

For this project, you will be reading and reviewing a book about mathematics.

- The motivation for this project is that there are a lot of cool and interesting aspects of math that aren't likely to come up in any math class you take ... but you can read about them!
- This is your opportunity to read about an area of math or a cool mathematical result that you might not be exposed to otherwise.
- Choose a book that is **not** a textbook; one that discusses a topic that you are interested in in a less formal, less proof-based, manner. In other words, the book you choose should treat you as a peer not a student. (This is a different style of math-writing that it is important that you are exposed to.)

How can you tell?

- Avoid books with sections of problems
- Avoid books that are filled with equations and/or theorems followed by proofs. Some equations and/or proofs are fine, but for this assignment, you don't want the book to be filled with them. The aim is for a broader picture.
- The book you choose should (in most cases) be at least 100 pages of actual text (not including appendices, indices, bibliographies, notes, references, etc.)
- **Do not choose a book you've already read**
- If you begin a book and find that you it is not as interesting as you'd hoped, there may still be time to switch books – but check with me first to be sure.
- Some books start out at a pretty elementary level and get progressively more and more difficult. If you choose a book that is quite long, and after a significant amount of reading you find it getting to the point where you are no longer understanding it mathematically (or are having to work very hard to understand it), bring the book for me to look at, and we'll discuss whether you should keep trying to finish it or whether you've read enough at that point.
- If you are interested in a book that is not on the list below, run it by me before committing too much time to reading it (or before buying it).

Be sure to pick something that interests you!

A few possibilities include

- *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy*
- *Teaching Mathematics for Social Justice: Conversations with Educators*
- *Mathematics, Poetry, and Beauty*
- *The Theory That Would Not Die: How Bayes' Rule Cracked the Enigma Code, Hunted Down Russian Submarines, and Emerged Triumphant From Two Centuries of Controversy*
- *The Drunkard's Walk: How Randomness Rules Our Lives*
- *The Improbability Principle: Why Coincidences, Miracles, and Rare Events Happen Every Day*
- *The Signal and the Noise: Why So Many Predictions Fail – But Some Don't*
- *The Code Book: The Science of Secrecy from Ancient Egypt to Quantum Cryptography*

- *The Pea and the Sun: A Mathematical Paradox*
- *How Not To Be Wrong: The Power of Mathematical Thinking*
- *Fermat's Enigma*
- *Euclid in the Rainforest*
- *A Mathematician's Apology*
- *The Elegant Universe*
- *To Infinity and Beyond*
- *The Broken Dice*
- *The Equation that Couldn't be Solved: How Mathematical Genius Discovered the Language of Symmetry*
- *The Road To Reality: A Complete Guide to the Laws of the Universe*
- *The Universe and the Teacup*
- *The Irrationals: A Story of the Numbers You Can't Count On*
- *Flatterland*
- *Finding Zero*

Your final review should **not** be a summary of the book. Instead, you should give a critique of the book. Specifically:

- Begin with a brief one or two page overview of the book that gives the big picture (not just a list of topics).
- Address who you think the appropriate audience for the book is. Could any high school graduate read the book? Does it assume some college-level mathematical background? If so, be specific about what knowledge the author is assuming. Do you have to be an expert to enjoy the book?
- Discuss the mathematical content of the book: was it explained well? was it interesting? Did the exposition make you want to learn more about the area?
- Be sure to include a discussion of those aspects of the book which were done well, those that were not, and (if applicable) give specific suggestions that would, in your view, improve the book.
- I have no hard-and-fast length requirements, but in my experience, in order to accomplish all of the above, the length will be at least four or five pages long.

Important Dates:

- **Friday, March 9:** have chosen your book and read at least one chapter. E-mail me the title of the book you've chosen, how far you are, and include a very brief reaction to what you've read. (4% of your project score).
- **Friday, April 6:** you should have read at least 75 pages (for most books). Turn in a progress report – I'd like to know about how far you are in the book and how reading the book is going (please don't exaggerate. If you *haven't* read those 75 pages, and it's because the book is very dense mathematically, let me know that!) ( 6% of your project score. )
- **Friday, April 27:** turn in your book critique (90% of project score.)