

## Who You Math With: The Role of Networking in the Accomplishments of Benjamin Banneker and Maria Mitchell

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# + Why Banneker and Mitchell?

Benjamin Banneker  
1731-1806



Maria Mitchell 1818-  
1889





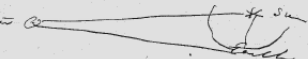
# What kinds of math did they do?

- Predicting solar and lunar eclipses
- Calculating astronomical distances
- Establishing longitude and latitude
- Algebra, Geometry, and Trigonometry
- Solving mathematical puzzles

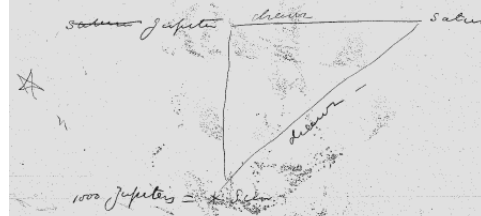
Ans first part 5.6 increases by 4 } 9.6  
 Second part 13.6 decreases by 4 } 9.6  
 Third part 2.4 multiplied by 4 } 9.6  
 fourth part  $\frac{38.4}{60.0}$  divided by 4 } 9.6

*The answer to a riddle given to Banneker by Major Ellicott, written in Banneker's own hand*

middle which is the mean of the very attractive - the experiment of the air pump. when the feathers & the bit of lead fall upon the table, at the same time.

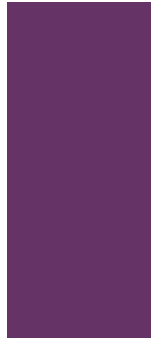
Jupiter  Sun

1. Attraction does not depend on the mass of the body which is attracted.  
 2. Attraction depends on the mass of the body which attracts

 Jupiter Saturn

1000 Jupiter = Saturn

Lecture notes by Mitchell on the laws of gravity



# + Childhood

Banneker learned to read and write from his grandmother on their family tobacco farm near Ellicott City, MD.



*A reproduction of Banneker's family cabin at the Benjamin Banneker Historical Park and Museum*



Mitchell grew up learning math and astronomy from her father in their Quaker community in Nantucket, MA.

*Mitchell and her father, still studying together ca. 1867*



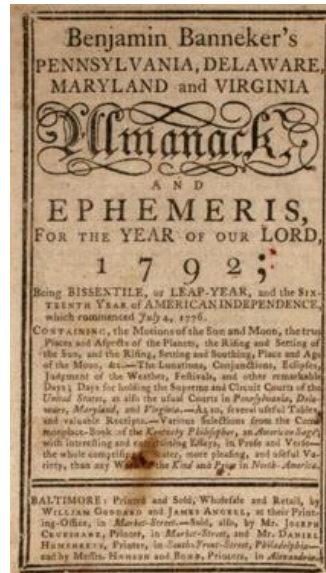
*A street scene in historic Nantucket ca. 1870*

# + Career

- With the help of the Ellicott Family, Banneker learned to make the necessary calculations for writing an ephemeris and helped Major Andrew Ellicott survey the land for Washington D.C..
- After discovering a comet, working at the Nantucket Atheneum, and calculating data on Venus for the Nautical Almanac, Mitchell became the Professor of Astronomy at Vassar College.



*Cover of his 1792 Almanac, one of many Banneker published between 1791 and 1797*



*Mitchell with her students observing a solar eclipse in 1878 Denver, CO*



# + Activism

- Banneker wrote a letter to Thomas Jefferson testifying to the intellectual equality of African Americans that was later published in several of Banneker's almanacs.

*Thomas Jefferson had earlier written Notes on the State of Virginia which claimed, among other things, that blacks were intellectually inferior to whites*



- Mitchell dedicated much of her career to inspiring future female scientists among her Vassar students and worked with several major organizations for women's educational rights.

*Mitchell with her first astronomy class, 1866*



# + Legacy

The Banneker Museum hosts events, displays artifacts, and gives tours of Banneker's recreated farmhouse



This table, lent to Banneker by George Ellicott, is on display at the Banneker Museum



Benjamin Banneker Academic High School on Euclid street in D.C.



The Maria Mitchell Association in Nantucket runs an Observatory, a Natural History Museum, the Mitchell House, and a Science Library

Maria Mitchell's own telescope, on display at the Smithsonian National Museum of American History



The original observatory at Vassar College built for Professor Mitchell



# + So who do *YOU* math with?



“The true mathematician joins his mathematics to all science. Of what interest is the discovery of a new curve if no flower winds itself according to its law, if no bird builds to interpret its sinuous ways, if no planet or star follows its sweeping arches?” – Maria Mitchell



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