UNIT 3 – ACIDS AND BASES

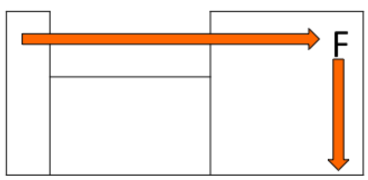
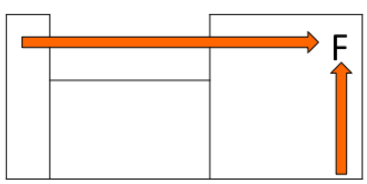
OCSL: Chapter 3: Acid-Base Reactions

VTOC: Acid-Base Reactions

UCSD: 7.1: The 'basic' idea of an acid-base reaction
7.2: Comparing the acidity and basicity of organic functional groups– the acidity constant
7.3: Structural effects on acidity and basicity, 7.4:More on resonance effects on acidity and basicity

Skills:

3A. Predict relative acidity and basicity of molecules or based on element effects, inductive effects, resonance effects and hybridization effects.
3B. Identify the acid and base in a Brønsted-Lowry acid-base reactions, draw the products and predict the direction based on pK_a values or structure.
3C. Identify the acid and base in a Lewis acid-base reaction, draw the products of a Lewis acid-base reaction.

Effects (in order of importance)	**Trend in Acidity**	**Explanation**
Element Effects the atom the H is *directly* attached to		Across a period, e- are more stable on electronegative atoms. Down a group e- are more stable the larger orbitals
Resonance Effects	The more resonance forms in the conjugate base, the stronger the acid	Resonance stabilizes the conjugate base.
Inductive Effects atoms *indirectly* attached to the H	 For neighbors that are e- withdrawing: more electronegative, more acidic, more withdrawing groups, more acidic, closer to the H, more acidic.	e- withdrawing power of neighboring atoms stabilizes electrons on conjugate base.
Hybridization Effects	$sp^3 < sp^2 < sp$ More s-character, more acidic	orbitals with more s-character are more stable, as are e- in those orbitals