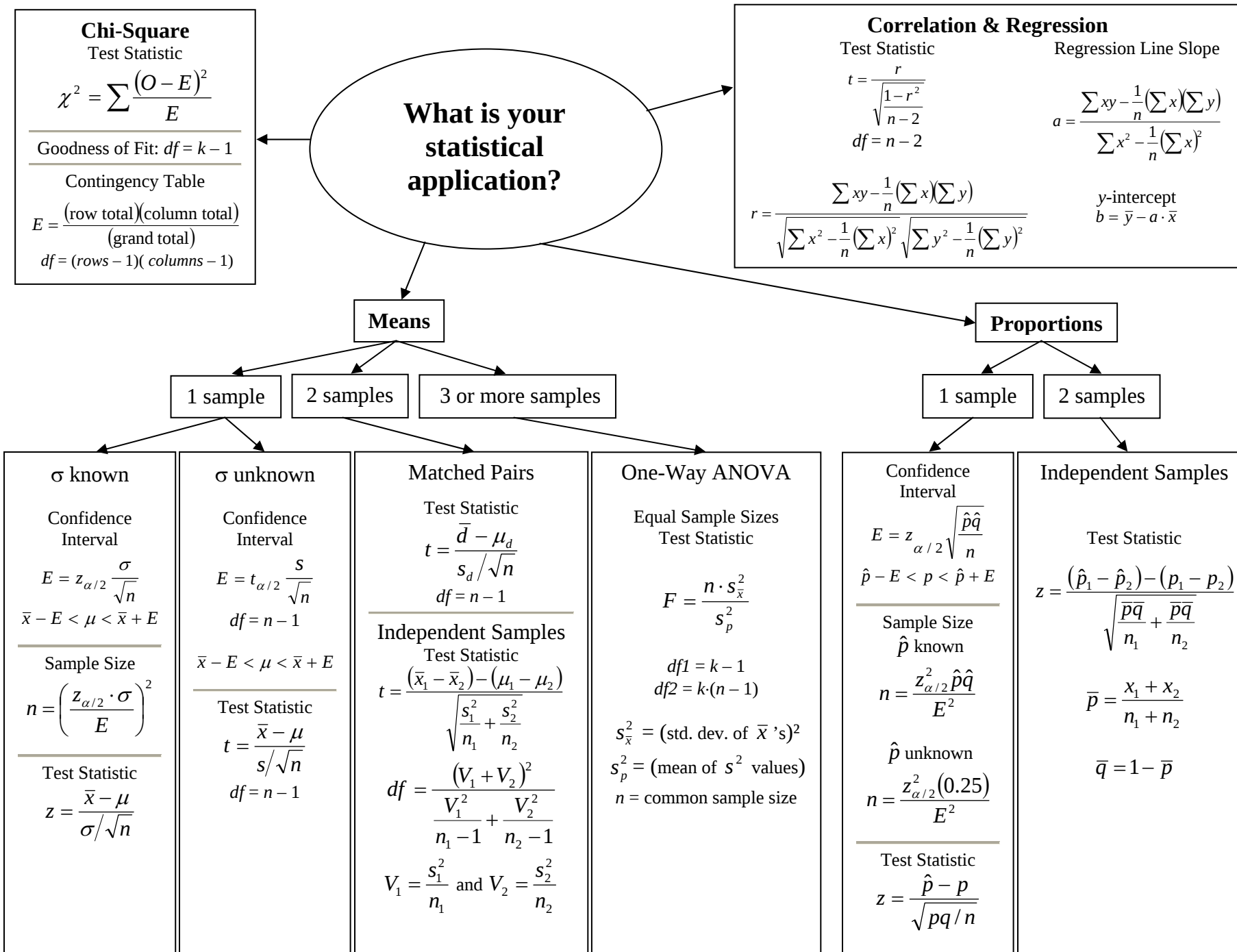




Elementary Statistics –Final Exam Review

- 1) Use the given degree of confidence and sample data to construct a confidence interval for the population proportion p . $n = 142$, $x = 60$; 90 percent
- 2) The amounts (in ounces) of juice in eight randomly selected juice bottles are: { 15.1, 15.3, 15.8, 15.7, 15.6, 15.5, 15.2, 15.7 }. Construct a 98 percent confidence interval for the mean amount of juice in all such bottles (assume that the population has a normal distribution).
- 3) Two types of flares are tested for their burning times (in minutes) and sample results are given below. Refer to the sample data to test the claim that the two populations have equal means against the claim that the means are different. Use a 0.05 significance level.

Brand X	Brand Y
$n = 30$	$n = 49$
$\bar{x} = 15.9$	$\bar{x} = 15.1$
$s = 1.4$	$s = 0.8$

- 4) A poll of 1,068 adult Americans reveals that 48% of the voters surveyed prefer the Democratic candidate for the presidency. At the 0.05 level of significance, test the claim that less than half of all voters prefer the Democrat.
- 5) The health of employees is monitored by periodically weighing them in. A sample of 54 employees has a mean weight of 183.9 lb. Assuming that σ is known to be 121.2 lb, use a 0.10 significance level to test the claim that the mean of all such employees weights is less than 200 lb.
- 6) Use the sample data below to test whether car color affects the likelihood of being in an accident. Use $\alpha = 0.01$.

	Red	Blue	White
Car has been in accident	28	33	36
Car has not been in accident	23	22	30

- 7) In a random sample of 360 women, 65% favored stricter gun control laws. In a random sample of 220 men, 60% favored stricter gun control laws. Test the claim that the proportion of women favoring stricter gun control is higher than the proportion of men favoring stricter gun control. Use $\alpha = 0.05$.
- 8) A consumer magazine wants to compare the lifetimes of ballpoint pens of three different types. The magazine takes a random sample of pens of each type in the following table. Do the data indicate that there is a difference in mean lifetime for the three brands of ballpoint pens? Use $\alpha = 0.05$.

Brand 1	Brand 2	Brand 3
260	181	238
218	240	257
184	162	241
219	218	213

- 9) A researcher wants to check the claim that convicted burglars spend an average of 18.7 months in jail. She takes a random sample of 11 such cases from court files and finds a sample mean of 20.2 months and standard deviation of 8 months. Test the null hypothesis that $\mu = 18.7$ at the 0.05 significance level. Assume that the sample has been randomly selected from a population with a normal distribution.
- 10) A test of abstract reasoning is given to a random sample of students before and after they completed a formal logic course. The results are given below. At the 0.05 significance level, test the claim that the mean score is not affected by the course. Assume that the population of differences is normal.

Before	74	83	75	88	84	63	93	84	91	77
After	73	77	70	77	74	67	95	83	84	75

- 11) Find the minimum sample size you should use to assure that your estimate of p will be within the required margin of error around the population proportion. Margin of error: 0.04; confidence level: 90; from a prior study, p is estimated by 0.27.
- 12) A group of 62 randomly selected students have a mean score 28.3 with an assumed population standard deviation of 3.4 on a placement test. What is the 95 percent confidence interval for the mean score, μ , of all students taking the test?
- 13) Two different tests are designed to measure employee productivity and dexterity. Several employees are randomly selected and tested with these results.

Productivity	23	25	28	21	21	25	26	30	34	36
Dexterity	49	53	59	42	47	53	55	63	67	75

Test for linear correlation using 5% significance. If linear correlation exists, give the equation of the regression line. Use this to estimate the dexterity of a person whose productivity is 32.

- 14) Use the margin of error, confidence level, and standard deviation to find the minimum sample size required to estimate an unknown population mean μ . Margin of error: \$133, confidence level: 0.99, $\sigma = \$533$