

Acids & Bases

Mr. Skirbst

Properties of Acids & Bases

Properties

ACIDS

BASES

Properties of Acids & Bases

Properties

- taste

ACIDS

sour



IF YOU NEED TO ADD SOUR



LEMON JUICE



LIME JUICE



ORANGE JUICE



VINEGARS LIKE SHERRY, RED, RICE, BALSAMIC, APPLE CIDER



TOMATO PASTE



YOGURT



SOUR CREAM



PICKLED VEGETABLES

BASES

bitter



FOOD INGREDIENTS THAT ARE BITTER



DANDELION GREENS



ENDIVES



BROCCOLI



SPINACH



KALE



OKRA



BITTER MELON



RADICCHIO

Properties of Acids & Bases

Properties

- taste
- in solution

ACIDS

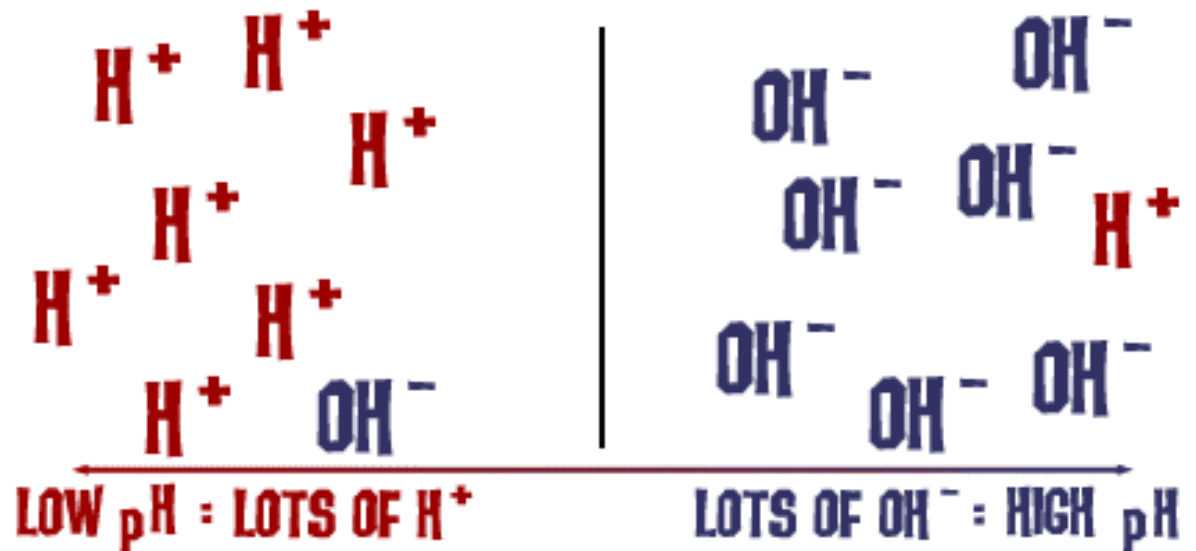
sour

H^+

BASES

bitter

OH^-



Properties of Acids & Bases

Properties

- taste
- in solution
- a.k.a.

ACIDS

sour

H^+

proton

donor

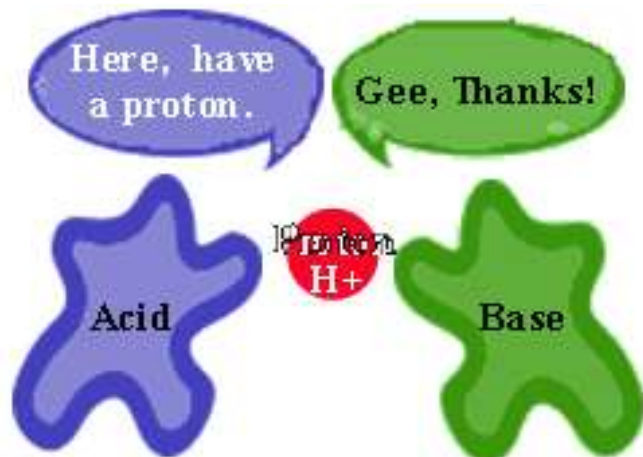
BASES

bitter

OH^-

proton

acceptor



Properties of Acids & Bases

Properties

- other

ACIDS

reacts w/
metals

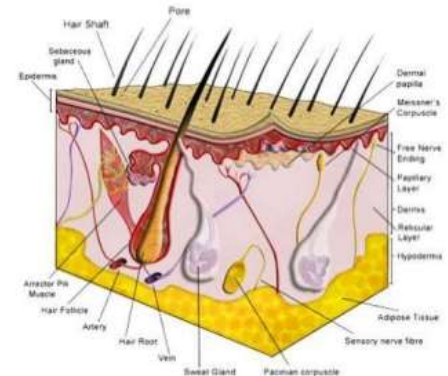
BASES

slippery
to touch

- Bases feel soapy or slippery because they react with acid molecules in your skin called fatty acids

Acids and metals

acid + metal \rightarrow salt + hydrogen



Indicators of Acids & Bases

Indicators

ACIDS

BASES

Indicators of Acids & Bases

Remember Indicators?



Fizzes

Did the reaction produce bubbles?



Aroma

Did the reaction produce a smell?



Replacement

Did the reaction replace any of the original substance?



Temperature

Did the reaction produce a temperature change, either hot or cold?

new



Substance

Did the reaction produce a new substance?

Indicators of Acids & Bases

Indicators

ACIDS

BASES

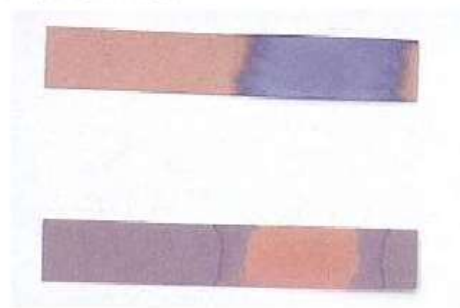
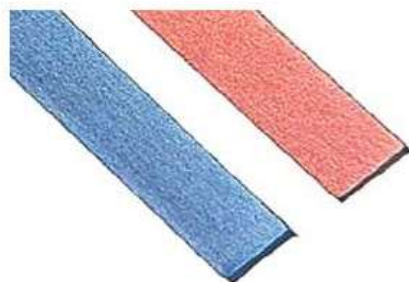
- litmus paper

red

blue

LITMUS PAPER

The main use is to test whether the solution is acidic or alkaline.



| | Test with acid | Test with alkali |
|-------------------|----------------|------------------|
| Red litmus paper | No changes | Red → blue |
| Blue litmus paper | Blue → red | No changes |

Indicators of Acids & Bases

Indicators

- litmus paper

- phenolphthalein

ACIDS

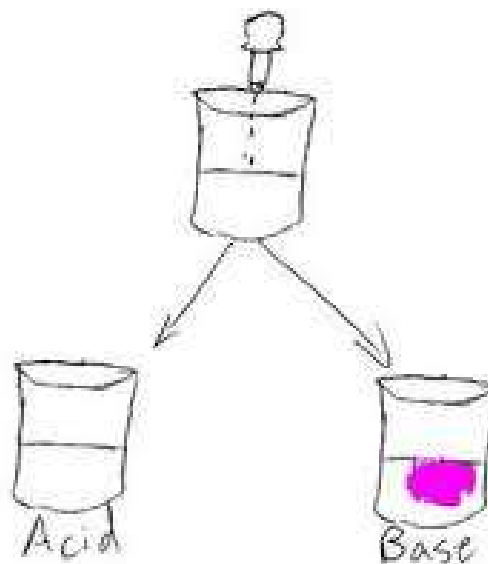
red

clear

BASES

blue

pink



Indicators of Acids & Bases

Indicators

ACIDS

BASES

- litmus paper

red

blue

- phenolphthalein

clear

pink

- pH paper

< 7

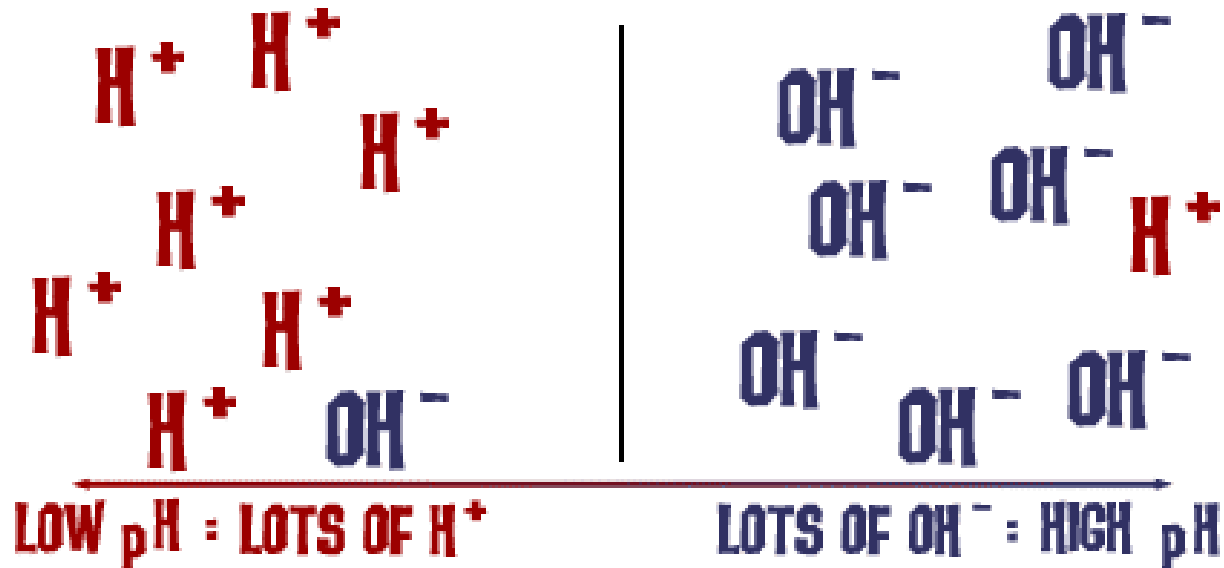
> 7



pH

pH – concentration of H^+

- indicates how acidic or basic a solution is



pH

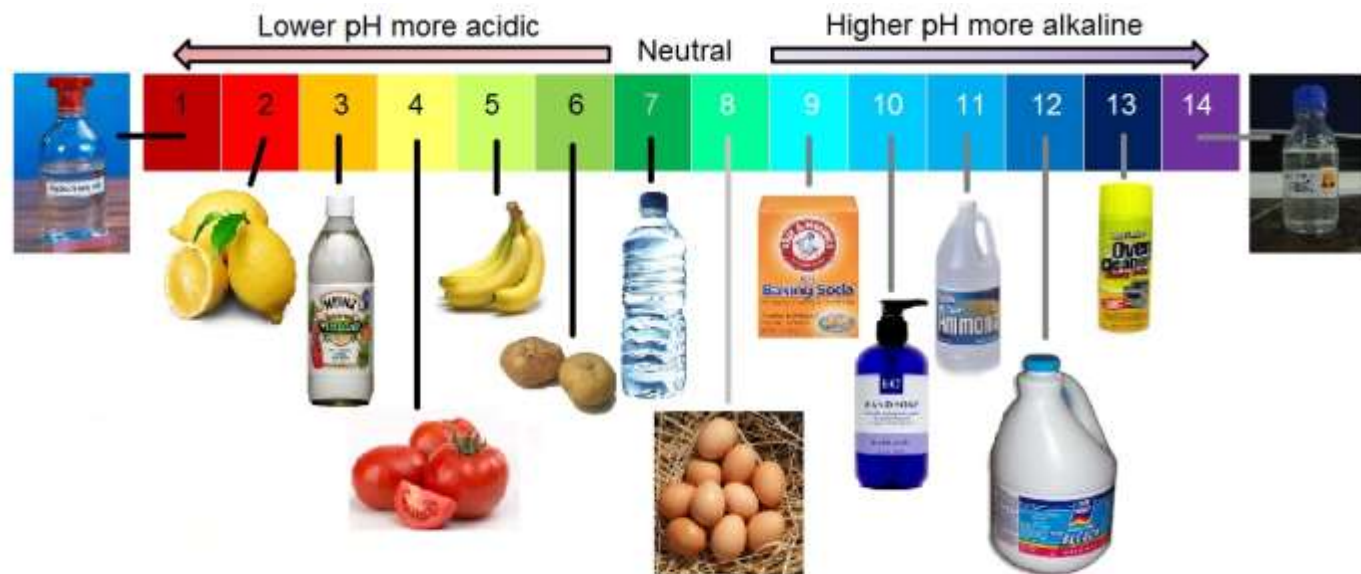
pH scale:

0-----7-----14

Acid

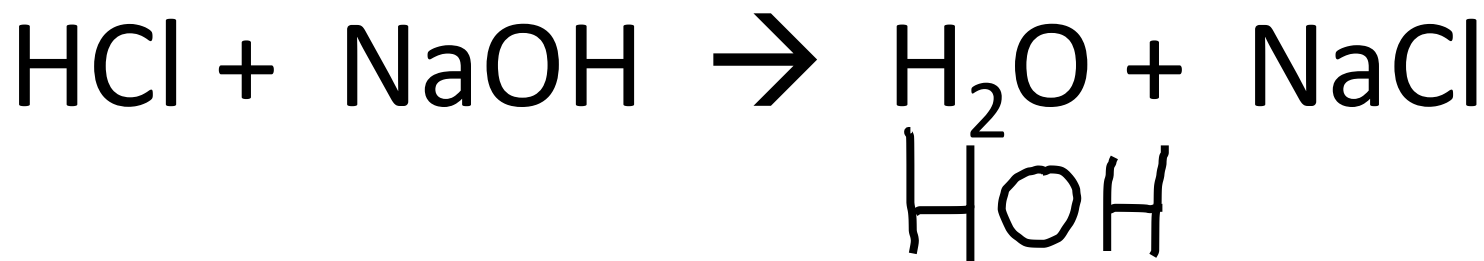
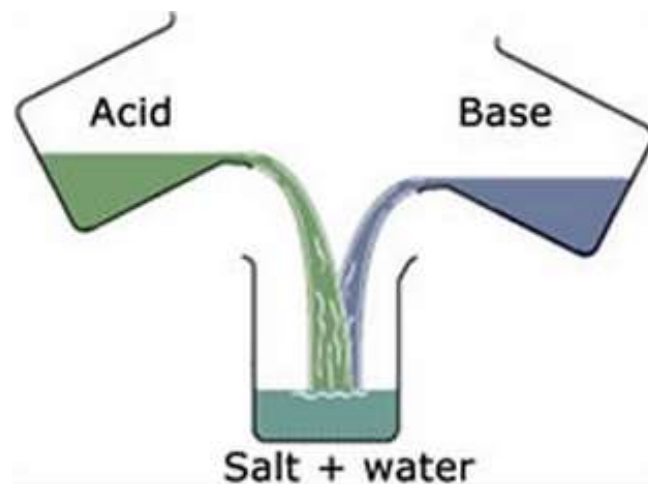
Neutral

Base



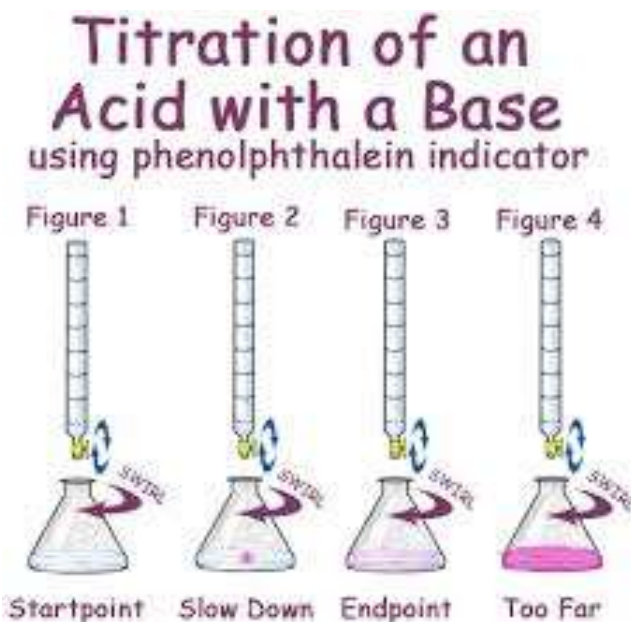
Neutralization

- a reaction between an acid and a base that produces salt and water



Acid-Base Titration

- neutralization reaction used to determine volume & concentration of acids & bases



Titration Equation

$$N_a \times V_a = N_b \times V_b$$

a = acid; b = base

N = normality (concentration)

V = volume (ml)

Summary

| TEST | Acid | Base |
|--------------------|-------------|-------------|
| Red litmus | | |
| Blue litmus | | |
| Phenolph. | | |
| pH paper | | |

Summary

| TEST | Acid | Base |
|--------------------|-------------|-------------|
| Red litmus | red | blue |
| Blue litmus | | |
| Phenolph. | | |
| pH paper | | |

Summary

| TEST | Acid | Base |
|--------------------|-------------|-------------|
| Red litmus | red | blue |
| Blue litmus | red | blue |
| Phenolph. | | |
| pH paper | | |

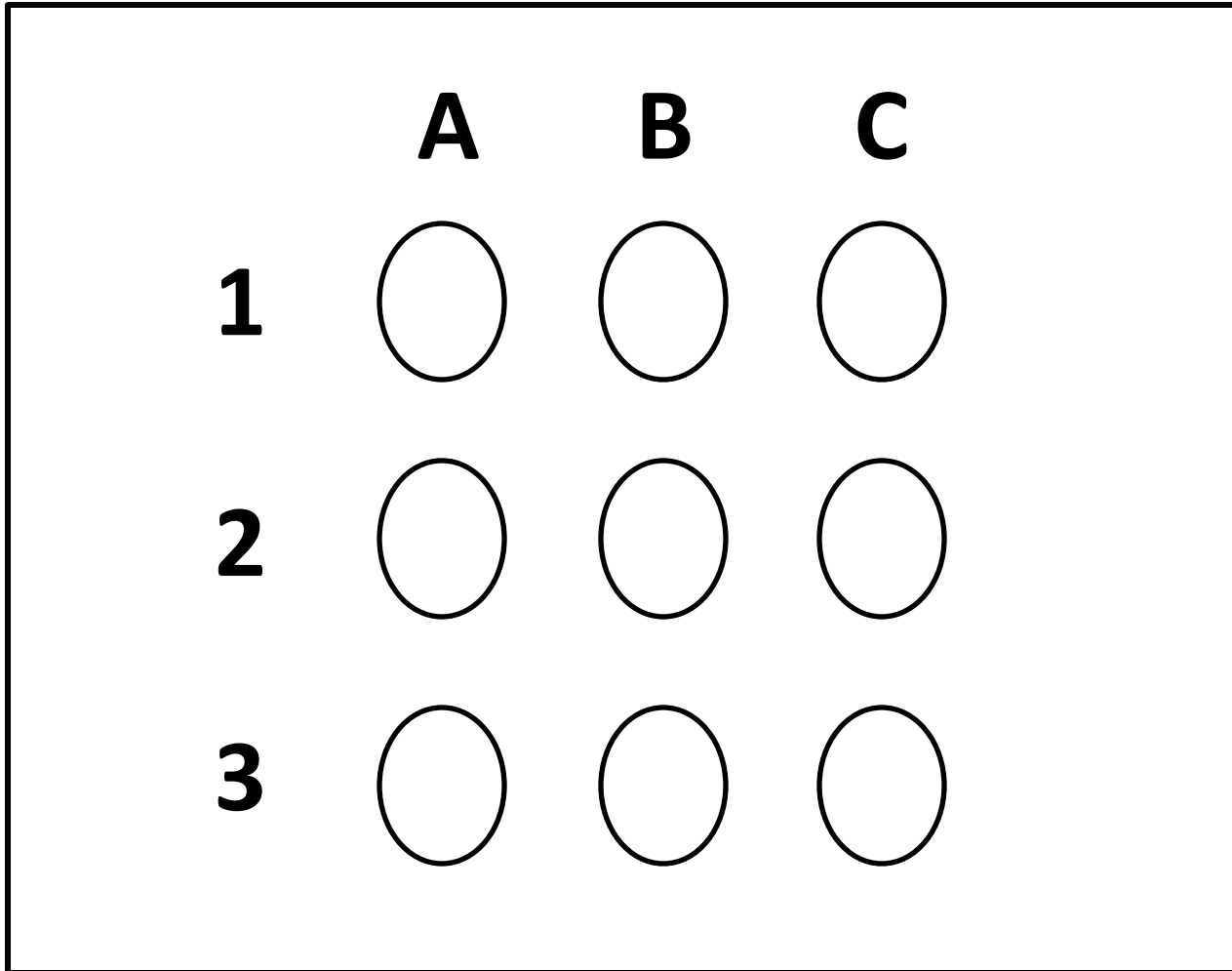
Summary

| TEST | Acid | Base |
|--------------------|--------------|-------------|
| Red litmus | red | blue |
| Blue litmus | red | blue |
| Phenolph. | clear | pink |
| pH paper | | |

Summary

| TEST | Acid | Base |
|--------------------|--------------------|---------------------|
| Red litmus | red | blue |
| Blue litmus | red | blue |
| Phenolph. | clear | pink |
| pH paper | low (<7) | high (>7) |

Microplate



Data Table

| TEST | A | | B | | C | |
|------------------------------------------|----------|---|----------|---|----------|---|
| 1. litmus paper | R | B | R | B | R | B |
| 2. pH paper | | | | | | |
| 3. Phenolph. | | | | | | |
| Identity (acid, base, neutral) | | | | | | |