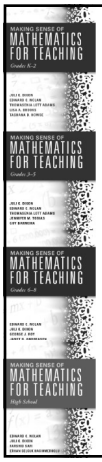
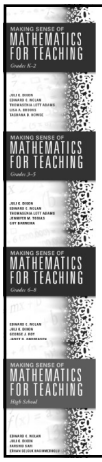


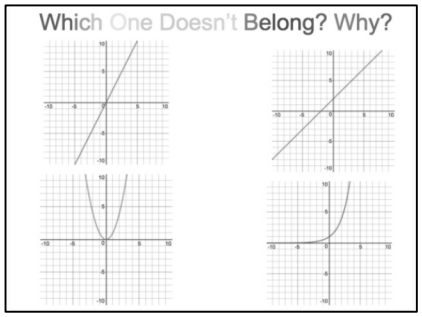
Amplifying Students' Mathematical Brilliance: Learning Mathematics Through Listening, Speaking, Reading, & Writing

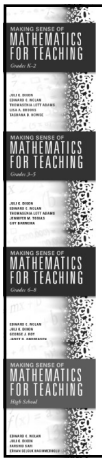
DNA MATHEMATICS

#DNAmath



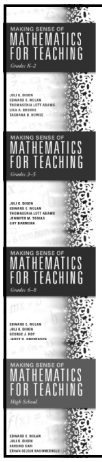
Let's Get Ready





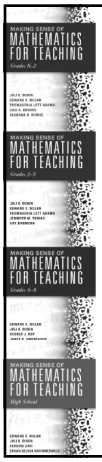
Check-in

- What comes to mind when you think about literacy and mathematics?
- What ways have you infused literacy into your mathematics teaching?



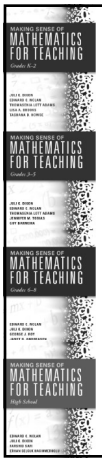
Session Goals

- Develop a shared understanding of what literacy means in the context of mathematics learning.
- Explore ways to infuse literacy strategies in mathematics teaching and learning.
- Reflect on (re)designing tasks to promote and support learner's opportunities to access and engage in mathematics discourse.



Mathematical Practices

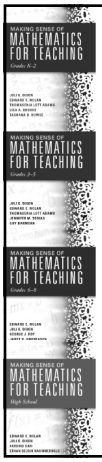
1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.



Literacy & Mathematics

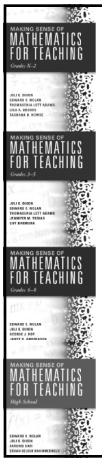



How can we infuse literacy in mathematics teaching and learning?



Anchor Standards for Literacy

Reading	Writing	Speaking & Listening
• Key Ideas and Details • Craft and Structure • Integration of Knowledge and Ideas • Range of Reading and Level of Text Complexity	• Text Types and Purposes • Production and Distribution of Writing • Research to Build and Present Knowledge • Range of Writing	• Comprehension and Collaboration • Presentation of Knowledge and Ideas



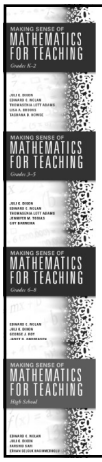
Anchor Standards for Literacy

Speaking & Listening Note

Note on range and content of student speaking and listening

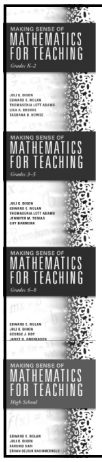
To build a foundation for college and career readiness, students must have ample opportunities to take part in a variety of rich, structured conversations—as part of a whole class, in small groups, and with a partner. Being productive members of these conversations requires that students contribute accurate, relevant information; respond to and develop what others have said; make comparisons and contrasts; and analyze and synthesize a multitude of ideas in various domains.

New technologies have broadened and expanded the role that speaking and listening play in acquiring and sharing knowledge and have tightened their link to other forms of communication. Digital texts confront students with the potential for continually updated content and dynamically changing combinations of words, graphics, images, hyperlinks, and embedded video and audio.



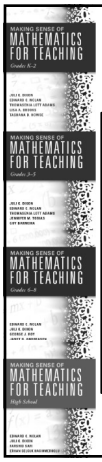
Population Growth Task

In the upcoming task on population growth, please note the **speaking and listening skills** your team uses as we engage in the mathematics.



Discourse Norms

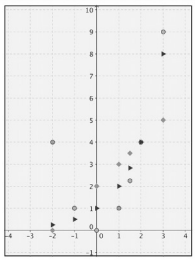
- Provide explanations and justifications with solutions.
- Make sense of others' solutions.
- Communicate when you don't understand or don't agree.

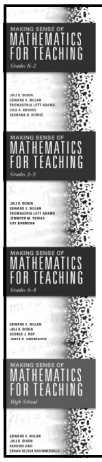


PROBLEM

Examine the series of points provided and determine what type of function(s) could be represented in each case.

Explain your reasoning.

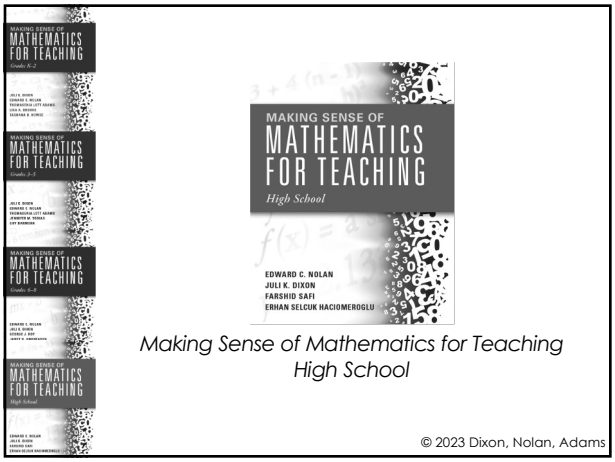




Reflections (Look Fors)

How did the teacher set up the lesson to support mathematical discourse?

What did you observe about the ways students engaged in mathematical discourse?



Making Sense of Mathematics for Teaching High School

Reflections

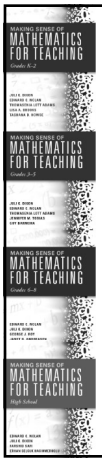
How did the teacher set up the lesson to support mathematical discourse?

What did you observe about the ways students engaged in mathematical discourse?

Engaging Students Through Mathematical Discourse

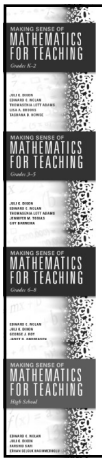
"In addition to explicitly teaching features of language (e.g., specialized mathematical language and syntax of mathematical statements) teachers are responsible for providing students with ***opportunities*** to engage in mathematical discourse across different modalities (e.g., speaking and writing)".

(Smith, 2021)



Plan with the TQE Process in Mind

- Select appropriate **T**asks to support identified learning goals,
- Facilitate productive **Q**uestioning during instruction to engage students in the Mathematical Practices, and
- Collect and use student **E**vidence in the formative assessment process during instruction.



Revisit Session Goals

- Develop a shared understanding of what literacy means in the context of mathematics learning.
- Explore ways to infuse literacy strategies in mathematics teaching and learning.
- Reflect on (re)designing tasks to promote and support learner's opportunities to access and engage in mathematics discourse.