

Math 5 Rs for Active Student Engagement



1. Build Resilience in Problem-Solving

Mathematical thinkers possess a growth mindset, which allows them to continue learning despite challenges when solving problems. Students can recognize, make sense of, and solve problems that arise in the real world. Problem-solving involves using a variety of appropriate strategies while determining the effectiveness of the strategy selected and the validity of the solution.

2. Apply Reasoning about Quantities and Relationships

Mathematical thinkers make sense of the relationships between quantities and model situations symbolically when applicable. Thinking abstractly and about numbers as quantities involves developing a clear picture of the problem at hand, thinking about the units involved, and paying attention to the meaning of numbers and variables (including unknown values) rather than just how to calculate them, and knowing and being able to use the different properties of operations flexibly.

3. Reflect using Discourse and Precision

Mathematical thinkers debate and question ideas to obtain a deeper understanding of mathematics. Justifying and defending ideas is observable when students actively participate in mathematical discourse. Students should communicate precisely with others and use appropriate terminology throughout all grade levels, beginning in kindergarten. When solving problems, students can use their number sense and apply operations correctly.

4. Select and Use Representation and Tools

Mathematical thinkers select and use mathematical representations along with tools appropriate for their grade or course to solve problems. Students should familiarize themselves with multiple representations and tools to determine which would be helpful as they work toward making sense of and solving problems.

5. Identify Relationships Using Structure and Patterns

Mathematical thinkers look for structure or patterns, including repeated calculations, to make generalizations and solve problems. Students connect previous learning when analyzing problems to recognize an efficient approach and think flexibly about numbers. Mathematical thinkers notice repetition and relationships and use them over time to solve problems quickly and with fewer steps.