

Mathematical Practice Virtual Professional Development Series

Math Practice 3: Construct viable arguments and critique the reasoning of others

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Intended Use

The facilitation guide is intended to be used by educators when viewing the voice over recording of Math Practice 3: Construct viable arguments and critique the reasoning of others. Districts and schools are encouraged to use this resource as part of a professional development series that spans all 8 Standards for Mathematical Practice.

Viewing the recordings of the Math Practice sessions can be done in any order. Viewing the recording is encouraged to be done in groups, but it can 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 the Mathematical Practice.

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.

During Facilitation: Discussion Questions

Pause the recording at the times indicated below to discuss each question.

Discussion Question

PowerPoint Slide 9: What makes a courtroom so dramatic?

Discussion Questions

PowerPoint Slide 11: Group A

- [Google slide 3](#): What is the purpose of a trial?
- [Google slide 4](#)
 - Who are the characters in a courtroom?
 - Rank the level of convincing each person needs on the line from easiest to hardest.
 - Discuss your rationale for your rankings.
- [Google slide 5](#): If you wanted to convince someone of something, create a scenario and discuss who in your life would play each of the give roles.
- [Google slide 6](#)
 - Discuss how the roles shown in the slide relate to a mathematics class?
 - How do the roles relate to Math Practice 3: Construct viable arguments and critique the reasoning of others?
- [Google slide 7](#)
 - Who is the judge?
 - What role does the judge play in your classroom?

Discussion Question

PowerPoint Slide 12: What is proof?

Discussion Questions

PowerPoint Slide 23: Convince Me!

- Grades K-2 tasks [slides 30-32](#)
- Grades 3-5 tasks [slides 33-35](#)
- Grades 6-8 tasks [slides 36-38](#)
- High School tasks [slides 39-41](#)

Discussion Questions

PowerPoint Slide 26: Convince Me!

- Grades K-2 task [slides 42-46](#)
- Grades 3-5 task [slides 47-55](#)
- Grades 6-8 task [slides 56-65](#)
- High School task [slides 66-75](#)

Discussion Questions

PowerPoint Slide 37: Assess

- What do you like and what do you not like about them?
- How could you use them in your classroom?
- Do some need to be modified for your classroom? If so, how?

Resource Links

- [Math Argumentation Rubric](#)
- [Student Language Math Argumentation Rubric](#)
- [NCTM Look Fors](#)
- [Standards for Mathematical Practice Rubric](#)
- [Performance Level Descriptors for Grades K-2 Mathematics](#) by CCSSO

References

- [“Levels of Convincing”](#) by Robert Kaplinsky.
- [“How Mathematicians are Storytellers and Numbers are the Characters”](#) by Marcus du Sautoy.
- [Where Proof, Evidence, and Imagination Intersect](#) by Patrick Honner.
- Putting the Practices Into Action by Susan O’Connell and John SanGiovanni
- Taking Action: Implementing Effective Mathematics Teaching Practices
- Developing Essential Understanding of Mathematical Reasoning
- Focus in High School Mathematics: Reasoning and Sense Making
- [“The Power of Making Mistakes in Learning Math”](#) posted on the Tarheelstate Teacher. Pay special attention to the 8 Reasons Why Making Mistakes in Math Class Are Valuable, which she took from Tracy Zager’s book *Becoming the Math Teacher You Wish You Had: Ideas and Strategies from Vibrant Classrooms*.
- [Implementing Standards for Mathematical Practices](#) by Louisiana Department of Education
- [Math Practice #3](#)
- [Implementing the Mathematical Practice Standards](#)