

## STATISTICS

## SECTION II

## Part A

## Questions 1-5

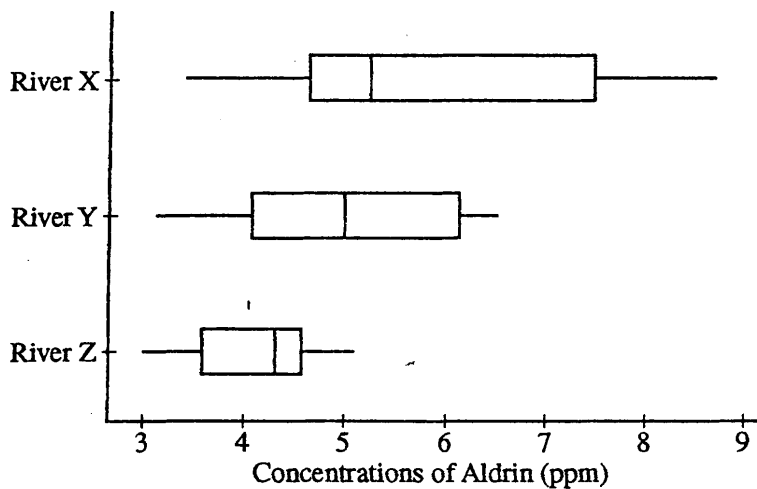
Spend about 65 minutes on this part of the exam.

Percent of Section II score—75

**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.

1. As a part of the United States Department of Agriculture's Super Dump cleanup efforts in the early 1990s, various sites in the country were targeted for cleanup. Three of the targeted sites—River X, River Y, and River Z—had become contaminated with pesticides because they were located near abandoned pesticide dump sites. Measurements of the concentration of aldrin (a commonly used pesticide) were taken at twenty randomly selected locations in each river near the dump sites.

The boxplots shown below display the five-number summaries for the concentrations, in parts per million (ppm) of aldrin, for the twenty locations that were sampled in each of the three rivers.



- (a) Compare the distributions of the concentration of aldrin among the three rivers.

The river X has the largest median, and Y the second. The range of X is larger than Y's and larger than two times Z's. The IQR of X is larger than the range of Z. X is skewed to the right, Y is roughly symmetric, and Z is skewed to left. There is no outlier in each of the three rivers.

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(b) The twenty concentrations of aldrin for River X are given below.

3.4 4.0 5.6 3.7 8.0 5.5 5.3 4.2 4.3 7.3  
8.6 5.1 8.7 4.6 7.5 5.3 8.2 4.7 4.8 4.6

Construct a stemplot that displays the concentrations of aldrin for River X.

concentration of aldrin for River X (ppm)

3	4 7
4	0 2 3 6 6 7
5	1 3 3 5 6
6	
7	3 3 5
8	0 2 6 7

\* 3 | 4 7

means there are two data  
started with 3 = 3.4 and 3.7

(c) Describe a characteristic of the distribution of aldrin concentrations in River X that can be seen in the stemplot but cannot be seen in the boxplot.

There is a gap during 5.6 to 7.3, and we  
can see it in the stemplot, but not in boxplot.

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