SEATTLE PUBLIC SCHOOLS

K-12 Math Ethnic Studies Framework (20.08.2019)

THEMES			
Origins, Identity, and Agency	**Power and Oppression**	**History of Resistance and Liberation**	**Reflection and Action**
Definition of theme: Origins, Identity and Agency, as defined by ethnic studies, is the ways in which we ***view ourselves as mathematicians*** and members of broader mathematical communities. Mathematical theory and application is ***rooted in the ancient histories of people and empires of color***. All human endeavors include mathematical thinking; from humanities to the arts to the sciences.	Definition of theme: Power and oppression, as defined by ethnic studies, are the ways in which individuals and groups define mathematical knowledge so as to see "Western" mathematics as the only legitimate expression of mathematical identity and intelligence. This definition of ***legitimacy is then used to disenfranchise*** people and communities of color. This ***erases the historical contributions*** of people and communities of color.	Definition of theme: The history of resistance and liberation, as defined by ethnic studies, is the stories, places, and people who helped liberate people and communities of color using math, engineering, and technology. ***Access to mathematical knowledge itself is an act of liberation.***	Definition of theme: Student action, as defined by ethnic studies, is fostering a sense of advocacy, empowerment, and action in the students that creates internal motivation to engage in and contribute to their identities as mathematicians. Students will be confident in their ability to ***construct & decode mathematical knowledge, truth, and beauty*** so they can ***contribute*** to their experiences and the experiences of people in their community.
Learning Targets	**Learning Target**	**Learning Targets**	**Learning Targets**
• SWBAT identify ancient mathematicians and their contributions to mathematics • SWBAT know the continents and countries that were and are at the core of the development of mathematics. • SWBAT create a timeline of math history • SWBAT create counter narratives about the origins of mathematical knowledge • SWBAT explore and express	• SWBAT analyze the ways in which ancient mathematical knowledge has been appropriated by Western culture. • SWBAT identify how the development of mathematics has been erased from learning in school. • SWBAT identify how math has been and continues to be used to oppress and marginalize people and communities of color.	• SWBAT know and appreciate the contributions of their individual communities towards the development of institutions in the advancement of mathematics. • SWBAT identify individuals and organizations that have reclaimed mathematical	• SWBAT see mathematics as a common language. • SWBAT value their mathematical identity. • SWBAT value the potential that math can have on their freedom. • SWBAT identify and teach others about mathematicians* of color in their various communities: schools, neighborhoods, places of worship,

mathematics in various forms including oral, symbolic, and written expression ● SWBAT engage in dialogue and debate (speaking and listening) by justifying their mathematical thinking. ● SWBAT extract mathematical concepts in stories and problems that aren't traditionally seen as mathematical. ● SWBAT see the mathematical value in making mistakes both as individuals and as a community.	● SWBAT explain how math and technology and/or science are connected and how technology and/or science have been and continues to be used to oppress and marginalize people and communities of color. ● SWBAT critique systems of power that deny access to mathematical knowledge to people and communities of color. ● SWBAT identify the inherent inequities of the standardized testing system used to oppress and marginalize people and communities of color. ● SWBAT explain how math has been used to exploit natural resources ● SWBAT explain how math dictates economic oppression	identity and agency. ● SWBAT to see the benefits of increased graduation rates of people of color to their communities. ● SWBAT identify economic movements that have led to liberation. (Kirabo Jackson)	businesses, etc. ● SWBAT demonstrate mathematical literacy by applying concepts to real world problems through dialogue and story telling. ● SWBAT re-humanize mathematics through experiential learning and answering "why?". ● SWBAT redefine mathematical learning through cooperative learning, engagement, advocacy, and action. ● SWBAT facilitate their learning and the learning of their peers independently and interdependently. *Mathematicians are defined as someone who uses a knowledge of mathematics in his or her work.
Essential Questions:	**Essential Questions:**	**Essential Questions:**	**Essential Questions:**

Who is a Mathematician?

- What is my mathematical identity?
- How does it feel to be a Mathematician?
- What other mathematicians are in my learning community?
- Who are resources for math learning?
- Is there an authority for math knowledge?
- How do students see mathematics as relevant to their individual lives and their communities?
- What stories are important to your cultural connection to mathematics?

What does it mean to do math?

- How important is it to be Right? What is Right? Says Who?
- What is the difference between being right and being a learner?
- What does it mean to make a mistake? In the classroom? In my home? In my community?
- How do mistakes facilitate learning?
- How do we derive mathematical truth?

Where does Power and Oppression show up in our math experiences?

- Who holds power in a mathematical classroom?
- Is there a place for power and authority in the math classroom?
- Who gets to say if an answer is right?
- What is the process for verifying the truth?
- Who is Smart? Who is not Smart?
- Can you recognize and name oppressive mathematical practices in your experience?
- Why/how does data-driven processes prevent liberation?

How is math manipulated to allow inequality and oppression to persist?

- Who is doing the oppressing?
- Who does the oppression protect? Who does this oppression harm?
- Where is there an opportunity to examine systemic oppression?
- How can math help us understand the impact of economic conditions and systems that contribute to poverty and slave labor?
- How does math contribute to how we value natural resources?

Formal vs Informal Mathematics

- What is legitimate as math?
- Where are math skills considered “real math”?
- What fears do we have about math?
- What is it that is feared?

How has math been used to resist and liberate people and communities of color from oppression?

- When has math been used historically to resist and liberate?
- How can we use data to resist and liberate?
- How can we use math to measure the impact of activism?

What does it look like when we own mathematical thinking?

- When do I know/feel like I am a mathematician?
- When do I see people around me as mathematicians?
- Can you recognize when someone is being mathematical?
- How/why do mathematical processes demand collective thinking?

Can you suggest resolutions to oppressive mathematical practices?

- How can we change mathematics from individualistic to collectivist thinking?
- How can we reframe our views of people/communities of color in mathematics?

In what ways does mathematical literacy impact how we think?

- Why is mathematical literacy important?
- How can math be used to communicate information?
- What validates (y)our mathematical thinking?

How does mathematics allow us to acquire intellectual freedom?

- As a mathematical thinker, what power do you have to change ___?
- Can you advocate against oppressive mathematical practices?
- How can our stories be valued as data points to impact change?

How can math be used to analyze and interpret life?

- Can I use mathematics to comprehend my everyday life?
- What ways do I use mathematics?
- What do you wonder about _____?
- What patterns are you observing during/in ___?

	● Where did these fears originate? ● Why do they persist? ● How do we disrupt these fears?		