

Those who can, do. Those who understand, teach.

–Lee S. Shulman, President, Carnegie Foundation for the Advancement of Teaching

These assignments are from the **green textbook**. AS YOU READ THE TEXTBOOK: When the text says “solve this problem on your own,” or shows the pencil icon, you should do it! You should also do the Investigations as you come across them. You will learn a great deal more from the text if you actually do these activities in the course of your reading. You don’t need to write out answers to the questions below, but you should think about them as you do the daily reading assignment. Your notebook is a good place for your reading notes.

Due to hand in week of August 21
Thursday 8/24 Beginning Reflection emailed or hard copy

Due Thursday 8/24 E-mail your **Beginning Reflection and appendix*** in the body of an email, not as an attachment, to *ben.ford@sonoma.edu* (or hand in your work, typed, at the beginning of class). Please put Math 300a in the title and give your name so I don't trash it as spam! Be sure to keep a copy for your notebook. It's best to use your sonoma email as I will be sending you assignments with that account.

*The **Beginning Reflection** is at least two pages in length and addresses each of the following:

How do you define mathematics?

How do you view yourself as a doer of mathematics?

How do you view yourself as a teacher of mathematics?

Describe at least one mathematical experience that has influenced you positively or negatively.

Rate and discuss your attitudes in relation to each of the paired statements in Bassarear's Table 1.1 on page 2 of the green text.

As an **appendix** to this reflection, write a paragraph or more about yourself, including the following points:

What year are you in university?

What is your career goal [and grade level(s) if your career goal is teaching]?

What GE math course have you passed to meet the prerequisite for this course?

What other university math classes [if any] have you taken here and elsewhere?

Anything else you want me to know.

Correct grammar and spelling are crucial for both the reflection and the appendix! Here's the rubric:

10	superior – extraordinary quality, exceeds expectations
9	very good —high quality, meets all expectations fully
8	good – good quality, meets expectations
7	adequate – acceptable quality, minimally meets expectations
6 or below	poor quality, does not meet expectations

Start working on your Take-home Quiz #1 (Quiz is due Tuesday, 8/29 & given below on page 3)**

Read syllabus and assignment sheet and pages xv–xx of the Preface, and Sections 1.1, 1.2, & 1.3 [pp. 1-24 Green Book]. Prepare for discussion, but not to turn in (your notebook is a good place to jot down answers):

1. Which of Polya’s four steps do you think is typically your strongest? Weakest?
2. List at least four “tools” in your mathematical “toolbox.” [continued next page with exercises...]

I-A Exercises §1.4 (pp. 28–30) # 2, 8, 20, 22 (a-f only). [for discussion only today – these will be turned in as part of Homework #1 on Wednesday, September 6. HW is from the Green book and does not need to be typed. Generally two exercise sets will be collected at once on Thursdays, always after they have been due for discussion.]

Due to hand in Week of August 28

Tuesday 8/29 Take-home Quiz #1

Thursday 8/31 Homework #1 Exercises I-A, I-B

Due Tuesday 8/29 Hand in Take-home Quiz #1 (See below, page 4).**

Read Section 1.4 [pp. 17- 27] and pp. 61—65; p. 70 bottom. **Prepare for discussion:**

1. Do you remember multiple methods of solving problems being emphasized in your school math?
2. Do you think representations are important for teaching mathematics? Why or why not?

I-B Exercises §1.7 (pp. 53-57) # 12, 15, 17.

[for discussion today – these will be turned in as part of Homework #1 on Wednesday, September 6]

Due Thursday 8/31 Hand in Homework #1 (I-A: all Exercises due 8/24 for discussion and I-B, all Exercises due 8/29 for discussion).

Read pp 43-44, and §1.7 pp. 47-53 and pp. 72-75 ignoring symbolic set notation. **Prepare for discussion:**

1. Sam can recite the numbers from one through 10, but gets different results each time he “counts” the number of beans in a small pile (less than 10). What could be happening?
2. What are the similarities and differences between “counting” and “measuring”? Which do you think you do more often in your everyday life?

I-C Exercises 2.1 (pp. 75-78) # 13 (in English & with diagrams only, not symbolically); 23

Due to hand in Week of September 4

Thursday 9/7 Homework #2 Exercises I-C, I-D

Due Tuesday, 9/5 Nothing to turn in [but still work to do!]

Read pages 100 - 103[top]; 109 [middle] - 115. **Prepare for discussion:**

1. Many numeration systems that developed independently in various cultures around the world use groups of "ten" (*****), though other numbers would serve just as well. Why is "ten" nearly universal?
2. What happens to a number when you divide by 10? Can you explain this in terms of the manipulatives on page 111 or in terms of *place value*?

I-D Exercises 2.3 pp. 116-118 # 21, 26, 28a.

Due Thursday 9/7 Hand in Homework #2 Exercises I-C, I-D

Study the Alphanthian counting system agreed upon by the class (Exploration 2.7) and be prepared to explain how it works.

I-E Exercises 2.3 #23, 24, 29. **Write out** the first fifty counting numbers using Alphanthia.

Due to hand in Week of September 11

Thursday, 9/14 Homework #3 Exercises I-E, I-F

Due Tuesday 9/12

Read: pages 112 – 115 **Prepare for discussion:**

1. Describe your process for answering the “what comes before” and “what comes after problems in different bases.
2. What is an advantage of base 2 over base 10? What is an advantage of base 12 over base 10?

I-F Exercises 2.3 pp. 116-118# 5, 6, 7, 19

Due Thursday 9/14 Hand in Homework #3 Exercises I-E, I-F

Reread pages 109-115 **Prepare for discussion:**

1. Are base two, base five, base ten, and base twelve all workable as number systems? In what ways are they similar? Different?
2. Are some bases better than others? If so, which ones and in what ways?

I-G Exercises 2.3 pp. 116-118 # 11, 12, 13, 14, 15, 17 [I-G&II-A will be Homework#4 due 9/21]

****Take home Quiz 1 [due Tuesday, August 29]**

EXPECTATIONS

This take home quiz is shorter than the upcoming take home exams in order to give you some feedback before you tackle the larger exams to come. In addition to finding all legitimate answers you need to justify your solution[s], explaining in detail how you found the answers and why they work. Getting correct answers is certainly important, but understanding the reasoning processes involved and the sense of the problem and its solution are even more important. Your take home quiz and exams will be evaluated using all of these criteria. See rubric below.

A correct answer with no supporting explanation will receive no credit. A reasonable but incorrect or incomplete answer together with the calculations that produced it will receive partial credit.

In order to receive full credit, you must:

1. state the problem clearly, preferably in your own words;
2. explain how you went about solving the problem, including any assumptions you may have made;
3. show any examples, data, or calculations you used, in a clear and organized way (this may include diagrams, lists, tables, graphs, or other visual displays);
4. state complete and correct answer[s];
5. explain why this is a reasonable solution to the problem.

Note that the requirements mirror Polya's steps of understanding: stating the problem (1), devising a plan (2), carrying out the plan(3) , and then looking back (5).

Your work should be typed or word-processed, though calculations and tables or other graphic displays may be hand-drawn.

THE QUESTION

SSU had too many students for its dorms. The administration decided to ask some students to take extra roommates into their rooms. For a trial they started with a dozen students who were already living in three dorm suites, Apple, Blueberry and Cherry. This was just to see how the move and personalities might go before they tried to squeeze more students in.

First, some students from Apple tried to move to Blueberry. But the Blueberries said they would only take the same number of students as they already had, so some remained in Apple.

After one night together, some students from Blueberry moved on to Cherry. But, you guessed it, the Cherry folks would only take in as many students as they already had.

Amazingly, after all this fuss, there were the same number of students in each suite!

Your question: How many students were in each suite before the moving started? Be sure to show how you found your answer, explaining each step, as well as why you know this answer works. Is this the only possible solution? How do you know?

Here's the rubric I will be using to grade this quiz.

GRADING RUBRIC FOR Take-home Quiz #1

TOTAL POSSIBLE: 10 POINTS; MAXIMUM FOR EACH PART SHOWN

- **3 points** correct and complete answer with work shown
- **3 points** explanation of each step in your solution process
- **2 points** why you know this answer works
- **2 points** whether this is the only possible answer and how you know