9. (1 point)

An insurer's risk classification system contains four classes (A, B, C, and D). The insurer is considering using experience rating to rate all four classes.

Given the following:

	Low Variance of Hypothetical Means within Class	High Variance of Hypothetical Means within Class
Low Expected Value of Process Variance	Class A	Class B
High Expected Value of Process Variance	Class C	Class D

From the insurer's perspective, briefly explain the class for which experience rating is expected to be the most useful and the class for which experience rating is expected to be the least useful.

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SAMPLE ANSWERS AND EXAMINER'S REPORT

QUESTION 9	
TOTAL POINT VALUE: 1	**LEARNING OBJECTIVE(S): B3**

SAMPLE ANSWERS

Sample Responses for Criteria 1

- High VHM means there is significant variance between risks due to risk difference, this cause credibility of experience to increase, making experience rating useful.
  High EVPV means there is a lot of volatility in loss experience. This causes credibility of experience to decrease making experience rating not useful.
  Thus experience rating is most useful for class B since it has high VHM and low EVPV,
  Least useful for class C since it has low VHM and high EVPV.

- Experience rating is used to further refine the classification plan beyond existing classes. It works best when there is high variance within each class and low process risk, so it would work best for class B because it has high VHM and low EVPV.
  Experience rating is least successful when the class itself is fairly homogeneous already and the loss experience is very volatile, because this it would be least successful for class C with low VHM and high EVPV.

- Class B will have the most benefit from experience rating
  High VHM and low EVPV means the variation is mostly driven by differences in the actual loss experience, and little is due to the randomness of the insurance business.
  Higher proportion of variance explained by difference in loss costs.
  Class C will have the least benefit from experience rating.
  High EVPV, low VHM means that the class is fairly homogeneous in terms of experience but the variance exists due to randomness of data.
  Lower proportion of variance can be explained by difference in loss costs.

Sample Response for Criteria 2

- Credibility $Z = n / (n + k)$, $k = EVPV/VHM$
  High EVPV and Low VHM = Low Credibility
  So Class C is the least useful because it has high EVPV + low VHM, thus low credibility for experience rating.
  Class B is the most useful because it has high credibility for similar reason.

EXAMINER'S REPORT

Candidates were expected to demonstrate an understanding of when experience rating may or may not be useful in practice. Related concepts include the credibility formula, the variance of hypothetical means, and expected process variance.

Candidates were either expected to

a) select the appropriate classes (most & least useful)
b) provide either:
   1) a sentence or two exhibiting some qualitative knowledge of VHM and EPV
   2) produce the credibility formula and explain the quantitative effects of VHM and EPV.

Common mistakes included:

- Selecting the correct classes, but not providing enough explanation, or an explanation that simply restated the terms provided in the question (High VHM, Low EPV)
- Selecting A/D classes instead of B/C
- Switching VHM and EPV when writing the k formula, but then supporting the correct answers verbally based on correct k: credit was dependent on additional details
- Failing to acknowledge a link between the credibility formula (Z) and the usefulness of experience rating in a rating plan
- Failing to select the most/least useful after identifying the most credible class.