EDMS 314 Weekly Homework

1. Briefly outline and discuss your observations and ideas useful and relevant to the reading. It may include but not limited to the questions you may want to discuss during the class. It should be minimum ½ page single spaced. These reading assignments are intended to keep you accountable for course readings and help you process the readings individually and determine how theoretical concepts can be directly applied to classroom practice or course assignments.

2. Notes from the quiz. This is not required but highly recommended. Please do not just copy and paste every quiz problem into the homework. It should be maximum one page.

3. Response to the following question:

4. Response to the following question:

5. Solve the following math problem at least one way. In order to build a deep, conceptual understanding of the mathematics you will be teaching your students, you will be solving a variety of complex, conceptually-based mathematics problems throughout the semester based on concepts in the elementary mathematics curriculum. You will solve these problems in a way that highlights your conceptual understanding, record the processes you used to solve the problems, and justify your problem-solving strategy. The focus is on developing, explaining, and defending a mathematical argument for your solution. Since conceptual understanding is emphasized, using memorized algorithms is not an option. You won’t get penalized for getting a wrong answer if you follow the directions above. You will be penalized, however, if you just write “I don’t know.”

Textbook editions: Customize, (7th), 6th, 5th, 8th, 9th

Week 02 homework #1 Read Chapter 1 (2) 3 3 2 2

1. Please see above.
2. Please see above.
3. Explain why we should assume that each child’s knowledge and understanding of an idea are unique for that child.
4. What does it mean to say that understanding exists on a continuum from relational to instrumental? Give an example of an idea, and explain how a student’s understanding might fall on either end of the continuum.
5. Three halls contained 9,876 chairs altogether. One-fifth of the chairs were transferred from the first hall to the second hall. Then, one-third of the chairs were transferred from the second hall to the third hall and the number of chairs in the third hall doubled. In the end, the number of chairs in the three halls became the same. How many chairs were in the second hall at first?
**Week 03** homework #2 Read Chapter 2 (3)

1. Please see page 1.
2. Please see page 1.
3. Describe what meant by tasks or problems that can be used for teaching mathematics. Be sure to include the three important features that are required to make this method effective.
4. Describe the kind of actions a teacher should be doing in each of the three parts of a lesson. (Note that not all of these would be done in every lesson.) Which actions should you use almost all of the time?
5. A slab of soap on one pan of a scale balances $\frac{3}{4}$ of a slab of soap and a $\frac{3}{4}$ pound weight on the other pan. How much does the full slab of soap weigh?

**Week 04** homework #3 Read Chapter 4 (8)

1. Please see page 1.
2. Please see page 1.
3. What are the four types of relationships that have been described for numbers from 1 to 10? Explain briefly what each of these means and suggest at least one activity for each.
4. How can a calculator be used to develop early counting ideas connected with numbers? How can a calculator be used to help a child practice number relationships such as part-part-whole or one less than?
5. In the barnyard is an assortment of chickens and pigs. Counting heads I get 13; counting legs I get 46. How many pigs and chickens are there?

**Week 05** homework #4 Read Chapter 6 (12)

1. Please see page 1.
2. Please see page 1.
3. How are traditional algorithms different from student-invented strategies? Explain the benefits of invented strategies over traditional algorithms.
4. Illustrate three different strategies for adding $46 + 39$, which ones are easy to do mentally? Is there a strategy that is easier because 39 is close to 40? What strategies work well for sums such as $538 + 243$? For each strategy you work with, think about how you could record it on the board so that other students will be able to follow what is being done.
5. Draw picture that show the explanation for this story:
   Joy ran $\frac{3}{4}$ of mile each day for 12 days. How many miles did he run?

**Week 06** homework #5 Read Chapter 8 (15)

1. Please see page 1.
2. Please see page 1.
3. Give examples of manipulatives within each of the three categories of fraction models.
4. What contexts might you use to develop the concept of equivalence within each of the models – area, length, and set?

5. Many problems can be solved in different ways. Decide if the following word problems can be solved using multiplication. Explain your thinking.

a. Liam is cooking potatoes. The recipe says you need 5 minutes for every pound of potatoes you are cooking. How many minutes will it take for Liam to cook 12 pounds of potatoes?

b. Mel is designing cards. She has 4 different colors of paper and 7 different pictures she can glue on the paper. How many different card designs can she make using one color of paper and one picture?

c. Nina can practice a song 6 times in an hour. If she wants to practice the song 30 times before the recital, how many hours does she need to practice?

d. Owen is building a rectangular tile patio that is 4 tiles wide and 6 tiles long. How many tiles does he need?

Week 07 homework #6 Read Chapter 9 (16)

1. Please see page 1.
2. Please see page 1.
3. A student adds 4/5 + 2/3 and gets 6/8. How will you help the student understand that this is incorrect and how would you redirect him or her to do it correctly?
4. Draw pictures to explain each of these divisions:
   a. \( \frac{2}{6} \div \frac{1}{6} \)
   b. \( 2 \frac{1}{3} \div \frac{2}{3} \)
   c. \( 2 \frac{1}{6} \div \frac{1}{3} \)
   d. \( 3 \frac{1}{2} \div 1 \frac{1}{3} \)
5. If there are nine people in a room and every person shakes hands exactly once with each of the other people, how many handshakes will there be?

Week 08 homework #7 Read Chapter 7 (14)

1. Please see page 1.
2. Please see page 1.
3. Kaput lists five types of algebraic thinking (3 algebraic reasoning in later editions). Rather than list each of these, describe algebraic thinking in no more than three sentences in a manner that encompasses Kaput’s main ideas and the spirit of this chapter.
4. What misconceptions do students have regarding variables? What causes these misconceptions and how can instruction clear these up?
5. Find the area of the figure below:

12 inches
Week 09 homework #8 Chapter 11 (20)

1. Please see page 1.
2. Please see page 1.
3. Describe in your own words the first three van Hiele levels of geometric thought (levels 0, 1, and 2). Note in your description the object of thought and the product of thought. How would activities aimed at levels 0, 1, and 2 differ?
4. Briefly describe the nature of the content in each of the four geometric strands featured in this chapter and in the Standards: Shapes and Properties, Location, Transformations, and Visualization.
5. Fourteen birds are sitting on a line at 7-foot intervals. How long is it from the first bird to the last?

Week 10 homework #9 Chapter 3 (5)

1. Please see page 1.
2. Please see page 1.
3. What is the difference between formative and summative assessment? Give examples of each.
4. Describe the essential feature of a rubric. What are performance indicators (It’s called evaluative criteria in PACT.)?
5. How many squares on a chessboard? (hint: There are a lot more than 64 squares.)

Week 11 homework #10 Chapter 10 (19)

1. Please see page 1.
2. Please see page 1.
3. Develop in a connected way that area formulas for rectangles, parallelograms, triangles, and trapezoid. Draw pictures and provide explanations.

4. Explain how the area of a circle can be determined using the basic formula for the area of a parallelogram.

5. Work out whether this number of descendants is realistic. Here are some facts that you will need:

Week 12 homework #11 Chapter 13 (22) 23 21 22

1. Please see page 1.
2. Please see page 1.
3. Describe the difference between experimental probability and theoretical probability. Will these ever be the same? Which is the “correct” probability?

4. Use an area model and a tree diagram to determine the probability for the following situation: If you need additional help, please watch the YouTube video at http://www.youtube.com/watch?v=j67ltX_bR_c

In the girls' basketball championship game, the Tigers are behind by one point and time has run out. However, a foul was called as the buzzer sounded. Tracy is at the line to shoot a one-and-one for the Tigers. If she makes the first shot, she gets a second shot. If she misses, the game is over. Tracy is a 60% free throw shooter.

What is the likelihood the Tigers will win? (Ignore the effects of pressure on Tracy's ability.)

5. Use an area model and a tree diagram to determine the probability for the following situation:

Dad puts a $5 bill and three $1 bills in the first box. In the second box, he puts another $5 bill with just one $1 bill. For washing the car, Junior gets to take one bill from the
first box without looking and put it in the second box. After these are well mixed, he then gets to take one bill from the second box. What is the probability that he will get $5?

**Week 13** Thanksgiving Break

**Week 14** homework #12 Chapter 12 (21) 22 21 21 21

1. Please see page 1.
2. Please see page 1.
3. Data should be collected to answer questions. What are some examples of questions that students might explore with data at the K-2 level and what are some for the upper grades?
4. Give an example of a context in which you would you choose to use median over mean and when would you choose mean over median (not the ones given in the textbook).
5. A. Mr. Jones has two children. The older child is a girl. What is the probability that both children are girls?
   B. Mr. Smith has two children. At least one of them is a boy. What is the probability that both children are boys?

**Week 15** No Homework