# Niles Johnson

Department of Mathematics

The Ohio State University, Newark

Welcome to Math for Elementary Teachers!

This is the course homepage and syllabus for **Math 1125**, section 18011, Mathematics for Elementary Teachers I. Here you will find our course calendar, current assignments, basic course information, and links to additional content of interest.

Excellent math teachers have been far too scarce in American education. This course and its sequel, Math 1126, give you give you the keys to *how* and *why* elementary mathematics works. We will develop a thorough understanding of the ideas, how they are related to eachother, and how they are related to more advanced ideas. This is the basic knowledge which underpins truly great teaching!
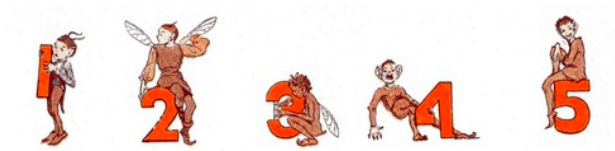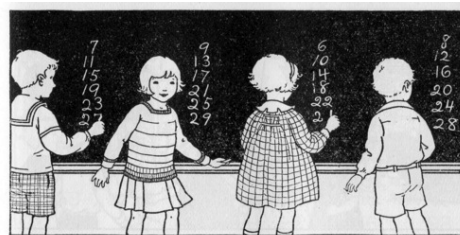
Basic information

Math 1125 focuses on concepts of number systems and operations. It also includes some basic concepts of geometry. Our class meets in **Hopewell 106** following the university Registrar's **academic calendar**. Our class times are:

- Monday, Wednesday: 12:45—2:05
- Friday: 12:40—2:30.

Instructor
Niles Johnson
Office: Hopewell 156
Office Hours: Mondays and Fridays 2:05 – 3:30, Wednesdays 3:30 – 5:00

Textbook
Mathematics for Elementary Teachers, 3rd Edition by **Sybilla Beckmann**. ISBN 0321654277. The activity manual packaged with this book is excellent and we will use it nearly every class.

Exam Schedule
We will have two in-class midterms and a final exam. All students must take the exams at the scheduled times, indicated here:

Midterms: Monday September 24 and Monday October 29 in class

Final: Friday, December 7, 12:40—2:25

Attendance
Active participation in class is an essential part of this course, and so attendance every day is required. Please let Niles know as soon as possible if an illness or other commitment will prevent you from attending. Homework is due at the beginning of each class, and late homework cannot be accepted.

Assessment

Your final grade will be based on written homework, written and oral in-class participation, quizzes, midterms, and a final exam. The precise breakdown is as follows:

- In-class participation: 12%
- Homework: 5%
- Quizzes: 13%
- Midterm exams: 20% each, for a total of 40%
- Final exam: 30%

Participation

Throughout this semester we will be focused on the *how* and *why* of elementary mathematics. This means that you will be responsible both for knowing the content and for knowing how to *explain* the content. We will practice this in a variety of ways, and much of this practice will take place in class. Teaching mathematics requires listening carefully to students, assessing their ideas, and responding in ways that make sense. Our class participation is designed to practice these essential skills. You will have opportunities on a daily basis to listen to your fellow classmates explain ideas and ask questions. You will be asked to respond with your ideas and with additional questions. Together we will see how and why mathematics works! Participating in this course includes all of the following:

- Show interest in mathematical ideas.
- Show interest in different ways of approaching mathematical ideas.
- Listen carefully to different ways of solving a problem.
- Carefully evaluate a proposed method of solution.
- State whether you agree or (respectfully) disagree with a statement.
- Show interest in learning with and from others.

Homework and Quizzes

Homework and Quizzes will be scored using the rubric below. Scores are based both on mathematical correctness and quality of explanations. Homework should be typed and presented as you would an essay. If necessary, you may draw diagrams by hand on separate pages. Quizzes will be hand-written during the first 10 or 15 minutes of class.

The homework is intended to give you time to develop your explanations and understanding of the content. You are encouraged to work with your classmates on this, but you must write your own explanations. Homework is designed to help you learn, and not as an assessment tool. Therefore grades for homework will be recorded on a complete/incomplete basis (scores of 4 and higher are complete). The numerical scores are given only for your information.

The weekly quizzes are opportunities to evaluate your current grasp of the material. They will be very short and based on previous homework problems or class activities. Quiz grades will be recored as scored.

Grading Rubric

Quizzes and exams will follow this scale; Niles will use these for comments on homework too, although homework grades are recorded on a complete/incomplete basis. Homework will be considered complete if the average score is 4 or higher.

10.5 Exemplary

Excellent work that exceeds the assignment guidelines.

10 Very good

Correct mathematics that is carefully thought out and explained well.

8 Good

Correct mathematics with an emerging but incomplete explanation.

6 Basic

Correct mathematics with little or no explanation.
OR
Minor mathematical errors with emerging explanation that shows understanding.

4 Emerging

Work that has merit but also has significant shortcomings in the mathematics and/or explanation.

2 Effort

Work that shows relevant effort but is seriously flawed.

0 No credit.

No work submitted, or no relevant effort shown.

Websites on math standards

- Ohio Department of Education Standards in Math and Model Curricula.
- National Common Core State Standards in English and Math: Adopted by 45 states (and counting), including Ohio.
- National Council of Teachers of Mathematics Standards and Focal Points.

Websites of elementary school texts from high performing countries

- Textbooks used in Singapore: singaporemath.com Primary Mathematics 1A, 1B (first grade) through 6A, 6B (sixth grade)
- Translations of textbooks used in Japan: http://www.globaledresources.com/ (Tokyo Shoseki's Mathematics for Elementary School)

Other websites of interest

- Project INTERMATH, which focuses on building teachers' mathematical content knowledge through mathematical investigations that are supported by technology.
- Problems and tasks that Sybilla Beckmann wrote for her 6th graders during the 2004/2005 school year organized according to the grade 6 Georgia Performance Standards.
- Report by the National Council on Teacher Quality on mathematics in the U.S.: No Common Denominator. The report includes a great appendix on content that mathematics teachers must know, and ranks Beckmann's textbook highest overall among elementary mathematics content textbooks.

GEC Information

This Mathematics course can be used, depending on your degree program, to satisfy the Quantitative and Logical Skills category of the General Education Requirement (GEC). The goals and learning objectives for this category are:

Goals: Courses in quantitative and logical skills develop logical reasoning, including the ability to identify valid arguments, use mathematical models and draw conclusions based on quantitative data.

Learning objectives: Students comprehend mathematical concepts and methods adequate to construct valid arguments and understand inductive and deductive reasoning, scientific inference and general problem solving.

Disability Statement

Students with disabilities that have been certified by the Office for Disability Services will be appropriately accommodated, and should inform the instructor as soon as possible of their needs. The Office for Disability Services is located in 150 Pomerene Hall, 1760 Neil Avenue; telephone (614) 292-3307 and VRS (614) 429-1334; webpage http://www.ods.ohio-state.edu/

Academic Misconduct Statement

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term "academic misconduct" includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations.

Instructors shall report all instances of alleged academic misconduct to the committee. For additional information, see the Code of Student Conduct:
http://studentaffairs.osu.edu/resource_csc.asp