

What to Look for in Students' Writing in Mathematics

What cognitive tools do we use to solve problems and communicate one's mathematical reasoning?	<p>Writing in the mathematics is no different than any other objective writing. "Writing is thinking on paper, or talking to someone on paper" (William, 1976, p. vii). Writing in mathematics allows the teacher to peek into the writer's mind as the writer attempts to communicate her mathematical reasoning. In fact, the perceptive teacher can witness all Common Core Standards for Mathematics, Math Standards for Practices (MSP), one through eight, in the students' writing.</p> <p>In addition to seeking evidence of the MSP, the teacher is looking for evidence of certain thinking tools:</p> <ul style="list-style-type: none"> • Images (e.g., models, drawings, pictures, schematics, etc.) • Concepts (i.e., mathematical ideas that govern the math problem) • Facts (i.e., declarative knowledge within the context of the specific problem) • Language (i.e., formal mathematical vocabulary and text in context), and • Procedures (i.e., models, strategies, algorithms, heuristics, etc.)
Word Problem:	<i>How many 3/4-cup servings are in 2/3 of a cup of yogurt?</i>
Teacher/Student Work: Communicate your mathematical reasoning/thinking using images, words, and numbers.	
Student's writing transcribed verbatim	
Finding Thinking Tools (ICFLP)—this is where the teacher identifies and connects student's use of images, concepts, facts, language and procedures to the student's mathematical thinking.	<p>Image:</p> <p>Concept:</p> <p>Facts:</p> <p>Language:</p> <p>Procedure:</p>
Alternative strategies for solving the word problem above	
Implications for teaching and learning	

Immordino-Yang, M.H. (2016). Emotions, learning, and the brain: Exploring the educational implications of affective neuroscience. New York, N.Y. W.W. Norton & Co.

Zinsser, W.K. (200?) On writing well: The classic guide to writing nonfiction. New York, N.Y. HarperCollins Publisher.