“None” means “none of the above answers is correct.”

1. Sammy Sosa has a lifetime batting average of .312. Which average is this?
   (a) mean (b) median (c) mode (d) mean over a sampling distribution (e) None

2. Which of the following should be computed with a sample rather than a census?
   (a) the shooting percentage of Michael Jordan
   (b) the favorite sports personality in the United States
   (c) the median salary of NIU employees
   (d) your grade point average at NIU
   (e) None

3. Which of the following is not an example of a biased sample?
   (a) Readers of Ann Landers are asked to write in their response to the question: “If you could do it over again, would you still have children?”
   (b) One hundred Math 101 students are chosen at random to answer a survey about the feelings of a typical NIU student towards the quality of the mathematics being taught at the university.
   (c) Those TV viewers used by the Nielsen company to obtain weekly ratings.
   (d) Five hundred citizens in Pakistan are asked about their opinions of the United States in order to find out how the rest of the world feels about our War Against Terrorism.
   (e) None

4. The mean of the three numbers 1, 5, and x is 10. What’s the value of x?
   (a) 4 (b) 8 (c) 24 (d) 30 (e) None

5. The mean IQ for 1000 students at the Illinois Math and Science Academy (IMSA) is 120 with a standard deviation of 10. Assume the scores are normally distributed. How many IMSA students have IQ’s between 105 and 130?
   (a) 682 (b) 774 (c) 841 (d) 866 (e) None

6. A researcher wants to estimate the number of ducks that live in Shabbona Lake. She captures and tags 38 ducks on one particular day. Three weeks later she returns to the lake and captures 51 ducks, 19 of which were tagged by her on the first capture. What should be her estimate of the size of the duck population on the lake?
   (a) 102 ducks (b) 108 ducks (c) 722 ducks (d) 969 ducks (e) None

7. The state of Florida has the nation’s highest mortality rate. Which of the following reasons best explains why this is so?
   (a) Florida is subjected to a large number of hurricanes and typhoons.
   (b) Shark attacks have been prevalent in Florida this summer.
   (c) A large proportion of elderly people live in Florida.
   (d) A large number of terrorists live in Florida.
   (e) None

8. Linda has 2 quarters, 3 dimes, 4 nickels, and 6 pennies in her purse. She reaches into her purse and takes out a coin at random. What is the probability the coin is worth at least 10 cents?
   (a) $\frac{1}{5}$ (b) $\frac{1}{3}$ (c) $\frac{1}{4}$ (d) $\frac{2}{5}$ (e) None

9. You roll two fair dice. What is the probability that their sum is 10?
   (a) $\frac{1}{36}$ (b) $\frac{1}{18}$ (c) $\frac{1}{12}$ (d) $\frac{1}{5}$ (e) None
10. Two events are independent if
   (a) they cannot both happen at the same time.
   (b) one event must happen before the other.
   (c) the occurrence or nonoccurrence of one event affects the probability of the other event.
   (d) the probabilities of the two events are the same.
   (e) None

11. A distribution has the following quartile points: $Q_1 = 20.2$, $Q_2 = 46.3$, $Q_3 = 69.4$. Which of
the following statements is not true?
   (a) The interquartile range is 49.2
   (b) 50% of the data is between 20.2 and 69.4
   (c) 25% of the data is below 20.2
   (d) 25% of the data is above 46.3
   (e) The quartile deviation is 24.6

12. The number of students who have personally met President Peters of NIU is 8%. Given the
data set of all 25 thousand NIU students, and assigning the value of 1 to each student who has met
President Peters and the value of 0 to each student who has not, what is the standard deviation of
this data set?
   (a) $\sqrt{(0.8)(0.2)}$ $\sqrt{25000}$
   (b) $0.08/\sqrt{25000}$
   (c) $\sqrt{(0.08)(0.92)}$
   (d) $(0.08)25000$
   (e) None

13. Two brands of bottled water, Dave’s and Andrea’s, are available at a local store. The manager
of the store is keeping track of sales, so that he can accurately predict the needs of the customers.
The manager had previously predicted these needs and has decided to test his figures by using a $\chi^2$
test. The expected and actual sales for 145 customers are listed below:

<table>
<thead>
<tr>
<th></th>
<th>Expected</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dave’s</td>
<td>65</td>
<td>58</td>
</tr>
<tr>
<td>Andrea’s</td>
<td>80</td>
<td>87</td>
</tr>
</tbody>
</table>

The value of $\chi^2$ for this data is:
   (a) 0.0193
   (b) 0.1952
   (c) 0.3379
   (d) 1.3663
   (e) 1.4080

Questions 14 and 15 refer to the following data: G.E. produces a light bulb which they claim will
burn for an average of 1000 hours. A consumer advocate group collects a random sample of 30 light
bulbs and finds that they burn an average of 975 hours with standard deviation of 120 hours.

14. What value should we use to estimate $\sigma$?
   (a) 122.05
   (b) 120
   (c) 22.3
   (d) 21.9
   (e) None

15. The confidence interval about 975 at a confidence level of 90% is (938.2, 1011.8). At this 90%
level, should you reject the claim that G.E. bulbs burn for 1000 hours?
   (a) accept the claim
   (b) reject the claim
   (c) not enough information to decide
   (d) None