

**Math 13800****Mathematics for Elementary Education II****Fall 2017**

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Course web page: [www.math.purdue.edu/MA13800](http://www.math.purdue.edu/MA13800)*Welcome to Mathematics for Elementary Education courses at Purdue!*

Course goals are to prepare you to:

- Be a knowledgeable and confident math teacher in the elementary classroom
- Have a deep understanding of the reasoning behind math processes
- Be able to clearly articulate math ideas with correct vocabulary

Your future students will need to know more than how to find a number answer. You will often be asked to explain your thinking or describe the process you use to solve a problem. Be prepared to show step-by-step math work and to explain your thinking clearly. Homework, quizzes, and exams will be graded accordingly.

**I. Learning Objectives:**

1. To model and perform arithmetic operations in bases other than base ten.
2. To convert numbers to scientific notation and perform arithmetic operations in scientific notation.
3. To perform operations with signed numbers.
4. To use properties of addition and multiplication to facilitate arithmetic.
5. To determine when two fractions are equivalent and to convert to decimals and percentages.
6. To use divisibility rules to determine greatest common factors to decide whether numbers are prime.

**II. Textbook: Reconceptualizing Mathematics 2<sup>nd</sup> Edition by Sowder, Sowder, and Nickerson, W.H. Freeman, 2014.**

- This book provides activities, discussion ideas, and questions that stimulate a deep level of thinking. We will use this workbook daily in class, and reading the section in the text before class is recommended to assist in achieving a high grade in the course.
- We will also use manipulatives to help us understand or demonstrate concepts. These manipulatives will appeal to different learning styles, and you may find them useful in clarifying ideas. Because it will be important to use them in your teaching for the benefit of your students, you will gain valuable experience using manipulatives in this course.

**III. Grading:** Grades consists of three (3) evening exams (100 points each), quizzes (100 points total), homework (50 points), and a comprehensive final exam (150 points). An instruction sheet for determining your grade is available on the web page. Note that a point on homework or quiz is not equivalent to a point for the course. The following will note the grading scale, description of graded assignments, and academic integrity expectations:

Course grades are based on the following scale:

%	Grade
98 – 100	A+
90 – 97%	A

%	Grade
80 – 89	B
70 – 79	C

%	Grade
60 – 69	D
Below 60	F

A minimum of 360 points is required to earn a D or better in the course.

- **Homework:** You will turn in homework every class period. *Late homework is not accepted.* Occasions arise to prevent students from attending class. Therefore, your 4 lowest homework scores will be dropped. Homework should be done neatly and with care, all steps must be shown, and multiple pages should be stapled (one point will be deducted from each homework assignment not stapled). Correct answers without work or with incorrect work may not receive credit. The instructor will decide which problems or parts of problems the grader will grade. Only a few problems on each assignment are graded. This means that sometimes the problems selected are the ones you have incorrect or they might be ones that you have correct. Students are encouraged to attend office hours as a way of getting help with assignments or checking answers.
- **Quizzes:** Quizzes will be given frequently. It is wise to review recent lessons as a way of studying for quizzes. Two quiz scores will be dropped to allow for absences. No make-up quizzes are given. Class participation will count towards one quiz grade. Be prepared to volunteer your ideas during class discussions.
- **Exams:** Exams are intended to cover the ideas from the text but not to mimic the homework questions. Questions may require thinking or problem solving not represented by the homework questions.
  - o **Exam 1: Tuesday, September 12, 2017 @ 6:30pm in LILY 1105.**
  - o **Exam 2: Tuesday, October 17, 2017 @ 6:30pm in LILY 1105.**
  - o **Exam 3: Tuesday, November 14, 2017 @ 6:30pm in LILY 1105.**
  - o Put these dates and times on your calendar. Make-up exams will be given only if you have a valid excuse *with documentation* and Brooke Max has been notified prior to the exam. If you are unable to notify her prior to the exam, *a valid explanation with documentation for the missed exam must be provided.* Unexcused absence from an exam may result in a grade penalty.
- **Academic honesty** is expected at all times. Academic dishonesty could result in a 0 for the assignment or exam or an F in the course. Academic integrity is one of the highest values that Purdue University holds. Individuals are encouraged to alert university officials to potential breeches of this value by either emailing [integrity@purdue.edu](mailto:integrity@purdue.edu) or by calling 765-494-8778. While information may be submitted anonymously, the more information that is submitted provides the greatest opportunity for the university to investigate the concern.

### **Purdue Honor Pledge:**

*As a Boilermaker pursuing academic excellence, I pledge to be honest and true in all that I do. Accountable together – we are Purdue.*

Link to video description: <https://www.purdue.edu/provost/teachinglearning/honor-pledge.html>

#### IV. Logistical Information

- **Attendance:** Please discuss illnesses or circumstances that lead to excessive absences privately with the instructor to make appropriate accommodations. With 4 homework scores and 2 quiz scores dropped, most absences should be accounted for.
- **Cell Phone Use:** Checking for messages and sending text messages is not appropriate during class time. Be polite and leave your cell phone alone during these 50 minutes.
- **Calculators:** Another goal of the Mathematics for Elementary Education courses is to be competent doing arithmetic of whole numbers, decimals, fractions, and percentages by hand. Because of this, **No calculators are allowed on quizzes and exams.** Occasionally, a calculator will be useful for homework problems or in-class work. There will also be three quizzes given during the semester called “Arithmetic Skills Quizzes.” To be prepared for those, a study guide is available on the course web page.
- **Course Evaluation:** During the last two weeks of the semester, you will be provided an opportunity to evaluate this course and your instructor. At that time, you will receive an official email from evaluation administrators with a link to the online evaluation site. Your feedback is vital to improving education at Purdue. I strongly urge you to participate in the evaluation system.
- **Campus Emergencies:** In the event of a major campus emergency, course requirements, deadlines, and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances beyond the instructor’s control. Information will be available at [www.math.purdue.edu/MA13700](http://www.math.purdue.edu/MA13700). If a fire alarm sounds, leave the building immediately and collect by the fountain outside. You may dial 911 for a campus emergency.
- **Last Day to Drop a Course:** Wednesday, October 25, 2017 @ 5:00 pm

#### V. Resources

- **CAPS:** Purdue University is committed to advancing the mental health and well-being of its students. If you or someone you know is feeling overwhelmed, depressed, and/or in need of support, services are available. For help, such individuals should contact Counseling and Psychological Services (CAPS) at (765)494-6995 and <http://www.purdue.edu/caps/> during and after hours, on weekends and holidays, or through its counselors physically located in the Purdue University Student Health Center (PUSH) during business hours.
- **For students certified by ODOS adaptive services**
  - If you have been certified by the Disability Resource Center (DRC) as eligible for academic adjustments on exams or quizzes, see <http://www.math.purdue.edu/ada> for exam and quiz procedures for your mathematics course or go to MATH 202 for paper copies.
  - In the event that you want to be certified by the DRC, we encourage you to review the procedures prior to being certified.
  - For all in-class accommodations, please see your instructor outside class hours – before or after class or during office hours – to share your Accommodation Memorandum for the current semester and discuss your accommodations as soon as possible.

**MA 13800****Calendar****Fall 2017**

	Monday	Tuesday	Wednesday	Thursday	Friday
Week 1 08/21-08/25	Lesson 1		Lesson 2		Lesson 3
Week 2 08/28-09/01	Lesson 4		Lesson 5		Lesson 6
Week 3 09/04-09/08	Labor Day – No class		Lesson 7		Lesson 8
Week 4 09/11-09/15	Review	<b>Exam I: 6:30pm</b> LILY 1105	No Class		Lesson 9
Week 5 09/18-09/22	Lesson 10		Lesson 11		Lesson 12
Week 6 09/25-09/29	Lesson 13		Lesson 14		Lesson 15
Week 7 10/02-10/06	Lesson 16		Lesson 17		No Class (PME-NA)
Week 8 10/9-10/13	Fall break – no class		Lesson 18		Lesson 19
Week 9 10/16-10/20	Review	<b>Exam II: 6:30pm</b> LILY 1105	No Class		Lesson 20
Week 10 10/23-10/27	Lesson 21		Lesson 22		Lesson 23
Week 11 10/30-11/3	Lesson 24		Lesson 25		Lesson 26
Week 12 11/6-11/10	No class (ICTM)		Lesson 27		Lesson 28
Week 13 11/13-11/17	Review	<b>Exam III: 6:30pm</b> LILY 1105	No Class		Lesson 29
Week 14 11/20-11/24	Lesson 30		Thanksgiving	Break –	No Class
Week 15 11/27-12/1	Lesson 31		Lesson 32		Lesson 33
Week 16 12/4-12/8	Lesson 34		Lesson 35		Review
	Final	Exam	Week	12/11-12/16	

Exam 1: Tuesday, September 12, 2017 @ 6:30pm in LILY 1105.

Exam 2: Tuesday, October 17, 2017 @ 6:30pm in LILY 1105.

Exam 3: Tuesday, November 14, 2017 @ 6:30 in LILY 1105.

## Math 13800

## Assignment Sheet

Fall 2017

Text: Reconceptualizing Mathematics, 2<sup>nd</sup> Edition by Sowder, Sowder, & Nickerson. W.H. Freeman, 2014.

Follow instructions written here in addition to instructions in the text. Ma 13800 web page: [www.math.purdue.edu/MA13800](http://www.math.purdue.edu/MA13800).

Lesson	Section	Page	Problems
1	12.1	p. 245	1aceg, 5b, 7acf, 9bdfi, 11, 12, 13, 14ab, 15 <b><i>Print out and bring worksheet for L2.</i></b>
2	12.2/3	p. 253 & 258	p. 253: 1, 2, 4, 5, 8, 9, 11c p. 258:1b, 1defgh (Write a function rule for each of these.), 2a, 3a, 4ac
3	12.4	p. 266	1, 5, 7, 10, 12bd, 20
4	12.5	p. 276	2, 4bc, 5, 11, 12, 14b, 15
5	13.1	p. 287	3, 6, 7, 10
Note: Please print off or buy graph paper. Using tick marks on notebook paper is not acceptable. Bring some to class and also use it for your homework unless you are making <i>qualitative</i> graphs. Please bring a ruler to class.			
6	13.2	p. 295	1abde, 5, 6, 9, 10 <i>You will need 4 sheets of graph paper for the next class.</i>
7	13.4	p. 308	1, 2bd, 3ab, 4b*, 6* (*Make a table.), supplementary ex 1a, Use graph paper and negative & positive $x$ -values for supplementary 1d.
8	NCTM Illuminations		Lesson for grades 6-8 "Patterns and Functions" Assignment #8: Worksheet
<b><i>Exam 1: Tuesday, September 12, 2017 @ 6:30pm in LILY 1105</i></b>			
9	NCTM Illuminations		Lesson for grades 6-8 "One grain of Rice" and for grades 9-12 "Drug Filtering" Assignment #9: Worksheet
10	Inverse & Logarithmic Functions		Assignment #10: Worksheet
11	14.1	p. 315	2 (Label the 5 parts of the graph A, B, C, D, E. Label the 5 parts of your story and the 5 parts of your new graph with the same letters.), 3, 8(Give answer in hours and minutes.), 9ab
12	14.3	p. 323	2(Use the negative speeds.), 5, 6bd, 7b, 8c, 9ab
13	14.4	p. 328	1ab (Copy graph and explain.), 3, 4ab, 6, 7
14	15.1	p. 338	3, 5, 7, 9, 11, 13, 16, 18, 19, 20bd, 21, 22bd
15	15.2	p. 345	6, 9, 12, 17, 21, 22, 23, 25, 27a, 30

16	15.3	p. 353	1*, 6, 7*, 11* (*Make graphs large enough to fill one side of a page of graph paper. Note that instructions for #7, 11 are at the bottom of page 354.)
17	15.4	p. 358	1, 2, 4a*, 5, 9, 12* (*Use an entire side of graph paper for each.)
18	15.5 & 15.6	p. 365 & 370	p. 365: 1c, 2bc, 3, 4 (Break down into TWO function machine rules.), 10 (Do only $3 \times 4 \times 6$ .) p. 370: 2, 3
19	27.1	p. 610	2, 4, 5, 6
<b><i>Exam 2: Tuesday, October 17, 2017 @ 6:30pm in LILY 1105.</i></b>			
20	27.2	p. 617	3, 4, 5, 6, 7, 8, 9bd, 13abdf, 15ab, 24a, 26
21	28.1	p. 634	2, 3, 7, 9, 10
22	28.2	p. 638	#2, 4, 6, 8, 10
23	28.3	p. 643	3, 6abcd, 7, 8, 10
24	28.4	p. 649	2, 4, 6, 7, 9, 11
25	29.1 & 29.2	p. 659	2, 3 (top of page); p. 665: 3, 4, 5, 6, 8, 9 <i>Please bring a compass and protractor to the next class. Have graph paper and unlined paper with you.</i>
26	29.4 & 30.1	p. 671 & 678	p. 671: 1, 2, 3 (Top of page.) p. 678: 2a (Show arithmetic with % to nearest 0.1 and angle to nearest degree.), 2b*, 3* (*Use an entire side of graph paper.), 4 and 5 – Print out from Excel, 6, 7, 8bc.
27	30.2	p. 686	2a, 3, 4a, 6 (Make a histogram by hand. Use 0-4, 5-9, 10-14, etc.)
28	30.3	p. 693	3, 4*, 5*abcde (*Make up a data set when possible.), 6, 9
<b><i>Exam 3: Tuesday, November 14, 2017 @ 6:30 in LILY 1105.</i></b>			
29	30.4	p. 701	1, 2 (Write data sets for each.), 3, 5, 9, 11, 13, 15, 16
30	30.5	p. 708	1 (Do work by hand.), 2, 5, 8a(Subtract 5.), b(Divide by 5.). Use Excel or a calculator to do the calculations for problems 5 and 8. Do the standard deviation by hand for this set of numbers: 2, 3, 7, 9, 10, 11
31	30.6	p. 716	1ab (Use a line plot.), 2, 3, 5, 6a (Use a line plot.)

32	30.6 & 30.7	p. 716 & 721	p. 716: 4, 8, 9, 10, 11a(Show z-scores.), c(400 six-year-olds: How many are taller than 48.6 in?; How many are shorter than 44.4 inches?) 13, 14, 16 p. 721: 1, 2
33	33.1	p. 767	1, 2(Refer to the table on p.634, & make a new table of <u>sums.</u> ), 3, 4, 6
34	33.2	p. 775	1, 2, 4ab, 5ab, 6b, 9
35	33.2	p. 775	10, 11, 12, 13, 16, 17

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