

Course Summaries for HS Math vs. Statistics

A math course summary, if it were completely truthful, might read something like this:

We use textbook examples as “plug and chug” templates to solve a large number of artificial homework problems. Although some of the problems are interesting, the computation skills we learn have little value in the real world. Even for the small percentage of us who will ever have a job where high school math computation skills might allow us to compute an answer to a problem of interest, we would use a spreadsheet or a computer algebra system (e.g., WolframAlpha.com), not the methods taught in high school, if we wanted to get the correct answer.

Because the course emphasis is usually on computation instead of deep conceptual understanding, most of us are able to pass. However, we usually finish with poor metaknowledge and are unable to describe what it is that we learned or how it is meaningful or useful.

The only legitimate purposes for high school math are (1) to train the mind and (2) to serve as a foundation for higher math in college and graduate school. Justification #1 can be met in many other ways (music, chess, and computer science, to name a few), and although justification #2 is valid (since it is good to keep one’s options open), many of us are so turned off by our elementary and high school math experiences that we avoid the high-paying career fields that require higher math in college and graduate school.

Here, by contrast, is a truthful course summary for statistics:

We use statistics to estimate parameters. The parameters (and, equally important, their associated margins of error) are things that we care about. Often, our estimates are worth big, big money. (Read *Moneyball* or *Freakonomics*.)

Eric Newburger, Lead Researcher in the Communications Directorate of the U.S. Census Bureau, puts it this way: “There are two fundamental facts about statistics. First, you can discover the secret truths of the world hidden in plain sight. Second, everything we care about falls into the category of sex, death, money, or power.”

Because we can use statistics to shed light on things that we care about, we are motivated to apply our skills to the real world, where the field of data analytics (especially Big Data) is hot, hot, hot. Examples of application areas include business, real estate, consumer profiling/marketing (think Google and Facebook), politics, entertainment (estimating TV ratings, Live Nation–style data mining), urban planning, law enforcement, homeland security, medicine, sports, investment banking, insurance, and hedge fund management. People who “get” statistics will outearn, outmaneuver, and outlive those who don’t.