

MATH 213: ELEMENTS OF GEOMETRY AND MEASUREMENT

University of Maryland, College Park

Spring 2022

Textbook: Mathematics for Elementary Teachers, by Sybilla Beckmann, 5th edition
(same text as Math 212 used last semester)
Deductive Reasoning Supplement (will be provided electronically via Canvas (elms.umd.edu))

Instructor: Jermain McDermott Email: jmcderm@umd.edu

Office Hours: MWF @ 4pm **Office location:** MTH 2121

Course Description: This course will review and extend topics of geometry and measurement that may be encountered in elementary school curricula. Students will actively investigate topics, working in groups on tasks and writing explanations of their thinking as well as answers to problems.

Course Objectives:

- The student will be able to solve problems involving geometric shapes and measures of angles, length, area, surface area, and volume.
- The student will be able to identify definitions and properties of common geometric shapes; given properties, a student will be able to identify the shape(s) that have those properties.
- The student will be able to use logic to prove additional properties based on known definitions, postulates, theorems, and given information.
- The student will be able to identify faulty reasoning in justification attempts.
- The student will be able to sketch basic transformations and designs having designated symmetry; given a design the student will be able to identify the transformation(s) and/or symmetry present.
- The student will be able to identify and use the properties of congruent and similar geometric shapes.

Schedule: (subject to change):

<i>Week of:</i>	<i>Topic (Chapter sections):</i>
Jan 24	Angles (c. 10) (Please bring protractor for first unit if you have one)
Jan 31	Angles, con't; Circles, Spheres, Polygons (c. 10)
Feb 7	Polygons, con't; Congruent Triangles (c. 10, Supplement)
Feb 14	Logic (Supplement). Exam 1 on Fri Feb 18
Feb 21	Deductive Reasoning (Supplement)
Feb 28	Deductive Reasoning, con't
Mar 7	Deductive Reasoning, con't, Coordinate Geometry
Mar 14	Coordinate Geometry, con't; Exam 2 on Wed Mar 16 ; Measurement (c. 11)
Mar 21	<i>Spring Break</i>
Mar 28	Measurement (c. 12)
Apr 4	Measurement, con't (c. 12)
Apr 11	Measurement, con't (c. 13)
Apr 18	Measurement, con't; Exam 3 on Fri Apr 22
Apr 25	Transformations, Symmetry (c. 14)
May 2	Symmetry, Similarity (c. 14)
May 9	Review (<i>Last day of class = May 10</i>)

FINAL EXAM (cumulative): Thursday, May 12, 1:30 – 3:30 pm. Location TBD

Grading:

Quizzes, classwork, and/or homework**30%

Letter grades will be given using the scale

98% - 100% = A+; 90% - 97% = A; 89% = A-; 88% = B+; 80% - 87% = B; 79% = B-; 78% = C+, etc.

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**Quizzes, classwork, and/or homework are assigned by the individual instructor and may differ from section to section.

Many homework problems assigned have answers in the text.

Exams (3)	45%
Final Exam	25%
TOTAL:	100%

Class Participation: Many class sessions will include time working with other students in groups, whole class discussions, and opportunities for students to explain their thinking. These experiences have been designed both to maximize opportunities to reflect on the content more deeply and to provide experience giving explanations—an important skill for future teachers to develop.

Honor Code: The University has a nationally recognized Honor Code, administered by the Student Honor Council. The Student Honor Council proposed and the University Senate approved an Honor Pledge. The Pledge reads: "I pledge on my honor that I have not given or received any unauthorized assistance on this assignment/examination." In this course, the Pledge statement should be handwritten and signed on each exam. Students who fail to write and sign the Pledge will be asked to confer with the instructor.

Late Work and Make-up Exams:

Notification: If possible, the instructor should be notified by email *before* a due date or exam is missed. If this is impossible due to the nature of the emergency, the instructor must be contacted as soon as possible.

Excused Absences: The following are recognized as excused absences *with appropriate documentation*:

- *illness of a student or dependent
- *death in the immediate family
- *participation in a UM athletic team trip, documented by official letter from the Athletics Dept.
- *religious observance which prevents class attendance, documented by a note from the leader of your congregation

Late work may be subject to a deduction of 20% per class period at the instructor's discretion.

Resources: Many students find the following resources helpful as they work to understand the material in this course:

Fellow students: Share phone numbers among group members and call or get together outside of class to discuss projects, homework, an upcoming quiz or exam.

Instructor's office hours: Be sure you know when and where to contact your instructor if you still have questions after individual study and discussion with classmates.

University Policies: The website <http://www.ugst.umd.edu/courserelatedpolicies.html> summarizes the university's course-related policies

Philosophy of this Course:

Many people think of math as a collection of meaningless procedures and rules that "magically" give the right answer when numbers from a problem are inserted correctly. Your experiences in this course will be very different from this! Throughout this course, in class, on projects, and on exams, you will be asked to "explain why or why not" or to "justify your answer." In other words, you will be expected to understand why the procedure you are using works or why the answer you give is correct. You will be most successful this semester if you continually ask "why?" as you read, listen, and solve problems. Seeking connections and meaning can be a very rewarding way to learn—and someday teach—these math ideas.