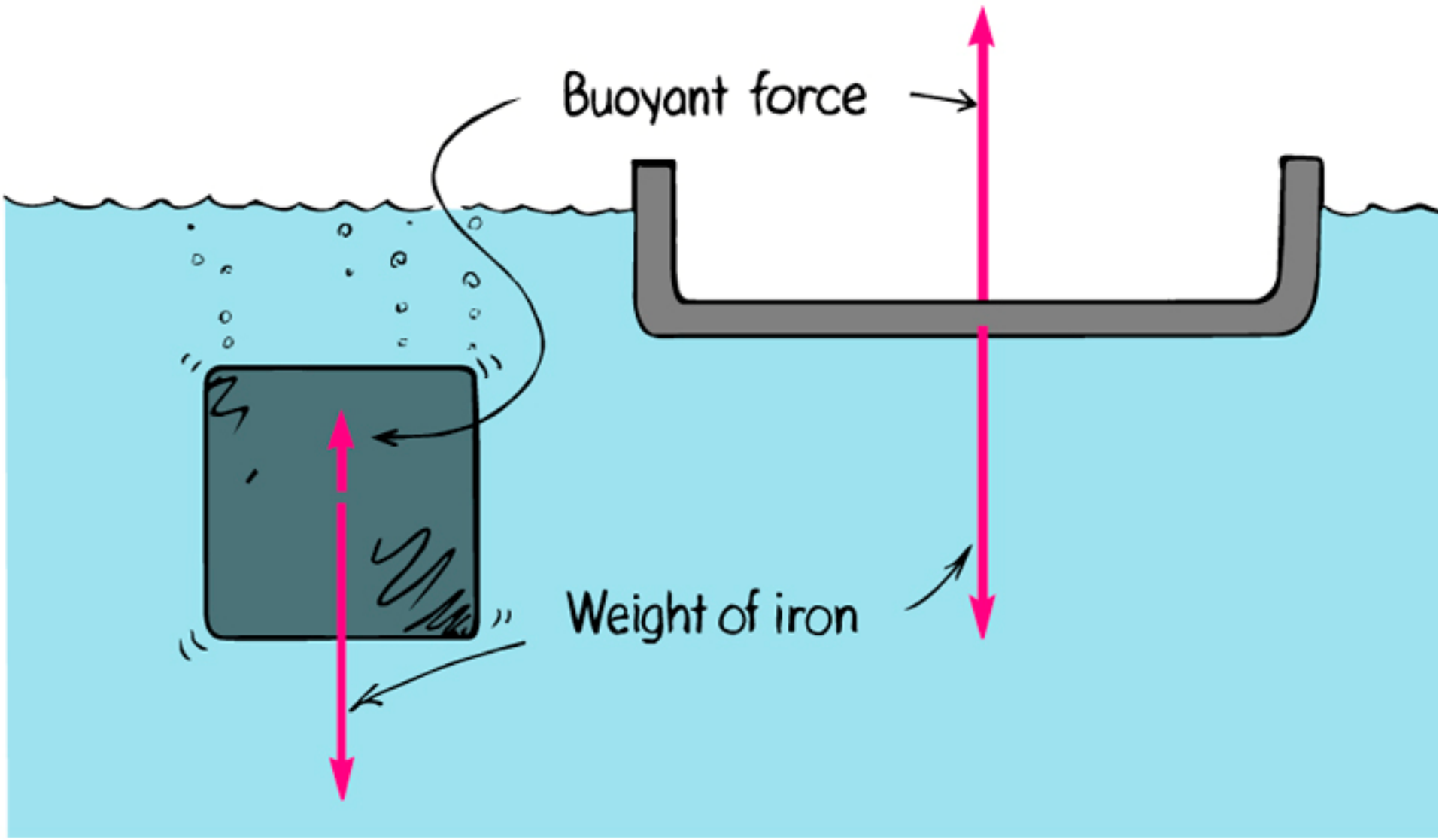
- Compare the weight with the buoyant force.

Summarize

- An object more dense than the fluid in which it is immersed, sinks
- An object less dense than the fluid in which it is immersed, floats
- An object with density equal to the density of the fluid in which it is immersed neither floats not sinks.

Examples of Changing Density to Float

- Swimming
- Submarine
- Fish
- Crocodiles
- Life Vests



Principle of Flotation

- A floating object displaces a weight of fluid equal to its own weight.