PEER Life Science Water’s the Matter-Measuring pH Notes Outline KEY

**Introduction**

* pH stands for the “potential or power of hydrogen” and measures the concentration of hydrogen ions in a solution.
* pH is also described as “acidity” and is a physical/chemical property of water.

**Lesson**

* An ion is an atom of hydrogen that has lost its electron.
* The pH of water is measured on a scale from 0 to 14, which is a logarithmic scale. This means that an increase or decrease of an integer value changes the concentration by a factor of ten.
* Approximately 60% of a normal adult is made up of water, which reveals that it is essential for life.
* Water is made up of hydrogen ions (H+) linked to hydroxyl ions (OH-) to form H2O, which is the molecular formula of water.
* A mole of a substance contains a particular number of molecules. This number is called Avogadro’s number and is equal to 6.02 x 1023.
* In water, a few water molecules split and create free H+ and free OH- molecules. In pure water, deionized water, these amounts are equal/different.
* An acidic solution has a low/high pH, which means that is has a lower/higher concentration of hydrogen ions than a neutral solution. Any solution with a pH more/less than 7.0 is said to be acidic.
* A basic solution has a low/high pH, which means that is has a lower/higher concentration of hydrogen ions that a neutral solution. Any solution with a pH lower/greater than 7.0 is said to be basic.
* Neutral solutions have a pH value close to or equal to 7.0.
* On the pH scale from 0 to 14, 0 is the most acidic and 14 is the most basic.
* The majority of aquatic organisms prefer a pH range of 6.5-9.0. If pH is not withing this optimal level, the organism may not be able to survive.
* In general, more acidic/basic conditions tend to cause animals to become less excitable.
* Acidic and alkaline (basic) compounds can be naturally released into the water from different types of rocks or soil, which can change the pH of the water.
* Carbon dioxide in water can form a weak acid/base.
* The formation of sulfuric acid due to water flowing over or through rocks at mine sites can result in lower pH levels.
* Rain water can combine with airborne pollutants to create nitrous oxides and sulfur dioxides that will make the rain water more acidic/basic.