

Course Title & Number: MAT*H143 Math for Elem. Ed: Algebra/Number Systems

Competency Area: **QUANTITATIVE REASONING** (Goal: Students will learn to recognize, understand, and use the quantitative elements they encounter in various aspects of their lives. Students will develop a habit of mind that uses quantitative skills to solve problems and make informed decisions.)

Faculty submitting the Learning Outcomes: Jane Wampler, Harry Burt, Ruth Urbina-Lilback, Katie Lozo

Date: 3/7/13

[Instructions: Please match the Learning Outcomes in the left hand column to those of the course you are submitting for Gen Ed approval. List the corresponding course outcomes in the right hand column to indicate a match.]

BOR TAP's Learning Outcomes	Corresponding Outcomes for Course Named Above
1. Represent mathematical and quantitative information symbolically, graphically, numerically, and verbally.	<ol style="list-style-type: none">1. Demonstrate Pólya's problem-solving principles and be able to recognize appropriate use of various strategies to solve problems.3. Use various manipulatives and models to demonstrate mathematical concepts and operations.7. Use the elements of set theory to develop definitions and demonstrate understanding of the whole numbers, their corresponding properties and operations.8. Moving from the concrete to the abstract, use a repertoire of traditional and nontraditional algorithms for performing operations on different sets of numbers.9. Demonstrate understanding of the conceptual meaning of operations on the subsets of real numbers and how operations relate to one another.11. Use graphing calculators for computations where appropriate and as a tool to verify answers, to explore concepts and make connections.
2. Apply quantitative methods to investigate routine and novel problems. This includes calculations/procedures, mathematical and/or statistical modeling, prediction, and evaluation.	<ol style="list-style-type: none">1. Demonstrate Pólya's problem-solving principles and be able to recognize appropriate use of various strategies to solve problems.2. Use the language of mathematics and appropriate vocabulary to explain mathematical concepts and terminology.3. Use various manipulatives and models to demonstrate mathematical concepts and operations.4. Perform mental arithmetic computation, estimation, and determine

	<p>reasonableness of answers.</p> <ol style="list-style-type: none"> 5. Develop a thorough conceptual understanding of place value concepts and their applicability to our base 10 system and in other number bases. 6. Demonstrate knowledge of the historical development and characteristics of various number systems. 8. Moving from the concrete to the abstract, use a repertoire of traditional and nontraditional algorithms for performing operations on different sets of numbers. 9. Demonstrate understanding of the conceptual meaning of operations on the subsets of real numbers and how operations relate to one another. 12. Make connections to real life applications and create story and age-appropriate word problems.
<p>3. Interpret mathematical and quantitative information and draw logical inferences from representations such as formulas, equations, graphs, tables, and schematics.</p>	<ol style="list-style-type: none"> 1. Demonstrate Pólya's problem-solving principles and be able to recognize appropriate use of various strategies to solve problems. 2. Use the language of mathematics and appropriate vocabulary to explain mathematical concepts and terminology. 3. Use various manipulatives and models to demonstrate mathematical concepts and operations. 5. Develop a thorough conceptual understanding of place value concepts and their applicability to our base 10 system and in other number bases. 7. Use the elements of set theory to develop definitions and demonstrate understanding of the whole numbers, their corresponding properties and operations. 8. Moving from the concrete to the abstract, use a repertoire of traditional and nontraditional algorithms for performing operations on different sets of numbers. 9. Demonstrate understanding of the conceptual meaning of operations on the subsets of real numbers and how operations relate to one another. 10. Demonstrate an understanding of properties applicable to each subset of the real numbers and how the subsets relate to each other.

	12. Make connections to real life applications and create story and age-appropriate word problems.
4. Evaluate the results obtained from quantitative methods for accuracy and/or reasonableness.	Evaluate the results obtained from quantitative methods for accuracy and/or reasonableness.
	<i>Additional Outcomes</i>