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Spaces for Children's Development of Structure, Pattern, and Repeated Reasoning

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Spaces for Children's Development of Structure, Pattern, and Repeated Reasoning

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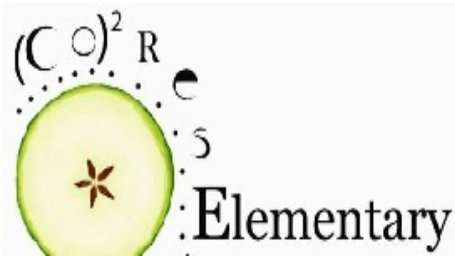
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Bowling Green State University

Saturday 9:45am to 11:00am

R02 (Session 615)



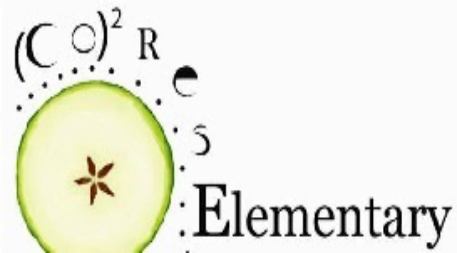
Project supported by a grant under the federally funded Improving
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NCTM
New Orleans

Session Focus K-5

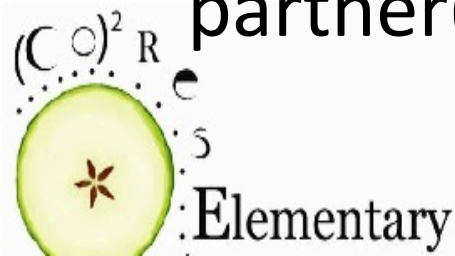
Structure, patterns, and repeated reasoning are key features of two Standards for Mathematical Practice (i.e., #7 and #8).

Our goal is to explore the difference of these two SMPs through a task designed for learners of differing abilities and connect the SMP and the mathematics content exhibited through the task engagement.



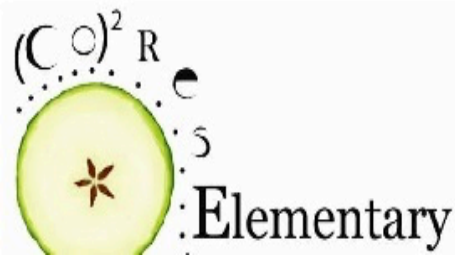
Norms for Mathematics Task

- We do not steal the “ice-cream.”
- We will use pictures, graphs, tables, symbols, numbers, manipulatives, and/or words to assist us while doing mathematics.
- We will be mathematically precise whenever possible.
- After sufficient individual think time we will explain our thinking to our shoulder partner(s).



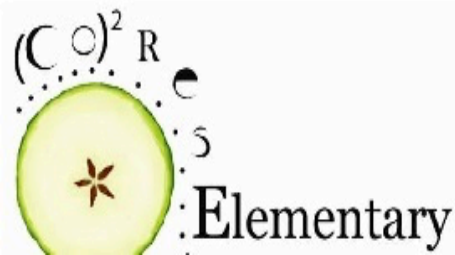
Crossing the River

Two adults and two children need to cross a river that is too large and too dangerous to swim across. They have one small boat available to help them. After testing the boat they find that it can hold either one adult, or one or two children. Everyone in the group is able to row the boat. In the space below **show** how you get them all across the river.



Crossing the River

- How many **one-way** trips does it take for the two adults and two children to cross the river?
- How many **one-way** trips would it take for three adults and two children to cross the river? Explain.
- How many **one-way** trips would it take for eight adults and two children to cross the river? Explain.
- With your partner, develop (represent it in your own way below) a system for knowing how many **one-way** trips it would take if there were “n” number of adults and two children.



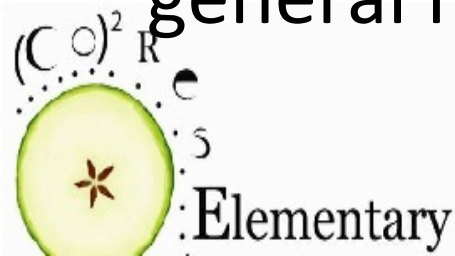
Standards for Mathematical Practice 7 & 8

- **7 Look for and make use of structure.**

Mathematically proficient students look closely to discern a pattern or structure.

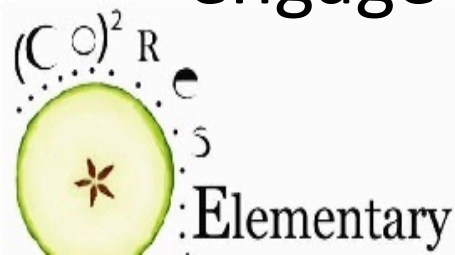
- **8 Look for and express regularity in repeated reasoning.**

Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts.



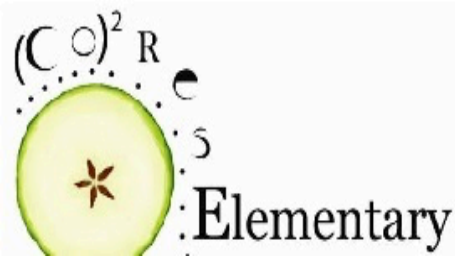
Reflecting on SMP 7 and 8

- Explain how one or both standards were exhibited (or not) by us as we engaged in Crossing the River.
- Think of one other example in from your collective teaching experiences when you have engaged in this practice or seen students engage in this practice.

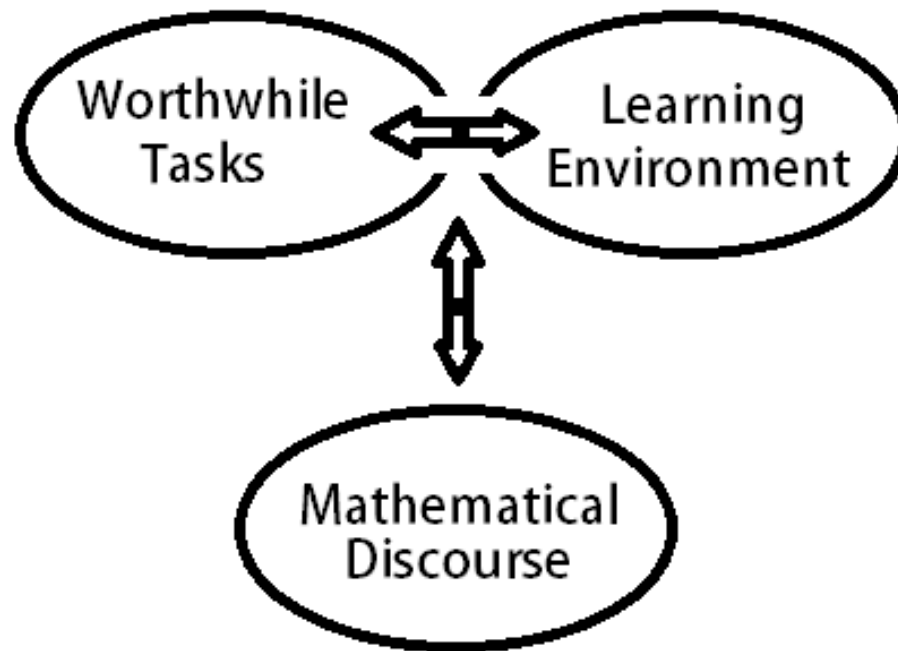


Reflecting on SMP 7 and 8

- How are SMP 7 and 8 different from one another?
- Do SMP 7 and 8 fit together in any way? Explain why or why not?



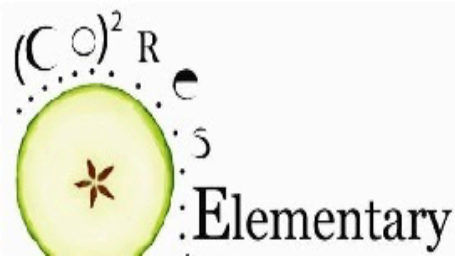
Pedagogically Promoting the Standards for Mathematical Practice



Questions?

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