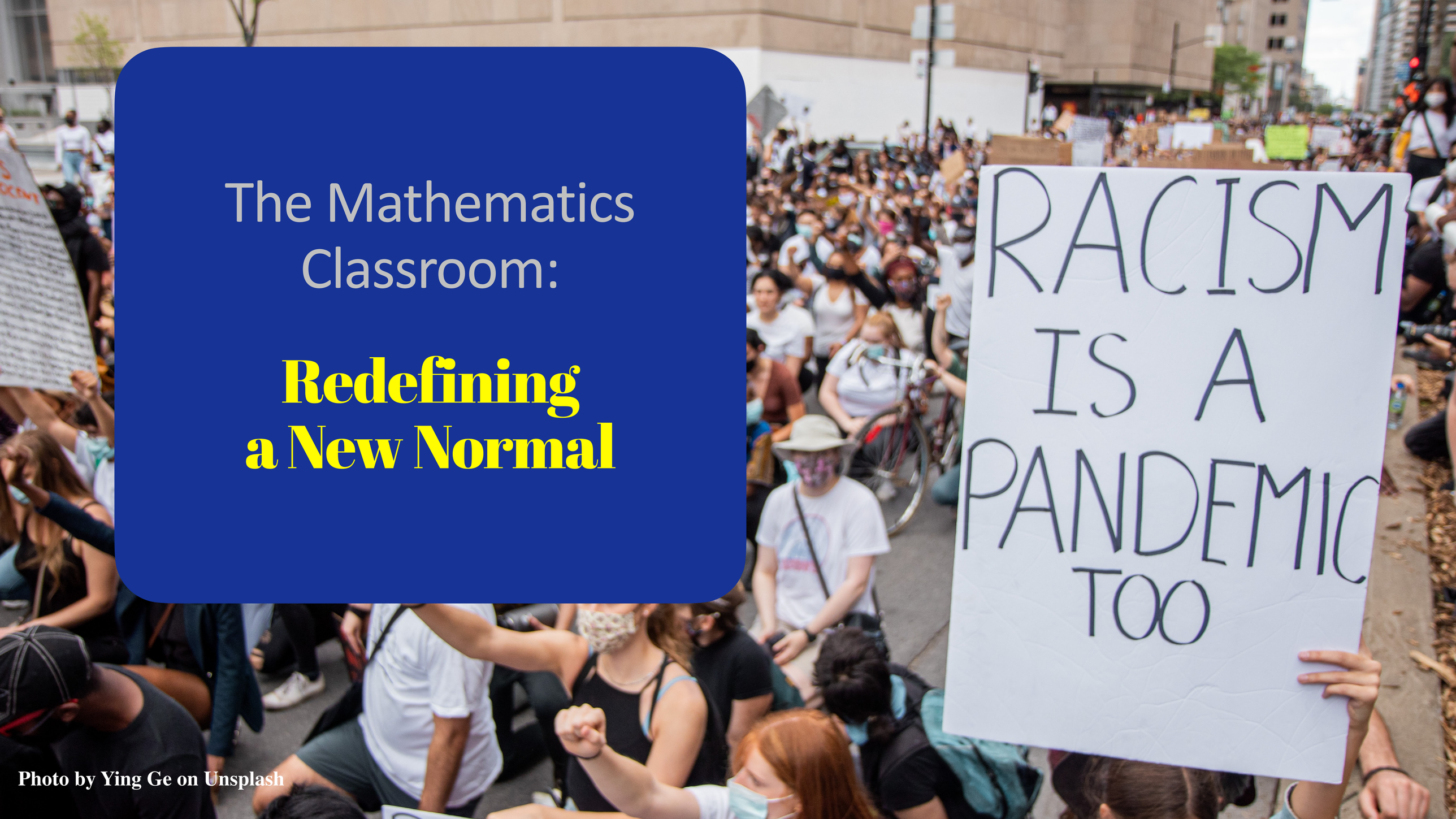
TODOS

Mathematics for ALL

Photo by Austin Pacheco on Unsplash



The Mathematics Classroom:

Redefining a New Normal

Photo by Ying Ge on Unsplash

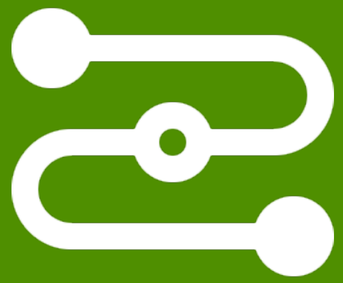
BIENVENIDOS

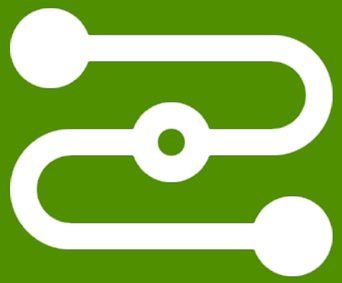
The Mathematics Classroom:

Redefining a New Normal

TODOS
Mathematics for ALL

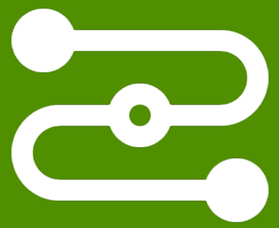
SHARE IN THE CHAT: **WHAT IS THE ROLE OF LANGUAGE IN THE MATH CLASSROOM?**





Intro

20 MINUTES

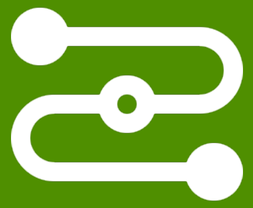


Experiencing “Stronger and Clearer Each Time”

25 MINUTES

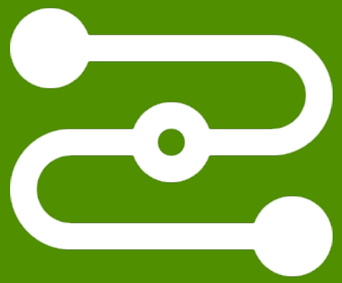
Debriefing the experience

10 MINUTES



Closing

5 MINUTES



Intro

20 MINUTES

Facilitators

Emma Trevino
Mathematics Educational Consultant

- Friend
- Teacher
- Professional Developer
- Coach
- Learner
- Listener
- Leader
- Advocate
- 2020 Iris Carl Awardee

Carmen Silvas Whitman
Director, Mathematics for All, Consulting

- Mother
- Grand Mother
- Sister
- Educator
- Professional Developer
- Author
- Listener
- Advocate

Luis Harold Asturias Méndez
Director, Center for Mathematics Excellence and Equity

- Father
- Grand Father
- Teacher
- Professional Developer
- Latino
- English learner
- Leader
- Advocate

We gratefully acknowledge the Native Peoples on whose ancestral homelands we gather, as well as the diverse and vibrant Native communities who make their home here today.

—National Museum of the American Indian

https://americanindian.si.edu/
https://native-land.ca/

Norms

Listen with attention

Norms

Listen with attention

Speak with intention

Norms

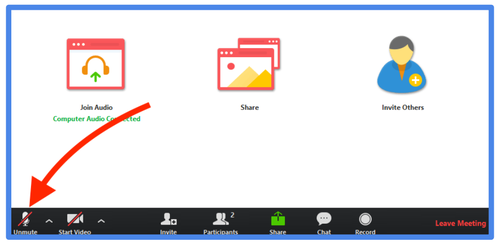
Listen with attention

Speak with intention

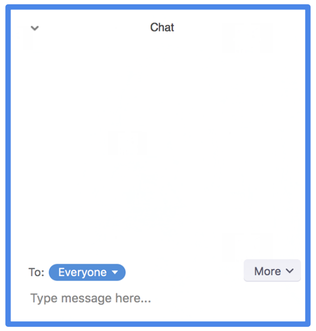
Mind the group’s wellbeing

Zoom Norms

Mute your sound when not speaking.

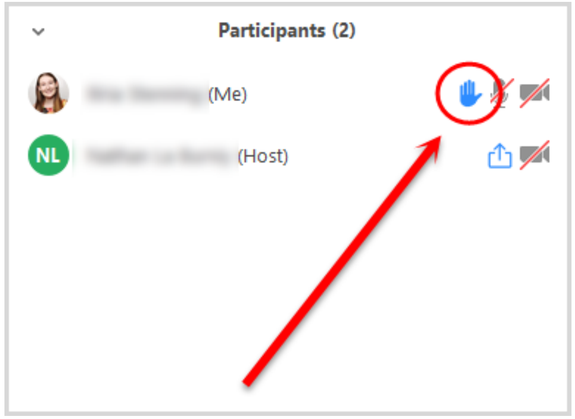


Use the chat box to ask questions/ask for support in the Breakout Rooms



Actively Participate

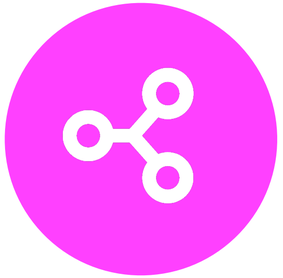
Wanna share?
(hand raising button)



Be flexible.

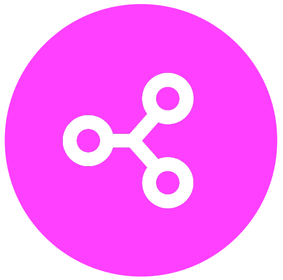
Have fun!

Outcomes—to better understand...



Language & Mathematics
are interconnected.

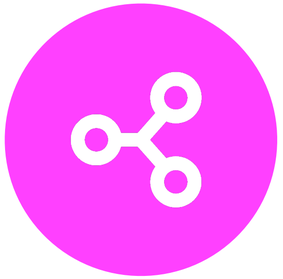
Outcomes—to better understand...



Language & Mathematics are interconnected.

Math Language Routines (MLRs) develop both math and language simultaneously.

Outcomes—to better understand...



Language & Mathematics are interconnected.

Math Language Routines (MLRs) develop both math and language simultaneously.

Student agency is essential for learning.

“

Three pillars:

Academic Achievement

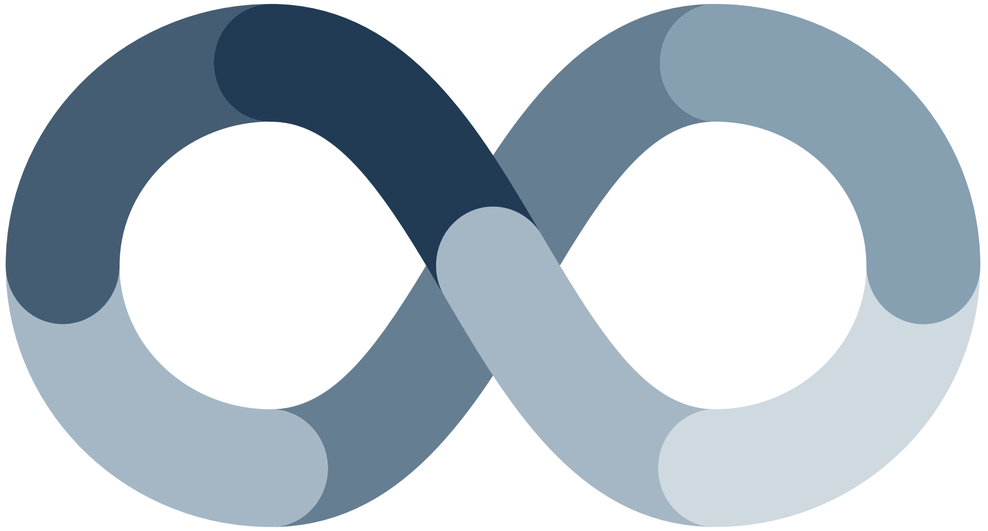
Cultural Competence

Sociopolitical Consciousness

Gloria Landson-Billings

What is the role of language in math class?

Students learn and practice mathematics by *using* language.



Math learners are always simultaneously developing their mathematical reasoning *and* their language.

As students grow in their use of language, they also grow in their understanding of math concepts, which supports their development of more language...

We can use activity structures that support students to develop both at the same time: Math Language Routines.

Math Language Routines

1. Stronger & Clearer Each Time
2. Collect & Display
3. Critique, Correct, Clarify
4. Information Gap
5. Co-craft Questions
6. Three Reads
7. Compare & Connect
8. Discussion Supports

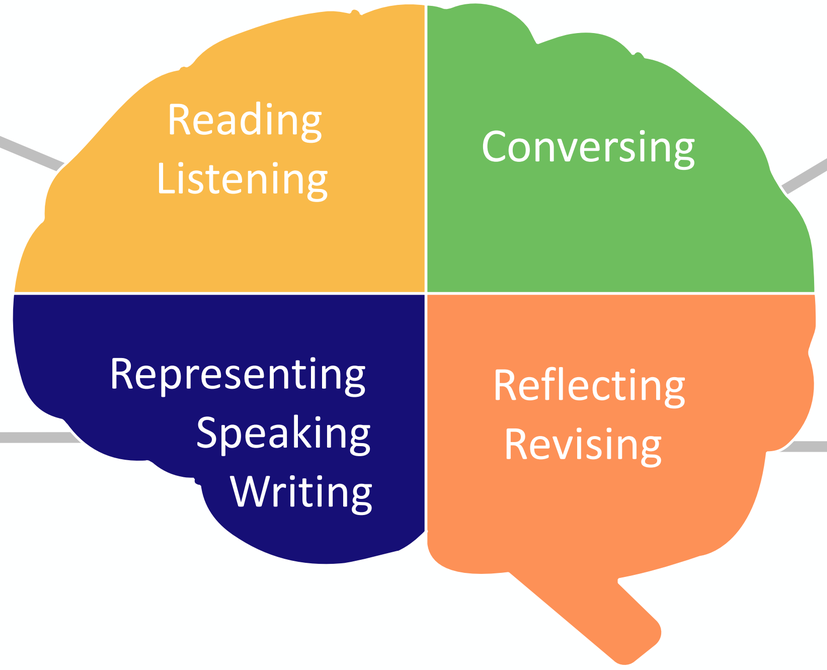
Understanding Language/SCALE
Stanford Graduate School of Education

Math Language Routines

All learners are developing language and math content expertise in our classrooms simultaneously. Routines to scaffold and structure discourse and writing allow students to process, share, and revise their mathematical thinking *and* also further develop their language.

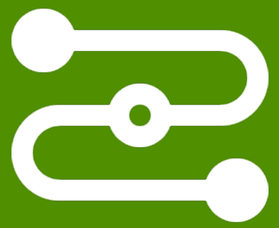
Support Sense-making

Cultivate Conversations



Optimize Output

Maximize Linguistic and Cognitive Meta-Awareness



Experiencing “Stronger and Clearer Each Time”

25 MINUTES

STRONGER AND CLEARER EACH TIME

What:

Students individually write an initial draft response to a prompt, then have 2-3 opportunities to verbalize and receive feedback on their response with a sequence of partners -- refining and clarifying with each iteration-- and then write a revised response that is stronger and clearer than their initial draft.

Why:

Provides a structured, interactive opportunity for students to revise and refine both their ideas and their language by leveraging students as a 'rehearsal audience' for each other, and by distributing peer ideas and words as a resource for the class.

When:

When you are ready to consolidate understanding and reach agreement on shared language for communicating and generalizing about mathematical ideas.

Take a few minutes to work SOLO on this task:

It is important in mathematics to give clear and logical explanations.
Please take a few minutes to write down your ideas.

What is the definition of an even number?
Explain why the sum of two even numbers is always even [draft an argument for why this is true].

Successive pairs feedback

Stronger [**mathematics**]:
Definitions, examples, counter-examples, generalizations, globally accepted truths (theorems, axioms, etc.)

Clearer [**language**]:

Purpose, audience, precision, clarity, logic, structure, completeness, etc.

The steps:

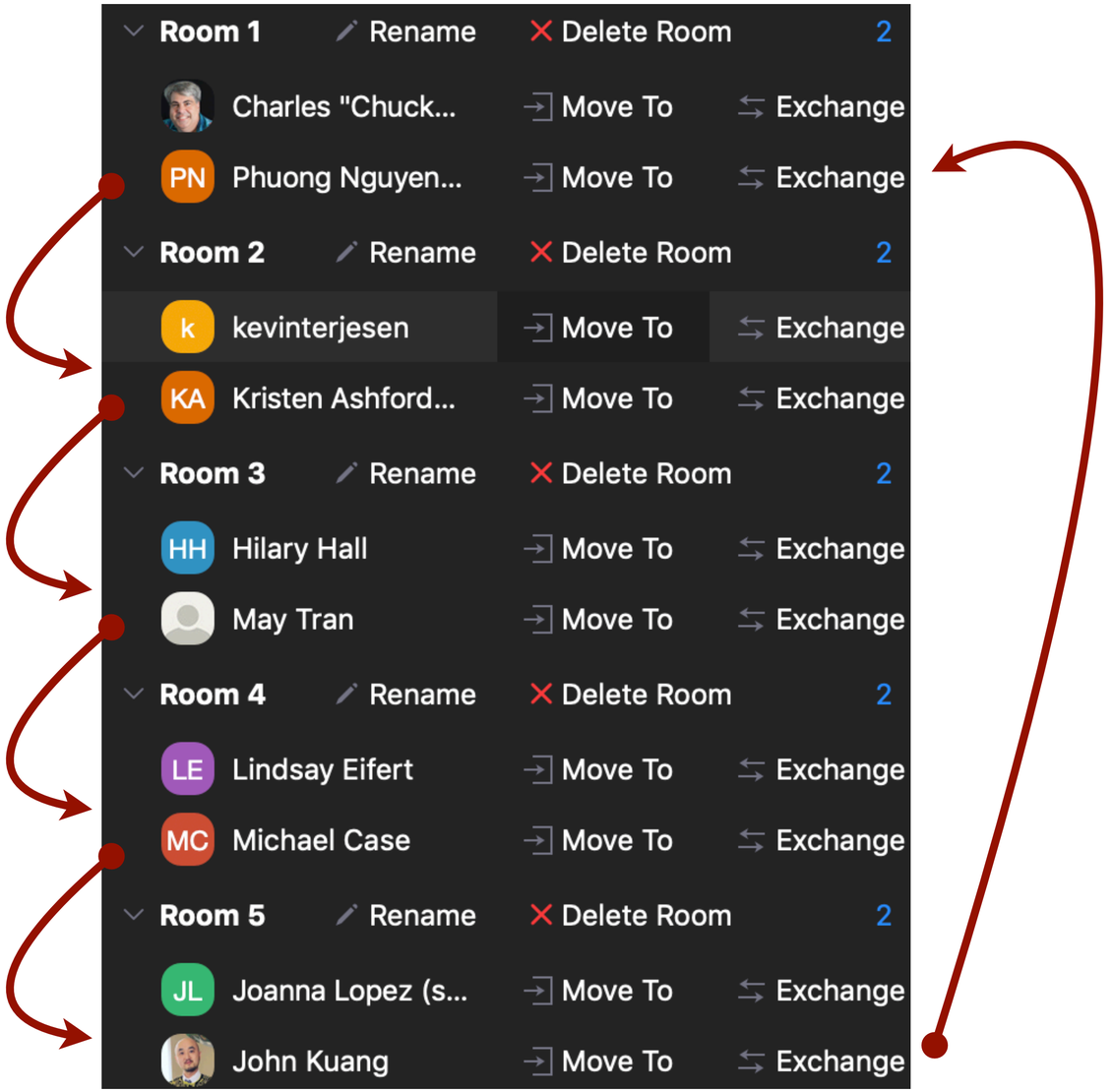
1. Random pairs
2. The first person in the pair is **A** the second one is **B**.
3. For two minutes: A reads draft **AND** B gives feedback
4. Two minutes later [switch]: B reads draft **AND** A gives feedback
5. Thank your partner and be ready to switch partner.

Switching partners:

A stays in the same room.

B goes to the next room.

[Person B from group 1 joins Person A in group 2;
B from group 2 joins A in group 3;
B from group 3 joins A in group 4; etc.
And, **B from last group joins A in group 1**]



Then repeat the process:

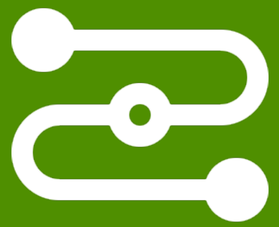
A reads; **B** provides feedback.

Two minutes later:

B reads; **A** provides feedback.

Take a few SOLO minutes to re-write your draft:

1. Write your second draft.
2. We'll ask a few of you to share.



Debrief The Experience

10 MINUTES

2) Explain why the sum of two even numbers is always even.

because it hasent been proven that its not

2) Explain why the sum of two even numbers is always even.

Because an even number plus an even number makes the sum also divisible by two therefore, its even.

1) What is the definition of an even number?

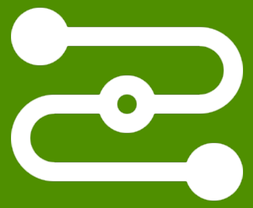
I think the definition of an even number Is a number Two time's like 1+1=2, two is an even number. If you put numbers on a paper and start at two and skip count you will find most of the even numbers.

2) Explain why the sum of two even numbers is always even.

Becaus an even plus an even equals even like 2+4=6, six is even and 12+14=26 twenty six is also even. two even numbers ALWASe equal an even.

2) Explain why the sum of two even numbers is always even.

Because when you go on a Date
you go with another perso and theres
two of you and if you go on
a double date theres four of you
but if there is a third wheel cause
there date didn't show up that's
just awkward and Odd... No pun intended



Closing & Q/A

5 MINUTES

Reflection

- Did your argument become stronger? clearer?
- What helped you the most?
- What feedback was most useful?

Three Big Ideas

Language & Mathematics
are interconnected.

Math language routines
develop both simultaneously.

Student agency is
essential for learning.

Individual Session Feedback

We value your input. Please take a few minutes to provide TODOS with feedback on each of the sessions you attend. Answering will allow us to improve our conferences moving forward.

https://bit.ly/3zebrd6

We encourage you to tag others and tweet highlights from the conference using #TODOS2021

Some of our favorite resources

- The Movement to Prioritize Antiracist Mathematics Ed by TODOS June 2020.edited
- Mathematics Education Through the Lens of Social Justice.pdf
- The Impact of Identity in K-8 Mathematics: Rethinking Equity-Based Practices
- High School Mathematics Lessons to Explore, Understand, and Respond to Social Injustice
- 5 Practices for Orchestrating Productive Mathematics Discussions, 2nd Edition
- Proportional Relationships Decluttered White Paper OCT20
- A Pathway to Equitable Math Instruction
- https://equitablemath.org/
- https://www.elequity.org/
- https://www.elsuccessforum.org/
- https://ell.stanford.edu/
- https://www.colorincolorado.org/
- https://remezcla.com/film/eva-longoria-selena-save-stories

THANK YOU.