	General Set Up	Single Mean	ANOVA (I groups)
Parameter	A number describing the population we are interested in	μ: population mean (or difference in means with paired data).	γ: linear combination of population means for different groups $\gamma = C_1\mu_1 + C_2\mu_2 + \cdots + C_I\mu_I$
Estimate	An estimate of the parameter based on the data in our sample	$\hat{\mu} = \bar{Y}$: sample mean (or difference in sample means with paired data).	Linear combination of sample means for different groups $\hat{\gamma} = C_1\bar{Y}_1 + C_2\bar{Y}_2 + \cdots C_I\bar{Y}_I$
SD(Estimate)	Measures variability of the estimate across different samples.	$\sigma/\sqrt{n}$	$\sigma\sqrt{\frac{C_1^2}{n_1} + \frac{C_2^2}{n_2} + \cdots + \frac{C_I^2}{n_I}}$
SE(Estimate)	An estimate of SD(Estimate)	$s/\sqrt{n}$	$s_{pooled}\sqrt{\frac{C_1^2}{n_1} + \frac{C_2^2}{n_2} + \cdots + \frac{C_I^2}{n_I}}$
Estimate of σ	How do we estimate the variance of residuals?	Based on squared differences from the overall sample mean $s = \sqrt{\frac{\sum_{j=1}^{n}(y_j - \bar{y})^2}{n-1}}$	Based on squared differences from the group means $s_{pooled} = \sqrt{\frac{\sum_{i=1}^{I}\sum_{j=1}^{n_i}(y_{ij} - \bar{y}_i)^2}{n-I}}$
t statistic	$t = \frac{\textbf{Estimate} - \textbf{Parameter}}{\textbf{SE(Estimate)}}$	$t = \frac{\bar{Y} - \mu}{s/\sqrt{n}}$	$t = \frac{\hat{\gamma} - \gamma}{s_p\sqrt{\frac{C_1^2}{n_1} + \frac{C_2^2}{n_2} + \cdots + \frac{C_I^2}{n_I}}}$
Degrees of Freedom		$n - 1$	$n - I$
Confidence Interval	**Estimate** $\pm\, t^{*}SE($**Estimate**$)$	$\bar{Y} \pm t^{*}SE(\bar{Y})$	$\hat{\gamma} \pm t^{*}SE(\hat{\gamma})$
P-value	• Calculate the t statistic as above, assuming H_0 is true (plug in the value of the parameter from H_0) • If the null hypothesis were true, what proportion of samples would have a t statistic at least as extreme as the value you just calculated?		