Math 1530 Final Exam
April 29, 2006

Name _____
Student ID _____
Instructor _____

There are five possible responses to each of the following multiple choice questions. There is only one "BEST" answer. Be sure to read all possible choices before selecting your answer. You may mark on this examination. You should use a calculator, but it is not required. A calculator manual cannot be used. A binomial table and a confidence level table are on the last page of this exam.

CANARY

1. A random sample of five ETSU professors were asked how many hours of TV did they watch last Sunday. Their answers were

   1 0 7 2 2

   The mean and median of the sample are

   (A) 2.4 and 5 hours, respectively. (C) 2.4 and 2 hours, respectively.

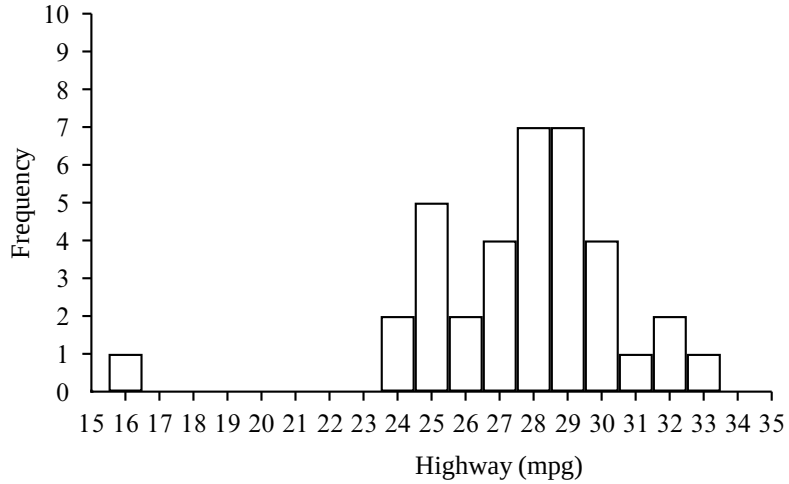
   (B) 3 and 2 hours, respectively. (D) 3 and 4 hours, respectively.

   (E) 2 and 7 hours, respectively.

   Use the following for the next 3 questions. The following descriptive statistics and histogram represent highway gas mileage (miles per gallon) for a sample of thirty-six 2002 model midsize cars.

Descriptive Statistics: Highway (mpg)

Variable	Mean	Variance	Minimum	Q1	Median	Q3	Maximum
Highway (mpg)	27.667	9.086	16.000	26.000	28.000	29.000	33.000



2. Exactly how many cars in the sample got highway gas mileage less than 25 mpg?
   (A) 8 (B) 2 (C) 18 (D) 3 (E) 5

3. Approximately what percentage of the sampled cars got more than 30 miles to the gallon in highway testing?
   (A) 11 (B) 4 (C) 100 (D) 28 (E) 50

4. Approximately one-fourth of the cars tested had highway gas mileage at or below what value of mpg?
   (A) 28 (B) 29 (C) 36 (D) 26 (E) 20

5. Here are the numbers of home runs that Babe Ruth hit in his 15 years with the New York Yankees, 1920 to 1934:

54 59 35 41 46 25 47 60 54 46 49 46 41 34 22

Which of the following best describes the distribution of home runs?

(A) The distribution is strongly right-skewed with 60 home runs being an outlier.

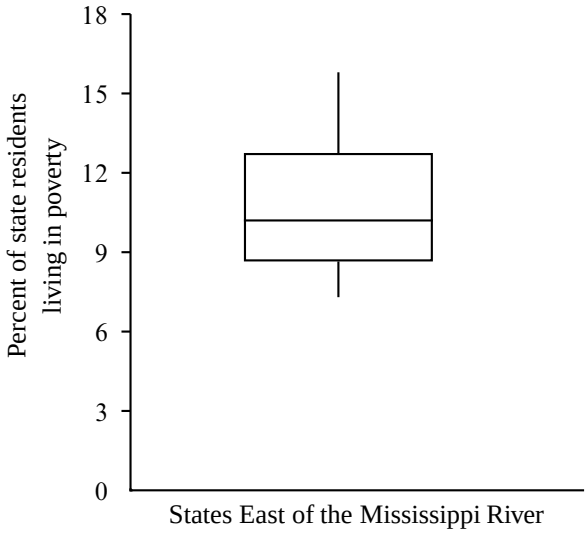
(B) The distribution is strongly left-skewed with 60 home runs being an outlier.

(C) The distribution is uniform with 40 home runs being the center.

(D) The distribution of home runs is quantitative ranging from 54 in 1920 to 22 in 1934.

(E) The distribution is roughly symmetric with no outliers; a typical year had about 46 home runs.

Use the following for the next 3 questions. The percentage of each state's residents living below the poverty line was determined by the year 2000 U.S. national census. The graphical display given below shows the percentages that were obtained from the 26 states that are located east of the Mississippi River. For this group of 26 states the mean state poverty level is 10.9% and the standard deviation is 2.5%.



6. Suppose that we call the variable of interest "State Poverty Level." What type of variable is this?

(A) categorical (B) qualitative (C) quantitative (D) boxplot (E) response

7. WHO are the "individuals" from which these 26 measurements were collected?

(A) interviewers for the U.S. Census Bureau (C) the last 26 years

(B) the states east of the Mississippi (D) the states west of the Mississippi

(E) 26 homeless families living in the U.S.

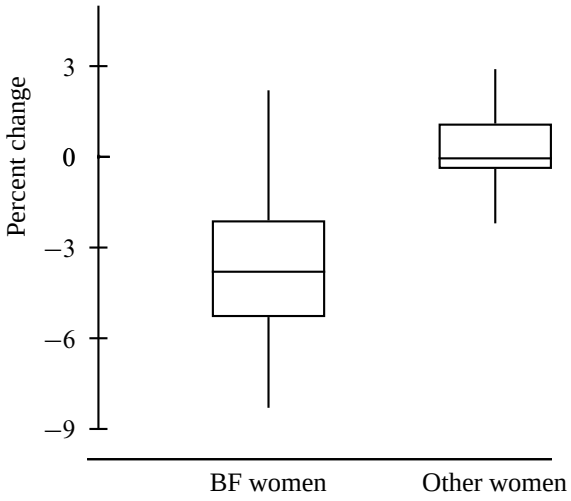
8. The middle half of this distribution of state poverty levels lies approximately between which two values?

(A) 2.5 and 10.9% (B) 10.2 and 15.8% (C) 7.3 and 15.8% (D) 8.7 and 12.8% (E) 8.7 and 15.8%

9. Suppose that you are interested in investing some money in the stock market. Before you buy some shares of a certain company's stock, you decide to look at the fluctuations in the price of the stock over the past five years. What type of graphical display is suitable for this purpose?

(A) histogram (B) pie chart (C) time plot (D) bar chart (E) stemplot

10. Does breast-feeding weaken bones? Beast-feeding (BF) mothers secrete calcium into their milk. Some of the calcium may come from their bones, so mothers may lose bone mineral. Researchers compared 47 BF women with 22 women of similar age who were neither pregnant nor lactating. They measured the percent change in the mineral content of the women's spines over three months. Below are some summary statistics and comparative boxplots of the percent change in the mineral content for the two groups.



Group	*Count*	*Mean*	*Median*	*StdDev*
BF women	47	−3.59%	−3.80%	2.51%
Other women	22	0.31%	−0.05%	1.30%

What do the data show about bone mineral loss?

(A) Both the graphs and the numerical summaries suggest that breast-feeding (BF) women lose calcium.

(B) Both the graphs and the numerical summaries suggest that breast-feeding (BF) women gain calcium.

(C) Breast-feeding (BF) women tend not to lose calcium.

(D) There doesn't appear to be any difference between the two groups.

(E) There is a negative correlation between calcium and breast-feeding/other women.

Use the following for the next 3 questions. The length of human pregnancies from conception to birth varies according to a distribution that is approximately normal with mean, μ, equal to 266 days and standard deviation, σ, equal to 16 days.

11. Between what values do the lengths of the middle 95% of all pregnancies fall?

(A) 234 to 298 days (B) 250 to 282 days (C) 266 days (D) at most 298 days (E) 218 to 314

12. What percent of pregnancies last between 240 and 270 days?

(A) 65 (B) 45 (C) 55 (D) 92 (E) 99.7

13. The longest 20% of pregnancies last at least how many days?

(A) 266 (B) 298 (C) 240 (D) 279 (E) 270

14. Only one of the following statements about the linear correlation coefficient r is FALSE. Which one?

(A) The correlation r indicates the strength and direction of the linear association between two categorical variables.

(B) The correlation r is always a number between -1 and 1, inclusive.

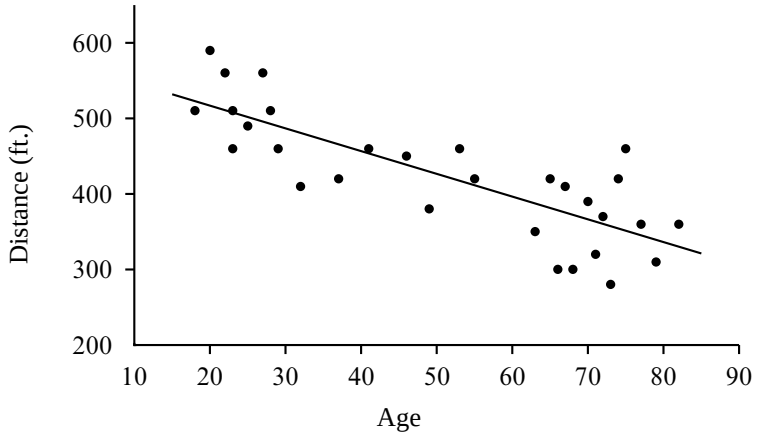
(C) The correlation r is not a resistant measure of the strength of association between two quantitative variables.

(D) The correlation r makes no distinction between the explanatory and the response variable.

(E) Because the calculation of r uses the standardized values of the observations, r does not change when the units of measurement for y and/or x are changed.

Use the following to answer the next 5 questions: From research conducted in Pennsylvania, information was collected from a random sample of 30 individuals ranging in age from 18 to 82 years old. Each participant in the study was asked to read a newly designed road sign. The maximum distance (feet) at which the driver was able to read the sign was recorded. We would like to have a regression model that explains maximum distance in terms of age. The observations and least-squares regression line appear in the scatterplot. The correlation between the two variables is $r = -0.801$ and the least-squares regression line for predicting distance from age is

$$\texttt{distance} = 577 - 3.01 \times \texttt{age}$$



15. Which is the most appropriate interpretation of the slope?

    (A) For each additional year of age the estimated maximum distance at which the driver is able to read the sign increases by approximately 3 feet.

    (B) For each additional year of age the estimated maximum distance at which the driver is able to read the sign decreases by approximately 577 feet.

    (C) For each additional foot the age decreases by approximately 3 years.

    (D) For each additional year of age the estimated maximum distance at which the driver is able to read the sign decreases by approximately 3 feet.

    (E) For each additional foot the age increases by approximately 3 years.

16. Which is the most appropriate statement regarding the interpretation of the intercept?

    (A) We should not interpret the intercept because new born babies don't read and don't drive cars.

    (B) For each additional year of age the estimated maximum distance at which the driver is able to read the sign decreases by approximately 3 feet.

    (C) The average distance at which drivers are able to read the sign is 577 feet.

    (D) The minimum distance at which drivers are able to read the sign is 577 feet.

    (E) For each additional foot the age decreases by approximately 3 years.

17. Which is the most appropriate interpretation of the correlation?

    (A) For each additional year of age the estimated maximum distance at which the driver is able to read the sign decreases by approximately 3 feet.

    (B) The relationship between age and distance is weak because the correlation is negative.

    (C) The relationship between age and distance is weak because -0.801 is a small number compared to 577.

    (D) The relationship between age and distance is strong and positive because 3 is greater than 1.

    (E) There is a strong negative association between distance required to read the sign and age, i.e., the older the person the shorter the distance at which he/she can read the sign.

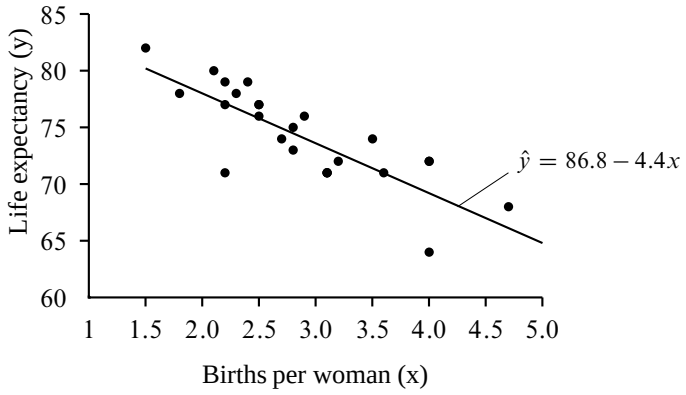
18. Estimate the maximum distance to read the sign for a person who is 52 years old.

    (A) 298.5 feet (B) 420.5 feet (C) 29848 feet (D) 733.5 feet (E) 450 feet

19. Trevor is 50 years old and can read the sign at a distance of 580 feet. If Trevor had been in the sample, it is likely that he would have been considered

    (A) an influential point, the slope would have changed from negative to positive.
    (B) a residual.
    (C) an outlier.
    (D) correlation.
    (E) an explanatory variable.

20. Data from the World Bank for 25 Western Hemisphere countries was collected to examine the association between female life expectancy and the average number of children women give birth to. The observations, least-squares regression line and equation appear in the scatterplot. The correlation between the two variables is $r = -0.815$.



    If government leaders wanted to increase life expectancy, in their country, should they encourage women to have fewer children?

    (A) Yes, females will have shorter life expectancies by having more children.
    (B) Yes, for each additional child a female will live 4.4 years less.
    (C) No, the graph indicates more births means longer lives.
    (D) No, while there is an association, there is no reason to expect causality. There may be lurking variables.
    (E) No, all the points are not exactly on the line.

21. At Eastern University there are 1200 freshman, 900 sophomores, 1100 juniors, 1000 seniors. The school's vice president of research randomly selects 50 students from each of the four classes and interviews all of the students selected. Identify the type of sampling used in this example.

    (A) Cluster sampling
    (B) Stratified sampling
    (C) Attempted census
    (D) Voluntary response
    (E) Simple random sampling

22. Suppose that the East Tennessean plans a survey to determine whether or not ETSU students like the new cafeteria food. A questionnaire is to be printed in an issue of the paper. Students are requested to fill out the questionnaire and return it to the newspaper office in the DP Culp Center. Identify the type of sampling planned for this example.

    (A) Stratified sampling
    (B) Cluster sampling
    (C) Attempted census
    (D) Voluntary response
    (E) Simple random sampling

23. Suppose that ETSU plans to take a simple random sample of 900 students from the 12,000 students enrolled during the spring term of 2006 using the student directory. They will mail a questionnaire to each student selected. They plan to question the students about the future plans to renovate the DP Culp Center. In this situation the student directory is the

    (A) population. (B) sample. (C) parameter. (D) statistic. (E) sampling frame.

    Use the following for the next 4 questions. A food company assesses the nutritional quality of a new "instant breakfast" product by feeding it to newly weaned white rats. They look at a rat's weight gain over a 28-day period. A control group of rats eats a standard diet but otherwise receives exactly the same care as the experimental group. The researchers have 40 rats available for the study. Twenty rats are randomly selected and fed the new product; the remaining rats are fed the standard diet.

24. The factor in this study is

    (A) the use of randomization. (B) diet. (C) the rat's weight gain. (D) the 40 rats. (E) the 28-day time period.

25. This type of study would be properly classified as

    (A) a retrospective study.
    (B) an observational study.
    (C) a simple random sample.
    (D) anecdotal evidence.
    (E) a completely randomized experiment.

26. Suppose the 40 available rats were first divided into male and female, and then half the males were randomly assigned the new product and half the females were randomly assigned the new product. The remaining rats were fed the standard diet. This would be an example of

    (A) confounding. (B) an observational study. (C) a double blind study. (D) a matched pair design. (E) a block design.

27. The subjects in the study are

    (A) the rats. (B) the diets. (C) the food company executives. (D) the researchers. (E) the 28 days.

28. A randomized block experimental design corresponds to which of the following sampling designs?

    (A) Simple random sampling
    (B) Stratified sampling
    (C) Multistage sampling
    (D) Cluster sampling
    (E) Convenience sampling

    Use the following for the next 2 questions. Can aspirin help prevent heart attacks? The Physicians Health Study, a large medical experiment involving 22,000 male physicians, attempted to answer this question. One group of about 11,000 physicians took an aspirin every second day; while the rest took a placebo every second day. After several years the study found that subjects in the aspirin group had significantly fewer heart attacks than the subjects in the placebo group. The physicians were assigned at random to the two groups.

29. If the physicians in the study and the researchers evaluating the physician's health during the study did not know whether a participant received aspirin or placebo, this would be a

    (A) retrospective study. (B) matched pair study. (C) placebo effect. (D) replication. (E) double blind experiment.

30. The statement, "the study found that subjects in the aspirin group had significantly fewer heart attacks than the subjects in the placebo group" means

    (A) the result was important to statisticians.
    (B) the observed effect was too large to attribute plausibly to chance.
    (C) the study resulted in a large P-value.
    (D) the study supports the findings of previous, similar studies.
    (E) the study was designed properly.

Use the following for the next 2 questions. Governor Bredesen wants to know what the voters in Tennessee think about the changes to TennCare. Suppose that he mailed a questionnaire on the subject to an SRS of 2,500 voters in Tennessee. His staff reports that 448 questionnaires have been returned, 343 of which support his plan.

31. The population is

(A) the 448 questionnaires returned.
(B) the 343 questionnaires supporting the plan.
(C) the 2,500 receiving the questionnaire.
(D) the voters in Tennessee.
(E) the people who voted for Bredesen in the last election.

32. This is an example of

(A) a survey with little bias because a large SRS was used.
(B) a sample with little bias because it was the voters who elected the governor.
(C) a survey with little bias because a probability sample was selected.
(D) a survey containing non response.
(E) All of the above.

33. I would like to know what is the percent of the Tennessee population 18 years or older who are current smokers. With that purpose I take a random sample of 2000 individuals in that age group who live in the state and find that 600 of them are current smokers. Imagine that the true percent of the adult (18 years or older) population of TN that are current smokers is 25%. I am trying to use this example to explain the idea of parameter and statistic to somebody. Which of the following is correct?

(A) $parameter = 18, statistic = 2000$
(B) $parameter = 25\%, statistic = 30\%$
(C) $parameter = 30\%, statistic = 25\%$
(D) $parameter = 2000, statistic = 600$
(E) $parameter = 2000, statistic = 30\%$

34. The scores of students on the ACT college entrance examination in 2001 had mean 21 and standard deviation 4.7. The distribution of scores is roughly Normal. What is the approximate probability that the average ACT score of an SRS of 50 students is 23 or higher?

(A) .0013 (B) .3336 (C) 3.01 (D) .9987 (E) .1103

35. Suppose we roll a pair of fair six-sided dice. The faces on each die have 1, 2, 3, 4, 5, or 6 spots on them. What is the probability that the sum of the spots on the up-faces is 3, 6, or 9?

(A) 1/4 (B) 1/12 (C) 3/11 (D) 7/36 (E) 11/36

Use the following for the next 2 questions. Choose an American household at random and let the random variable X be the number of cars (including SUV's and light trucks) they own. Here is the probability model if we ignore the few households that own more than 5 cars.

Number of cars X	0	1	2	3	4	5
Probability	.09	.36	.35	.13	.05	.02

36. What is the probability that a randomly chosen American household has at least 2 cars?

(A) .35 (B) .55 (C) .45 (D) .20 (E) .80

37. What is the probability that a randomly chosen American household has exactly 1 car?

(A) .64 (B) .35 (C) .09 (D) .20 (E) .36

38. The common test for the presence in the blood of antibodies to HIV, the virus that causes AIDS, gives a positive result with probability about .006 when a person who is free of HIV antibodies is tested. A clinic tests 1000 people who are all free of HIV antibodies. What is the expected number of positive tests?

(A) 6 (B) 60 (C) 600 (D) 500 (E) .006

39. People with type O-negative blood are universal donors whose blood can be safely given to anyone. Only 5% of the population have O-negative blood. A blood center is visited by 8 donors in an afternoon. What is the probability that there are exactly 2 universal donors among them?

    (A) .1094 (B) .0515 (C) .0054 (D) .9500 (E) 2

    Use the following for the next 2 questions. Here are the counts (in thousands) of earned degrees in the United States in the 2005-2006 academic year, classified by level and by the gender of the degree recipient.

	Bachelor's	Master's	Professional	Doctorate	Total
Female	784	276	39	20	1119
Male	559	197	44	25	825
Total	1343	473	83	45	1944

40. If you choose a degree recipient at random, what is the probability that the person you choose is a woman?

    (A) .42 (B) 1.36 (C) .70 (D) .58 (E) .1119

41. What is the conditional probability that you choose a woman, given that the person chosen received a professional degree?

    (A) .03 (B) .04 (C) .47 (D) .58 (E) .02

42. A couple has six children, all girls. They are expecting a seventh child. Which of the following statements is true?

    (A) The "law of large numbers" tells us that the next child will most likely be a boy.

    (B) The "law of large numbers" tells us the chance of a boy is now much greater than 50%.

    (C) The probability of having a boy is close to 1.

    (D) There is a 1/7 chance that the seventh child will be a boy.

    (E) The chance of a boy is 50%.

    Use the following for the next 2 questions. Hemoglobin is a protein in red blood cells that carries oxygen from the lungs to body tissues. People with less than 12 grams of hemoglobin per deciliter of blood (g/dl) are anemic. In a developing country a public health official suspects that the mean hemoglobin level μ of all children in that country is less than 12. He plans to select a simple random sample of children, draw blood and measure their hemoglobin level in order to find out evidence either in favor of or against his suspicion.

43. The null and alternative hypotheses are

    (A) $H_0 : p = 12$ $H_a : p < 12$ (C) $H_0 : \bar{x} = 12$ $H_a : \bar{x} < 12$

    (B) $H_0 : \mu = 12$ $H_a : \mu < 12$ (D) $H_0 : \mu = 12$ $H_a : \mu \neq 12$

    (E) $H_0 : \mu > 12$ $H_a : \mu = 12$

44. To test his claim, the public health official takes a simple random sample of 25 children and finds the mean hemoglobin level for those 25 children to be 11.5 g/dl. Assume that the hemoglobin level for all children this age follows a Normal distribution with standard deviation $\sigma = 2$ g/dl. In a test of statistical hypotheses, the $p - value$ is equal to

    (A) 0.8944. (B) 0.1056. (C) 0.6056. (D) -0.25. (E) 1.25.

45. Imagine that a presidential election is approaching. We would like to estimate ahead of time what percent of the registered voters plans to vote for Candidate X. We plan to take a simple random sample from the list of registered voters in the state and ask them who they plan to vote for. How many people should we have in the sample if we want to estimate that percent with a margin of error of 3% and we want to feel 95% confident in our estimation?

    (A) 33 (B) 534 (C) 1068 (D) 400 (E) 251

46. The national mean IQ test score for seventh grade girls is 100. An educator wonders if seventh grade girls who attend charter schools have a mean IQ different from the national mean IQ score. She selects a simple random sample of 50 seventh grade girls from charter schools and finds that the mean IQ of those 50 girls is 102 and the standard deviation is 13. She calculates a 95% confidence interval for the mean IQ of all seventh grade girls in charter schools and finds it to be $(98.305, 105.695)$. Which of these statements IS TRUE?

    (A) The study definitely concludes that charter school seventh grade girls have a mean IQ score higher than the national mean of 100 at the 0.05 level.

    (B) We are 95% confident that all charter school girls have their IQ scores between 98.305 and 105.695.

    (C) The sample mean is equal to the population mean and this can be stated with 95% confidence.

    (D) 95% of girls in charter schools have their IQ scores between 98.305 and 105.695.

    (E) The study does not provide enough evidence as to claim that charter school seventh grade girls have a mean IQ different from the national mean of 100 at the 0.05 level.

47. Somebody in the police department claims that in the TRI-CITIES area 90% of drivers use seatbelts but we think that seatbelt use is below 90%. We will conduct a study by randomly selecting drivers driving in the area and check to see if they are wearing seat belts. The null and alternative hypotheses in this case would be

    (A) $H_0 : p = 0.9$ $H_a : p > 0.9$ (C) $H_0 : p = 0.9$ $H_a : p < 0.9$

    (B) $H_0 : \hat{p} = 0.9$ $H_a : \hat{p} < 0.9$ (D) $H_0 : \mu = 90$ $H_a : \mu < 90$

    (E) $H_0 : \bar{x} = 90$ $H_a : \bar{x} < 0.9$

48. The proportion of drivers who use seat belts depends on variables like age, gender, ethnicity and local law. As part of a broader study investigators observed a random sample of 500 male white drivers in San Francisco, 380 of these drivers were wearing seat belts. Give a 95% confidence interval for the proportion of all white male drivers in San Francisco who wear seat belts.

    (A) 380 ± 0.0374 (B) 0.76 ± 0.0374 (C) 1.31 ± 0.0374 (D) 0.76 ± 0.031 (E) 0.70 ± 0.0429

49. We plan to take random samples of size n (with replacement) from a population with mean μ and standard deviation σ. Which of these statements about the sampling distribution of the sample mean $\bar{x}$ IS NOT CORRECT?

    (A) The Standard Deviation of $\bar{x}$ is $\sigma/\sqrt{n}$.

    (B) When the variable x has a normal distribution, $\bar{x}$ has a normal distribution regardless of the size of the sample.

    (C) The Central Limit Theorem says that if the sample size is large enough, $\bar{x}$ has an approximate normal distribution.

    (D) The Mean and Standard Deviation of $\bar{x}$ are μ and σ, respectively.

    (E) Considering all the possible samples of size n, the mean of $\bar{x}$ is equal to the population mean μ.

50. An engineer designs an improved light bulb. The previous design had an average lifetime of 1200 hours. The new bulb had a lifetime of 1200.2 hours, using a sample of 40,000 bulbs. Although the difference is quite small, the effect was statistically significant. The explanation is

    (A) that the sample size is very large.

    (B) that new designs typically have more variability than standard designs.

    (C) that the mean of 1200 is large.

    (D) that the p-value was large.

    (E) that the test of hypotheses is not rejected.

51. A medical researcher is working on a new treatment for a certain type of cancer. The average survival time after diagnosis on the standard treatment is two years. In an early trial, she tries the new treatment on three subjects who have an average survival time after diagnosis of four years. Although the survival time has doubled, the results are not statistically significant even at the 0.10 significance level. The explanation is

    (A) the placebo effect is present, which limits statistical significance.

    (B) that although the survival time has doubled, in reality the actual increase is really two years.

    (C) the sample size is small.

    (D) the calculation was in error. The researchers forgot to include the sample size.

    (E) that the p-value is smaller than the 0.10 significance level.

52. Is caffeine dependence real? A study was conducted with 11 individuals diagnosed as being dependent on caffeine. Each subject was barred from coffee, colas, and other substances containing caffeine. Instead, they took capsules containing their usual caffeine intake. During a different time period they took placebo capsules. It was a blind experiment. Depression was measured after each period using the Beck Depression Inventory. Higher scores show more symptoms of depression. We have a depression score for each individual while using caffeine (Depr Caffeine) and a depression score for each individual while using the placebo (Depr Placebo).

	N	Mean	StDev
Depr Placebo	11	11.3636	7.9028
Depr Caffeine	11	4.0000	3.3764
Difference P-C	11	7.3636	6.9177

    The research question is *'Are caffeine dependent people more depressed when they don't use caffeine?'*. Below you see two outputs obtained with the matched pairs t-test.

```
-----------------------------------------------------------------------
output 1) Paired T for Depr Placebo - Depr Caffeine
          T-Test of mean difference = 0 (vs not = 0): T-Value = 3.53  P-Value = 0.005
-----------------------------------------------------------------------
output 2) Paired T for Depr Placebo - Depr Caffeine
          T-Test of mean difference = 0 (vs > 0): T-Value = 3.53  P-Value = 0.003
-----------------------------------------------------------------------
```

    Which of the outputs would you select and what would your answer be to the research question?

    (A) Output 1; caffeine dependents are significantly more depressed on average when they don't take caffeine.

    (B) Output 1; we can not conclude that there is a difference in depression level when caffeine dependents don't take caffeine.

    (C) Output 2; we can not conclude that depression level is higher on average for caffeine dependents when they don't take caffeine.

    (D) Output 2; caffeine dependents are less depressed on average when they don't take caffeine.

    (E) Output 2; caffeine dependents are more depressed on average when they don't take caffeine.

53. The question "Do you think there should be a law that would ban possession of handguns except for the police and other authorized persons? (YES, NO)" was asked to a random sample of 1201 adults from different educational backgrounds. The results appear in the table below. Expected counts are printed below observed counts.

	Handgun Law		
Education level	YES	NO	Total
Less than high school	58 46.94	58 69.06	116
High school graduate	84 86.19	129 126.81	213
Some college	169 187.36	294 275.64	463
College graduate	98 94.29	135 138.71	233
Postgraduate degree	77 71.22	99 104.78	176
Total	486	715	1201

$$Chi - Sq = 8.525, DF = 4, P - Value = 0.074$$

What is the correct conclusion of this analysis? (Use $\alpha = 0.05$.)

(A) There is not enough evidence to claim that the opinion about possession of handguns is related to the educational level of the person.

(B) The opinion about possession of handguns definitely depends on the educational level of the person, less educated people tend to favor handguns.

(C) We can not arrive at a conclusion because the table has more than two rows.

(D) The results are statistically significant.

(E) The opinion about possession of handguns definitely depends on the educational level of the person.

Binomial Probability Table

		p											
n	*x*	.01	.05	.10	.15	.20	.25	.30	1/3	.35	.40	.45	.50
1	0	0.9900	0.9500	0.9000	0.8500	0.8000	0.7500	0.7000	0.6667	0.6500	0.6000	0.5500	0.5000
	1	0.0100	0.0500	0.1000	0.1500	0.2000	0.2500	0.3000	0.3333	0.3500	0.4000	0.4500	0.5000
2	0	0.9801	0.9025	0.8100	0.7225	0.6400	0.5625	0.4900	0.4444	0.4225	0.3600	0.3025	0.2500
	1	0.0198	0.0950	0.1800	0.2550	0.3200	0.3750	0.4200	0.4444	0.4550	0.4800	0.4950	0.5000
	2	0.0001	0.0025	0.0100	0.0225	0.0400	0.0625	0.0900	0.1111	0.1225	0.1600	0.2025	0.2500
3	0	0.9703	0.8574	0.7290	0.6141	0.5120	0.4219	0.3430	0.2963	0.2746	0.2160	0.1664	0.1250
	1	0.0294	0.1354	0.2430	0.3251	0.3840	0.4219	0.4410	0.4444	0.4436	0.4320	0.4084	0.3750
	2	0.0003	0.0071	0.0270	0.0574	0.0960	0.1406	0.1890	0.2222	0.2389	0.2880	0.3341	0.3750
	3	0.0000	0.0001	0.0010	0.0034	0.0080	0.0156	0.0270	0.0370	0.0429	0.0640	0.0911	0.1250
4	0	0.9606	0.8145	0.6561	0.5220	0.4096	0.3164	0.2401	0.1975	0.1785	0.1296	0.0915	0.0625
	1	0.0388	0.1715	0.2916	0.3685	0.4096	0.4219	0.4116	0.3951	0.3845	0.3456	0.2995	0.2500
	2	0.0006	0.0135	0.0486	0.0975	0.1536	0.2109	0.2646	0.2963	0.3105	0.3456	0.3675	0.3750
	3	0.0000	0.0005	0.0036	0.0115	0.0256	0.0469	0.0756	0.0988	0.1115	0.1536	0.2005	0.2500
	4	0.0000	0.0000	0.0001	0.0005	0.0016	0.0039	0.0081	0.0123	0.0150	0.0256	0.0410	0.0625
5	0	0.9510	0.7738	0.5905	0.4437	0.3277	0.2373	0.1681	0.1317	0.1160	0.0778	0.0503	0.0313
	1	0.0480	0.2036	0.3280	0.3915	0.4096	0.3955	0.3601	0.3292	0.3124	0.2592	0.2059	0.1562
	2	0.0010	0.0214	0.0729	0.1382	0.2048	0.2637	0.3087	0.3292	0.3364	0.3456	0.3369	0.3125
	3	0.0000	0.0011	0.0081	0.0244	0.0512	0.0879	0.1323	0.1646	0.1811	0.2304	0.2757	0.3125
	4	0.0000	0.0000	0.0005	0.0022	0.0064	0.0146	0.0283	0.0412	0.0488	0.0768	0.1128	0.1562
	5	0.0000	0.0000	0.0000	0.0001	0.0003	0.0010	0.0024	0.0041	0.0053	0.0102	0.0185	0.0313
6	0	0.9415	0.7351	0.5314	0.3771	0.2621	0.1780	0.1176	0.0878	0.0754	0.0467	0.0277	0.0156
	1	0.0571	0.2321	0.3543	0.3993	0.3932	0.3560	0.3025	0.2634	0.2437	0.1866	0.1359	0.0938
	2	0.0014	0.0305	0.0984	0.1762	0.2458	0.2966	0.3241	0.3292	0.3280	0.3110	0.2780	0.2344
	3	0.0000	0.0021	0.0146	0.0415	0.0819	0.1318	0.1852	0.2195	0.2355	0.2765	0.3032	0.3125
	4	0.0000	0.0001	0.0012	0.0055	0.0154	0.0330	0.0595	0.0823	0.0951	0.1382	0.1861	0.2344
	5	0.0000	0.0000	0.0001	0.0004	0.0015	0.0044	0.0102	0.0165	0.0205	0.0369	0.0609	0.0938
	6	0.0000	0.0000	0.0000	0.0000	0.0001	0.0002	0.0007	0.0014	0.0018	0.0041	0.0083	0.0156
7	0	0.9321	0.6983	0.4783	0.3206	0.2097	0.1335	0.0824	0.0585	0.0490	0.0280	0.0152	0.0078
	1	0.0659	0.2573	0.3720	0.3960	0.3670	0.3115	0.2471	0.2048	0.1848	0.1306	0.0872	0.0547
	2	0.0020	0.0406	0.1240	0.2097	0.2753	0.3115	0.3177	0.3073	0.2985	0.2613	0.2140	0.1641
	3	0.0000	0.0036	0.0230	0.0617	0.1147	0.1730	0.2269	0.2561	0.2679	0.2903	0.2918	0.2734
	4	0.0000	0.0002	0.0026	0.0109	0.0287	0.0577	0.0972	0.1280	0.1442	0.1935	0.2388	0.2734
	5	0.0000	0.0000	0.0002	0.0012	0.0043	0.0115	0.0250	0.0384	0.0466	0.0774	0.1172	0.1641
	6	0.0000	0.0000	0.0000	0.0001	0.0004	0.0013	0.0036	0.0064	0.0084	0.0172	0.0320	0.0547
	7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0002	0.0005	0.0006	0.0016	0.0037	0.0078
8	0	0.9227	0.6634	0.4305	0.2725	0.1678	0.1001	0.0576	0.0390	0.0319	0.0168	0.0084	0.0039
	1	0.0746	0.2793	0.3826	0.3847	0.3355	0.2670	0.1977	0.1561	0.1373	0.0896	0.0548	0.0312
	2	0.0026	0.0515	0.1488	0.2376	0.2936	0.3115	0.2965	0.2731	0.2587	0.2090	0.1569	0.1094
	3	0.0001	0.0054	0.0331	0.0839	0.1468	0.2076	0.2541	0.2731	0.2786	0.2787	0.2568	0.2187
	4	0.0000	0.0004	0.0046	0.0185	0.0459	0.0865	0.1361	0.1707	0.1875	0.2322	0.2627	0.2734
	5	0.0000	0.0000	0.0004	0.0026	0.0092	0.0231	0.0467	0.0683	0.0808	0.1239	0.1719	0.2187
	6	0.0000	0.0000	0.0000	0.0002	0.0011	0.0038	0.0100	0.0171	0.0217	0.0413	0.0703	0.1094
	7	0.0000	0.0000	0.0000	0.0000	0.0001	0.0004	0.0012	0.0024	0.0033	0.0079	0.0164	0.0312
	8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0002	0.0002	0.0007	0.0017	0.0039

CONFIDENCE LEVEL	*TAIL AREA*	z^*
80%	0.1000	1.282
90%	0.0500	1.645
95%	0.0250	1.960
96%	0.0200	2.054
98%	0.0100	2.326
99%	0.0050	2.576
99.5%	0.0025	2.807