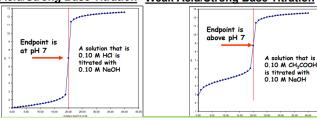
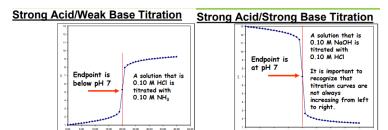
N41 - Titration

Strong Acid/Strong Base Titration Weak Acid/Strong Base Titration





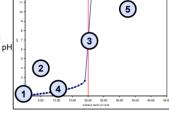
Calculations to Plot a Titration Curve

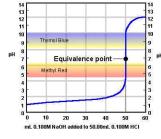


BRACEYOURSELF

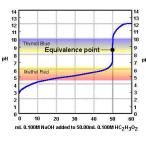
1. Starting pH

- ICE table then pH
- 2. Early on during titration
- Stoich then He-Ha
- 3. Equivalence Point
 - mol acid = mol base
 - No more buffer! Reverse rxn
- Calc new K value ICE then pH
- 4. 1/2 Way Point
- 1/2 moles @ eq.pt
- pH = pKa
- 5. Towards end of titration
- Extra titrant left over
- Stoich then simple pH





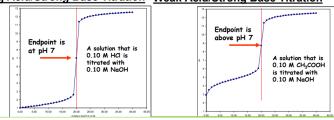
CALCULATIONS ARE COMING

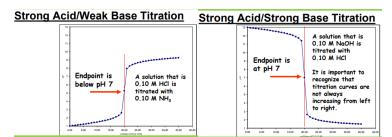


	H	
Indicator	pH Range in which Color Change Occurs	Color Change as pH Increases
Crystal violet	0.0 - 1.6	yellow to blue
Thymol blue	1.2 - 2.8	red to yellow
Orange IV	1.4 - 2.8	red to yellow
Methyl orange	3.2 - 4.4	red to yellow
Bromcresol green	3.8 - 5.4	yellow to blue
Methyl red	4.8 - 6.2	red to yellow
Chlorophenol red	5.2 - 6.8	yellow to red
Bromthymol blue	6.0 - 7.6	yellow to blue
Phenol red	6.6 - 8.0	yellow to red
Neutral red	6.8 - 8.0	red to amber
Thymol blue	8.0 - 9.6	yellow to blue
Phenolphthalein	8.2 - 10.0	colourless to pin
Thymolphthalein	9.4 - 10.6	colourless to blu
Alizarin yellow	10.1 - 12.0	yellow to blue
Indigo carmine	11.4 - 13.0	blue to yellow

N41 - Titration

Strong Acid/Strong Base Titration Weak Acid/Strong Base Titration



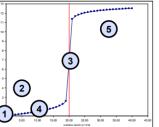


BRACEVOURSELF **Calculations to Plot a Titration Curve** 1. Starting pH ICE table then pH

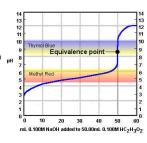


2. Early on during titration

- Stoich then He-Ha
- 3. Equivalence Point
- mol acid = mol base
- No more buffer! Reverse rxn
- Calc new K value ICE then pH
- 4. 1/2 Way Point
- 1/2 moles @ eq.pt
- pH = pKa
- 5. Towards end of titration
 - Extra titrant left over
 - Stoich then simple pH

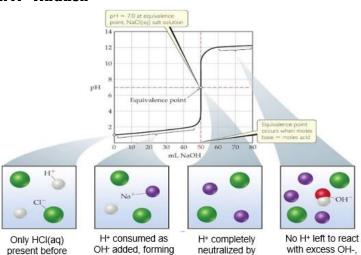


9 -	Thymol	Blue				1	
B 7	E	quiva	lence	point	-	- 7	, pi
6 5	Methyl	Red				- 6	
4			+			4	
2		_	+	_	4		
	10	20	30	40	50)



Indicator	pH Range in which	Color Change
	Color Change Occurs	as pH Increases
Crystal violet	0.0 - 1.6	yellow to blue
Thymol blue	1.2 - 2.8	red to yellow
Orange IV	1.4 - 2.8	red to yellow
Methyl orange	3.2 - 4.4	red to yellow
Bromcresol green	3.8 - 5.4	yellow to blue
Methyl red	4.8 - 6.2	red to yellow
Chlorophenol red	5.2 - 6.8	yellow to red
Bromthymol blue	6.0 - 7.6	yellow to blue
Phenol red	6.6 - 8.0	yellow to red
Neutral red	6.8 - 8.0	red to amber
Thymol blue	8.0 - 9.6	yellow to blue
Phenolphthalein	8.2 - 10.0	colourless to pink
Thymolphthalein	9.4 - 10.6	colourless to blue
Alizarin yellow	10.1 - 12.0	yellow to blue
Indigo carmine	11.4 - 13.0	blue to yellow

N41 - Titration



OH- Only

conjugate left

now there is

conjugate and

excess OH-

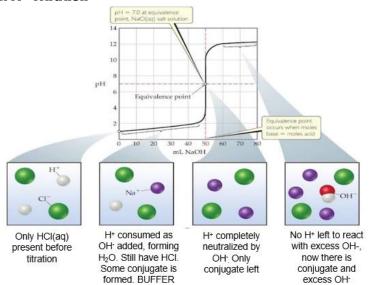
H2O. Still have HCI.

Some conjugate is

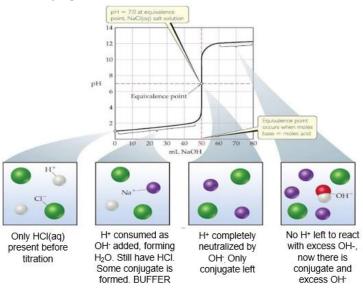
formed. BUFFER

N41 - Titration

titration



N41 - Titration



N41 - Titration

