I) Review of assumptions and consequences of violation of assumptions

OLS Assumption	If you violate this assumption . . .
No measurement error	If X is measure w/error a and b will be biased, and will have biased standard error [redacted] (so significance tests and confidence intervals will be wrong) If Y is measured w/error, std error of b will be off - usually inflated (less signif.)
All relevant X's included	The variables left in the regression equation that are correlated with the excluded variable will pick up some of the impact of the excluded variable on Y; these variables will have biased estimates
No inclusion of irrelevant independent variables, or variables that have no direct impact on dependent variable	a and b will be unbiased, but violating this assumption inflates the standard errors of the slope estimates for the other independent variables with which the irrelevant variable is correlated
Linearity and additivity. Linearity is the assumption that the relationship between X and Y is linear; additivity is the assumption that for the slope coefficient for each independent value does not change for different levels of other independent variables (we'll talk more about this when we cover interactions).	a and b will be biased—you have the wrong equation specified
E (ε_i) = 0	I.e., we expect the error terms to average out to zero *in the long run.* Affects the intercept term more than the slope. Recall that the average residual value *will always be zero* as an artifact of OLS.
Var (ε_i) = $_{\varepsilon}^{2}$ (a constant) for all i	a and b will still be unbiased, but less efficient—the confidence intervals for the true intercept α and the true slope β will be biased
Cov (ε_i, ε_k) = 0, i $\neq$ k	a and b will still be unbiased, but the confidence intervals for the true intercept α and the true slope β will be biased
Cov (ε_i, x_i) = 0 for all i (The error term is uncorrelated with each independent variable)	a and b will be biased; this is an indication that some variable or variables have been wrongly excluded from the equation. Very difficult assumption to meet. Note that $\frac{\Sigma e_i X_i}{n} = 0$ as an artifact of regression
ε_i is normally distributed	Arguably the least important assumption—makes T tests for a and b more powerful (some would say it makes these t tests valid)