

Mathematical Practice Virtual Professional Learning Series Math Practice 7: Look for and Make Use of Structure

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Intended Use

This facilitation guide is intended to be used by educators when viewing the voice-over recording of Math Practice 7: Look for and Make Use of Structure. Districts and schools are encouraged to use the resource as part of a professional learning series that covers all 8 of the Standards for Mathematical Practice.

Viewing the recordings of the Math Practice sessions can be done in any order; however, it is beneficial to view Math Practice 7 before Math Practice 8. To get the full benefit of the professional learning series, educators should engage in the tasks and participate in local discussions on the Mathematical Practice. Therefore, viewing the professional learning series in small groups is encouraged over individuals watching it in isolation.

Reproducing the Facilitation Guide

Please credit the Ohio Department of Education if making copies of any portion of this facilitation guide or [accompanying PowerPoint presentation](#).

During Facilitation: Discussion Questions

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

Discussion Question

PowerPoint [Slides 21-27](#): Focusing on MP.7, work on “How many Squares are in the Border of an $n \times n$ grid?” Task. Use Chat to write your responses.

1. What do you notice about alternative thinking processes that can be used for solving this Task?
2. What previously learnt concepts are helpful for solving this Tasks?
3. What do you wonder about correctness of those thinking processes?
4. What do you think about equivalence of variable expressions representing the number of squares on the Border of an $n \times n$ grid?
5. What do you think about evidence of MP.7 in this Task?

Discussion Question

PowerPoint [Slide 35](#): Find the [Area of the Figure Video](#)

1. What do you notice about teacher’s questions?
2. What do you notice about students’ thinking?
3. How do you think students’ thinking proficient in SMP.7 should look like?

Discussion Questions

Discussions take place in Breakout Rooms A. Each breakout Room A is composed of educators from the same grade bend. These problems can be accessed from Jamboard.

PowerPoint [Slide 38](#): Elementary School problems that promote SMP.7

PowerPoint [Slide 39](#): Middle School problems that promote SMP.7

PowerPoint [Slide 40](#): High School problems that promote SMP.7

1. What evidence of SMP.7 do you notice in the problems?
2. What questions can you use to direct your students towards using SMP.7?
3. What teaching practices can you employ to make students use SMP.7 skills?
4. How can you help your students to apply their SMP.7 skills as they move to the new problems?

PowerPoint [Slide 41](#): Share Out opportunities

Discussion Questions

Discussions take place in Breakout Rooms B. Educators stay in the same Breakout Rooms and discuss the same 3 problems they discussed in Breakout Rooms A. These problems can be accessed from Jamboard. This time the focus of the discussion is on Standards for Math Practice Progressions document.

PowerPoint [Slide 50](#): Elementary School problems that promote SMP.7

PowerPoint [Slide 51](#): Middle School problems that promote SMP.7

PowerPoint [Slide 52](#): High School problems that promote SMP.7

1. How do you think SMP.7 skills should look like at this grade bend?
2. What do you think SMP.7 skills in earlier grades and SMP.7 skills in subsequent grades should be?
3. How can you help your students to strengthen their SMP.7 skills as they progress through the grades?

PowerPoint Slide 53: Share Out opportunities

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
- [The Power of Making Mistakes in Learning Math](#)
- [Implementing the Mathematical Practice Standards](#)
- [Mathematical Practice Standards](#) by Charles A. Dana Center
- [Standards for Mathematical Practice Rubric](#) by the Ohio Department of Education
- [Ohio Learning Standards](#)
- [Math Argumentation Rubric](#) (Draft)
- [What Isn't Mathematical Modeling?](#)

References

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

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