Summative Test

Circle the letter corresponding to the correct answer.

1. Which statement is true?
   a. Estimation is a procedure by which a numerical value or numerical values are assigned to the population parameter based on the information collected from a population.
   b. Estimation is a procedure by which a numerical value or numerical values are assigned to the sample statistic based on the information collected from a sample.
   c. Estimation is a procedure by which a numerical value or numerical values are assigned to the sample statistic based on the information collected from a population.
   d. Estimation is a procedure by which a numerical value or numerical values are assigned to the population parameter based on the information collected from a sample.
2. Which statement is false?
   a. The best point estimator for the population mean is the sample mean.
   b. The best point estimator for the true variance is the population variance.
   c. The best point estimator for the true proportion is the sample proportion.
   d. The best point estimator for the population standard deviation is the sample standard deviation.

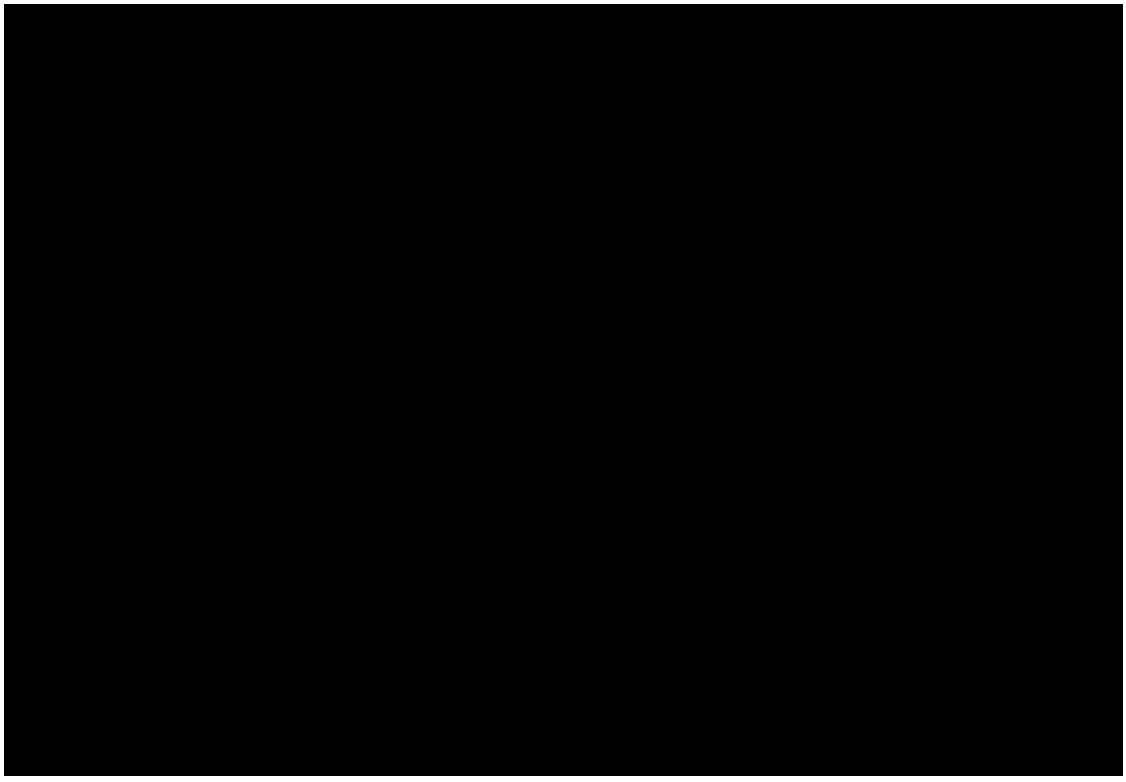
For numbers 4 to 8, refer to the situation below.

Twelve school canteens were randomly sampled and asked about their operating hours. Following are the sample data (in hours):

6	6	7	7.5	8	8
8	8	8	8.5	9	10

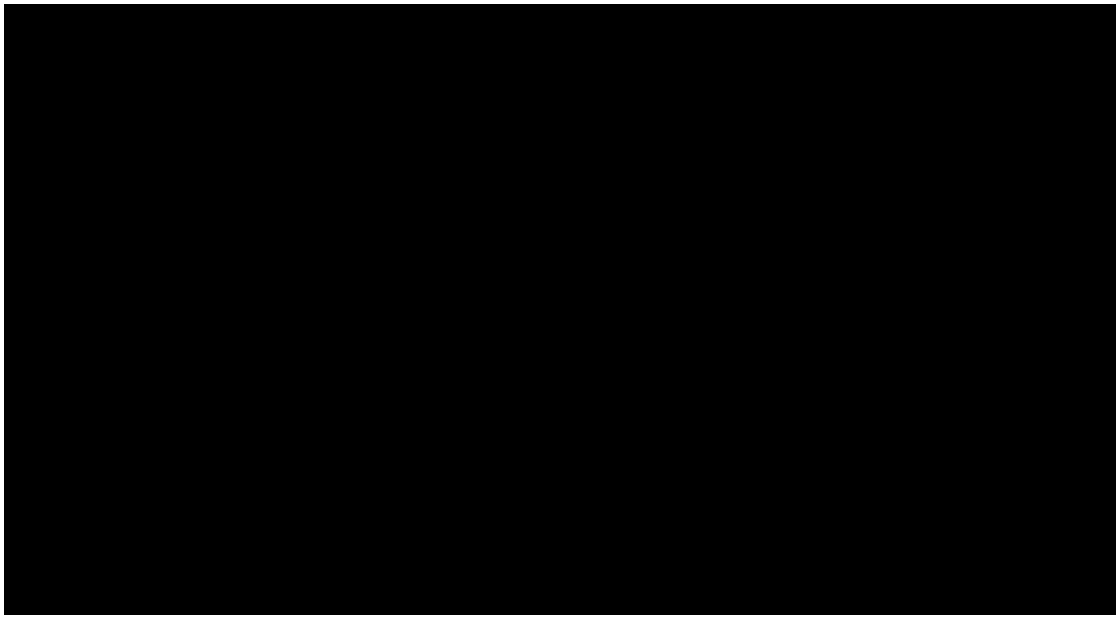
4. What is the best point estimate of the population mean number of hours of operation of the canteens?
   a. 7.33
   b. 7.83
   c. 8.33
   d. 8.83

5. What is an unbiased point estimate of the population standard deviation of number of hours of operation of the canteens?
   a. 1.13
   b. 1.85
   c. 2.25
   d. 3.52



9. In estimation, how can you lessen the error?
   a. decrease the confidence level
   b. increase the confidence level
   c. decrease the sample size
   d. increase the sample size

10. Suppose you want to conduct a survey to estimate the proportion of students who are actively involved in school organizations at 95% confidence level such that the difference between the true proportion and the estimate is at most 2%. What is the minimum sample size required?
    a. 2400
    b. 2401
    c. 2500
    d. 2501



For numbers 13 to 16, refer to the situation below.

A farmer claims that 90% of his watermelon seeds germinate. When a random sample of 500 seeds were planted, 100 failed to germinate.

13. What is the point estimate for the true proportion of seeds that germinate?
    a. 0.10
    b. 0.20
    c. 0.80
    d. 0.90

14. What is the standard error of this estimate?
    a. 0.010
    b. 0.018
    c. 0.020
    d. 0.037

15. What is the lower limit of the 96% confidence interval for the true proportion of seeds that germinate?
    a. 0.76
    b. 0.80
    c. 0.83
    d. 0.90

16. Is the farmer's claim valid?
    a. Yes, since 0.80 is contained in the confidence interval.
    b. Yes, since 0.90 is contained in the confidence interval.
    c. No, since 0.80 is not contained in the confidence interval.
    d. No, since 0.90 is not contained in the confidence interval.