

Neutral Buoyancy

What is Neutral Buoyancy and how do we apply it?

Mass

- Amount of matter in an object

Weight

- Amount of gravitation force on a mass

$$W = mg$$

Weight of object = mass of object x acceleration of gravity

Density

- Is a basic property of matter that measures the amount of mass of an object per unit volume
- $D = M/V$
- The density of freshwater is 1 g/cm^3
- Density of saltwater is about 1.025 g/cm^3

The diagram shows the density formula $D = \frac{m}{v}$ on a white background with a green border. The letter 'D' is in red and has a blue line pointing to the word 'density' below it. The letter 'm' is in red and has a blue line pointing to the word 'mass' above it. The letter 'v' is in red and has a blue line pointing to the word 'volume' below it. The equals sign and the fraction bar are in red. A small 'wikiHow' logo is in the bottom right corner.

$$D = \frac{m}{v}$$

density = D , mass = m , volume = v

Water's Unique Property

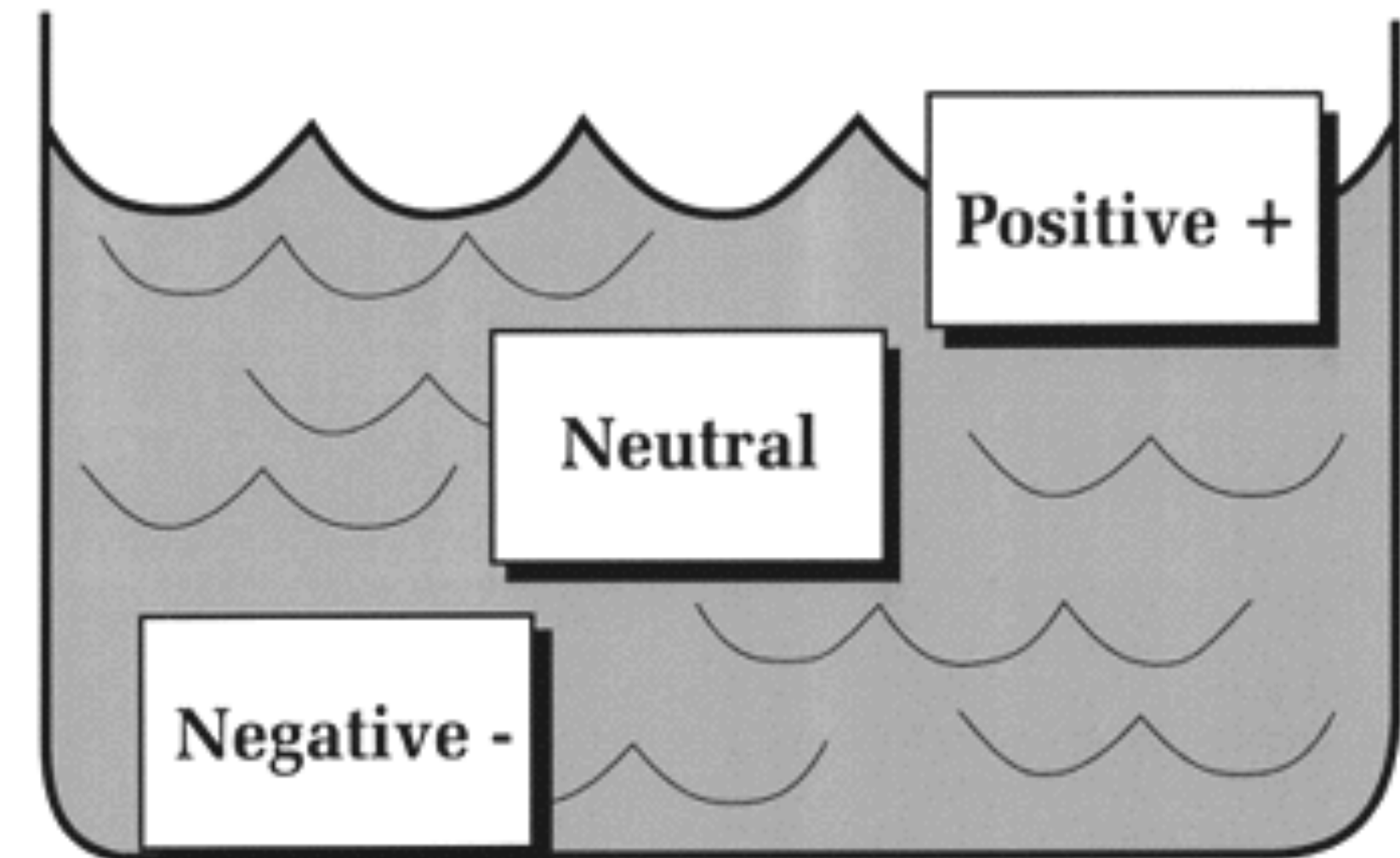
- It's solid phase (ice) is less dense than most other solids, enabling it to float in liquid water.

Buoyancy

- Is the tendency of a fluid (gas or liquid) to exert an upward force on an object that is submerged in it.

Types of Buoyancy

- Positively Buoyant will float
- Negatively Buoyant will sink
- Neutrally Buoyant displaces a quantity of matter of equal density.



Saltwater

- An object placed in saltwater is more buoyant than the same object placed in freshwater.
- Dissolved salts in seawater cause the water to be more dense.



The Challenge

How do we find Neutral Buoyancy of the ROV's?

How do we maintain Neutral Buoyancy when we add our science instrumentation?

How do we maintain centre of gravity when placing components onto ROV?

