STATISTICS
SECTION II
Part A
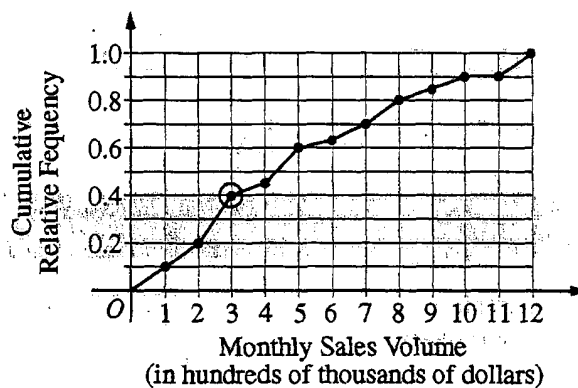Questions 1-5
Spend about 65 minutes on this part of the exam.
Percent of Section II grade—75

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

1. A large regional real estate company keeps records of home sales for each of its sales agents. Each month, the company publishes the sales volume for each agent. Monthly sales volume is defined as the total sales price of all homes sold by the agent during a month. The figure below displays the cumulative relative frequency plot of the most recent monthly sales volume (in hundreds of thousands of dollars) for these agents.

Monthly Sales Volume
(in hundreds of thousands of dollars)

(a) In the context of this question, explain what information is conveyed by the circled point.

The circled point is conveying 40th percentile of the most recent monthly sales volume. This 40th percentile means that the agent who earned $300,000 dollars (horizontal coordinate for the point) has higher monthly sales volume than about 40% of all the agents of the company. At the same time, it means that about 60% of the agents had monthly sales volume greater than the agent.

GO ON TO THE NEXT PAGE.

(b) What proportion of sales agents achieved monthly sales volumes between $700,000 and $800,000 ?

There was 0.1 of sales agents or 10% who achieved monthly sales volume between $700,000 and $800,000.

0.8 - 0.7 = 0.1 ← proportion of agents between

Y coordinate 700,000 for 800,000
for

(c) For values between 10 and 11 on the horizontal axis, the cumulative relative frequency plot is flat. In the context of this question, explain what this means.

In the context of this question, the flat line means there was no one who earned monthly sales volume between $10,000,000 and $11,000,000. Since this is cumulative frequency graph, an increase in frequency for a given interval signifies that there were agents who made sales of between this range. However, as there is no difference in frequency, (0.9 - 0.9 = 0), close to 0% of sales agents achieved monthly sales volume between $10,000,000 and $11,000,000.

for 10 for 11   ↖ Proportion of agents
on horizontal axis

(d) A bonus is to be given to 20 percent of the sales agents. Those who achieved the highest monthly sales volume during the preceding month will receive a bonus. What is the minimum monthly sales volume an agent must have achieved to qualify for the bonus?

To find answer for this problem, I had to find 80th percentile or top 20% of sales agent. 80th Percentile, or 0.8 on Cumulative Relative Frequency (y axis) corresponds with $800,000 (8 on horizontal axis). That is an agent must have achieved at least $800,000 monthly sales volume to qualify for the bonus.

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