Type + Description	Observed Quantities	Inferred Quantities
Visual / Astrometric Resolve the 2 ☆'s in binary & motion about each other	$\alpha_1 = \frac{a_1 \cos i}{d}$, $\alpha_2 = \frac{a_2 \cos i}{d}$ P (sit & watch)	$\frac{m_2}{m} = \frac{\alpha_1}{\alpha_2} = \frac{a_1}{a_2}$ If d & i know, use Kepler III to get M_{true} → m_1, m_2 individually
Spectroscopic SINGLE lined ~~orbits~~ Shift in spectrum due to motion of ☆ around binary COM. BUT one ☆ much more luminous, so only see 1 line.	$V_{1R} = V_1 \sin i$ P (from time to redshift → blueshift)	Mass function gives LOWER limit on companion mass m_2 $m_2 \underbrace{\left(\frac{m_2}{m_1+m_2}\right)^2 \sin^3 i}_{\text{MUST be} \leq 1} = \frac{P}{2\pi G} V_{1R}^3$ So set = 1 for lower limit on m_2
Spectroscopic DOUBLE lined Two ☆s ~ equally luminous, so can detect 2 lines	V_{1R} & V_{2R} P	$\frac{m_1}{m_2} = \frac{V_{2R}}{V_{1R}} = \frac{V_2}{V_1} = \frac{a_2}{a_1}$ (Kepler III) $M_{tot} = \frac{4\pi^2}{GP^2}(a_1 + a_2)^3$ Do we have a_1, a_2? Not quite, but we do measure them up to an inclination factor: $a_1 \sin i = \underbrace{\frac{P V_{1R}}{2\pi}}_{\text{all observables}}$ & $a_2 \sin i = \underbrace{\frac{P V_{2R}}{2\pi}}_{\text{all observables}}$
~~Spectroscopic DOUBLE li~~ Eclipsing (one ☆ passes in front of another)	Depth of light curve $F_0 - F_s$ & $F_0 - F_p$ $\underbrace{\text{Orbital period } P}_{\text{time b/w eclipses}}$	Temp ratio: $\left(\frac{F_0 - F_p}{F_0 - F_s}\right) = \left(\frac{T_h}{T_c}\right)^4$ B/c eclipsing, know immediately that $i \approx 90°$ If V known (e.g., from spectra), then measure $R_☆$