Chemistry review: Acids and Bases

Today's Info Session

- Introduction
- Discussion of titrations
- Equilibria
- Titrations
- How Can Next Step Help?
- Questions?

Next Step TEST PREP

MCAT
Medical College Admission Test

WHAT IS YOUR NEXT STEP?

Introduction

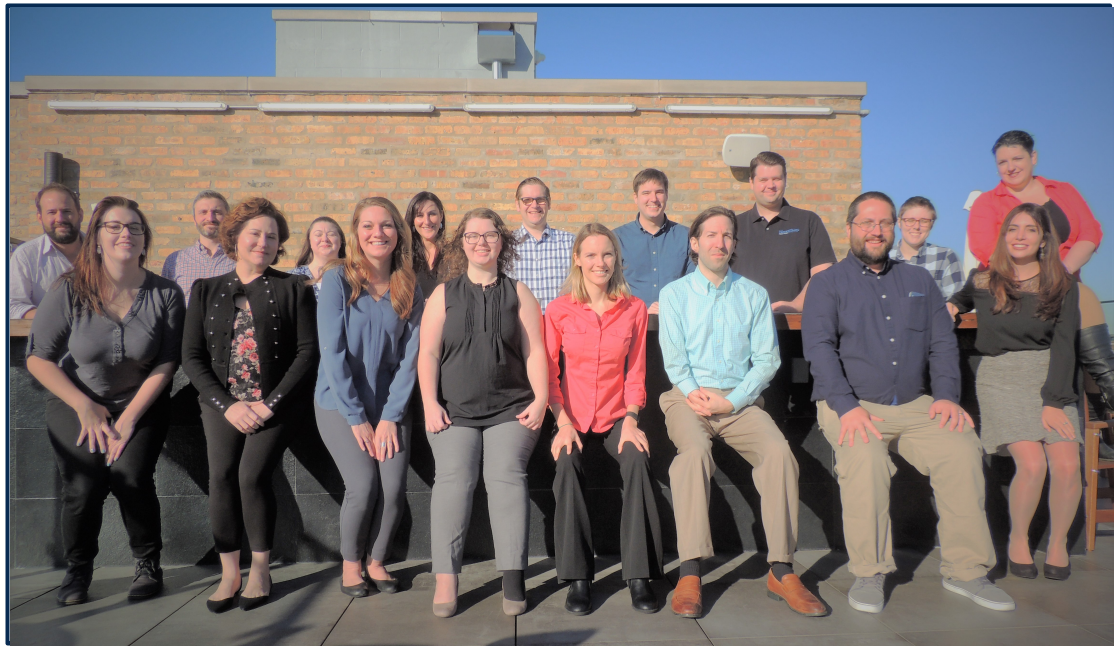
Hi, I'm Phil!

- MCAT Content writer
- Tutored and taught for 9+ years
- Attended University of Nebraska Medical Center as an MD/PhD student.

✓ Next Step is a team of test prep and educational experts committed to excellence.

Who Is Next Step?

- Began in 2009 as a tutoring company
- Focus on graduate admissions tests only
- Team of educational experts
- First company to have materials built from ground up for 2015 MCAT format
- Now the first company to have new 2018 MCAT Interface



✓ We never stop improving our materials!

Equilibria

Keq

$N_2 (g) + H_2(g) \leftrightarrow NH_3(g)$

$K_{eq} = [NH_3]^2 / [N_2][H_2]^3$

$HCl(aq) + H_2O (l) \leftrightarrow H_3O^+ + Cl^- (aq)$

$K_{eq} = [H_3O][Cl^-] / [HCl]$

Types of Keq: Ka, Kb, Ksp, Kd, Ka, Kw, Kr, Kf…

pH = pKa + log (Cb/A)

$HCl(aq) \leftrightarrow H^+ + Cl^- (aq)$

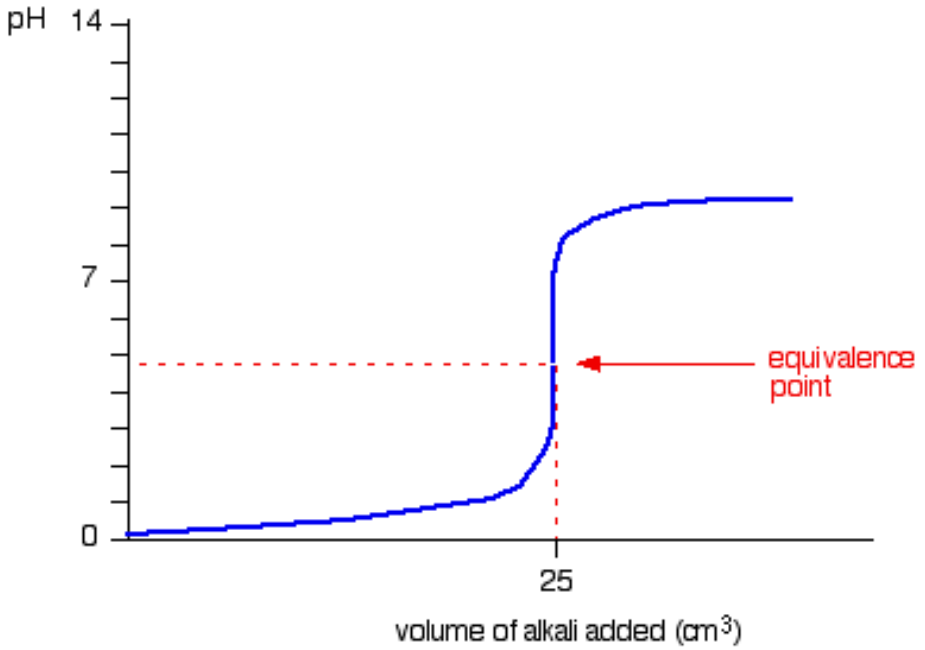
Titrations

Used to determine the concentration of an acid or base!

At equivalence point, we have one acid molecule for every base molecule

Ma Va = Mb Vb

If I started with 5 mL of an HCl solution and titrated with 1M of a Base as shown, what was my acid concentration?



Was it a strong or weak base?

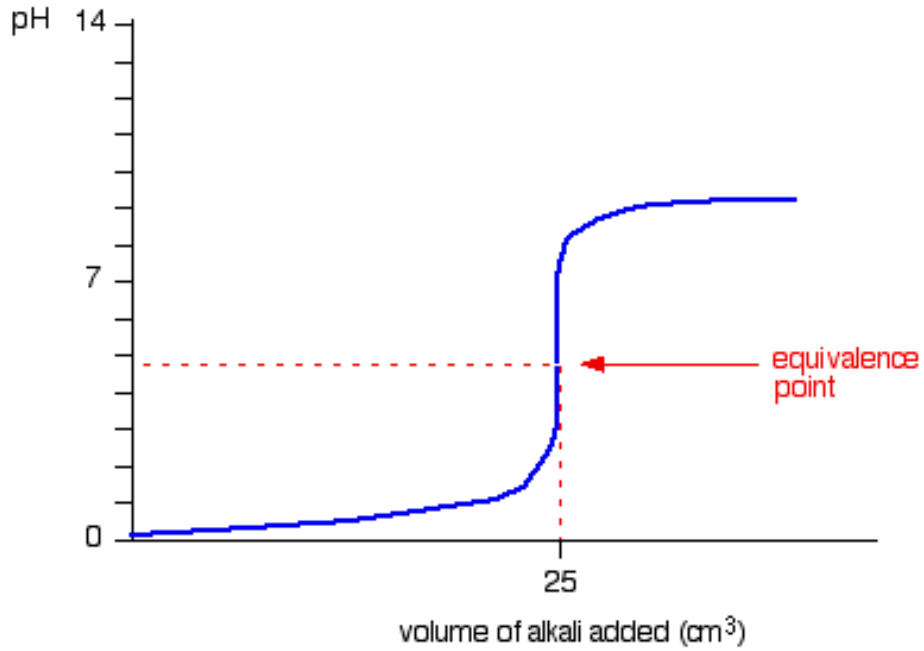
Titrations

Where on the graph will I find the most HCl?

HCl ← → H+ + Cl-

What happens at the ½ eq pt?

pH = pKa + log (Conjugate base/Acid)



Titrations

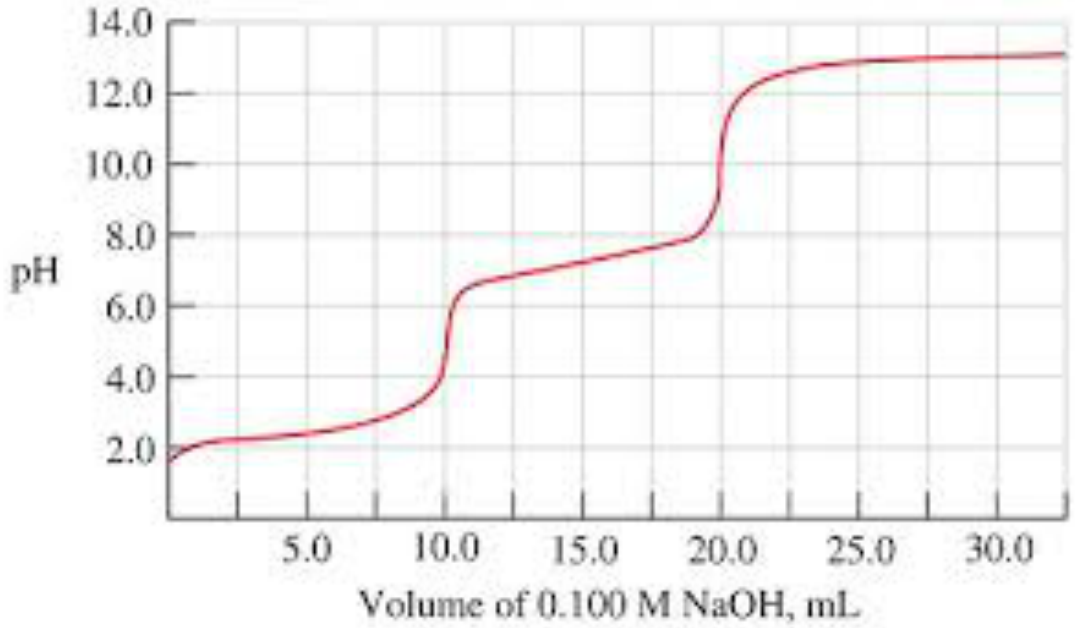
What can you tell me about my acid?

If I started with 5 mL of my acid, what is it's concentration?

Where on this graph will I find the most HSO4- ?

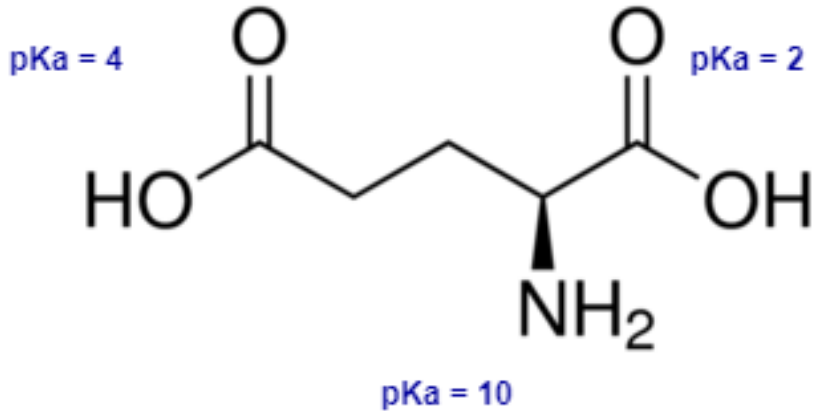
What are the pKas?

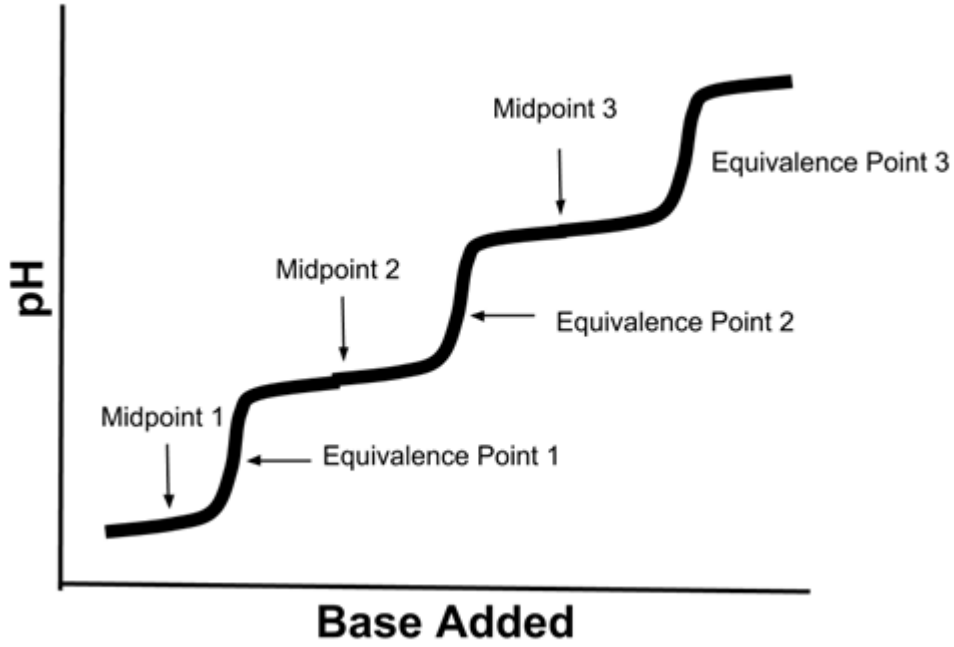
$H_2SO_4 \leftrightarrow HSO_4^- + H^+ \leftrightarrow SO_4^{2-} + 2H^+$



Titrations

What is the pH where this molecule has 0 charge overall?





Next Step
TEST PREP

Q&A

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Ownership

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“Next Step helped me take my score from a 496 to a 523!! That's 35th percentile to 99th! Every service they offer is top notch and definitely helps you prepare for the MCAT” - Gus

“This course has significantly improved the way I approach the exam, how I study, and has given me great support with any questions I have had along the way.” - Tyler

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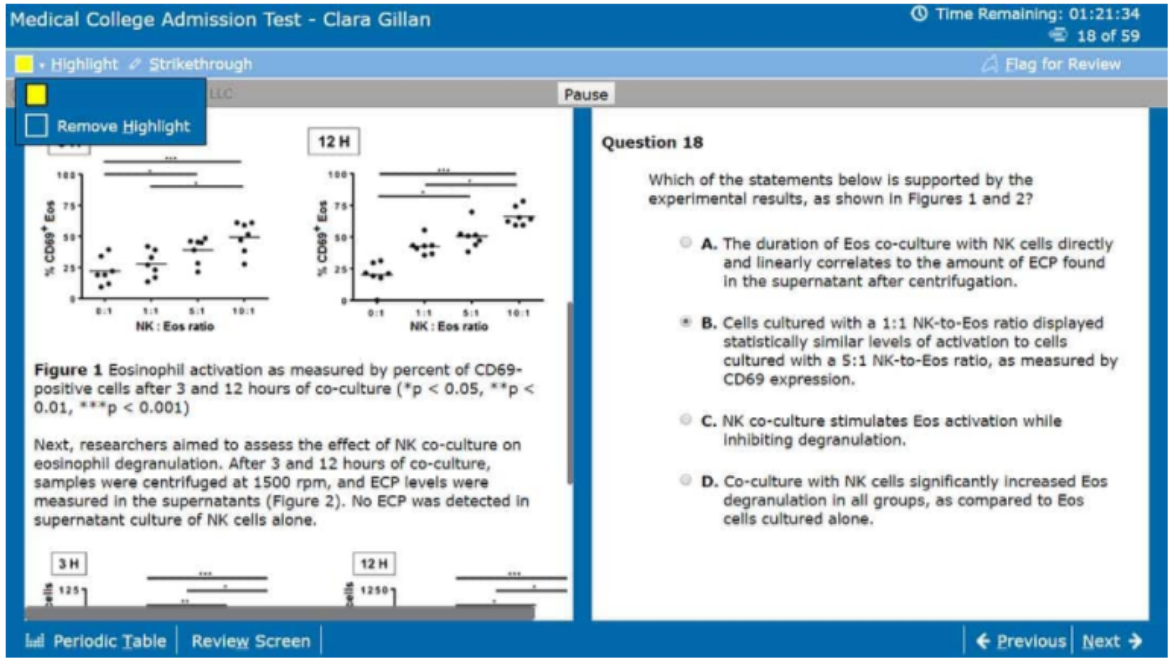

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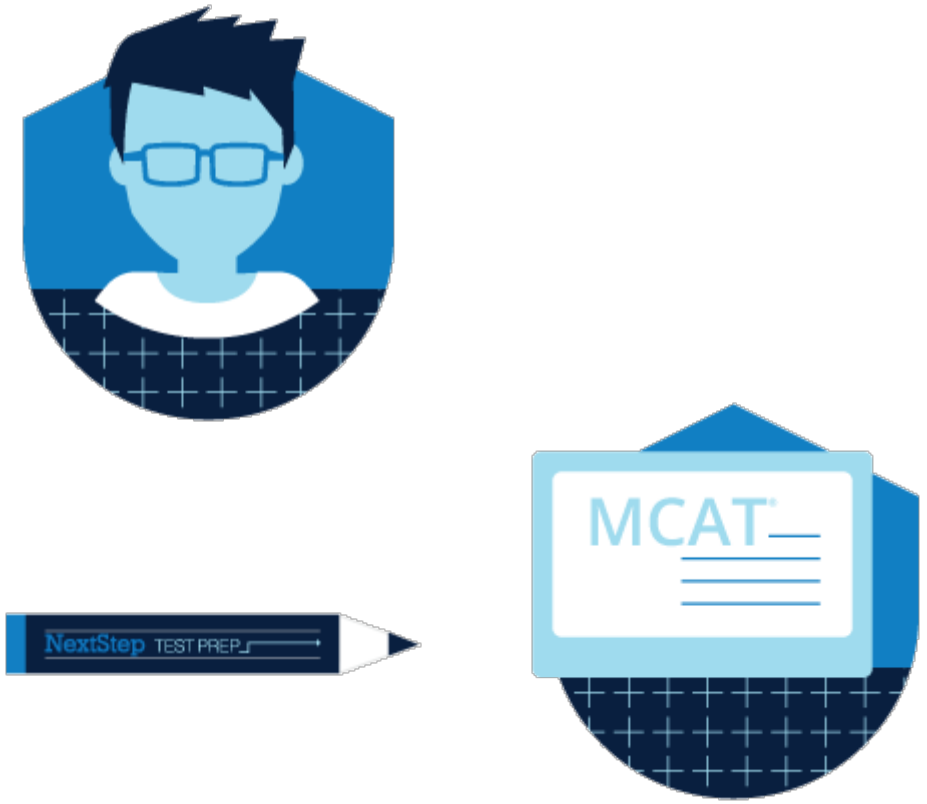

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