



Impact Statement

Marianne Nguyen, Grade 11

Al-Khwarizmi: The Magic of History's Hidden Hand, 2026

Acrylic on canvas board, 24 x 17 inches

Benjamin Franklin High School, New Orleans, LA

Unsung Hero: Muhammad ibn Musa al-Khwarizmi

While a countless number of mathematical postulates, formulas, and theories have been named after white men, it is rare to find one named after a person of color. In fact, it was a Persian Muslim man who introduced the very concept of numbers 0 through 9 to Europeans in the first place. Al-Khwarizmi was a Persian Muslim mathematician and is commonly referred to as “the father of algebra.” It is his work as a translator of texts and treatises, but also as an original publisher, that inspires me. Al-Khwarizmi’s translated and original texts changed history, allowing math to become a universal language accessible to everyone through his work *Al-Jabr w'al-muqabala* (*The Compendious Book on Calculation by Completion and Balancing*), later just termed “Algebra.”

Al-Khwarizmi’s algebra and techniques of reduction were the foundation for other concepts, such as differentiation (“calculus of two errors”) and even modern-day computing and software design, because of his step-by-step approach to solving arithmetic problems and the 0-9 Hindu-Arabic numbering system. To put into perspective how impactful that is, let me elaborate: computing and software include AI-powered development and computational design, including CAD, where designers can visualize 3D models before construction. Because of him, we are also able to have computer interfaces and all the programs we use today. Essentially, without Al-Khwarizmi’s introduction of these vital concepts, we wouldn’t have more than half the things we use today. Not only that, but he also produced some of the first accurate sine and cosine tables, which were essential for breakthroughs in astronomy and geography, facilitating the travel of people and, thus, culture worldwide. From his workplace in the House of Wisdom, Al-Khwarizmi was able to affect everyone around the world.

My vision behind my interpretation is to make his work seem magical, because behind real-life magic—science—is simply math. This is why there are a bunch of papers flying everywhere: to convey the idea that Al-Khwarizmi’s work was literally like true magic. My artwork expresses Al-Khwarizmi in his workplace, focused on transcribing his mind onto paper and sharing his knowledge with the world—something that honestly still impacts us today. I wanted to highlight the moment his internal “magic”—his ideas—got put out into the world and onto paper. In my painting, I included references to real pages from Al-Khwarizmi’s work, gathered from primary resources. For my materials and techniques, I used the back of a canvas board and normal acrylic paint, and I used a classical pen to precisely replicate the shapes and Arabic script that were in his original manuscript.

Al-Khwarizmi influences my outlook on life because he reminds me of the overlooked importance of valuing education, specifically granting and increasing access to it. He reminds me that seemingly little steps, such as transcribing and discovering simple algebra, are secretly big steps that have lasting effects on the world. His lifestyle inspires me as well; living in the House of Wisdom, he had a specific place surrounded by people with similar goals, which I am sure helped in the process of making his work. In my own life, I hope to cultivate a similar community and to continue sharing access to education in any way I can. I hope my work is shared in other spaces, such as museums, though I do not currently know of any and was made aware of this one through a teacher at my school.

Ultimately, in a similar way to Al-Khwarizmi, my artwork is a tribute to the fact that while math is the logic behind science, it is the act of sharing that knowledge that truly makes it magic.

References:

Al-Khwarizmi, Muhammad ibn Musa. The Algebra of Mohammed Ben Musa. Edited and translated by Frederic Rosen, Oriental Translation Fund, 1831. Harvard University Department of Mathematics, legacy-www.math.harvard.edu/~knill/teaching/summer2019/exhibits/algebra/AlgebraMohammedBenMusa.pdf. Accessed 2 April 2026.

Britannica Editors. "Hindu-Arabic numerals". Encyclopedia Britannica, 30 Jan. 2025, <https://www.britannica.com/topic/Hindu-Arabic-numerals>. Accessed 2 April 2026.