

Expand your ranges when guessing numbers

I was working with a friend and fellow educator, and I gave him a quiz decision scientists like to play. We'll ask a random questions with numerical answers, like the year Prince's first album came out, the length of the Nile, the number of elements on the periodic table, etc. ... for each, we ask folks to list a range (that is: a lower-bound and an upper-bound guess for each), for which they are 90% sure the correct answer falls between.

When you give people this quiz, most people (though, interestingly: not all) get far less than 90% correct. Why? Usually because people give ranges that are too narrow.

For example, when I guessed the range for which I was 90% sure Prince's first album came out, I guessed 1970-1975. The correct answer was 1978. Had I guessed 1965-1985, or even 1970-1979, I would have gotten that correct.

Importantly, nothing stopped me from saying 1965-1985. In other words, the rules of the game didn't say "you can only give a six-year span." That was self-imposed to do such a narrow range.

So... I played a round of that game with my friend, then taught him the trick, and then gave him another ten questions. He told me, "If you look at my score, I technically did better during our second round, but I just created way bigger ranges. I didn't get better are making the guesses." In other words, he felt he didn't really get better, he just cheated. *But the thing he calls "cheating" is actually exactly what I wanted him to do!* It isn't cheating. It's the whole point!!!!

When we play this game, most of us are overconfident. I thought Prince's album came out in the early 70s. Maybe 72? So I built a range around that number. *But that was an overconfident thing to do.* 1970-1975 might be an appropriate spread if I were more of a Prince expert. But in reality, even though I love his hits, I'm no Prince expert. So I had no business guessing a range of only six years.

Now, can you overdo it? Of course. Had I said "Prince's first album came out somewhere between 5,000 BCE and 2026," that would have technically been correct, but would have been such a ridiculously large range that it would have been useless. That, as it turns out, is *underconfident*. Maybe that's cheating. But short of that, guessing bigger isn't cheating! That's the point!

Why? Because we aren't just overconfident when we play silly games. We're overconfident is many, many of the predictions we make everyday.

When you estimate how long it will take you, as a high school teacher, to grade an essay test for all your students, you think it'll take between 5-7 hours. It actually takes 10. You should have estimated between 3-15.

When you estimate how much it will cost you, as an elementary teacher, to buy a small gift for each of the your students at the end of the year, you think it'll cost between \$20 and \$50, but it costs \$85.

When you estimate, as a homeowner, how long it will take your kitchen to be remodeled, you guess 3 or 4 weeks, it actually takes 9.

Because here's the deal: (a) When you give wider ranges, you can begin asking intelligent questions. If you estimate your kitchen could be remodeled in between 2-12 weeks, you can ask "What would enable it to get done on the 2-week timeframe" or "What might cause it to take closer to 12 weeks." (b) You can plan accordingly without being bamboozled by an overconfident prediction.

It is better, in other words, to go into it thinking "my kitchen remodel will take between 2-12 weeks" than to say "it will take 3-4 weeks" but be wrong.

Now: If you were someone who remodels a *ton* of kitchens, you would probably - over time - be increasingly accurate even with increasingly narrow ranges. So sure, the pinnacle will be to say "it'll take 8 or 9 weeks" and be right. But that takes a lot of expertise, and in reality we have to make predictions about a lot more things than just the things we have expertise in. In those cases, it makes sense to give wider ranges and be right than to give too narrow a range.

Make good choices, -Kevin