

Name _____ Date _____ Per _____

AP REVIEW PACKET #8 INSTRUCTIONS – Due Thursday in class or by Friday 4/26 7:50– 40 points

- 1) Read Topic 13: Confidence Intervals; pp 319-361 and Topic 14: Tests of Significance; pp 363-404 As you read, answer the reading questions.
- 2) Do Practice Exam #3, pp 497-512 – on a separate paper
- 3) Correct your work, starting on pg 513, in red or green ink – make sure I can tell you corrected your work!
- 4) Calculate your projected AP Score = _____. (see pg 585)

Optional Bonus Activity: Go to <http://learner.org/resources/series65.html>. Watch programs 16 & 17 answer the worksheets.

Guided Reading Questions for Packet #8:

- 1) In what form are confidence intervals usually expressed?
- 2) Verifying assumptions and conditions means more than simply listing them with little _____. You must _____ or give some _____ to confirm verification.
- 3) We can also say, using the definition of confidence level, that if the interviewing procedure were repeated many times, about 99% of the _____ confidence _____ would contain the _____.
- 4) Note....for a given sample proportion, the population proportion either is or isn't within the specified interval, and so the probability is either _ or _
- 5) What is the difference between interpreting the confidence interval and interpreting the confidence level?
- 6) In making calculations and drawing conclusions from specific samples, it is important both that the samples be simple random samples and that they be taken _____ of each other.
- 7) We use t-distributions instead of the standard normal curve whenever _____ is unknown, no matter what the sample size, and the population must be assumed approximately normal.
- 8) Read the question _____! Be sure you understand exactly what you are being asked to _____ or _____ or _____.
- 9) In the case of independent samples ... it's never wrong _____.

10) The _____ of the _____, is sometimes written se . It is a measure of the _____ about the regression line, and is almost always in the regression output (usually simply labeled as s or S).

11) Copy the 5 Summary bullet points:

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-
-
-
-

12) The P-value relates to the probability of the _____ given that the _____ is true; it is not the probability of the null hypotheses being true.

13) Copy the decision/truth table on pg 364.

14) We _____ a null hypothesis; we either do or do not have evidence to reject it.

15) To do a hypothesis test for a difference between two proportions the samples must be taken _____ of each other.

16) When the data comes in pairs you _____ use a two-sample t-test.

17) The book divides PHANTOMS into 5 steps: _____ 1: Name the _____ 2: State the _____
_____ 3: Check the _____ 4: Perform the _____
and _____ 5: Give a _____ in _____.

Please label each of these steps with their corresponding components in PHANTOMS (you will need multiple letters on both steps.)

18) Define P-value:

Type I error:

Type II error:

Power

Bonus Assignment: Video 16 - RANDOM VARIABLES

1. In the 1986 Challenger disaster,
 - a. what was the probability of success of each individual field joint? _____
 - b. what was the overall probability of success? _____
 - c. how do engineers insure a high probability of success? _____
 - d. what assumption was faulty in their reasoning? _____
 - e. should engineers be required to take and pass a statistics course? _____

2. What are disjoint events? _____

3. Are disjoint events independent? _____

4. What are independent events? _____

5. What is a variable that can take on only a finite number of values? _____

6. What is a variable that can take on any value? _____

7. Classify each of the following as discrete or continuous:
 - a. Total number of points in a basketball game _____
 - b. Lifetime of a cell _____
 - c. Number of people in line at a checkout counter _____
 - d. Snowfall _____
 - e. Failure time of a mechanical part _____

8. What can be described as long term relative frequency? _____

9. On which axis is probability plotted? _____

10. What is the sum of the bars of a relative frequency/probability distribution? _____

11. What are the ranges of possible outcomes called? _____

12. What is the formula for the mean of a probability distribution? _____
for variance? _____

13. What is the process called that uses statistical techniques to draw conclusions and make predictions about data? _____

Bonus Assignment: Video 17 - **BINOMIAL DISTRIBUTIONS**

1. What law says that the mean result of a large number of independent trials comes close to the true mean of the distribution? _____
2. What is the misconception called when strings of events differ from predicted probabilities are considered significant? _____
3. Which distribution has a smaller variance: stocks or t-bills? _____
Which has the smaller mean? _____
4. Complete the rules for means: $E[a + X] =$ _____
 $E[bX] =$ _____ $E[X + Y] =$ _____
5. What does risk in the stock market translate into? _____
6. Complete the rules for variances: $E^2[a + X] =$ _____
 $E^2[bX] =$ _____ $E^2[X + Y] =$ _____
7. What are the three traits of a binomial distribution? _____

8. What example in the video is used to illustrate the binomial distribution? _____
9. Write the formulas for the mean and standard deviation for the binomial distribution:
= _____ = _____
10. How is the binomial distribution produced by a quincunx? _____

11. When the number of trials n is large or $p = 1/2$, what distribution is the binomial distribution approximated by?
