Survival Packet

Vocabulary—know what all of these things mean.

Data Organization:

Bivariate	Y	Residuals
Univariate	(x-bar,y)	IQR
Pie chart	LSRL	Range
Histogram	Power model	Median
Dot plot	Scatter plot	Resistant
Box plot	Coefficient of	Non-resistant
Stem plot	determination	Mean
Slope	Correlation coefficient	Mode
Exponential model	Residual plot	Standard deviation

Inference:

Statistic	2 sample T-interval	Parameter
Z-test	2 sample Z-interval	Type I (alpha error)
T-test	P-value	Type II (beta error)
T-interval	1 prop Z-test	Chi-squared Test for
Z-interval	1 prop Z-interval	Independence
2 sample T-test	2 prop Z-test	Chi-squared Test for
2 sample Z-test	2 prop Z-interval	Homogeneity

Probability:

Random variables	Binomial geometric	Conditional probability
Discrete	Continuous	Independent
Expected value	Mutually exclusive	

Experimental Design:

Experiment	Randomization	Survey
Treatment	Replication	Extraneous variables
Observational study	Blocking	Direct control
Control	Explanatory/Response	Double blind

Questions about the test:

1. What are the four parts of the course?
2. How many multiple choice?
3. How many free response?
4. How long for the test.
5. Tell me about question #6? What is its style?

Data Organization key questions

1. How do you "describe a distribution"?
   a. What are the reasons for correlation?
   b. What do you talk about?
   c. Acronym?
2. When do you use a bar chart as opposed to a histogram?
3. What does R mean? What is it's name?
4. What does R-squared mean? What is it's name?
5. What does the slope mean in context of the problem?
6. What is the formula for that involves slope, correlation, and standard deviation.
7. What does resistant and non-resistant mean? Name things that are non-resistant? Resistant?
8. Cumulative frequency and relative frequency – What do you always convert this to?
9. What does a "good" residual plot look like?
10. Name ways to plot univariate data.
11. Name ways to plot bivariate data.
12. What is the meaning of least squares?
13. What are the three ways to check for normality?
14. What is the difference between influential points and outliers?
15. What is the empirical rule?
16. What is the meaning of standard deviation?

Experimental Design key questions

Note: In all likelihood, there will be 1 experimental design question on the AP test.

1. What is the difference between blocking and stratifying?
2. What is the purpose of blocking?
3. What is the purpose of stratifying?
4. What is the purpose of a control group?
5. What are the three or four main elements of an experiment?
6. What is the difference between an observational study and an experiment?
7. Can you name the three major types of experimental design?
   a. When do you use a matched pair?
   b. When do you use a block design?
   c. When do you use a completely randomized design?
8. What does double blind mean? When do you employ such a technique?
9. What are explanatory and response variables?
10. Why randomize?
11. How do you calculate the number of treatments?
12. What is extrapolation?
13. What are the two calculations for outliers?

Inference Key Questions

1. What is the meaning of a p-value?
2. What is the meaning of a confidence interval in context?
3. Name the 7-9 major tests we run.
4. Name the confidence intervals we run.
5. What is the difference between a Z and a T?
6. Name the symbols that we use in these tests for the null hypothesis and the alternative.
7. Name the test statistic symbols.
8. Name the conditions for all 7 tests.
9. Describe the central limit theorem.
10. How do you calculate the number of samples needed for a mean or proportion?
11. If you want to cut the standard deviation in half, how many samples should you have?
12. What is a type I error and what are the consequences?
13. What is a type II error and what are the consequences?
14. What is power?
15. What is the relationship between alpha, beta, and N.
16. When do you pool?
17. What are the reference numbers for all of the different confidence intervals?
18. What do bias and variability mean?
19. What is the parameter of interest?
20. Name 2 ways to shrink the confidence interval.

Probability Key questions:

1. What does independent mean?
2. What does mutually exclusive mean?
3. What does expected value mean?
4. Which of the above has to do with and (multiply) problems?
5. Which of the above has to do with or (addition) problems?
6. How do you find the mean of a discrete random variable?
7. How do you find the standard deviation of a discrete random variable?
8. What is a discrete random variable?
9. What is a continuous random variable? Give me an example.
10. What is conditional probability?
11. What is the mean of a binomial distribution?
12. What is the standard deviation of a binomial distribution?
13. What are the conditions for a binomial?
14. What is the mean of a geometric distribution?
15. What are the conditions for a geometric distribution?
16. What is the standard deviation of a geometric distribution?
17. What is the formula for combining standard deviations?
18. What is a standard score?
19. For a proportion problem, when is the standard deviation at its largest?

20. How do you find the median of a discrete random variable?
21. What is replacement and non-replacement?
22. Complement. What is it?
23. How do you calculate payout?
24. What is the law of large numbers?
25. What are the degrees of freedom for each test we run?