

Impact Statement

Aalyssa Loverso, Grade 11

Muhammad's Golden Approach, 2024.

Graphite, oil, gold leaf and marker on paper, 18 x 16.5 inches

Bethel High School, Bethel, CT

Unsung Hero: Muhammad ibn Musa Al-Khwarizmi

I found my Unsung Hero, Muhammad ibn Musa Al-Khwarizimi, through Lowell Milken Center and my interest towards mathematics. These two factors played a strong role in my choosing of what Unsung Hero I would explore. Not many individuals are aware of the contributions from the Father of Algebra himself and the concepts around us stemming from his works. Muhammad pioneered works not only involving arithmetic, but astronomy, geography, algorithms, etc., as well. His inspiring work, during the Islamic Golden Age, set the foundation for basic concepts of mathematics. He had a committed approach in developing analysis of abstract mathematical language, as what we now know as modern Algebra, further showcasing his distinct mark in the modern math world.

Through my artwork, I wanted to present the resoluteness of Muhammad. I felt it was important to artistically show this firm determination he possessed, when it came to simplifying language and translating within complex algorithms. I wanted to express the large range of his contributions and application of these mathematics in other disciplines too. With this, I admire Muhammad immensely as a staunch mathematician and astronomer. In working within the House of Wisdom, he acquired knowledge in translating scientific and philosophic texts, leading to advancements in major scientific fields. He showed a strong commitment in utilizing his mathematical studies, translations, and influence from Hindu and Greek sources, to compile feasible astronomical tables for astronomy. Muhammad further forwarded this dedication as a mathematician, when constructing a world map and eventually using measurements to understand the circumference of the Earth as well.

In my artwork, it highlights a portrait of the Father of Algebra, with contrasting colors of forest-green, gold, brown, and burgundy. My art piece explores the complex and systematic mind of Muhammad ibn Musa Al-Khwarizimi. Along with emphasizing his abstract mathematical processes, I wanted to give awareness of his revolutionary techniques in solving linear and quadratic equations. Giving awareness of these introduced methods that are also intertwined with his defining work in astro-geology too. Behind my creative interpretation of this story, gold is relevant all throughout my artistic piece as I chose to emphasize the Islamic Golden Age, which held profound intellectual and scientific advancements. I chose to emphasize this golden, foundational text that Muhammad provided for modern Algebra and the domain of algorithmic thinking. Since he did not use our standard way of algebraic notations, I explicitly incorporated his

diagrams instead in my piece and the Hindu-Arabic numeral system he translated. These diagrams were both involved in the mathematical and astronomical fields he did his studies in.

My process in creating this work helped me acknowledge the ubiquity of his mathematical contributions and the significance of them in modern life. From the variety of mathematical classes an individual takes to the modern digital age we are currently living in, I can see how wide-ranging his influence is on life. Creating such a special piece gave me more insight on the development of math and his methods being the blueprint for computer science as well. I gained a more complex look of Muhammad reshaping the mathematical world as he pushed boundaries in human curiosity and the intellectual exploration individuals participate in to inspire others. For other individuals to experience this changed perspective, I can share my artwork among a variety of social media platforms. I have also already shared my piece at a STEAM Hero Expo event held at my High School. Having a wide-reaching audience and community on these social media platforms, I can ensure that many others can also understand my Unsung Hero and the significance of his extensive, transcendent work. At my school's STEAM Hero Expo event, I had provided my artwork and a brief synopsis of my Unsung Hero's assistance to the development of mathematics, in order to educate the audience.