

4010 PORTFOLIO

Objectives for the portfolio: The student will

- See an overview of what was learned this semester.
- Have examples to use when teaching children
- Reflect on the material covered in the course.
- Have a model of a good assessment tool

PORTFOLIO REQUIREMENTS:

- A copy of the Utah core curriculum table for grades k-6
- Problem solving section including chosen problems and solutions, with reasons why particular problems were chosen, at least 10 problems.
- Sample Venn Diagram problems
- A Venn Diagram of the Real number system showing natural, whole, integer, fractions, rational, irrational numbers
- Multiple representations of a number
- Operations in a base of your choice (not 10) including addition, subtraction, multiplication, division
- Models for each operation addition, subtraction, multiplication, division, including sample word problems
 - Natural numbers
 - Integers
 - Fractions
- Multiple models and algorithms for one operation (addition, subtraction, multiplication or division.)
- Investigations
 - Factors, LCM, GCF
 - Prime numbers
 - Divisibility tests
 - others
- Mathematical explanations
 - Why can't we divide by zero?
 - Why do we invert and multiply?
 - How are we sure $\sqrt{2}$ is irrational?
- Reflections
 - All reflections from assignments (you are encouraged to fix grammatical, and other stylistic mistakes, as well to improve the reflection).
 - A final reflection (make two copies, one for me.)
 - a. On learning: What was the mathematical concept studied in this course that you found most interesting? What helped you to understand the concept and why did you find it intriguing?
 - b. On practicum: The goal of the practicum is to help prospective teachers learn to listen to children's

thinking and then relate this thinking to important directions or concepts in mathematics. Describe how your practicum experience did or did not accomplish that goal.

- Practicum

Organizing your portfolio:

The main themes in 4010 are the development of number and operation concepts, study of models to explain these concepts to children, and the final goal is an in-depth understanding of how the Real Number System works and the connections between its various subsystems. These notions developed historically over time and children's growth in understanding of these concepts develops over time as well as they progress through the K6 grades. Your portfolio should be organized to illustrate one or more of the following themes along with any other theme from the course you would like to illustrate:

- The development of number and operation concepts (whole numbers, fractions, integers, rational numbers; the four arithmetic operations) across the grades
- Representations for different number and operation concepts and their use at different grade levels
- Connections between various arithmetic operations and ways to use these connections to increase understanding of operations and their properties

Grading:

Content:	Required elements not including final reflection	30
	Completed all worksheets and fraction book	10
	Final Reflection	10
	Interview	10
	Extras: news articles on mathematics education	5
	Related items from the internet or conferences.	5
Presentation:	Binder, tabs, title page, table of contents	10
	Neatness	10
	Organization, Theme	<u>10</u>
		100