

MATH 2008

Foundations of Numbers and Operations

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Office hours: 12:15-3:00 (T, Th)-Carrollton Campus
11:30-1:30 (F)-Newnan Campus

Textbook:

Billstein, R., Libeskind, S., & Lott, J. (2015). *A Problem solving approach to mathematics for elementary school teachers*, 12th Edition. Pearson Addison-Wesley: Boston, MA.

Goals and Objectives of the Course include, but not limited to,

1. Apply and adapt a variety of appropriate strategies to solve problems.
2. Identify how a sequence (in both numeric forms and in diagrams) grows and find the general term of sequence using the pattern in the sequence. Explain how Gauss method works and generalize the method to find the sum of terms in a sequence with a pattern.
3. Construct numeric systems for various bases and explain the role of place values and zero in the systems. Be able to convert back and forth numbers in base 10 to numbers in base other than 10.
4. Identify and explain various strategies and algorithms for number operations (addition, subtraction, multiplication, and division) and use those in calculation.
5. Be able to model operations using various representations (visual and verbal) and explain how multiple representations are connected.
6. Explain how mathematical properties, such as the distributive, commutative, and associative properties, are embedded in various strategies in operations and use the properties efficiently in problem solving.

7. Define and find multiples and factors including the greatest common divisor (GCD) and the least common multiple (LCM). Be able to explain how prime factorizations of numbers are associated with the GCD and LCM.
8. State the divisibility rules and explain why those rules work. Apply the rules to determine if numbers are divisible by certain numbers and to list numbers that satisfy the rules.
9. Explain and compute integer operations using various models.

Attendance and Classroom Rules:

- Students must be **punctual** and **always** attend class. There could be unforeseen emergencies that do come up. However, anyone missing classes **FOUR times or more** during the semester **might not** receive a credit for the course. Medical excuses are only accepted when provided with documentation.
- Students cannot enter the classroom once the class starts and should wait **SILENTLY** outside of the classroom until the door is reopened. In such cases, students will be recorded as tardy. The first two tardiness combined will be considered as one absence. After two tardiness, each tardiness will be considered as an absence.
- Students who disrupt the class for any reason will be escorted to outside of the classroom, disallowed to return for the day, and marked absent.

Use of Electronics: Calculator is the only electronic device students can use in the classroom. **Calculator as a phone accessory is NOT allowed.** In fact, in no circumstance are students allowed to use any types of electronics other than calculators. Students who do not abide by this rule will be escorted to outside of the classroom, disallowed to return for the day, and marked absent.

Grading: The final grade in the course will be based on the performance on three mid-term exams (20 points each) and a final exam (40 points), totaling 100 points.

Final Course Grade:

A	90-100
B	80-89.99
C	70-79.99
D	60-69.99
F	Below 60

Exam Schedule:

Midterm 1: Sep. 15
Midterm 2: Oct. 20
Midterm 3: Nov. 29
Final Exam: Dec. 6 (at 11-1)

Common Language Link: <http://www.westga.edu/UWGSyllabusPolicies/>

Tentative Schedule

Week	Topics	Materials
1 & 2	<ul style="list-style-type: none"> • Problem Solving Using Patterns • Sets: Equivalent Sets, Cardinal Numbers 	Textbook-Ch. 1.1 & 1.2
3 & 4	<ul style="list-style-type: none"> • Logic • Sets: Subsets, Set Operations 	Textbook-Ch. 2.1, 2.2, & 2.3
5, 6, & 7	<ul style="list-style-type: none"> • Numbers with Various Bases • Properties of Whole Numbers • Addition and Subtraction with Whole Numbers 	Textbook-Ch. 3.1 & 3.2
8 & 9	<ul style="list-style-type: none"> • Multiplication and Division with Whole Numbers • Addition, Subtraction Algorithms and Estimation • Multiplication and Division Algorithms and Estimation 	Textbook-Ch. 3.3, 3.4, & 3.5
10 & 11	<ul style="list-style-type: none"> • Divisibility • Prime and Composite Numbers • GCD and LCM 	Textbook-Ch. 4.1, 4.2 & 4.3
12 & 13	<ul style="list-style-type: none"> • Integers and Operations with Integers 	Textbook-Ch. 5.1 & 5.2
14	<ul style="list-style-type: none"> • Rational Numbers and Operations 	Textbook-Ch. 6
15	<ul style="list-style-type: none"> • Review 	
16	<ul style="list-style-type: none"> • Final Exam 	