

STATISTICS
SECTION II

Total Time—1 hour and 30 minutes
6 Questions

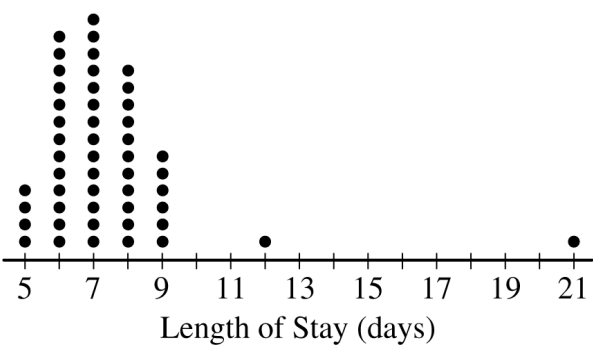
Part A
Questions 1-5

Spend about 1 hour and 5 minutes on this part of the exam.

Directions: Show all your work. Indicate clearly the methods you use, because you will be scored on the correctness of your methods as well as on the accuracy and completeness of your results and explanations.

The length of stay in a hospital after receiving a particular treatment is of interest to the patient, the hospital, and insurance providers. Of particular interest are unusually short or long lengths of stay. A random sample of 50 patients who received the treatment was selected, and the length of stay, in number of days, was recorded for each patient. The results are summarized in the following table and are shown in the dotplot.

Length of stay (days)	5	6	7	8	9	12	21
Number of patients	4	13	14	11	6	1	1



(a) Determine the five-number summary of the distribution of length of stay.

GO ON TO THE NEXT PAGE.

Use a pencil or pen with black or dark blue ink only. Do NOT write your name. Do NOT write outside the box.

- (b) Consider two rules for identifying outliers, method A and method B. Let method A represent the $1.5 \times \text{IQR}$ rule, and let method B represent the 2 standard deviations rule.
- (i) Using method A, determine any data points that are potential outliers in the distribution of length of stay. Justify your answer.
- (ii) The mean length of stay for the sample is 7.42 days with a standard deviation of 2.37 days. Using method B, determine any data points that are potential outliers in the distribution of length of stay. Justify your answer.
- (c) Explain why method A might identify more data points as potential outliers than method B for a distribution that is strongly skewed to the right.

GO ON TO THE NEXT PAGE.

Use a pencil or pen with black or dark blue ink only. Do NOT write your name. Do NOT write outside the box.