

# Math Practice 7: Look for and Make Use of Structure (Facilitation Guide)

## Presenter:

## Intended Use

This facilitation guide is intended to be used by educators when viewing the presentation of Math Practice 7: Look for and Make Use of Structure. State Support Team staff, Educational Service Center consultants, districts, and schools are encouraged to use the resources as part of a professional learning series that covers all 8 of the Standards for Mathematical Practice.

Viewing the Math Practice series can be done in any order. While viewing the series is encouraged in groups, it can also be done individually. To get the full benefit of the professional development series, educators should engage in the tasks and participate in local discussions on Mathematical Practice. Therefore, viewing the professional learning series in small groups is encouraged over individuals watching it in isolation.

## Reproducing the Facilitation Guide

If you would like to make copies of any portion of this facilitation guide or accompanying PowerPoint presentation, please credit the Ohio Department of Education and Workforce.

## During Facilitation: Discussion Questions

For each discussion question(s), pause and facilitate a group discussion.

### DISCUSSION QUESTION

*PowerPoint Slides 24: Kindergarten-Grade 5 Task*

- How many ways can you find to solve the expression  $48 \times 5$ ?
- Discuss:
  - Common ways you found to solve the expression  $48 \times 5$ .
  - Identify different ways you found to solve the expression  $48 \times 5$ .
  - Which methods are your students likely to produce?
  - Which methods are your students unlikely to produce? Why?

### DISCUSSION QUESTION

*PowerPoint Slides 25: Grades 6-8 Task*

- If there were a row of 50 connected equilateral triangles, what would the perimeter be?
- Share how you determined the perimeter.
- Which methods are your students likely to use as they come up with their answers?
- Which methods are your students unlikely to come up with? Why?

## DISCUSSION QUESTION

*PowerPoint Slides 26: Grades 9-12 Task*

- Consider two algebraic expressions  $(n + 2)^2 - 4$  and  $n^2 + 4n$ .
  - Use the figures to illustrate why the expressions are equivalent.
  - Verify this result algebraically.
- Share how you illustrated the equivalence of the two expressions and how you verified the results.
- Which methods are your students likely to use as they come up with their answers?
- Which methods are your students unlikely to come up with? Why?

## DISCUSSION QUESTION

*PowerPoint Slides 28: Discussion Debrief*

- Where in the Breakout Room tasks did you observe opportunities for students to:
  - Look for connections between the conceptual and abstract levels
  - Create and use representations to organize, record, and communicate math ideas
  - Make ideas available for deeper reflection and allow for explicit connections
  - Demonstrate flexibility with numbers
  - Understand or recognize patterns and functions

## DISCUSSION QUESTION

*PowerPoint Slides 31: Discussion*

- What do you think Math Practice 7: Look for and Make Use of Structure means or looks like at your grade level/course?
- How does your school or district support students' progression of the usage of structure across grade levels and/or courses?

## DISCUSSION QUESTION

*PowerPoint Slides 35: Discussion Debrief*

- What do you think Math Practice 8: Look for and Express Regularity in Repeated Reasoning means or looks like at your grade level/course?
- How does your school or district support students' progression of repeated reasoning across grade levels and/or courses?

## Resources Links

*Ohio Department of Education Documents*

- [Standards for Mathematical Practice](#)
- [Kindergarten-Grade 5](#)
- [Grades 6-8](#)
- [High School](#)

*Other National Resources*

- [Inside Mathematics](#)
- [Illustrative Mathematics](#)
- [Robert Kaplinsky: Math CCSS Math Practices Readable](#)
- [Standards for Mathematical Practice: Commentary and Elaborations for 6-8](#)

### Other Resources

- [Implementing Standards for Mathematical Practices](#) from Louisiana Believes
- [Implementing the Mathematical Practice Standards](#)
- [Math Argumentation Rubric](#) (Draft)
- [Mathematical Practice Standards](#) by Charles A. Dana Center
- [Ohio Learning Standards](#)
- [Standards for Mathematical Practice Rubric](#)
- [The Power of Making Mistakes in Learning Math”](#)
- [What Isn’t Mathematical Modeling?](#)

### References

Boston, M., Dillon, F., Smith, M., & Miller, S. (2017). *Taking Action Implementing Effective Mathematics Teaching Practices, Grades 9-12*. Reston, VA: The National Council of Teachers of Mathematics

Graham, K., Cuoco, A., & Zimmermann, G., (2010). *Focus on High School Mathematics: Reasoning and Sense Making*. Reston, VA: The National Council of Teachers of Mathematics

Illustrative Mathematics. (2014, May 6). *Standards for Mathematical Practice: Commentary and Elaborations for 6–8*. Tucson, AZ.

Koestler, C., Felton-Koestler, M. D., Bieda, K., & Otten, S. (2013). *Connecting the NCTM process standards and the CCSSM practices*. Reston, VA: The National Council of Teachers of Mathematics.

O'Connell, S., & SanGiovanni, J. (2013). *Putting the practices into action: Implementing the common core standards for mathematical practice, K-8*. Portsmouth, NH: Heinemann.

### Conversation Notes: