

Friday, 09/09/16

P.S.1; P.S. 2-11:

Distinguish between chemical and physical properties and changes.

By the end of today,
IWBAT...

Explain differences in acids, bases & salts

Essential Question:

How do we differentiate between acids, bases and salts?

Topic:

Acids, Bases & Salts (I)



Acids & Bases

They are everywhere..

In your food

In your house

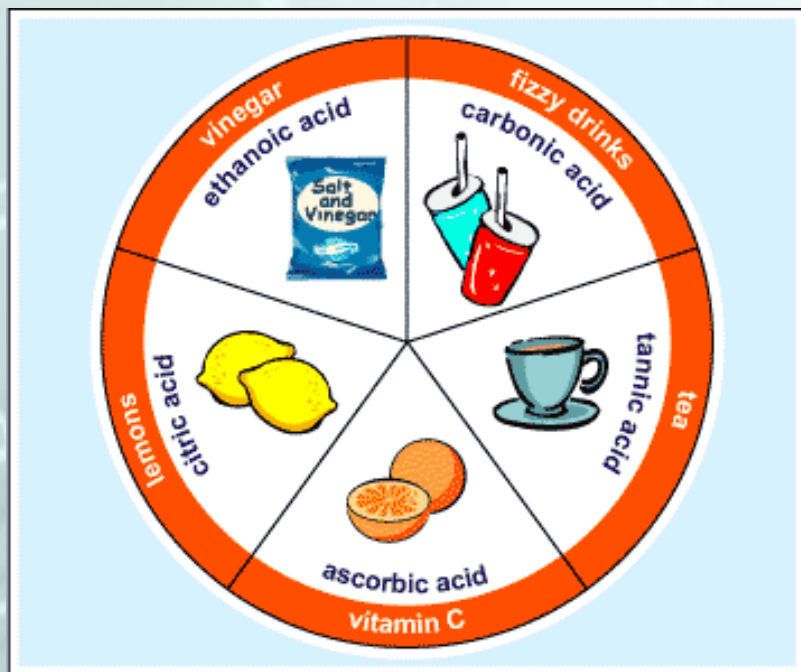
EVEN IN YOU!!!!

What is an acid?

- An acid is a solution that has an excess of H^+ ions. It comes from the Latin word acidus that means "sharp" or "sour".
- The more H^+ ions, the more acidic the solution.



Properties of an Acid



- Tastes Sour
- Conduct Electricity
- Corrosive, which means they break down certain substances. Many acids can corrode fabric, skin, and paper
- Some acids react strongly with metals
- Turns blue litmus paper red

Picture from BBC Revision Bites

http://www.bbc.co.uk/schools/ks3bitesize/science/chemistry/acids_bases_1.shtml

Uses of Acids



Acids

- Acetic Acid = Vinegar
- Citric Acid = lemons, limes, & oranges. It is in many sour candies such as lemonhead & sour patch.
- Ascorbic acid = Vitamin C which your body needs to function.
- Sulfuric acid is used in the production of fertilizers, steel, paints, and plastics.
- Car batteries

What is a base?



- A base is a solution that has an excess of OH^- ions.
- Another word for base is alkali.
- **Bases** are substances that can accept hydrogen ions

Properties of a Base



Bases

- Feel Slippery
- Taste Bitter
- Corrosive
- Can conduct electricity. (Think alkaline batteries.)
- Do not react with metals.
- Turns red litmus paper blue.

Uses of Bases



- Bases give soaps, ammonia, and many other cleaning products some of their useful properties.
- The OH^- ions interact strongly with certain substances, such as dirt and grease.
- Chalk and oven cleaner are examples of familiar products that contain bases.
- Your blood is a basic solution.

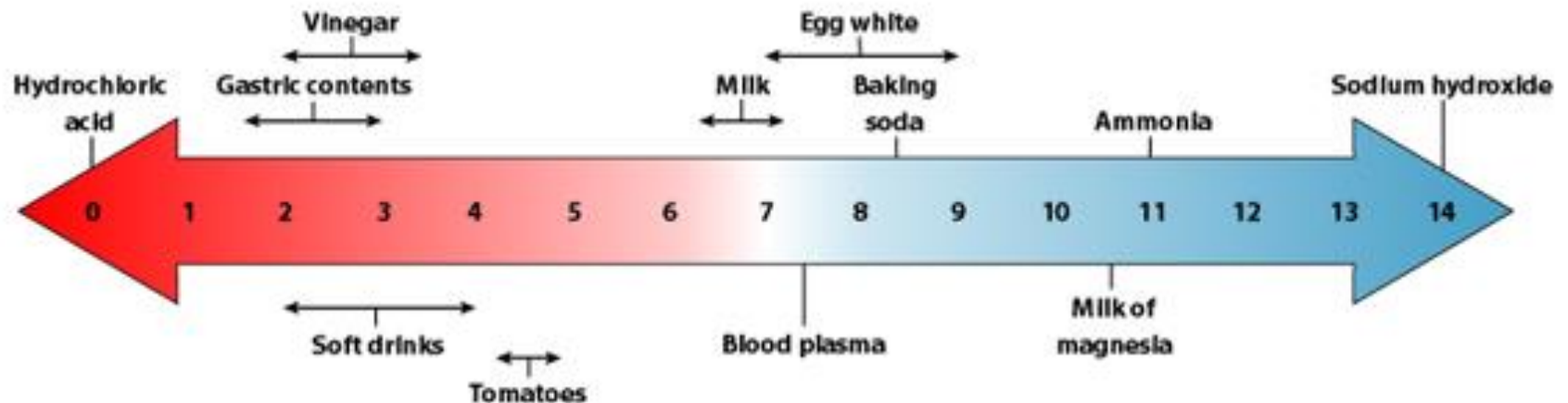
pH Scale



- **pH** is a measure of how acidic or basic a solution is.
- The pH scale ranges from 0 to 14.
- Acidic solutions have pH values below 7
- A solution with a pH of 0 is very acidic.
- A solution with a pH of 7 is neutral.
- Pure water has a pH of 7.
- Basic solutions have pH values above 7.

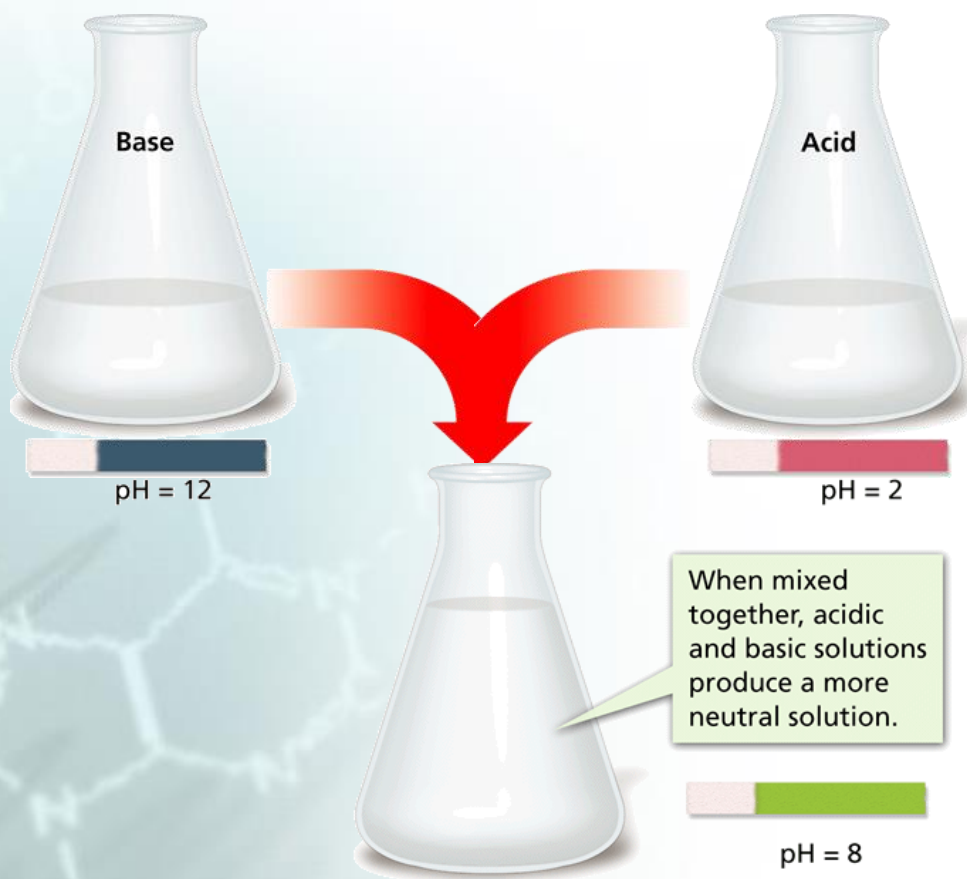
pH Scale

- A change of 1 pH unit represents a tenfold change in the acidity of the solution.
- For example, if one solution has a pH of 1 and a second solution has a pH of 2, the first solution is not twice as acidic as the second—it is ten times more acidic.



Acid – Base Reactions

A reaction between an acid and a base is called *neutralization*. An acid-base mixture is not as acidic or basic as the individual starting solutions.



Acid – Base reactions

Common Salts	
Salt	Uses
Sodium chloride NaCl	Food flavoring; food preservative
Potassium iodide KI	Additive in "iodized" salt that prevents iodine deficiency
Calcium chloride CaCl ₂	De-icer for roads and walkways
Potassium chloride KCl	Salt substitute in foods
Calcium carbonate CaCO ₃	Found in limestone and seashells
Ammonium nitrate NH ₄ NO ₃	Fertilizer; active ingredient in cold packs

Each salt listed in this table can be formed by the reaction between an acid and a base.

Monday, 09/12/16

P.S.1; P.S. 2-11:

Distinguish between scientific hypotheses and scientific theories.

By the end of today,
IWBAT...

Explain differences in acids, bases & salts

Essential Question:

How do we differentiate between acids, bases and salts?

Topic:

Acids, Bases & Salts (II)

Identifying Acids and Bases

- Acids have a pH from 0-7
- Lower pH value indicates a stronger acid.

- Bases have a pH from 7-14
- Higher pH value indicates a stronger base.

Definitions of Acids and Bases

- An acid is a substance that breaks into $[H^+]$ ions in an aqueous solution.
- A Base (alkaline) is a substance that breaks into $[OH^-]$ ions in an aqueous solution.
- Note: aqueous solution is any solution where H_2O is the solvent.

Did we Miss something??

- What happens when the pH of a substance is 7?
- Ans: A pH level of 7 indicates a Neutral Substance i.e: Water!

Test Your Knowledge

- What is the range of an ACID on the pH scale?

Ans: 0-7

- What is the range of a BASE and what is another name for a BASE?

Ans: 7-14, Alkaline

Characteristics Of Acids

Acids can be characterized by:

1. A sour taste.
2. It turns blue litmus paper red
3. It tastes sour. Try drinking lemon juice (citric acid)

Characteristics of Bases

A Base is characterized by:

1. A bitter taste. (Milk of Magnesia)
2. It feels slippery. (Soapy Water)
3. It turns Red Litmus Blue.

Why Learn about Acids & Bases?

- What do you think is the pH level of NYC tap water?
- The pH of a swimming pool must be checked periodically. Why?
- Is it important for Lakes & Rivers to maintain a certain pH?