

1. Read the “New Practices in Teaching Mathematical Definitions” handout.
2. Read the “Concept Definition and Concept Image” handout.
3. From “Surprises from Mathematics Education Research: Student (Mis)use of Mathematical Definitions,” *American Mathematical Monthly* Volume 111, Number 5, May 2004, pp. 411-424 (available in the periodical section of the library or via a link at Mike Ward’s webpage <http://www.wou.edu/~wardm/ward.html>), read sections 1, 2 and 4 (Introduction, Framework, and The Surprises). Much of the mathematics mentioned in the article will be unfamiliar. When you reach some unfamiliar mathematics, just skim over it.
4. Write a short essay (1-2 pages) in which you list and discuss each of the following important ideas from those readings and also give specific ways in which each might help you in your study of mathematics.
 - Stipulated vs. extracted definitions
 - An original example of a word with a stipulated mathematical definition and an extracted definition* (see Details below)
 - Concept image vs. concept definition
 - “Surprise 1” (please write-out the surprise)
 - “Surprise 2”(please write-out the surprise)
 - “Surprise 3” (please write-out the surprise)

(An example of how the idea of stipulated vs. extracted definitions might help you:

Knowing that mathematical definitions are stipulated tells me that I must memorize and use the definitions as given in each course, text, or research paper that I encounter.

I cannot reliably learn mathematical definitions only by looking at examples. In other words, ostensive definition does not work mathematics.)

*Details: Find a word which has a stipulated mathematical definition and an extracted definition. Quote the mathematical definition from an advanced mathematics book (like our text for example), not from the web. Then quote an extracted meaning from a dictionary for your word and give the dictionary from which your definition was obtained. Beware, just because the definition comes from a standard dictionary does not mean it is extracted. A large percentage of definitions in dictionaries are actually stipulated.

Assessment: 0=missing or badly underdeveloped, 1=in development, 2=well developed

	Listed (0-1)	Discussion (0-2)	Application (0-2)
Stipulated vs. extracted definitions			
Word w/ stipulated & extracted def.		N/A	N/A
Concept image vs. concept definition			
“Surprise 1”			
“Surprise 2”			
“Surprise 3”			

	Listed (0-1)	Discussion (0-2)	Application (0-2)
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Word w/ stipulated & extracted def.		N/A	N/A
Concept image vs. concept definition			
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“Surprise 2”			
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