Compare and Connect
(Math Language Routine 7 – MLR 7)

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

This MLR supports student understanding by comparing different mathematical strategies, representations, and approaches.

Goal

- Students identify and then compare and contrast their own understanding of a mathematical problem with their peers' approaches, examples, and language by creating a visual display demonstrating their process.

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 4**: Model with mathematics.
- **Standards for Mathematical Practice 6**: Attend to precision.
- **Standards for Mathematical Practice 7**: Look for and make use of structure.

Materials

- A mathematical problem focused on a current topic or skill
- Student template

Procedure

1. Provide a mathematical problem.
2. Individually or with a partner, students create a visual display of their reasoning to solve the problem.
3. Students or pairs compare and contrast their strategy with other students' strategies.
4. As a whole group, compare and contrast the different strategies, making connections between the different representations.

Tips for Using this Routine

- Model the routine by demonstrating the process.
- Model how to ask for and share information, clarify questions and information, and collaborate to find a solution.
- Support students to think aloud.
    - What do you notice?
    - Do you agree with this strategy? Why? Why not?
    - What are other ways to solve this problem?
- This routine can work well in a virtual setting where student pairs or small groups use breakout rooms to create their visual displays. Students can use Google Slides or documents to create their displays.
- 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