When analyzing amplifiers, consider the following “steps”

DC Analysis
Biasing
- Design Voltage reference
- $R_{ref}$
- Current source
- Current mirrors
Voltage swing
- MOS transistors should stay saturated (i.e. $V_{DS} > V_{GS} - V_{Tn}$, $V_{SD} < V_{SG} + V_{Tn}$).
- BJT transistors should stay in the linear mode ($V_{BE} \approx 0.7$, $V_{CE} > 0.1$).

Small Signal Analysis
- Use it to find 2-port equivalent
- Figure out parasitic capacitors in the small signal circuit
- Figure our $R_{in}$, $R_{out}$, $r_{oc}$, $A_v$, $A_i$
- Do frequency response of simple amps.

2-Port Analysis
- Use it to take advantage of pre-calculated properties of $CE$, $CB$, $CC$, $CD$, $CS$, $CG$.
- Use it to create compact representations of each stage, so that you can figure out cascaded, multi-stage amps.
- Use it (with parasitic and load capacitors) to figure out frequency response of complex amps.