Wording in Context: Approximately vs Predicted

Dr. Debbie M. Kohler, Kennesaw State University
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AP Statistics teachers are constantly telling their students to be sure to interpret in context. If an interpretation is so generic that it could apply to another question, then the context is not there and credit will not be awarded for context. Furthermore, the context must clearly link to the question. In some cases students don't say enough in context to receive the context credit. A beautiful response where everything is perfect except for including context will often not qualify for a "4". It's very disconcerting to graders to grade a paper and realize the context was missing, and therefore the student loses a component and possibly a point due to this.

Specifically two words need to be distinguished—approximately versus predicted. When interpreting a slope in context, it is necessary to include "the predicted value" or "on average" where the words "on average" are linked to the response variable in context. For example, suppose a least squares regression line models the depth (meters) of a dolphin's dive based on the duration of a dive in minutes. Given: Depth = 0.02517 + 29.8177 minutes. An interpretation of the slope would be, "For each addition minute the dolphin is underwater, the predicted depth will increase by 29.85 meters." Predicted is the gold standard for the proper interpretation of a slope in context.

Why is approximately not accepted? Notice –not accepted. A student cannot use the word "approximately" in lieu of predicted. An explanation was given during the 2016 AP Reading by one of the question leaders. Approximately describes rounding. Since the slope is acquired through a least squares method, in most cases the slope is already rounded to several decimal places. The same idea is true for describing an outcome. In the dolphin example, for a 2 minute duration, a dolphin is at a depth of "approximately" 59.6606 meters. This is considered an approximate depth due to the fact that the slope and the depth are rounded. Even if the equation produced a value that didn't need rounding, it's still an approximation because of the slope and y-intercept of the equation being rounded. Note—I did not give an accurate statement of the predicted depth at 2 minutes. The accurate statement for the depth should be similar to the following: After duration of 2 minutes, the predicted depth (according to the model) would be 59.5505 meters.

Context is always important, but learning the specific ways words can be interpreted is very important. In past years, if a student used the word "prove" when explaining the results of a hypothesis test, it was overlooked. Now a student will lose a component if they say that word. Also, "accepts the null" hypothesis will result in losing a component. Most teachers are careful in teaching students to avoid both of these terms, but it may help to be able to tell students that at the AP Reading in 2016 it became apparent that certain words will result in a loss of a component and usually a drop in a student's score.