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INTRODUCTION

This book is not a comprehensive history of mathematics. There are excellent books, much longer than this one, that present a thorough survey of ancient math. There are also more specialized books that go into great depth about certain topics (the history of algebra, the development of numerals, etc.) or certain civilizations (math in ancient Greece, math in ancient China, etc.). I hope that you are interested to look at these other books one day, and some of them surely are in your college library right now.

When I start my course, I tell the students that this is obviously a math course. It's offered within the Math Department, and the students will solve math problems. Some of the problems are practical, and some of the problems are exercises that students had to do in their schools in Egypt and Babylonia long, long ago. It's a *math class*.

It's also a *history class* because what we're exploring here is where ancient mathematical ideas came from, what kinds of problems these old civilizations needed to solve, and how mastering math helped them develop their agriculture, engineering, government, economic, military, and social systems. So it's a *history class*.

I tell my students it's also a bit of an *art class*. Not everybody could read and write in the ancient world. In fact, it was a select minority who could. And a long period of training and education was required to train the scribes who did the counting and computing and administrative work that made ancient Egypt, ancient Babylonia, and ancient China run. I have my students practice making the numeric symbols that these old civilizations used, just as if they were in a scribe school, and this takes patience and accuracy.

It's also a bit of an *archeology class* and an *anthropology class*. If we're talking about the mathematics used by old civilizations, we need to know a little bit about these civilizations, and generally students get curious about how we know what we know about these civilizations—that's where the archeology comes in. And if we go further back in history, to the nomadic, tribal, primitive kinds of societies that lived before the agricultural revolution, we get into the realm of anthropology—how and why did people even begin to think mathematically? Remarkably, there are groups of people around the world who were so isolated until modern times that we can use what we know about them to make reasonable guesses about our quite remote human ancestors.

I even tell my students this is a bit of an *English class*, because I ask them to write a short paper about a mathematician or about a bit of mathematics. Basically I'm looking for one idea that can be linked to one mathematician. Students can choose something from long ago (like Archimedes working out an approximation of π) or something modern (like Mandelbrot developing fractals) or something in between (like Omar Khayyam solving cubic equations). I look for clear writing that explains the idea, describes the world the mathematician lived in, and relates the idea to mathematical knowledge that came before it or grew out of it.

So, don't expect everything from this slender book. It is a starting point. I have my own favorite websites about the history of math, but your professor may have his (or hers) and there are many good ones. I show my students videos of people making cuneiform tablets and of people building models of Platonic solids. I show the Mayan codex books that survived and I also show the Hindu derivation of the square root of 2. I read out loud to the class the view of the Crow Indians that honest people don't need numbers larger than 1000.

So I urge you to read, think, and be curious. You've got an electronic calculator at your fingertips and the advantage of a clever base-10 system with 10 simple digits. But put yourself in the position of someone thousands of years ago, who needed to solve an arithmetic problem and didn't have these wonderful and convenient things. Put yourself in that position often enough this semester, and you'll have a profound understanding of the history of math and the development of mathematical thought.