1. With respect to the central Limit theorem, which of the following statements is not true
   A. The mean of the sampling distribution of the sample mean will equal the population mean
   B. The variation of the sampling distribution of means will be a function of the sample size
   C. The sampling distribution of means will be approximately normally distributed provided that the sample size is large enough
   D. The variation of the sampling distribution of means is larger than the variation of values in the population
   E. None of the above

2. The mean of a sampling distribution
   A. Is a function of the sample size
   B. Will be greater than the population mean
   C. Will be equal to the population mean
   D. Is independent of the population mean
   E. Is equal to the square root of the sample size

3. A large number of samples of size n=1 are collected and plotted in a frequency histogram. The resulting histogram
   A. Will be normally distributed based on a central limit theorem
   B. Will look like the parent population if enough samples are collected
   C. Will have a standard deviation larger than the population
   D. Will have a mean greater than the population mean

4. Which of the following is not a necessary condition for a binomial experiment
   A. There are fixed number of trails
   B. The probability of a success is the same for each trial
   C. The number of trials should be greater than 5
   D. Each trial results in a success or failure
   E. The trials are independent

5. Suppose a statistics fairy visits you and made it possible for you to pick the distribution for your first statistics 211 exam. Your score was an 84. Assuming you would like to do well in the class you choose to place your score of 84 into the distribution
   A. With a mean of 70, and standard deviation of 7
   B. With a mean of 70, and standard deviation of 6
   C. With a mean of 70, and standard deviation of 8
   D. With a mean of 66, and standard deviation of 9
   E. With a mean of 66, and standard deviation of 6
6. Randomly selecting a sample of 10 observations and calculating the sample mean is an example of ---------------------------, and the calculated mean is an example of ------------
   A. Random experiment; random variable
   B. Random variable; random experiment
   C. Sampling distribution; parameter
   D. Random experiment; parameter
   E. None of the above

7. From a population with mean of 100 and standard deviation of 12, the probability of randomly selecting a sample of size n=49 that has a mean greater than or equal to 105 is
   A. 0.9984
   B. 0.0016
   C. 0.6628
   D. 0.3372
   E. None

8. You find out that your score on a normally distributed exam is 68 and that it represented the 80th percentile. Given the variance of the exam was 4, what was the mean of the exam?
   A. 66.32
   B. 71.36
   C. 69.68
   D. 64.64
   E. No answer

9. From the following identify those that are legitimate probability distributions:

   \[
   \begin{array}{c|c}
   X & P(X=x) \\
   \hline
   2 & 0.4 \\
   8 & 0.6 \\
   4 & 0.2 \\
   \end{array}
   \quad
   \begin{array}{c|c}
   X & P(X=x) \\
   \hline
   1 & 0 \\
   3 & 0.5 \\
   9 & 0.3 \\
   \end{array}
   \quad
   \begin{array}{c|c}
   X & P(X=x) \\
   \hline
   -2 & 0.25 \\
   0 & 0.50 \\
   2 & 0.25 \\
   \end{array}
   \quad
   \begin{array}{c|c}
   X & P(X=x) \\
   \hline
   0 & 0.3 \\
   1 & -0.1 \\
   2 & 0.8 \\
   \end{array}
   \]

10. Identify each of the following as either a parameter or a statistic, also indemnify each as either a constant or a variable
    A. Sample standard deviation
    B. Sample range
    C. Population 10th percentile
    D. Sample first quartile
    E. Population median
    F. Sample inter quartile range
    G. Population mean

11. Consider a normal distribution with a mean of 50 and a standard deviation of 4. The relative frequency of scores below a score of 56 is
12. A random sample of size n=100 is obtained from a population with a mean of 240 and standard deviation of 20. What is the probability that the mean of this sample will be greater than or equal to 244?
   A. 0.0793
   B. 0.9772
   C. 0.4207
   D. 0.0228
   E. 0.0114

13. Calculate the probability obtaining 5 or fewer successes in a binomial experiment with parameters (10, 0.15)
   A. 0.5
   B. 0.9986
   C. 0.0014
   D. 0.0084
   E. 0.9916

14. State whether or not the normal approximation to the binomial is appropriate in each of the following situation
   A. n= 500, p=0.33
   B. n= 400, p=0.01
   C. n= 100, p=0.61
   D. n=10, p=0.45
   E. n=200, p=0.98