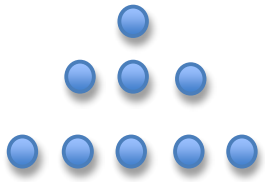
Math 535 Homework 1 Due at 9:00 Tuesday, July 8

A. Textbook: Read the Introduction pp. 1-6 and the Chapter Overview pp. 7-9. Answer these questions.

1. On page 1 there is a reference to "decomposing and composing numbers." What do you think this means? Give an example.
2. Why is it important for K-2 teachers to know more than the math content for those grades?
3. See the last full paragraph on page 3. Restate the "erroneous claim" that is made. Refute the claim.
4. On page 4 in the second paragraph from the bottom, there is a statement, "Effective mathematics teaching requires understanding what students know and need to learn and then challenging and supporting them to learn it well." Briefly reflect on what this means to you.
5. Pages 7-9 have a list of the Big Ideas and their Essential Understandings. By the time we finish Chapter 1, you should have a restatement in your own words and/or and example for each of these. But for now, make a list of any terms used on these pages that you are not fluent with.

B. Problems: Use the 4-step problem solving process to solve these problems. Use the scoring rubric as a guide. Evaluate your solution on the scoring guide and attach one to your paper for each problem.

1. **Nim.** A game of Nim uses rows of objects that look like the pattern below. The first three rows of the pattern are shown. If the pattern is extended to 100 rows, how many objects would be in the 100^{th} row? Show how you know.



2. **Logs.** How many cuts does it take to cut a log into five equal pieces? 6 equal pieces? Any number (n) equal pieces? Show how you know.

3. **Number sequence**. Find the next number in this sequence. Show how you know.

   5, 6, 14, 29, 51, 80, . . .

Your Name: _____ **Date due:** _____

Name of the problem: _____

Problem Solving Rubric

Characteristics	Points Possible	Self-Score	Instructor's Score
Understand the Problem Demonstrates clear understanding of the problem, which could include: • Restates the question(s) in own words, • States the given, • Defines the variables, and/or labels a diagram, • Clarifies the definitions of key words in the problem.	**1**		
Make a plan: • Explains your strategy	**1**		
Implement and Carry out the Plan: • Discusses any initial strategies that did not work. • Gives a logical explanation of how the answer was achieved using appropriate details, mathematical vocabulary, and notation. • Thought process is clearly articulated. • Includes pertinent diagrams, tables, sketches, equations, graphs, etc. • Final answer is clear, complete, stated in a complete sentence, and correct.	**2**		
Looking Back: Reflects on the Problem and Process • Is your answer reasonable? • Can you check your answer? • Did you learn anything from doing the problem? • Can you see a pattern that would lead to a generalization? • Does this problem make you think of any other related questions?	**1**		
Total Score	**5**		