The Table!	**Categorical Data** proportions, percentages, counts	**Numeric Data** means, correlation, regression, slope
Basic Tests 1 or 2 groups, samples, categories, choices, factors, levels, answers, or responses 2 SD Rule applies Can be left, right, or both tails	one proportion (3.1) $p=0.40$ 1 group, 2 choices 40% of people favor banning cell phones on public transportation. Less than 20% of people approve of the job Congress is doing. two proportions (3.2) $p_1=p_2$ 2 groups, 2 choices Men are more likely than women to chew tobacco. Blacks are less likely than Whites to trust police. Gender is not a factor in whether a person owns a gun.	one mean (4.1) $\mu=61.5$ 1 group, 1 numeric variable The mean weight of a Skittles bag is 61.5g. paired means (4.2) $\mu_d=0$ 1 group, 2 numeric variables – checking equality The length of a person's foot is equal to the length of their forearm. two independent means (4.3) $\mu_1=\mu_2$ 2 groups, 1 numeric variable Women have higher pain tolerance than men. correlation (5.x) $\rho=0$ 1 group, 2 numeric variables – checking relationship The length of someone's index finger is related to their height.
Distribution	Normal, Z	Student's T
Test Statistic	$z = \frac{\text{observed} - \text{expected}}{\text{standard deviation}}$	$t = \frac{\text{observed} - \text{expected}}{\text{standard error}}$
Advanced Tests more than 2 groups, samples, categories, choices, factors, levels, answers, or responses Always right tail	goodness of fit (3.3) 1 grouping variable w/ more than 2 choices 25% of people are Republican, 35% are Democrats, and 40% are independents. The colors of Skittles are equally distributed. The 68-95-99.7 rule applies to a set of data. test for association (3.4) 2 grouping variables w/ more than 2 choices Race and political party are associated. A person's religion and gender are related. A person's race is not a factor in whether they were stopped by the police.	one-way ANOVA (4.4) $\mu_1=\mu_2=\mu_3$ 1 grouping variable w/ more than 2 choices, 1 numeric variable Race is not a factor in a person's SAT score. two-way ANOVA 2 grouping variables, 1 numeric variable. 3 sets of hypotheses Race and gender are related to income. simple regression (5.x) $\beta_1=0$ 1 response variable, 1 predictor variable – see correlation A person's age is not related to their income. multiple regression (6.x) $\beta_1=\beta_2=\beta_3=0$ 1 response variable, multiple predictor variables A student's score on a test is related to the time spent studying, the amount of sleep the night before, and their SAT score.
Distribution	Chi-Square, χ^2	F
Test Statistic	$\chi^2 = \sum\left(\frac{\text{observed} - \text{expected}}{\sqrt{\text{expected}}}\right)^2$	$F = \frac{\text{Variance}_1}{\text{Variance}_2} = \frac{MS_{source}}{MS_{error}}$

The symbolic representation is for a typical null hypothesis and may not match the example claims. Example claims may be the null hypothesis or the alternative hypothesis. Groups and samples mean the same thing. Categories, choices, factors, levels, answers, and responses are synonyms. A grouping or classification variable is a categorical variable used to identify the groups. There is more to hypothesis testing than will fit on a single page unless you make the font so small you cannot read it, so this should be considered a quick guide.

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