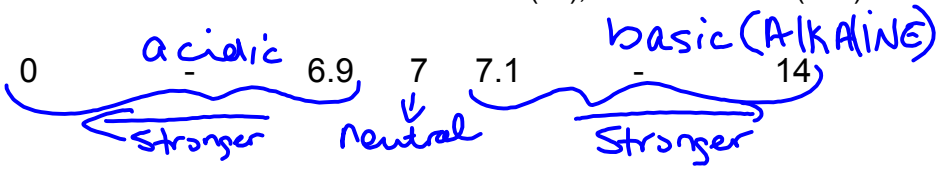
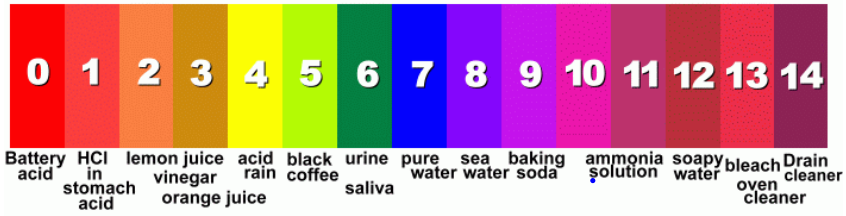
pH

Allows us to determine if a solution is acidic (H^+), neutral or basic (OH^-).





Calculating strength of pH

For every unit on the pH scale there is a 10x difference between strengths.

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

10 x 10

10 x 10

How much weaker is an acid of 4 vs 1? 10^3 1000

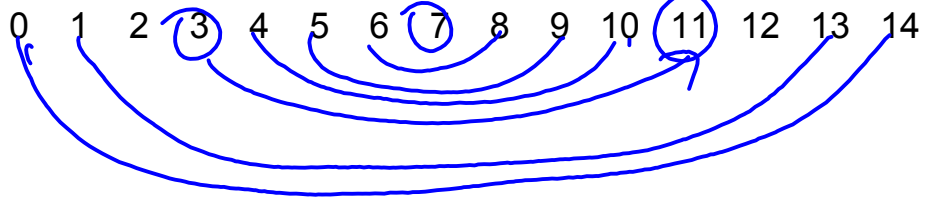
How much stronger is a base of 13 vs 8? 10^5 100 000

How much stronger is a base of 9 vs an acid of 5? 104 10 000

Determining strength to neutralize pH

Each specific unit has its opposite on the pH scale.

To neutralize must have same amount and strength of the opposite unit.



1- What would you add to neutralize 30 mL of a pH of 6? 30mL of 8

2- What would you add to neutralize 60 mL of a pH of 10? 60mL of 4

3- You want to neutralize 50 mL of a pH of 3. You only have pH 8 available. What do you do? You add more than 50mL of 8.

The pH of rain water is 5.

Identifying unknowns using indicators and buffer solutions

Buffer solution: clear liquids (chemicals) which have the strengths of specific pH levels. ex: buffer 8 = pH 8
buffer 4 = pH 4

Indicators: Liquids (chemicals) which will produce various colours when mixed with buffer solutions.

buffer solutions + indicators = various colours when mixed



Different indicators will produce different colours when mixed with buffer solutions. Sometimes the colour change gives a lot of info, sometimes very little info.

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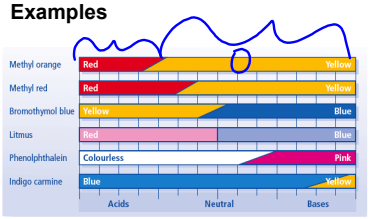
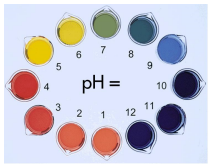
Examples

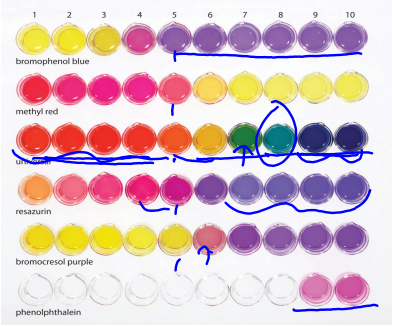




Why different colours?

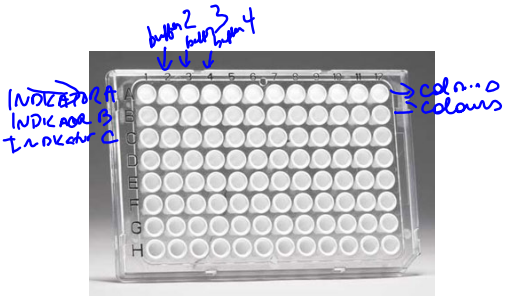
Different indicators

Lab



1- Best for strong acid?
2- Useless for base?
3- Only good for strong base?
4- Best for neutral?
5- Best for pH 5?
6- Best for pH 8?
7- Best overall info for acid, base and neutral?

What procedure was followed to produce the picture above?



Attachments

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