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Professor Little

Math Across Culture

8 August 2011

Annotated Bibliography

"Al-Khwārizmī." Encyclopædia Britannica. Encyclopædia Britannica Online. Encyclopædia Britannica, 2011. Web. 05 Apr. 2011. <<http://www.britannica.com/EBchecked/topic/317171/al-Khwarizmi>>.

This Online encyclopedia page will serve as a valuable resource as it includes information on not only the entire life of Al Khwarizmi but also information on all his techniques for algebra and other types of mathematics. This article also has related links on Islamic culture, which could provide needed information in the analysis of Al-Khwarizmi. The source is very reliable because it comes from the nationally recognized Encyclopedia Britannica.

*Al-Khwarizmi: The Father of Algebra*. Research Paper. Web. 5 Apr. 2011. <https://www2.bc.edu/christian-zorn/work\_and\_research/hist\_algebra.pdf>.

This paper on Al-Khwarizmi, the father of algebra, discusses his work and how his travels contributed to his development of the Arabic numeral system and eventually algebra. The writer talks about how Al-Khwarizmi’s travel to India influenced him to create the Arabic numeral system and a place holder; zero. Al-Khwarizmi then used his new number system and wrote his second book, *al-Kitab al-mukhtasar fi hisab al-jabr wa'l-muqabala,* which was the first book on algebra. In his book he showed both written and geometrical proofs for solving quadratic equations and finding roots. This research paper shows some significant detail about Al-Khwarizmi’s work on algebra. It seems reliable because it does have a significant amount of sources, but the length of the report is to short and not everything about the development of algebra is explained in full detail.

Joseph, George Gheverghese. *The Crest of the Peacock: Non-European Roots of Mathematics*. Princeton: Princeton UP, 2011. Print.

*The Crest of the Peacock* provides a general overview of information about al-Khwarizmi and the influence of Islamic mathematics. Joseph covers a broad range of information and as a result does not go into depth about al-Khwarizmi. *The* *Crest of the Peacock* does cover the accomplishments of al-Khwarizmi in brevity, which will provide our research paper with a general outline of information to include. Joseph describes al-Khwarizmi’s role in the foundation of algebra based on his two books *Calculation by Restoration and Reduction* and *Calculation with Indian* Numerals, which set the precedent for future Arabic and European mathematicians. He also describes al-Khwarizmi’s accomplishments in astronomical tables, geographical work, and role of math in the service of Islam. The general information in Joseph’s book highlights al-Khwarizmi’s accomplishments and will serve as a guide as we research al-Khwarizmi in greater depth. *The Crest of the Peacock* is credible because Professor Little recommended it.

Katz, Victor J. *The Mathematics of Egypt, Mesopotamia, China, India, and Islam: a Sourcebook*. Princeton: Princeton UP, 2007. Print.

This book’s section on medieval Islamic mathematics goes over many topics of the Islamic world’s developments, including the development and progression of algebra. It has primary documents written by many of the Islamic mathematicians, including Al-Khwarizmi, making it a highly credible source. This book has the actual examples of the problems that Al-Khwarizmi did and their geometrical proofs. It also offers the reader to read the actual text and get a better understanding of the mathematician. Additionally this book has actual texts of other mathematicians that continued Al-Khwarizmi’s work to further the development of algebra. This book is highly credible because it has the original writings of the Islamic mathematicians and it was recommend by professor Little.

Saylil, Aydin. *Al-Khwarizmi, Abu'lHamid Ibn Turk and the Place of Central Asia in the History of Science and Culture*. Rep. Ed. Mohammed El-Gomati. Foundation For Science and Civilisation, Dec. 2006. Web. 3 Apr. 2011. <http://www.muslimheritage.com/uploads/place\_of\_central\_asia\_in\_history\_of\_science\_and\_culture.pdf>.

*Al-Khwarizmi, Abu'lHamid Ibn Turk and the Place of Central Asia in the History of Science and Culture* covers the influence and accomplishments of Al-Khwarizmi in depth. The report by Dr. Saylil shows examples of Al-Khwarizmi’s mathematics and cites the interpretations of various historians and mathematicians (even some of the mathematicians that we have discussed in our class). The report covers the similar topics of *The Crest of the Peacock*, but in more detailed and only about Al-Khwarizmi. The report stresses the significance of the al-Khwarizmi accomplishments and its essential influence in the development of modern algebra. The report will supplement the information from *The Crest of the Peacock*, and will provide more knowledge about the accomplishments of al-Khwarizmi.The report seems credible because references multiple mathematicians that Professor Little has discusses and its accredited by the Foundation for Science and Civilisation. In addition Dr. Aydin Saylil he remains a credible source within the mathematical historian community based on my online research.

O’Connor, J.J., Robertson, E. F. "Al-Khwarizmi Biography." *MacTutor History of Mathematics*. 01 July 1999. Web. 07 Apr. 2011. <http://www-history.mcs.st-and.ac.uk/Biographies/Al-Khwarizmi.html>.

This website directly relates to our topic because it depicts the entire life of Al-Khwarizmi including all of his major contributions to various fields of mathematics. This source will be useful in giving the background of Al- Khwarizmi’s life and some useful information on his famous book The Compendious Book on Calculation by Completing and Balancing. It also gives us important information on his contributions to Arithmetic, Astronomy, and Trigonometry. This Website looks very reliable because the information matches up with our other sources and it also has extensive list of 53 books and references for sources.

Overbay, Shawn, Jimmy Schorer, and Heather Conger. "Al-khwa2.html." *Math Sciences Computing Facility*. Web. 05 Apr. 2011. <http://www.ms.uky.edu/~carl/ma330/project2/al-khwa21.html>.

This report by Shawn Overbay, Jimmy Schorer, and Heather Conger talks about Al-Khwarizmi and his book on algebra. This report discusses the six different ways that Al-Khwarizmi defined quadratic equations. This article discusses two examples from Al-Khwarizmi’s book and shows the proofs he did geometrically as well as algebraically. It also discusses how Al-Khwarizmi’s work was straight forward, clear, and well organized. It will be helpful to use this source to understand the geometric proofs of Al-Khwarizmi’s work on algebra. This source gives a good overview of Al-Khwarizmi’s work and what influenced it. This sources seems quite credible, it has three authors, a fairly long bibliography, and uses two examples that are from Al-Khwarizmi’s book on algebra and explains them well.