

Quantitative Reasoning

Mr. Trevor

Spring 2024

Purpose of class

My goal in Quantitative Reasoning is to introduce computer science as a natural and useful extension of your studies in mathematics. You already know a great deal about algebra, geometry and calculus. These fields of math give engineers, economists, and you—if you choose to jump in!—the ability to know and change the world we live in. On a device as accessible as your laptop computer, you can simulate and predict non-trivial systems and perhaps even change those systems if you want. My hope is that this class will take us beyond the rote memorization of formulas and open the door to the practical and creative *use* of math to explore our world.

We will begin with some review of functions, the construction of the number system, combinatorics (this is what mathematicians call “counting”), measurement and calculus. (If you went straight to *Quantitative Reasoning* from pre-calculus, don’t worry, this will just be a brief review of terminology and tangent lines.) These investigations will develop our ability to think about math consistently and energetically, and, more importantly, they will build the muscle of rigorous thought, whatever problems you choose to put it towards! Then we will download Python and have some fun putting these ideas to work while learning the basics of writing computer programs.

Grades

There will be a weekly problem set released on the first day of class in a given week and due the first class day the following week. We will structure our in-class time around doing the exercises in these problem sets. *Problem sets and the final project will be the only work that is taken for a grade.* But the problems will be difficult to work on your own, so attendance is strongly encouraged. There will be 10 problem sets and I will drop the lowest 3. The remaining 30% of the grade will come from the final project. The grading will be on a curve so that $grade = \frac{\% \text{ correct}}{\% \text{ max correct}}$. I will grade the coding projects by effort, and can also grade the problem sets by effort, if you prefer, in this manner:

A	Only attainable through > 90% correct answers on the curve
B	Strong, honest effort with many correctly worked exercises
C	Very little effort
F/0	No effort/not turned in

Exceptions and other policies

Late homework can be turned in with a letter grade penalty per week and I will accomodate any reasonable medical/personal issues on the honor system. I am also open to suggestions on course content and pace. If you feel the class is not working for you, we can try any combination of online/alternative instruction that is allowed by KAPS policies, as long as some reasonable work and learning is happening. Talk to me or KAPS faculty/administration, especially Mrs. Lisa and Mrs. J., about your questions and ideas for the class at any time! My school e-mail is theise@kapschool.org.