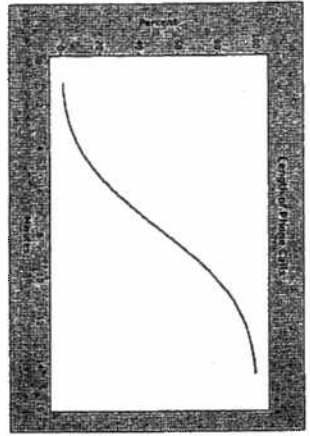


1. A large company is interested in improving the efficiency of its customer service and decides to examine the length of the business phone calls made to clients by its sales staff. A cumulative relative frequency graph is shown below from data collected over the past year.



According to the graph, 80% of the calls will take how long to complete?

- (A) Less than 10 minutes.
- (B) At least 10 minutes.
- (C) Exactly 10 minutes.
- (D) At least 5.5 minutes.
- (E) Less than 5.5 minutes.

2. A radio station is interested in predicting the proportion of registered voters who support an increase in the state sales tax to construct additional regional parks across the state. Listeners of the station's programs were asked to go to the station's Web site and indicate whether they favored or opposed such an increase. 1,744 listeners logged on and 922 (53%) were against the increase. Which one of the following is NOT a correct statement about possible bias in the sampling procedure?

- (A) Only people with Internet access would be counted.
- (B) 1,744 is quite a large sample, so any bias that might have occurred can be overcome.
- (C) Only people listening to the station would be counted.
- (D) Those who responded may not even be registered voters.
- (E) It is likely that only those who feel passionately about the proposal would respond.

3. A recent newspaper article cited a poll that reported 4% of the adults in Wyoming believed that overcrowding might be a serious problem, while 36% of the respondents in California had the same opinion. The reporter said that an average of 20% of the population of the two states felt that overcrowding was therefore a problem. A statistician criticized the article saying the conclusion was inaccurate. Which one of the following reasons supports the statistician's objection?

- (A) The number of people in the two states is very different, thus averaging is inappropriate.
- (B) The polls did not represent an SRS from each state. Wyoming has less overcrowding than California, so the results are biased on this issue.
- (C) The article should have given the correct statement since 40% of the people in the poll believed that overcrowding might be a serious problem.
- (D) The sample size from each state was not large enough to support a 95% confidence interval.
- (E) If equal-size samples had been taken from each state, the results could have been averaged.

4. A national tabloid newspaper wants to estimate the true proportion of all people who believe that life exists elsewhere in the universe. What is the least number of people that should be sampled in order to estimate the true proportion of those who believe that life exists elsewhere within 4% of the real answer with 95% confidence? Past data indicate that 30% of the general population holds this belief.

- (A) 11
- (B) 356
- (C) 505
- (D) 610
- (E) 711

5.

A medical society conducts a study to determine if heart attack sufferers who arrive at the city hospital on nights and weekends wait longer for an artery-clearing angioplasty than patients who arrive at the city hospital during regular hours. Current guidelines recommend that patients wait no longer than 90 minutes from the time they enter the emergency room. The hypotheses for this study were $H_0: \mu_1 = \mu_2$ and $H_a: \mu_1 > \mu_2$, where $\mu_1 =$ the mean waiting time for heart attack sufferers who would arrive at the city hospital at night or on weekends and $\mu_2 =$ the mean waiting time for heart attack sufferers who would arrive at the city hospital during regular hours. It was found that the mean waiting time for the random sample of those going to the hospital at night or on the weekend was $\bar{x}_1 = 116$ minutes, while those in the random sample arriving during regular hours had a mean waiting time of $\bar{x}_2 = 95$ minutes. The P -value for the resulting test was 0.016. Which one of the following is a correct conclusion for this test?

- (A) Since $\bar{x}_1 > \bar{x}_2$, we can conclude that $\mu_1 > \mu_2$.
- (B) There is enough evidence at the 5% level to conclude that $\mu_1 > \mu_2$.
- (C) The observed difference between \bar{x}_1 and \bar{x}_2 is significant at $\alpha = 0.01$.
- (D) Since the P -value is 0.016, we would fail to detect any difference between the two means.
- (E) Only 1.6% of the time will $\mu_1 = \mu_2$.

6. Which statement below represents a major advantage of an experimental study relative to an observational study?

- (A) Experimental studies are usually less expensive to conduct.
- (B) Experimental data are more readily available.
- (C) You need fewer subjects in an experiment.
- (D) Experimental studies provide stronger evidence of cause-and-effect relationships.
- (E) Experimental studies rely on data from treatment, so it is easier to assess any limitations on the scope of inference.

An efficiency expert wanted to see if there is a relationship between the number of people attending a meeting and the number of minutes late that the meeting started. The table shows the results with the accompanying scatter plot (Figure 1).

Number of people attending the meeting	2	3	4	5	6	10
Number of minutes late the meeting started	3	6	8	10	14	7

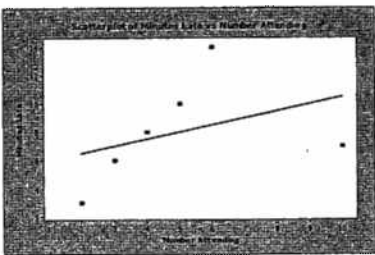


Figure 1

Figure 2 represents the scatterplot with the point (10, 7) removed from the data.

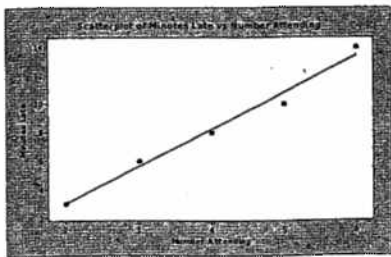


Figure 2

Which one of the following is TRUE about the point (10, 7)?

- (A) It has the largest residual.
- (B) It is an influential observation.
- (C) It is not an outlier in the x -direction.
- (D) The P -value of a linear regression t test changes little when the point is removed.
- (E) The correlation is lower with the removal of the point.

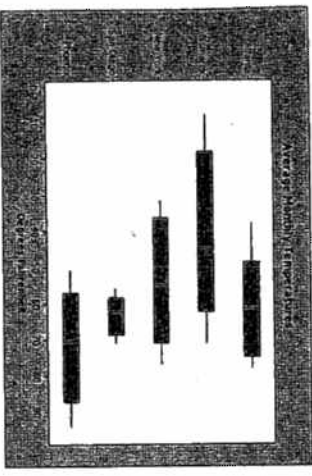
8. A sports physiologist wants to compare the effects of two different exercise machines, A and B, on the flexibility of gymnasts. There are 20 gymnasts available. All gymnasts have been given a flexibility rating before the experiment starts. A similar ratings test will be given at the end of the experiment. Which one of the following methods of assigning gymnasts to machines would be *optimal* in order to assess the difference in flexibility due to the machines?

- (A) Randomly assign a number (01 through 20) to each gymnast. Match the gymnasts by consecutive number (i.e., #1 with #2, #3 with #4, etc.). Then assign the odd-numbered gymnast in each pair to machine A and the even-numbered gymnast to machine B.
- (B) Have all the gymnasts use both machines. A coin flip will determine which machine is used first.
- (C) Flip a coin to assign the gymnasts into two groups of 10. Flip the coin again to assign one group to use machine A and the other group to use machine B.
- (D) Match each gymnast with a gymnast who has the same years of experience, training level, and gymnastic ability. Then flip a coin to assign each pair of gymnasts to one of the two machines.
- (E) Match each gymnast with a gymnast who has the same years of experience, training level, and gymnastic ability. Flip a coin to assign one member of the pair to machine A and the other to machine B.

9. The number of goals scored per game in a full season of games for a professional soccer league is strongly skewed to the right with a mean of 2.3. An SRS of size $n = 15$ is taken from the population and the sample mean is computed. This process is repeated a total of 375 times. Which one of the following best describes the shape of the resulting distribution of sample means?

- (A) Skewed to the right with a mean of 2.3 goals.
- (B) Skewed to the right with a mean of $\frac{2.3}{\sqrt{15}}$ goals.
- (C) Approximately normally distributed with a mean of 2.3 goals.
- (D) Approximately normally distributed with a mean of $\frac{2.3}{\sqrt{15}}$ goals.
- (E) Bimodally distributed with a mean of 2.3 goals.

10. The boxplots below represent the distributions of average monthly temperature of five cities over a three-year period.



- Which one of the following statements is FALSE?
- (A) The city with the largest variation in average monthly temperatures is Bismark.
 - (B) The city with the highest median monthly temperature is Phoenix.
 - (C) There are no outliers in any of the temperature distributions.
 - (D) All of the average monthly temperatures in San Diego are above the median average temperature for New York.
 - (E) Atlanta's temperature distribution is skewed to the right.

11. To determine the viscosity of a liquid, scientists measure the length of time it takes for a fixed amount of the liquid to run through a tube. Two different types of motor oil were compared. The first type of oil had a mean time of 10 seconds with a standard deviation of 2 seconds. The second type of oil had a mean of 14 seconds with a standard deviation of 3 seconds. One can of each type of oil is randomly selected. The difference between the lengths of time it takes for each can of oil to run through a tube is calculated. If this process were repeated 500 times, the mean of the differences would be 4 seconds, with a deviation of

- (A) 5 seconds
- (B) $\sqrt{13}$ seconds
- (C) 1 second
- (D) $\frac{5}{\sqrt{20}}$ seconds
- (E) $\frac{5}{\sqrt{40}}$ seconds

12. According to data from Major League Baseball, the mean salary for professional major league baseball players has been increasing for the past 15 years. A sportswriter looks at the data for all players for the 2002 season and decides to construct a 95% confidence interval for the mean salary for all players for 2002. Which one of the following is the reason why the writer's procedure is incorrect?

- (A) The sportswriter did not take a simple random sample.
- (B) A confidence interval should not be constructed when population data are known.
- (C) Since very few ball players make over \$20,000,000 a year, the data are highly skewed, which violates a necessary condition for constructing a confidence interval.
- (D) Since the number of players is not fixed, the degrees of freedom are unknown.
- (E) Using the data from only one year is not sufficient to verify the trend from previous years.

13. The t distribution is used for inference about a population mean in which of the following situations?

- (A) In all cases where the size of the random sample is small, irrespective of any other factor.
- (B) Whenever a confidence interval for means with a confidence level of 90% or higher is constructed.
- (C) In all cases where the sample size is small, the population is normal, and the population standard deviation, σ , is known.
- (D) The population is approximately normal and the population standard deviation is estimated based on a small random sample.
- (E) Whenever $n(p) < 10$ and $n(1-p) < 10$.

14. Suppose that 28% of the vehicles in a certain town are trucks. A person is standing at an intersection waiting for a friend to pick him up. Let X = the number of vehicles that drive by until a truck passes the observer. Assuming the independence of passing vehicle types, which one of the following best describes the probability distribution of X ?

- (A) binomial
- (B) geometric
- (C) normal
- (D) t with $df = 27$
- (E) chi-square

15 Many times the weatherperson on the local news station weather report will give several different high temperatures (in degrees Fahrenheit) for the same city, such as the high temperature downtown and the high temperature at the airport. Let μ_1 = the true mean daily high temperature downtown and μ_2 = the true mean daily high temperature at the airport. Based on a random sample of 200 days from the past six years, a 95% confidence interval for the mean difference, $\mu_1 - \mu_2$, between the airport and downtown temperatures was constructed. This interval is given by $(-5.3^\circ, -1.9^\circ)$. Which one of the following is a correct conclusion based on this interval?

- (A) The mean temperature at the airport is only 95% as warm as the mean temperature downtown.
- (B) The mean temperature at the airport is cooler than the mean temperature downtown on 95 out of every 100 days.
- (C) Ninety-five percent of the time, the true mean difference in temperatures is between 1.9° and 5.3° .
- (D) We are 95% confident that the mean temperature at the airport is between 1.9° and 5.3° degrees cooler than the mean temperature downtown.
- (E) We are 95% confident that the mean temperature at the airport is between 1.9° and 5.3° degrees warmer than the mean temperature downtown.

16 One of the biggest recurring expenditures for a college student is the cost of textbooks. One recent survey indicated that students and parents spent twice as much on books as they did on clothing. In a random sample of 255 students at colleges and universities across the country, it was found that students spent an average of \$875 on textbooks for the year with a standard deviation of \$88. Which one of the following represents the approximate margin of error for a 98% confidence interval for estimating the true mean cost of textbooks for U.S. students?

- (A) $1.96 \left(\frac{88}{\sqrt{255}} \right)$
- (B) $1.96 \left(\frac{88}{\sqrt{255}} \right)$
- (C) $2.326 \left(\frac{88}{\sqrt{255}} \right)$
- (D) $2.326 \left(\frac{88}{\sqrt{255}} \right)$
- (E) $2.576 \left(\frac{88}{\sqrt{255}} \right)$

19 A pharmaceutical company wants to test two new acid reflux medications, A and B, to see which is most effective in relieving the reflux in the shortest amount of time. The researchers plan to give the two medications in three dosages: 50 mg, 100 mg, and 150 mg. They have 120 volunteers available for the study. For this part of the study, researchers think that the weight of the patient might play a role in the incidence of reflux disease. Volunteers are separated into 20 groups—the six heaviest, the next six heaviest, and so on, down to the six lightest. Within each medication there are randomly assigned to medication A and three to medication B. Within each medication group of three, one is randomly assigned to each dosage. Which one of the following statements best describes this experiment?

- (A) There are two treatments, participants were blocked on weight, and the response variable is time until pain relief is achieved.
- (B) There are two treatments, participants were blocked on dosage, and the response variable is time until pain relief is achieved.
- (C) There are three treatments, participants were blocked on medication A and B, and the response variable is proportion of participants who achieved pain relief.
- (D) There are six treatments, participants were blocked on weight, and the response variable is proportion of participants who achieved pain relief.
- (E) There are six treatments, participants were blocked on weight, and the response variable is time until pain relief is achieved.

17 According to a regional blood bank, 13% of the first-time donors return to make a second donation within three months. In the fall of 2001 they tracked 6000 first-time donors and found that 834 donated a second time within three months. Which one of the following represents the approximate probability that the rate of repeat donations among the sample group was greater than the long-term rate?

- (A) $P \left[z > \frac{.13 - .149}{\sqrt{\frac{(.13)(.87)}}{6000}}} \right]$
- (B) $P \left[z > \frac{.13 - .149}{\sqrt{\frac{(.149)(.851)}}{6000}}} \right]$
- (C) $P \left[z > \frac{.13 - .149}{\sqrt{\frac{(.13)(.87)}}{6000}}} \right]$
- (D) $P \left[z > \frac{.149 - .13}{\sqrt{\frac{(.149)(.851)}}{6000}}} \right]$
- (E) $P \left[z > \frac{.149 - .13}{\sqrt{\frac{(.13)(.87)}}{6000}}} \right]$

18 The mean blood pressure for 47-year-old males in the United States is normally distributed with a mean of 139 mg and a standard deviation of 26 mg. A doctor calls a 47-year-old male patient that he is in the lowest 10% of all people in this population. Which one of the values below is nearest to the patient's actual blood pressure?

- (A) 96
- (B) 106
- (C) 108
- (D) 125
- (E) 127

20 A statistics class took a random sample of students at the school to find the proportion of those who claimed to be vegetarians. This class found 12 out of the 150 students questioned were vegetarians. Another statistics class in another school took a similar random sample of the students at its school and found that 9 out of 90 claimed to be vegetarians. Which one of the following represents the approximate 90% confidence interval for the difference between the proportions of students of the two schools that would claim to be vegetarians?

- (A) $.02 \pm 1.645 \left(\frac{(.08)(.92) + (.1)(.9)}{\sqrt{150 + 90}} \right)$
- (B) $.02 \pm 1.645 \left(\frac{(.08)(.92) + (.1)(.9)}{\sqrt{150}} \right)$
- (C) $.02 \pm 1.645 \left(\frac{(.08)(.92) + (.1)(.9)}{150} \right)$
- (D) $.02 \pm 1.645 \left(\frac{(.08)(.92) + (.1)(.9)}{150 + 90} \right)$
- (E) $.02 \pm 1.645 \left(\frac{(.08) + (.1)}{\sqrt{150 + 90}} \right)$

21 A company with 16 employees gives everyone a \$2000 bonus. What will be the change in the standard deviation of the employees' income after the bonus is awarded?

- (A) It will remain the same.
- (B) It will increase by \$500.
- (C) It will increase by $\$ \sqrt{2000}$.
- (D) It will increase by \$ 2000.
- (E) It will be multiplied by \$2000.

22 A local dealer has two video stores in a town, one located on Foothill Drive and the other one on Grand Avenue. The Foothill Drive store does 70% of the dealer's business in the town, and the Grand Avenue store does the rest. In the Foothill Drive store, 40% of all rentals are DVDs. At the Grand Avenue store, 30% of all rentals are DVDs. If a customer is selected at random, what is the approximate probability that the customer rented a DVD?

- (A) 0.175
- (B) 0.33
- (C) 0.35
- (D) 0.37
- (E) 0.70

23. The weights of adult male Savanah African elephants (*Loxodonta africana africana*) are approximately normally distributed with a mean of 11,000 pounds and a standard deviation of 1200 pounds. The weights of adult male mainland Asian elephants (*Elephas maximus indicus*) are also approximately normally distributed with a mean of 7200 pounds and a standard deviation of 680 pounds. If the weight of a particular adult male African elephant is known to be 12,800 pounds, how much would an adult male Asian elephant have to weigh, in pounds, in order to have the same standardized weight as the African elephant?

- (A) 6520
(B) 7200
(C) 7880
(D) 8220
(E) 8560

24. As part of a bear population study, data were gathered on a sample of black bears in the western United States to examine the relationship between the bear's neck girth (distance around the neck) and the weight of the bear. Below is some of the output from a least-squares regression analysis examining the linear relationship between neck girth and weight. Which one of the following is the correct value and corresponding interpretation for the correlation coefficient?

Predictor	Coef	SE Coef	T	P
Constant	-293.53	19.27	-15.23	0.000
Neck.g	22.6447	0.8574	26.42	0.000

$$s = 30.1994 \quad R-Sq = 93.6\% \quad R-Sq(Adj) = 93.4\%$$

- (A) The correlation coefficient is 0.936, and 93.6% of the variation in a bear's weight can be explained by its neck girth.
(B) The correlation coefficient is 0.936. There is a strong positive linear relationship between a bear's neck girth and its weight.
(C) The correlation coefficient is 0.967, and 96.7% of the variation in a bear's weight can be explained by its neck girth.
(D) The correlation coefficient is -0.967. There is a strong negative linear relationship between a bear's neck girth and its weight.
(E) The correlation coefficient is 0.967. There is a strong positive linear relationship between a bear's neck girth and its weight.

25. Company A has 500 employees and Company B has 5000 employees. Union negotiators want to compare the salary distributions for the two companies. Which one of the following would be the most useful for accomplishing this comparison?

- (A) Dotplots for A and B drawn on the same scale.
(B) Back-to-back stemplots for A and B.
(C) Two frequency histograms for A and B drawn on the same scale.
(D) Two relative-frequency histograms for A and B drawn on the same scale.
(E) A scatterplot of A versus B.

27. Menhaden are an abundant but inedible ocean fish of the Atlantic and Gulf waters that are harvested commercially as a nutritional source of omega-3 fatty acid, are ground up for fish meal and fertilizer, and serve as a major food source for sea bass and other more commercial fish. The lengths of menhaden are approximately normally distributed with a mean length of 12 inches and a standard deviation of 2.5 inches. If you were to commercially catch 20,000 menhaden, which one of the following intervals would you expect to contain approximately 8000 menhaden?

- (A) 0 to 11.87 inches
(B) 8.80 to 12.5 inches
(C) 8.80 to 15.20 inches
(D) 10.69 to 13.31 inches
(E) 10.69 to 14.10 inches

26.

An economist in a large city wanted to develop a model to estimate the vacancy rate of downtown office space (the percent of available office space that was unoccupied) based on the monthly rental price per square foot. She took a random sample of various office buildings in the downtown area and created three models using monthly rental price (x) to predict vacancy rate (y).

- A model using (x, y) produced a regression equation of $\hat{y} = -3.019 + 1.176x$ and the residual plot showed strong curvature.
- A model using (x, \sqrt{y}) produced a regression equation of $\sqrt{y} = 1.3497 + 1.57x$ and the residual plot indicated that the variance increased as the rental prices increased.
- A model using $(x, \log y)$ produced a regression equation of $\log y = 0.538 + 0.038x$ and the residual plot showed no apparent pattern.

Based on the above information, which would be the most reasonable prediction of vacancy rate if the monthly rental price were \$12.00 per square foot?

- (A) 3.23%
(B) 9.86%
(C) 10.46%
(D) 11.09%
(E) 12%

28. An insurance company provides insurance policy coverage for automobile owners at a fixed yearly premium. If customers are a poor risk, the company is likely to pay out more in damages than it collects in premiums. However, if the customers are good risks, the company stands to make a profit, since the company will collect the premium but will likely not have to pay out in damages. The company would like to have this customer's business. Each time a customer applies for insurance the company is faced with a decision based on the following hypotheses.

H_0 : The customer is a good risk.
 H_a : The customer is a bad risk.

- Which of the following represents a Type II error and its consequence for the company?
- (A) The company decides that the customer is a bad risk but he was, in fact, a good risk. The company misses an opportunity to make a profit.
(B) The company decides that the customer is a bad risk but he was, in fact, a good risk. The company loses money.
(C) The company decides that the customer is a good risk but he was, in fact, a bad risk. The company loses money.
(D) The company decides that the customer is a good risk but he was, in fact, a bad risk. The company makes a profit.
(E) The company decides that the customer is a bad risk and he is a bad risk and the company avoids losing money.
29. A survey of 1000 pet owners asked a random sample of customers the number of dogs, cats, birds, fish, etc., that they owned. Which one of the following statements is true for the distribution of number of pets shown below?



- (A) It is not that unusual to own 12 pets.
(B) The distribution is symmetrical.
(C) The mean is smaller than the median.

concentrations (number of pounds per 1000 square feet) of this fertilizer. He divides a large field into 100 plots as shown in the diagram below. A strong wind tends to blow from the east. Which one of the methods below should be used to assign the treatments in order to account for the wind?

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

East

- (A) Use 100 slips of paper numbered 001 through 100. Randomly draw out 10 slips and assign these plots to concentration 1, next ten slips to concentration 2, etc.
- (B) Block by columns. Within each column randomly assign all 10 concentrations.
- (C) Block by rows. Within each row randomly assign all 10 concentrations.
- (D) Test the soil for fertility. Group the 10 plots that are most fertile based on the test and randomly assign the 10 concentrations within this group. Do this random assignment to each group of 10 plots.
- (E) Make a list of all 100 plots. Randomize a starting point with plots 1 through 10. Then systematically take every tenth plot from the random starting point and form a group. Do this until you have 10 groups. Randomly assign the 10 concentrations within each group.

11. The testing pulse rate of 11 people was measured before and after experiencing a new thrill ride at an amusement park. The researcher wanted to check the mean difference in pulse rate for each subject. The results are shown in the following table.

Subject	1	2	3	4	5	6	7	8	9	10	11
Pulse rate before	85	79	73	76	75	79	74	67	80	69	71
Pulse rate after	83	82	85	82	81	90	75	69	74	82	78

Which one of the following test procedures would be the most appropriate in order to determine if there is a significant difference in pulse rates?

- (A) A chi-square test for independence.
- (B) A two-proportion z test.
- (C) A t test on the slope of the regression line.
- (D) A two-sample t test for means.
- (E) A matched pairs t test for means.

2. A researcher wanted to measure the sensitivity of a hypothesis test to detect differences between the true mean of the population and the hypothesized mean of the population. If the difference was large, she could use a small sample size. If the difference is small, she will have to increase the sample size. This is an illustration of

- (A) The power of a statistical test.
- (B) A two-sample test statistic.
- (C) A correlation coefficient.
- (D) A Type II error.
- (E) The P-value of a statistical test.

14. A large bakery has many different products for sale. Suppose that 70% of all customers of the bakery order donuts, 50% order cinnamon rolls, and 40% order both. If a customer is randomly selected, what is the probability that they ordered either donuts or cinnamon rolls but not both?

- (A) 20%
- (B) 24%
- (C) 40%
- (D) 48%
- (E) 60%

snore or who had nocturnal coughing, and the prevalence of asthma among those children. The results of a survey of 1048 randomly selected children aged 2 to 5 are given below.

	Snored four or more times per week	Snored three or less times per week	Total
Had nocturnal coughing	59	255	314
Had asthma	22	222	33
Did not have asthma or nocturnal coughing	115	375	444
Total	196	852	1048

The hypotheses that the pediatricians used were given as:

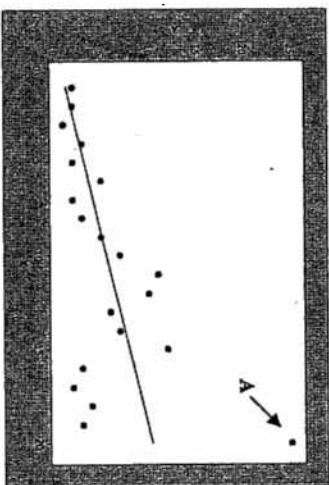
- H₀: There is no association between frequency of snoring and the prevalence of asthma symptoms and nocturnal coughing.

H_a: An association does exist between frequency of snoring and the prevalence of asthma symptoms and nocturnal coughing.

If the test statistic for this procedure is $\chi^2 = 22.38$, which one of the following is a correct conclusion?

- (A) Since the P-value is large, an association does exist between frequency of snoring and the prevalence of asthma symptoms and nocturnal coughing.
- (B) The results are not significant at the 5% level of significance.
- (C) The results are not significant at $\alpha = 0.01$ but are significant at $\alpha = 0.001$.
- (D) Since the P-value is < 0.001 , there is an association between frequency of snoring and the prevalence of asthma symptoms and nocturnal coughing.
- (E) Since the test statistic is so large, no association exists between frequency of snoring and the prevalence of asthma symptoms and nocturnal coughing.

35. A scatterplot and a least-squares regression line are shown in the figure below. If the point (20,25) that is labeled A is removed from the data set, which one of the statements below is TRUE?



- (A) The slope will decrease and the y-intercept will increase.
- (B) The slope will decrease and the y-intercept will decrease.
- (C) The slope will increase and the y-intercept will increase.
- (D) The slope will increase and the y-intercept will decrease.
- (E) No conclusion can be drawn since the coordinates of the other data points are unknown.

36. A local car dealership sells an average of 3.1 cars per week with a standard deviation of 1.1 cars. The dealership pays her \$300 a week plus a commission of \$250 for each car that she sells. What are the mean and standard deviation, respectively, of her total weekly pay?

- (A) \$1705.00, \$605.00
- (B) \$1705.00, \$275.00
- (C) \$1075.00, \$775.00
- (D) \$1075.00, \$302.50
- (E) \$1075.00, \$275.00

37.

An airline would like to add an early morning flight to one of its popular business routes if there is sufficient demand. In order to get an estimate of the number of business travelers who might use this new flight, it takes a random sample of businesspeople who have taken one of the current existing flights. If the airline constructs a 98% confidence interval to estimate the proportion of business travelers who would take the new flight instead of a 95% confidence interval, which one of the following statements is TRUE?

- (A) The 98% confidence interval would be wider, and therefore less precise.
- (B) The 98% confidence interval would be wider, and therefore more precise.
- (C) The 98% confidence interval would be narrower, and therefore less precise.
- (D) The 98% confidence interval would be narrower, and therefore more precise.
- (E) No statement can be made about the width and precision of the 98% confidence interval.

38.

A company has been running television commercials for a new children's product on five different family programs during the evening hours in a large city over a one-month period. A random sample of families is taken and they are asked to indicate the one program they viewed most often and their rating of the advertised product. The results are summarized in the table below.

Family Program

Product	A	B	C	D	E
Excellent	23	29	42	48	51
Good	25	33	44	53	49
Fair	31	29	25	16	10
Poor	38	32	25	18	12

The advertiser decided to use a chi-square test to see if there was a relationship between the family program viewed and the product's rating. What would be the degrees of freedom for this test?

- (A) 3
- (B) 4
- (C) 12
- (D) 18
- (E) 19

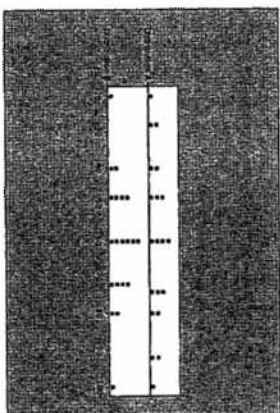
39.

A national retail chain wants to test-market a new product line: bed and bath accessories created by a nationally known clothing designer. The chain has approximately 1500 stores across the country. The locations of these stores are downtown in urban cities, are in suburban shopping malls, or are stand-alone stores in medium-size cities. The chain decides to randomly select 5% of its downtown stores, 10% of its suburban stores, and 5% of its small-city stores in which to test the product line. What type of sampling method did the retail chain use?

- (A) Simple random sample.
- (B) Systematic sample.
- (C) Convenience sample.
- (D) Cluster sample.
- (E) Stratified sample.

40.

Which of the distributions below has the larger standard deviation?



- (A) Distribution A.
- (B) Distribution B.
- (C) The standard deviations are equal since the means are equal.
- (D) The standard deviations are equal since the ranges are equal.
- (E) The standard deviations are equal since both distributions are symmetric.