

A misapplication of probability theory in exam grading

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In standardized multiple-choice exams, where each question has 5 options, a common (and extremely dumb) rule used is that correct answers score 4 but wrong answers score -1.

Presumably the inventors of this rule noticed that the ordinary policy of simply counting the right answers produces a randomness factor, and they desired to eliminate it by "penalizing random guessing" according to the above scheme.

The irony is that this penalty clause does absolutely nothing to penalize random guessing because a random guess scores 0 on average, the same as an omitted question.

Therefore, from a game theory stance, an optimal way to play the exams is to attempt all questions regardless of whether or not there is a penalty clause.

Therefore, when played correctly, the randomness components in both grading systems is exactly the same.

The inventors of the modified grading system saw a problem, and very bizarrely managed to "solve" the problem by changing the grading system to one with exactly the same problem.

If the intent is to "penalize random guessing" then, assuming -1 for a wrong answer (and 5 choices per question), the amount for a correct answer needs to be < 4 , not exactly 4.

How did such a mathematically dumb grading system become so universally accepted? And what on earth is the rationale for the (-1, 4) grading system, as opposed to (for example) (-1, 3)?

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