

Black Lives Matter Lesson Plans for Day 1 and Day 2

Hongshan Zhang, FDHS

Standards

CCSS.HSS-IC.A 2 Decide if a specified model is consistent with results from a given data-generating process, e.g., using simulation. *For example, a model says a spinning coin falls heads up with probability 0.5. Would a result of 5 tails in a row cause you to question the model?*

CCSS 9-10 RH 1 Cite specific textual evidence to support analysis of primary and secondary sources, attending to such features as the date and origin of the information.

CCSS 9-10 RH 5 Analyze how a text uses structure to emphasize key points or advance an explanation or analysis.

CCSS 9-10 RH 6 Compare the point of view of two or more authors for how they treat the same or similar topics, including which details they include and emphasize in their respective accounts.

CCSS 9-10 RH 8 Assess the extent to which the reasoning and evidence in a text support the author's claims.

BLM Principles

BLM.CV Collective Value: Valuing all Black lives, regardless of actual or perceived sexual identity, gender identity, gender expression, economic status, ability, disability, religious beliefs or disbeliefs, immigration status, or location Teachers'

Democracy Project Black Lives Matter

BLM.BV Black Villages: Disrupting the Western-prescribed nuclear family structure requirement by supporting each other as extended families and "villages" that collectively care for one another Teachers' Democracy Project Black Lives Matter

BLM.LE Loving Engagement: Embodying and practicing justice, liberation, and peace in our engagements with one another Teachers' Democracy Project Black Lives Matter

Monday, February 1st, 2021

Objective: Students learn the history of ancient African Mathematics from online resources to understand the contribution of Mathematics from ancient Africa.

Materials:

http://www.taneter.org/math.html#google_vignette
And other online resources

Procedure/Strategies

- 1) Do Now: List three contributions of Mathematics from Africa-American community or list three black mathematicians that you know.
- 2) Activity: Let students read the introduction part of ancient African Mathematics on measuring and counting, fraction and geometry from website:
http://www.taneter.org/math.html#google_vignette
- 3) Student sharing: Which ancient African Mathematics contributions is more important? Why?

Assessment/Check for Understanding

Each students submit 1/2 sentences to summarize what they learned from reading today.

Reading Document:

Ancient African Mathematics

Africa is home to the world's earliest known use of measuring and calculation, confirming the continent as the birthplace of both basic and advanced mathematics. Thousands of years ago, Africans were using numerals, algebra and geometry in daily life. This knowledge spread throughout the entire world after a series of migrations out of Africa, beginning around 30,000 BC, and later following a series of invasions of Africa by Europeans and Asians (1900 BC-present).

Measuring and Counting

Lebombo Bone (35,000 BC)

The oldest mathematical instrument is the Lebombo bone, a baboon fibula used as a measuring device and so named for its location of discovery in the Lebombo mountains of Swaziland. The device is at least 35,000 years



The world's oldest known measuring device, the "Lebombo bone"

old. Judging from its 29 distinct markings, it could have been used to either track menstrual or lunar cycles, or used merely as a measuring stick.

It is rather interesting to note the significance of the 29 markings (roughly the same number as lunar cycle, i.e., 29.531 days) on the baboon fibula because it is the oldest indication that the baboon, a primate indigenous to Africa, was symbolically linked to Khonsu, who was also associated with time. The Kemetic god, Djehuty ("Tehuti" or "Toth"), was later depicted as a baboon (also an ibis), and is usually associated with the moon, math, writing and science. Use of baboon bones as mathematical devices has been continuous throughout all of Africa, suggesting Africans always held the baboon as sacred and associated with the moon, math, and time.

Ishango Bone (20,000 BC)

The world's oldest evidence of advanced mathematics was also a baboon fibula that was discovered in present-day Democratic Republic of Congo, and dates to at least 20,000 BC. The bone is now housed in the Museum of Natural Sciences in Brussels. The Ishango bone is not merely a measuring device or tally stick as some people erroneously suggest. The bone's

inscriptions are clearly separated into clusters of markings that represent various quantities. When the markings are counted, they are all odd numbers with the left column containing all prime numbers between 10 and 20, and the right column containing added and subtracted numbers. When both columns are calculated, they add up to 60 (nearly double the length of the lunar or menstrual cycle).



Front and rear of Ishango Bone in the Museum of Natural Sciences, Brussels

Gebet'a or "Mancala" Game (700 BC-present)

Although the oldest known evidence of the ancient counting board game, Gebet'a or "Mancala" as it is more popularly known, comes from Yeha (700 BC) in Ethiopia, it was probably used in Central Africa many years prior. The game forces players to strategically capture a greater number of stones than one's opponent. The game usually consists of a wooden board with 2 rows of 6 holes each, and 2 larger holes at either end. However, in antiquity, the holes were more likely to be carved into stone, clay or mud like the example from Medieval Aksum, shown at right. More advanced versions found in Central and East Africa, such as the Omweso, Igisoro and Bao, usually involve 4 rows of 8 holes each.



A Gebet'a carving on the base of an Aksumite tekhen (stela), courtesy of Indech



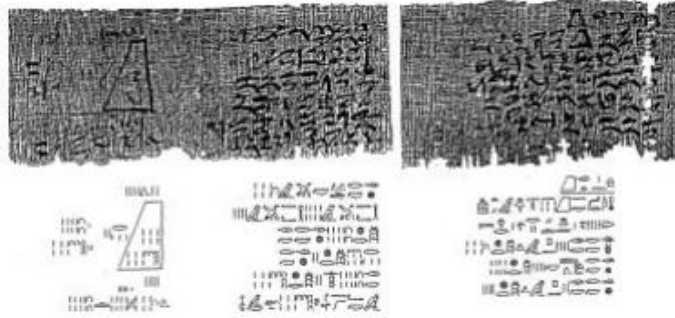
Fractions, Algebra and Geometry



Rwandans playing Omweso, a more advanced version of Gebet'a

"Moscow" Papyrus (2000 BC)

Housed in Moscow's Pushkin State Museum of Fine Arts, the so-called "Moscow" papyrus, was purchased by Vladimir Golenishchev sometime in the 1890s. Written in hieratic from perhaps the 13th dynasty in Kemet, the papyrus is one of the world's oldest examples of use of geometry and algebra. The document contains approximately 25 mathematical problems, including how to calculate the length of a ship's rudder, the surface area of a basket, the volume of a frustum (a truncated pyramid), and various ways of solving for unknowns.



A copy of the so-called "Moscow" papyrus in "hieratic" text, with a clearer rendering below in "hieroglyphs".

Let students to understand the contributions of Africans to our current content: Algebra.

"Rhind" Mathematical Papyrus (1650 BC)

Purchased by Alexander Rhind in 1858 AD, the so-called "Rhind" Mathematical Papyrus (shown below) dates to approximately 1650 BC and is presently housed in the British Museum. Although some Egyptologists link this to the foreign Hyksos, this text was found during excavations at the Ramesseum in Waset (Thebes) in Southern Egypt, which never came under Hyksos' rule. Written by the scribe, Ahmose, in the "Hieratic" script, the text reads as follows:

"Accurate reckoning for inquiring into things, and the knowledge of all things, mysteries...all secrets... This book was copied in regnal year 33, month 4 of Akhet, under the majesty of the King of Upper and Lower Egypt, Awserre, given life, from an ancient copy made in the time of the King of Upper and Lower Egypt Nimaatre. The scribe Ahmose writes this copy..."

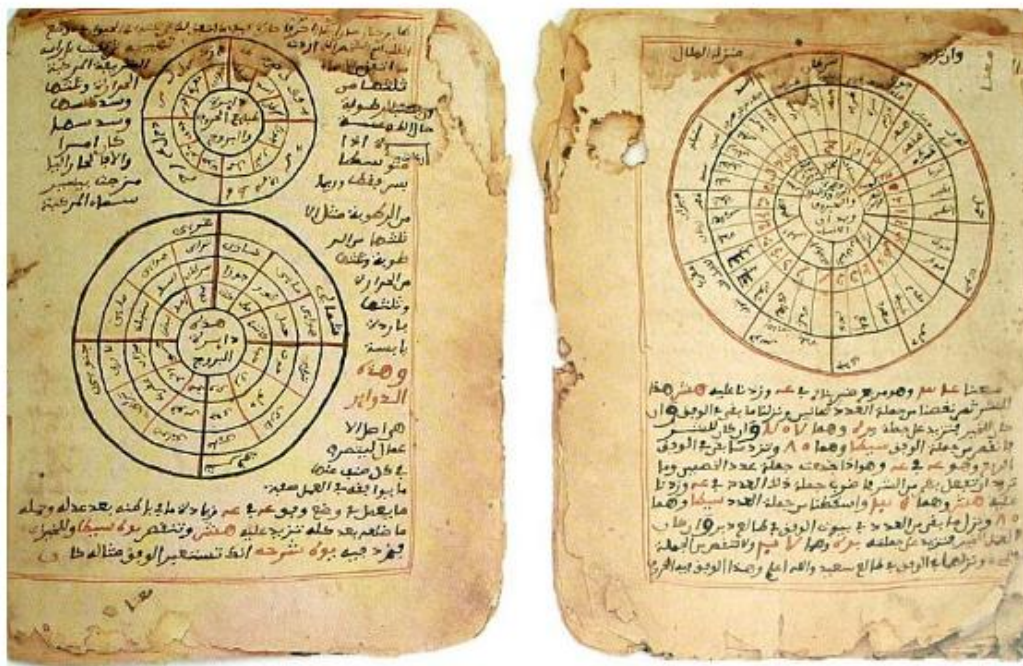
The first page contains 20 arithmetic problems, including addition and multiplication of fractions, and 20 algebraic problems, including linear equations. The second page shows how to calculate the volume of rectangular and cylindrical granaries, with pi (π) estimated at 3.1605. There are also calculations for the area of triangles (slopes of a pyramid) and an octagon. The third page continues with 24 problems, including the multiplication of algebraic fractions, among others.



A page from the so-called "Rhind" Mathematical Papyrus in "Hieratic" text.

Timbuktu Mathematical Manuscripts (1200s AD)

Timbuktu in Mali is home to one of the world's oldest universities, Sankore, which had libraries full of manuscripts mainly written in Ajami (African languages, such as Hausa in this case, written in a script similar to "Arabic") in the 1200s AD. When Europeans and Western Asians began visiting and colonizing Mali from 1300s-1800s AD, Malians began to hide the manuscripts in basements, attics and underground, fearing destruction or theft by foreigners. This was certainly a good idea, given Europeans' history of stealing and/or destroying texts in Kemet and other areas of the continent. Many of the scripts, such as the one shown below, were mathematical and astronomical in nature. In recent years, as many as 700,000 scripts have been rediscovered and attest to the continuous knowledge of advanced mathematics and science in Africa well before European colonization.



A famous example of a mathematical and astronomical manuscript from medieval Timbuktu

Tuesday, February 2nd, 2021

Objective: Students learn the contributions of Africans to Arithmetic and Algebra which is their current learning subject.

Materials:

articles from blackvoicnews.com And other online resources,

Article: Africans Invented Arithmetics and Algebra (2006)

<https://blackvoiceneews.com/2006/08/27/africans-invented-arithmetic-and-algebra>

Procedure/Strategies

1) Do Now: Answer: Who invented Arithmetic and Algebra ? Students use google to earch for answer and ready to share..

2) Activity: Read the article from blackvoicnews.com about Africans Invented Arithmetics and Algebra and have a discussion on the Africans' contribution on Arithmetics and Algebra

<https://blackvoiceneews.com/2006/08/27/africans-invented-arithmetic-and-algebra>.

3) Discussion: Based on their research and the article they read in class,, who do you think invented Arithmetic and Algebra? What evidence do you have?

Assessment/Check for Understanding

Each students use 2/3 sentences to summarize who they think invented Arithmetic and Algebra and explain why.

Reading Document:



by *Paulette Brown-Hinds*
August 27, 2006

The earliest treatise on algebra is the Egyptian Rhind Papyrus (c.1700 BC). But in c.3000 BC Egyptians called it "aha Calculus" because "Aha," "Ahe," or "Ahau" was the name of the second pharaoh of the first dynasty. Meaning mass, quantity, or heap (a pile of many things), it was used as an abstract term for the unknown in an equation. Originally, the word "algebra"-(*"al"* "from Egypt"-*"al-Kemit"*)—meant the reuniting of broken parts and was later defined by the Arabs as "restoration", including "bone setting". Note that Yin and Yang are also about the union of separate parts.

Joseph A. Bailey, II M.D., F.A.C.S.

Now, algebra deals with math structures—the solution of equations and the general relations among numbers. It embraces calculus, logic, theories of numbers, equations, functions, and their combinations. Both arithmetic and algebra are branches of mathematics and both are ways of figuring. Figuring involves discovering answers (e.g. establishing values) to problems using the amount or value given in numbers, using unknown numbers, or using letters or symbols standing for quantities. A letter or symbol for any number is called a Variable. Quantities of matter have size, weight, number, mass, height, depth, width, length, capacity, extent, endurance, time duration, and volume. They can be counted, weighed, and measured geometrically (e.g. lines, curves, angles)—and these may be added to or lessened.

Arithmetic ("the science of numbers"; "the art of calculation") applies numbers to answer questions such as "how many?" -how much?" –and how far?" Algebra is the next step up and features letter or symbol "shorthand" in expressing quantities. With arithmetic the simple job of adding can be expressed as $3+4=7$ or three + four = seven. However, in algebra the same could be written $T + F = S$ -i.e. using the first letters of the words to stand for the numbers. This is called an Equation– a statement that two things are equal. Equations have many governing rules-rules which allow discovering unknown numbers that appear in an equation with known numbers-and rules which make calculation with big numbers just as easy as calculation with small numbers. For example, "x" (or any other letter of the alphabet) stands for an unknown quantity. As in arithmetic, addition is shown by + and subtraction is shown by -. When you put one letter over the other–like a/b – you are dividing b into a. Putting two symbols together– as ab -means to multiply them. In algebra the multiplication sign is not used when two symbols are placed side by side. $T \times F$ is written TF and $3 \times T$ is written $3T$.

Although certain symbols, marks, and letters customarily represent quantities and operations, seldom would the letters T, F, and S (see examples above) be used. Usually the early letters of the alphabet-a, b, c, etc.-are applied to stand for constants (fixed or known numbers) and the late letters-x, y, z-to stand for variables. Variables are quantities that may have various values or that are unknown. The letter "n" is used to mean "any given (or known) number". A Power of a number is the product or result you get when you multiply the number by itself, one or more times. It is expressed by an Exponent (a small number written after and higher than the number). When you read it aloud as "three squared," this means $3 \times 3 = 9$; or "two to the fifth power is $2 \times 2 \times 2 \times 2 \times 2$ or 32. Roots, the opposite of a power, must be multiplied by itself to produce a given number. The cube root (using a number three times as a factor- $4 \times 4 \times 4$) of 64 is 4. A Series is a group of numbers related by some rule. In an arithmetic series-1, 4, 7, 10-a constant number (here, 3) is added to each term to give the next. Africans found a place for arithmetic and algebra during their on-going activities on such vast construction projects– as in building temples, pyramids, irrigation works, and obelisks.

Website: www.jablifescills.com

Joseph A. Bailey, II, M.D.

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BLM.LE Loving Engagement: Embodying and practicing justice, liberation, and peace in our engagements with one another Teachers' Democracy Project Black Lives Matter

Objective: Students understand the Modern history of Blacks in Mathematics based on the evidence they found from online resources.

Materials:

<http://www.math.buffalo.edu/mad/madhist.html>

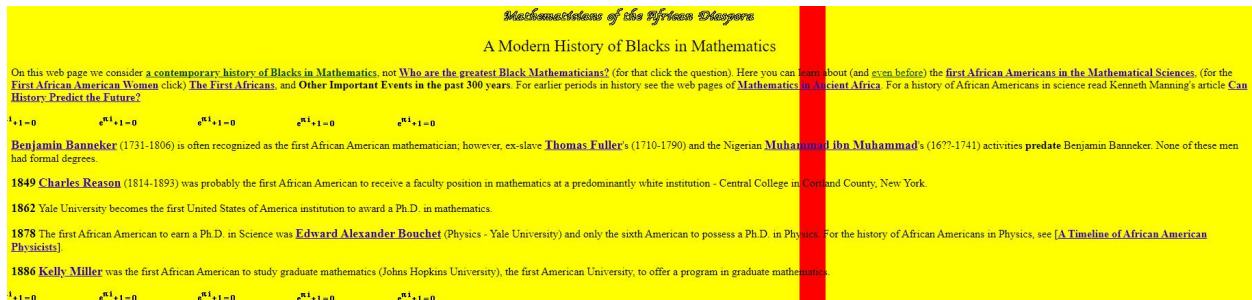
Procedure/Strategies

- 1) Do Now: Answer: Name two greatest Black Mathematician in Modern history ? Students use google to search for answer and ready to share..
- 2) Group Activity: Students read the articles about the Modern history of Blacks in Mathematics From the website: <http://www.math.buffalo.edu/mad/madhist.html> in groups and share their thinking about who the greatest black Mathematician is in their opinions.
- 3) Discussion: Each group share the names of their favorite black mathematicians and explain why.

Assessment/Check for Understanding

Each students use 1/2 sentences to summarize the contributions of their favorite mathematicians.

Document:



From 1923 to 1947, 12 Blacks earned a Ph.D. in Mathematics.

1923 The first African to earn a Ph.D. was Ali Mostafa Mosharafa, of Egypt, who received his Ph.D. (1923) and D.Sc. (1924) from the University of London in 1923 and 1924.

1925 The first African American to earn a Ph.D. in Mathematics (Cornell University) was **Elbert Frank Cox**. There were 28 Ph.D.'s awarded in the United States that year. However, nearly 20 years would pass before the first African American Women would earn a Ph.D.

1928 **Dudley Weldon Woodard** becomes the second African American to earn a Ph.D. in Mathematics (University of Pennsylvania).

1929 The first research paper published in an accredited mathematics journal by an African American, **Dudley Woodard's On two dimensional analysis situs with special reference to the Jordan Curve Theorem, Fundamenta Mathematicae 13 (1929), 121-145.**

1933 **William Schiefelin Claytor** becomes the third African American to earn a Ph.D. in Mathematics (University of Pennsylvania). Dr. Claytor's struggle to earn recognition in the mathematical world was quite typical prior to 1970. You can read about it in his profile.

1934 **Walter R. Talbot** becomes the fourth African American to earn a Ph.D. in Mathematics (University of Pittsburgh). The first African American publication in a top research journal was **William W. S. Claytor's Topological Immersion of Peanian Continua in a Spherical Surface, Annals of Mathematics 35 (1934), 809-835**. Here is a page from another of Claytor's papers. Claytor was thought to have extraordinary promise as a mathematician, however, racism took its toll on his success.

1938 **Ruben R. McDaniel** (Cornell University) and **Joseph Pierce** (University of Michigan) are the fifth and sixth African Americans to earn a Ph.D. in Mathematics.

1941 At the age of 22, **David Blackwell** becomes the seventh African American to earn a Ph.D. in Mathematics (University of Illinois). He may well be **the greatest black Mathematician**.

1942 At age 19, **J. Ernest Wilkins** becomes the eighth African American to earn a Ph.D. in Mathematics (University of Chicago). He is certainly one of **the greatest black Mathematicians**.

From 1943 to 1969, thirteen African American women earn the Ph.D. in Mathematics.

1943 **Euphemia Lofton Haynes** (Catholic University), the first African American woman, and **Clarence F. Stephens** (University of Michigan) become the ninth and tenth African Americans to earn a Ph.D. in Mathematics.

See our web page **Black Women in Mathematics for a chronology of the first 20 Black women Ph.D.'s**. Also an ongoing effort, a chronology of all African Americans is under construction at **Timeline of African American Ph.D.'s in Mathematics**

1944 The eleventh, twelfth and thirteenth African Americans earned a Ph.D. this year. **Joseph J. Dennis** earned a Ph.D. in Mathematics (Northwestern University). **Wade Ellis** and **Warren Hill Brothers** both earned a Ph.D. in Mathematics (University of Michigan).

1945 **Jeremiah Certain** was the fourteenth African American to earn a Ph.D. in Mathematics (University of Michigan). At this time **half of all African American Ph.D.'s in Mathematics were earned by students of the University of Michigan**.

1947 The earliest record of a Mathematics Ph.D. by an African appears to be Ghanaian **A. M. Taylor** (Oxford University, we think in 1947).

According to a 1951 letter from the AMS (the American Mathematics Society) to **Lee Lorch**, "when the Society met at the University of Georgia in 1947, not one Negro was present." This is false. **J. Ernest Wilkins, Jr.** had asked to participate, however, he received a letter from the AMS Associate Secretary for the Southeastern region urging him to come and saying that very satisfactory arrangements had been made with which they were sure he'd be pleased. They had found a "nice colored family" with whom he could stay and where he would take his meals! The hospitality of the University of Georgia (and of the AMS) was not for him. This is why the meeting there was totally white.

$e^{i+1}=0$ $e^{n^2+1}=0$ $e^{n^2+1}=0$ $e^{n^2+1}=0$ $e^{n^2+1}=0$

1949 The fourteenth African American and the second African American Woman to earn a Ph.D. in Mathematics was **Evelyn Boyd Granville** (Yale University).

1950 **The third African American Women and fifteenth African American to earn a Ph.D. in Mathematics was Marjorie Lee Browne** (University of Michigan). **George H. Bortolero** is the sixteenth African American to earn the Ph.D. (University of Pennsylvania). The Nigerian **Chike Obi** is the second African to earn the Ph.D. in Mathematics.

1951 The American Mathematics Society sold its library to the University of Georgia, which was the highest of six bidders. A careful search of AMS records does not disclose any assurances given --- or even sought --- that all AMS members, regardless of race, would be able to use it. This was at a time of intense segregation mandated by Georgia state law. (At the other four U.S. institutions bidding, access would not have been a problem.)

1953 **Luna I. Mishoe** is the seventeenth African American to earn the Ph.D. (New York University).

1954 **David Blackwell** becomes the first African American to hold a permanent position at major university (University of California at Berkeley). **Charles Bell** is the eighteenth African American to earn the Ph.D. (University of Notre Dame).

1955 **Adegoke Oluhumm** (King's College, University of Durham in Castle-Upon-Tyne, United Kingdom) is the third African to earn a Ph.D. in Mathematics. **Vincent McRea** (Catholic University) and **Lionnie Cross** (Cornell University) are the nineteenth and twentieth African American to earn the Ph.D. in Mathematics.

1956 The Soviet Union launched the first satellite to orbit the Earth. The United States reaction by pouring enormous funds in to basic research. As a result, many African American students of the late 1950's and the 1960's were able to study mathematics at a level not possible before (see **Raymond L. Johnson**). **Lloyd K. Williams** is the twenty-first African American to earn the Ph.D. in Mathematics. Also in 1956, **Gloria Ford Gilmer** is the first African American woman to publish a non-Ph.D. thesis mathematics research paper (with **Luna I. Mishoe**) and this is the first paper published joint mathematics research between two Black co-authors.

1957 **Eugene A. Graham** earns a Ph.D. from the University of Turin in Italy. This appears to be the first instance of an African American earning a Mathematics Ph.D. outside the U.S.

1960 second paper published joint mathematics research between two Black co-authors, **Charles Bell and David Blackwell**. Bell, C. B., Blackwell, David, Breiman, Leo *On the completeness of order statistics*. Ann. Math. Statist. 31 1960 794-797.

1961 **Lionnie Cross** shocked the African American and mathematics community by changing his name to **Abduljalim Shabbazz**, and becoming the first African American scientist to embrace the followers of Elijah Mohammed, the leader of the African American Moslem community.

1963 **Grace Lele Williams** became the first Nigerian woman to earn any doctorate when she got her Ph.D. in Mathematics (University of Chicago).

1964 This year **David Blackwell** became the first African American mathematician to Chair a department (Statistics) at a major university (University of California-Berkeley). Elsewhere, under the direction of **Clarence Stephens** (using the *The Morgan-Poitdam Model* of teaching and learning mathematics) and **Walter Talbot**, Morgan State University (then College) became the first institution to have three African Americans of the same graduating class who would eventually go on to obtain a Ph.D. in Mathematics. **This record still stands among all universities and colleges.**

1965 **David Blackwell** became the first African American named to **The National Academy of Sciences**.

1968 From 1968 to 1969, **Percy A. Pierre** was White House Fellow for the Executive Office of the President of the United States.

1969 **Clarence Ellis** is the first African American to earn a **Computer Science Ph.D.** (University of Illinois, 1969). At the January 1969 Annual Meeting of The American Mathematics Society, then mathematics graduate students **Johnny Houston** and **Scott Williams** called together a group of African American mathematicians. This group began an ad hoc organization, Black and Third World Mathematicians, which, in 1971, changed its name to **The National Association of Mathematicians (NAM)**. In 1969, the Balam Company publishes the book *Negroes in Science: Natural Science Doctorates* by James M. Jay.

1972 The first Kenyan African to become Full Professor of Mathematics was **Morris Sika Alala**. (at the University of Nairobi).

1974 **J. Ernest Wilkins, Jr.** became President of the American Nuclear Society. **Alton Wallace** becomes the first African American to earn a mathematics Ph.D. with an African American thesis advisor, **Raymond L. Johnson** at the University of Maryland.

1975 The **African Mathematical Union (AMU)** was founded in Africa. Its first president was **Henri Hoghe Nlend**, then of the Cameroon.

1976 The first AMU Pan-African Congress of Mathematicians is held in Rabat, Morocco. **J. Ernest Wilkins, Jr.** becomes a member of **The National Academy of Engineers**. Under the guidance of its Mathematics Department chair **James Donaldson** and aid of the chair, **J. Ernest Wilkins, Jr.** of its Physics Department, **Howard University** established the first Ph.D. program in Mathematics at a **Historically Black University and College (HCBUC)**.

1979 **David Blackwell** wins the von Neumann Theory Prize (Operations Research Society of America).

1980 NAM inaugurates the first Claytor Lectures with Professor **James Josephs** as speaker. The first book (begun in 1971 by Virginia K. Newell) on African American Mathematicians **Black Mathematicians and their Works**, Dorrance & Company, was finally published by V. K. Newell, **J. H. Gipson**, **L. W. Rich**, and **B. Stubblefield**. The **Southern African Mathematical Sciences Association (SAMSA)** was founded among the 12 countries of southern Africa in 1980.

1981 **C. Dwight Lahr** is the first African American to get tenure in a department of mathematics of an Ivy League School.

1984 **C. Dwight Lahr** is the first African American to become Full Professor in a department of mathematics of an Ivy League School.

1986 The first issue of the **AMUCHA** - The African Mathematical Union's Commission on the History of Mathematics in Africa was presented.

1990 **AMUCWMA** - The African Mathematical Union Commission on Women in Mathematics in Africa is founded with **Grace Lele Williams** as Chairman.

1992 **Gloria Gilmer** is the first woman to deliver a major **NAM** lecture.

1995 The first Conference for African American Researchers in the Mathematical Sciences (CAARMS1) was held at the Mathematical Sciences Research Institute (MSRI). The conference organizers were **Raymond Johnson**, **William Massey**, **William Thurston**, and **James Turner**. Each year since then CAARMS has met: CAARMS2 (at Rutgers University and Lucent Technologies), CAARMS3 (at Morgan State University and the National Security Agency), CAARMS4 (at Rice University). In June of 1999, CAARMS5 will meet at University of Michigan-Ann Arbor.

1997 **Kate Okikiola** becomes the first Black to win Mathematics' most prestigious young person's award, the **Sloan Research Fellowship**. She also is awarded the new \$500,000 **Presidential Early Career Awards for Scientists and Engineers**. The organization **Council for African American Researchers in the Mathematical Sciences (CAARMS)** was formed to oversee the CAARMS conferences and to aid African Americans interested in research in mathematics. Also in 1997, **Nathaniel Dean's** book **African American Mathematicians** was published by the American Mathematical Society.

The First Africans

Algeria: [Chikh BOUZAR](#) Ph.D. 1986 Belorussian State University (Minsk, Belorussia).

Angola: [Manuel Domingos O. CADETE](#) Ph.D. 1999 Tula State Pedagogical University (Tula, Russia)

Benin: [Sunday Ozarumyense Iyabeh](#) Ph. D. (Keele) 1967; D. Sc. (Keele) 1987; [Idris Assani](#) The Doctorat 3^{eme} cycle 1981 Pure mathematics University Pierre and Marie Curie - Paris 6- Doctorat es Sciences 1986- Pure mathematics- University Pierre et Marie Curie Paris 6

Botswana: [Basinyi CHIMIDZA](#) 1995 (Ph.D.) Louisiana State University

Burkina Faso: [Albert OUEDRAOGO](#) 1969 (Doctorat 3^{eme} cycle) Université Pierre et Marie Curie - Paris VI (Paris, France)

Burundi: [Juma SHABANI](#) 1986 (Doctorat en sciences) Université de Louvaine, Belgium

Ghana: [Daniel Akyeampong](#) (University of London 1966) and [F.K.A. Allotey](#) (Princeton 1966) were the first Ghanaian Ph.D.s in the mathematical sciences. [Atu M. Taylor](#) was the third (Oxford 1967)

Nigeria: Indigenous mathematics research activities in Nigeria were pioneered by [Chike Obi](#) (1950), [Adegoke Olubummo](#) (1955), and [James Ezeilo](#) all of whom obtained their doctorates in mathematics from British Universities in the 1950's. For more read [Mathematics in Nigeria Today](#). [Grace Lele Williams](#) became, in 1963, the first Nigerian woman to earn any doctorate when she got her Ph.D. from the University of Chicago.

Kenya: The first Kenyan African to become Full Professor of Mathematics was [Morris Sika Alala](#), at the University of Nairobi in 1972.

Zimbabwe:

this section is being researched with the help of [African Mathematical Union](#)

[1999](#) [2000](#) [2001](#) [2002](#) [2003](#)

MATHEMATICIANS OF THE AFRICAN DIASPORA <http://www.math.buffalo.edu/mad/>

[Black Research Mathematicians](#)

[Outside North America](#)

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[African Mathematical Union](#)

[The Ancients in Africa](#)

[AMUCHMA Online](#)

[MODERN & ANCIENT REFERENCES](#)

Thursday, February 4th, 2021

Objective: Learn the main idea of the book, *Radical Equations* by black author Robert Moses and connect to the study of math equations.

Materials:

Several chapters of the book, *Radical Equations* by Robert Moses.

Procedure/Strategies

- 1) Do Now: Solve a simple Radical Equation and share the solution.
- 2) Group Activity: Each group select one chapter of the book to read and share the main idea of the book on a poster
- 3) Student do a galaxy walk to look at other group's posters and leave comments.

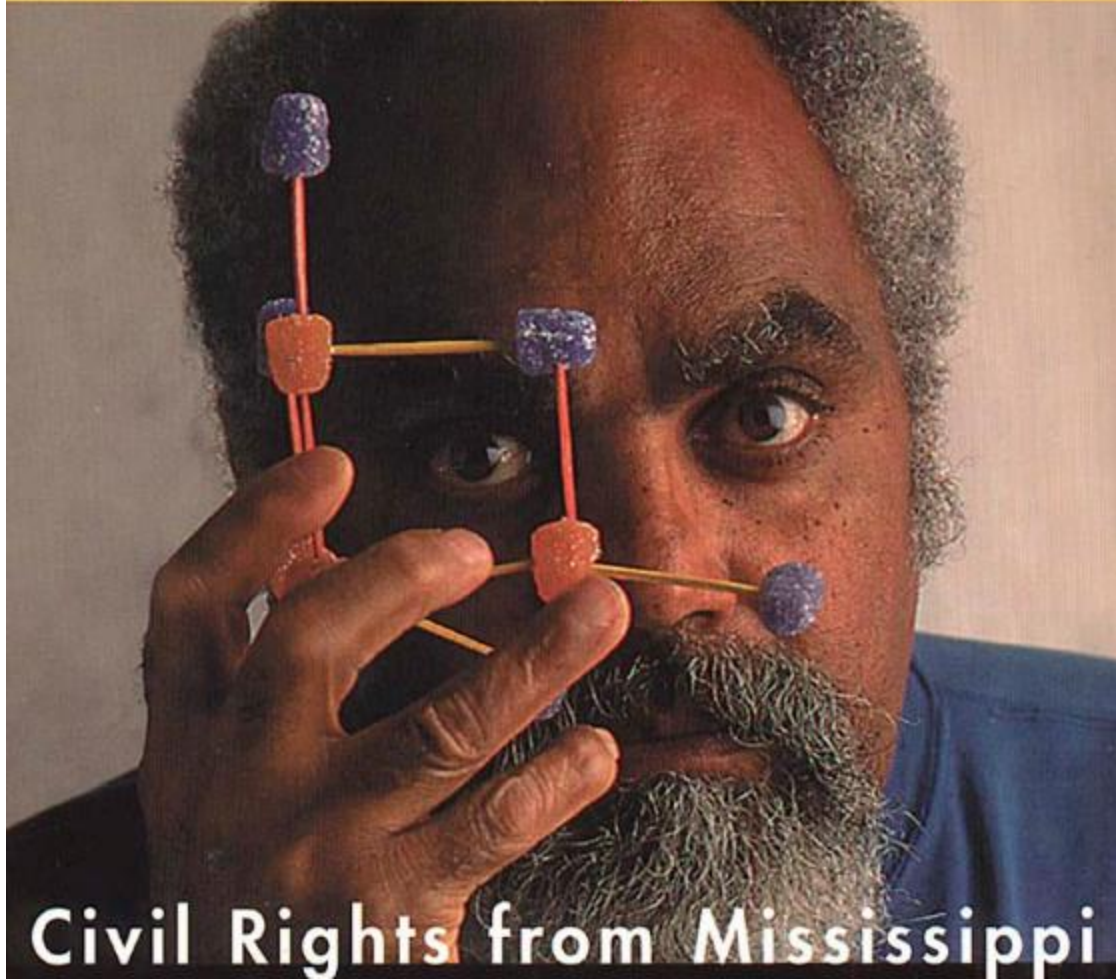
Assessment/Check for Understanding

Each students submit 1/2 sentences to explain the connection of the book to their study today.

Reading Document:

"Robert Moses is the towering activist/intellectual of his generation—a grassroots freedom fighter of quiet dignity and incredible determination." —**Cornel West**

radical equations



Civil Rights from Mississippi

Radical Equations

Math Literacy and Civil Rights

ROBERT P. MOSES

AND CHARLES E. COBB, JR.

C O N T E N T S

FOREWORD BY DAVID DENNIS vii

PART ONE In the Spirit of Ella: *The Algebra Project and the Organizing Tradition of the Civil Rights Movement*

- 1 Algebra and Civil Rights? 3
- 2 Learning from Ella: *Lessons from Mississippi, ca. 1961* 23
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Algebra and Civil Rights?

In order for us as poor and oppressed people to become a part of a society that is meaningful, the system under which we now exist has to be radically changed. This means that we are going to have to learn to think in radical terms. I use the term *radical* in its original meaning—getting down to and understanding the root cause. It means facing a system that does not lend itself to your needs and devising means by which you change that system. That is easier said than done. But one of the things that has to be faced is, in the process of wanting to change that system, how much have we got to do to find out who we are, where we have come from and where we are going. . . . I am saying as you must say, too, that in order to see where we are going, we not only must *remember* where we have been, but we must *understand* where we have been.

Ella Baker

The sit-ins woke me up.

Until then, my Black life was conflicted. I was a twenty-six-year-old teacher at Horace Mann, an elite private school in the Bronx, moving back and forth between the sharply contrasting worlds of Hamilton College, Harvard University, Horace Mann, and Harlem.

The sit-ins hit me powerfully, in the soul as well as the brain. I was mesmerized by the pictures I saw almost every day on the front pages of the *New York Times*—young committed Black faces seated at lunch counters or picketing, directly and with great dignity, challenging white supremacy in the South. They looked like I felt.

It was the sit-in movement that led me to Mississippi for the first time in 1960. And that trip changed my life. I returned to the state a year later and over the next four years, was transformed as I took part in the voter registration movement there. The great campaigns of protest so identified with Dr. Martin Luther King, Jr., were swirling around us, inspiring immense crowds in vast public spaces. But along with students from the sit-in movement, in Mississippi I became immersed in and committed to the older but less well-known tradition of community organizing. In my mind, Ella Baker, who helped to found Dr. King's organization, symbolizes this organizing tradition—quiet work in out-of-the-way places and the commitment of organizers digging into local communities.

CHAPTER 2

Learning from Ella

Lessons from Mississippi, ca. 1961

We are smuggling this note from the drunk tank of the county jail in Magnolia, Mississippi. Twelve of us are here, sprawled out along the concrete bunker: Curtis Hayes, Hollis Watkins, Ike Lewis and Robert Talbert, four veterans of the bunker are sitting up talking—mostly about girls—Chuck McDew (“Tell the Story”) is curled into the concrete and the wall; Harold Robinson, Stephen Ashley, James Wells, Lee Chester Vick, Leotus Eubanks, and Ivory Diggs lie cramped on the cold Bunker; I’m sitting with smuggled pen and paper thinking a little, writing a little; Myrtis Bennet and Janie Campbell are across the way wedded to a different icy cubicle.

Standin' at the Crossroads

From Voter Registration to Political Party

We went up to register and it was the first time visiting the courthouse in Greenwood, Mississippi, and the sheriff came up to me and he asked me, he said, "Nigger, where you from?" I told him, "Well, I'm a native Mississippian." He said, "Yeh, yeh, I know that, but where you from? I don't know where you from." I said, "Well, around some counties." He said, "Well, I know that, I know you ain't from here, 'cause I know every nigger and his mammy." I said, "You know all the niggers, do you know any colored people?" He got angry. He spat in my face and he walked away. So he came back and turned around and told me, "I don't want to see you in town any more. The best thing you better do is pack your clothes and get out and don't never come back no more." I said, "Well, sheriff, if you don't want to see me here, I think the best thing for you to do is pack your clothes and leave, get out of town, 'cause I'm here to stay, I came here to do a job and this is my intention, I'm going to do this job. . . ."

field report from Sam Block, 23, late summer 1962

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field report from Sam Block, 23, late summer 1962

Black Lives Matter Lesson Plan for Day 5

Hongshan Zhang, FDHS

Standards

CCSS.HSS-IC.A.2 Decide if a specified model is consistent with results from a given data-generating process, e.g., using simulation. *For example, a model says a spinning coin falls heads up with probability 0.5. Would a result of 5 tails in a row cause you to question the model?*

CCSS 9-10 RH 1 Cite specific textual evidence to support analysis of primary and secondary sources, attending to such features as the date and origin of the information.

CCSS 9-10 RH 5 Analyze how a text uses structure to emphasize key points or advance an explanation or analysis.

CCSS 9-10 RH 6 Compare the point of view of two or more authors for how they treat the same or similar topics, including which details they include and emphasize in their respective accounts.

CCSS 9-10 RH 8 Assess the extent to which the reasoning and evidence in a text support the author's claims.

BLM Principles

BLM.CV Collective Value: Valuing all Black lives, regardless of actual or perceived sexual identity, gender identity, gender expression, economic status, ability, disability, religious beliefs or disbeliefs, immigration status, or location Teachers'

Democracy Project Black Lives Matter

BLM.BV Black Villages: Disrupting the Western-prescribed nuclear family structure requirement by supporting each other as extended families and "villages" that collectively care for one another Teachers' Democracy Project Black Lives Matter

BLM.LE Loving Engagement: Embodying and practicing justice, liberation, and peace in our engagements with one another Teachers' Democracy Project Black Lives Matter

Friday, February 5th, 2021

Objective: Students learn the history of ancient African Mathematics from online resources to understand the contribution of Mathematics from ancient Africa.

Materials:

Posters

Pen/Pencils

Procedure/Strategies

- 1) Do Now: How do your experiences relate to what you have learned this past week?
- 2) Activity: Students write one/two paragraph essay to summarize the 3 major resonances they got from the last four lessons. And share it to class.
- 3) Three question to address in the essay:
 - What is new to you?
 - What is the major contributions of black community on Mathematics
 - What is the connection to your current study of mathematics.

Assessment/Check for Understanding

Students submit their modified essay to teacher to get grades.