Assignment #1 – Concept of “Number”  
(Due: Fri., Jan. 11th)

Purpose: To help you think deeply about the ideas needed to understand the concept of number.

Part I (Not turned in) – Ideas to think and write about for class discussion

Guiding Questions to write about:
1. What are the core differences in the mission of elementary teachers compared to day care providers?
2. What is the purpose of a “standard” like the Essential Academic Learning Requirements (EALRs) or Grade Level Expectations (GLEs)? (See link to OSPI website on syllabus under “Learning Objectives” for more information.)
3. What is a “number?” For example, “eight” is more than just a word or symbol.
4. How are the concepts of set, subset, element, relation, function, one-to-one correspondence, cardinal numbers, and ordinal numbers important for defining what a number is?

Puzzle of the Week [problem-solving training]: Page 35, problem 2(a) in Sec. 1.2 B

Standard of the Week: GLE 1.1.1, Grade 2 evidence of learning: “Represent a number to at least 1000 in different ways, including numerals, words, pictures, and physical models; translate between representations.”

Part II (Turn in) – Comprehension of the ideas related to numbers and counting

Bookwork (19 problems with subtasks):

<table>
<thead>
<tr>
<th>Assigned Reading (Stuff to take notes on)</th>
<th>Practice Problems (to help understand the reading)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section 2.1</td>
<td>Problem Set A (pp. 54 – 55)</td>
<td>This section provides formal terminology that helps describe what numbers physically represent.</td>
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<tr>
<td></td>
<td>1acd, 2abfg, 3 – 6, 8 – 10, 13, 14</td>
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<tr>
<td>Section 2.2</td>
<td>Problem Set A (p. 67)</td>
<td>These help you begin thinking about how to build a number system of your own.</td>
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<td></td>
<td>1 – 5, 7bc, 8bcd, 9bcd</td>
<td></td>
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<tr>
<td>Section 2.4</td>
<td>&lt;None&gt;</td>
<td>This section has definitions.</td>
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</tbody>
</table>

NOTE: Your answers to these questions should include written explanations, computations, or diagrams that reveal how you reached your answer. Since you are training to be a teacher, why the answer was chosen is far more important than what was given as the answer.

See next page for a preview of next week’s Part III task.
Part III – Preview of the NEXT assignment (DON’T DO THIS YET)

Analyzing and applying the ideas related to numbers and counting.
You will create your own number system, and explain how to count with it. See the “Starting Point” section on page 60 of the text for the idea.

1. Create a set of symbols you can use to represent the numbers from 1 to 15, as well as the numbers 20, 50, 67, 91, 100, 189, and 236. The symbol system you create must meet the following conditions.

   a) Your symbols must be unrelated to any standard number system (again, page 60 shows the freedom you have in choosing symbols). **It cannot use symbols from any number system you’ve seen, either in real life (Arabic, Chinese, etc.) or in the text (Egyptian, Mayan, Roman, etc.).**

   b) You can only create a maximum of **five** basic symbols – your “numerals”. (Recall that the Egyptian and Roman systems each use seven numerals, the Babylonians used two, and our Arabic system uses ten.) All of your other numbers will have to be represented using combinations of just the five symbols you create. If two of your basic symbols are rotations or mirror images of each other, they still count as two of your five symbols. HOWEVER, you may introduce additional “accent” symbols like dots or diacritics (~, ^, ¯, umlauts) without the modified symbol being counted as “new.”

   c) Each basic symbol must have a sound attached to it. This sound **cannot** be a sound/word that is used or clearly related to counting in any common language.

2. Provide a page of analysis and description that identifies the properties of your number system as well as what activities you’d use to help a child learn your system.