ASSESSING CONCEPTUAL COMPREHENSION

Statistics & Applied Calculus

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BRAINSTORM #1

WHAT CONSTITUTES A CONCEPTUAL QUESTION?

WHAT DOES NOT?

CONCEPT QUESTIONS

- WRITTEN

- SHORT-ANSWER (1 Paragraph max)

- MINIMAL CALCULATION

- MINIMAL NOTATION NEEDED IN RESPONSE

EXS: INTRO STATISTICS

- Suppose the hypothesized population mean is just inside an appropriate confidence interval. Would you reject the null hypothesis or not? Why?

- A college basketball player has an 80% free-throw percentage throughout her 160-game career. She misses her first two free-throws in the championship game, and then makes seven in a row. Does she make the next free-throw? Explain.

EXS: APPLIED CALCULUS

Suppose data about the spread of a bacteria (in hundreds of acres) in lettuce after t weeks has the following percentage rates of change: 0.9%, 1.3%, 1.1%, 1.0%, 1.3%, 1.0%; and the following average rates of change: 2.9, 2.4, 3.7, 3.1, 3.6, 3.2. Based only on the information given, what type of model would you use? Why?

EXS: APPLIED CALCULUS

A model *F(x,t)* has a critical point *(a, b)*. The second-derivative (determinant) test gives *D(a,b)=0*. What about a further investigation of the function would lead you to conclude that *F* has a **saddle point** at *(a, b)*?

Write your own conceptual questions.

BRAINSTORM #2

What criteria would you use to evaluate and score student responses to conceptual questions?

STAT COMPR.	EFFECT. COMM.	SCORE (10)
AWESOME	*AWESOME*	11
AWESOME	OK	9
OK	*AWESOME*	8
OK	OK	7
OK	UGH!	6
UGH!	OK	4
UGH!	UGH!	0

CRITERIA	SCORE
Good Answer	4
Good Idea; Poor Communication	3
Decent Presentation; Small Errors in Comprehension	2
Vaguely Addressed Question; Poor Comprehension of Mathematics	1
No Answer to Question	0

BRAINSTORM #3

When, where, how would you administer your conceptual questions?

LOGISTICAL QUESTIONS

- Individual or Pairs?

- Rewrites?

- In Class or Paper HW or Online Submission?

- What Percentage of Overall Grade?