Discussion Supports

(Math Language Routine 8 – MLR 8)

Background

The eight Math Language Routines, or MLRs, are part of the Illustrative Math® (IM®) K-12 Math curriculum. This curriculum has been adapted for adult learners and can be accessed on the PA Adult Education Resources website. The MLRs provide the chance for students to reason, communicate, and strengthen their understanding in a collaborative and supportive environment.

Zwiers et al. (2017) identify four design principles that guide mathematical language routines:

- Supporting sense-making
- Optimizing output
- Cultivating conversation
- Maximizing linguistic and cognitive meta-awareness

For more information, visit Math Language Routines: Discourse with a Purpose.

Purpose

MLR 8 supports robust and productive oral discussions around mathematical topics. Rather than a step-by-step model like the other routines, MLR 8 presents a strategy to include the other math language routines as part of a lesson planning model. For example, as part of a warm-up or introduction to new content, consider which routines support this part of the lesson. MLR 2, Collect and Display, provides an opportunity for students to use words and images to explain their understanding of a mathematical problem. Similarly, routines like Critique, Correct, and Clarify (MLR 3) or Co-craft Questions and Problems (MLR 5) could serve as a tool to guide the practice portion of a lesson.

Goal

- Students will develop mathematical vocabulary and language by engaging in guided conversations around mathematical topics.

Audience

- Intermediate to advanced English learners
- English learners transitioning to adult basic education classes
- Adult basic education learners

Supported Standards for Mathematical Practice

- **Standards for Mathematical Practice 1:** Make sense of problems and persevere in solving them.
- **Standards for Mathematical Practice 3:** Construct viable arguments and critique the reasoning of others.
- **Standards for Mathematical Practice 5:** Use appropriate tools strategically.
- **Standards for Mathematical Practice 6**: Attend to precision.

Materials

- Student template for appropriate routine(s)

Procedure

1. Provide a mathematical problem.
2. Follow the appropriate procedures for the selected routine.

Tips for Using this Routine

- Be sure that students have had the opportunity to practice the selected routine(s) at least once before.
- Evaluate the routines to determine which one might best encourage conversation and discussion.
- Model how to ask for and share information, clarify questions and information, and collaborate to find a solution.
- If you would like support with implementing this routine from an instructional coach, email dschauer@tiu11.org.

Reference

Zwiers, J., Dieckmann, J., Rutherford-Quach, S., Daro, V., Skarin, R., Weiss, S., & Malamut, J. (2017). *Principles for the design of mathematics curricula: Promoting language and content development*. Understanding Language/Stanford Center for Assessment, Learning, and Equity. https://ul.stanford.edu/sites/default/files/u6232/ULSCALE_ToA_Principles_MLRs__Final_v2.0_030217.pdf ul.stanford.edu