

**Math 300a Dr. Ford Fall 2006 Assignments for Unit III**  
**Number Theory, Integers, Fractions & Decimals: Chapters 4 & 5**

*I advise my students to listen carefully the moment they decide to take no more mathematics courses.  
They might be able to hear the sound of closing doors. --James Caballero*

**Due to hand in Week of October 9**  
**Thursday, October 12 HW#7, Exercises II-F & II-G**

**Due Thursday, October 12 Hand in Homework #7 Assignment II-F & II-G.**

**Read** §4.1 pages 211-226.

1. What are some divisibility rules?
2. Why do people confuse the concepts of "factor" and "multiple"? How can you keep them straight?

**Assignment III-A** Exercises 4.1 p. 226ff # 4, 8

**Due Week of October 16 to hand in**  
**Thursday, October 19 HW#8 Exercises III-A, III-B**

**Due Tuesday, October 17**

**Read** §4.2 pp. 229 – 235 middle of page.

1. How can you tell whether or not a number is prime?
2. How can you tell that  $2 \times 3 \times 3 \times 7 \times 11$  and  $2 \times 2 \times 3 \times 5 \times 13$  are different, without doing any computation?

**Assignment III-B** Exercises 4.2 pp. 237 ff. # 5, 10, 13.

**Due Thursday, October 19 Hand in Homework #8 Exercises III-A, III-B.**

**Read** §4.3 pp. 238 - 249.

1. How are GCF and LCM similar? How are they different? How are they related?
2. How are the prime factorizations of two numbers related to their GCF and LCM?

**Assignment III-C** Exercises 4.3 pp. 250ff # 2, 4, 7, 14.

**Due Week of October 23 to hand in**  
**Thursday, October 26: HW #9 Assignments III-C & III-D**

**Tuesday, October 24**

**Read** Section 5.1.

1. What are some contexts in which children might recognize and use negative numbers?
2. How would you explain why “a negative times a negative is positive?”

**Assignment III-D** Exercises 5.1 # 4, 7, 16.

**Thursday, October 26 Turn in HW #9 Assignments III-C & III-D**

1. Using a number line model, how can you represent adding, subtracting, multiplying, and dividing integers?

**Assignment III-E Exercises 5.1** #20, 21, 23, 24.

**Due week of October 30 to hand in  
Thursday, November 2 HW # 10 Assignments III-E, III-F**

**Tuesday, October 31**

**Read** § 5.2 pp. 266 - 278.

1. What are the four interpretations [contexts] of fractions? Explain them using examples that are not in the text.
2. When is the unit not the whole? Give an example not in the text.

**Assignment III-F Exercises 5.2** pp. 278ff. # 3, 5, 8.

**Thursday, November 2 Turn in HW #10 Assignments III-E, III-F**

1. In the procedure for creating equivalent fractions, what is meant when we say that “if we physically divide, ... we mathematically multiply” (page 275)?
2. Find as many possible ways as you can to find which is larger:  $\frac{4}{9}$  or  $\frac{6}{11}$ .

**Assignment III-G Exercises 5.2** pp. 278ff. #10, 16, 24

**Due week of November 6 to hand in  
Tuesday, November 7 Group Investigation  
Thursday, November 9 HW #11 Assignments III-G & III-H**

**Tuesday, November 7 Turn in group investigation**

**Assignment III-H Exercises 5.2** pp. 278ff. # 25, 26a

**Thursday, November 9 Turn in HW #11 Assignments III-G & III-H**

**Read** §5.3 pp. 281 – middle 289

1. Explain why we need to find common denominators when adding fractions. Be very clear in your explanation, using examples from everyday experiences.
2. Explain the procedure for converting a mixed number to an improper fraction and why this procedure works.

**Assignment III-I Exercises 5.3** pp 301ff. #1 a-e only; 13, 41 a-f only N.B. #1d answer in back is wrong!

**Due week of November 13 to hand in  
Thursday, November 16 HW # 12 Assignments III-I & III-J**

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**Tuesday, November 14**

**Read** §5.3 pp. 289 – middle 293

1. It has been said that “multiplication makes bigger and division makes smaller.” Is this always true? Explain.
2. What are some of the different models of multiplication of fractions? Explain them using examples that you come up with on your own.

**Assignment III-J Exercises 5.3** pp 301ff. #1 f-i; 41 h, i; 42 a

**Thursday, November 16 Turn in HW#12 Assignments III-I, III-J**

**Read** §5.3 middle of p. 293 – top 301

1. Describe some of the models used for division of fractions. Make up story problems to exemplify the models.
2. Explain the difference between the partitioning model for division of fractions and the repeated subtraction model. Explain also how they are related.

**Assignment III-K Exercises 5.3** pp 301ff. #3, 41 j-l, 40

**Due to hand in week of November 20**

**Tuesday November 21 HW #13 Assignment III-K**

**Tuesday, November 21 Turn in HW #13 Assignment III-K**

**Assignment III-L Fraction Word Problems # 3, 7, 10**

**Thursday, November 23 HAPPY THANKSGIVING!**

**Due to hand in week of November 27**

**Tuesday, November 28 Take-Home Exam #3**

**Thursday, November 30 HW #14 Assignments III-L and III-M**

**Tuesday, November 28 Turn in Take-Home Exam #3.**

**Read** §5.4 pages 305-322

1. How are base 10 blocks useful when studying decimals?
2. Which is easier: Ordering fractions or ordering decimals? Why?

**Assignment III-M §5.4 pp. 329ff. #1, 20, 37 [not collected]**

**Thursday, November 30 Turn in HW #14 Assignments III-L & III-M**

**Due to hand in week of December 4**

**Thursday, December 7 Turn in or email Final Reflection**

**Tuesday, December 5**

**Reread** §5.4 pages 305-322.

1. What would the first place to the right of the “point” represent in our base 5 Alphabitian system?

2. Is there a situation in which 3.240 and 3.24 mean different things?

Assignment III-N Exercises 5.4 p. 329ff # 7, 44, 49 [not collected]

**Thursday, December 7 Last Class! Final reflection and at least 2 review questions**

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

How do you now define mathematics? Has this changed at all since August?

How do you now view yourself as a doer of mathematics? Has this changed at all since August?

How do you now view yourself as a teacher of mathematics? Has this changed at all since August?

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

Again, 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.

Correct grammar and spelling are crucial! Here's the rubric. Averaged with your beginning reflection, this is 5% of your grade.

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	poor quality, does not meet expectations

**Tuesday, December 12 Final Examination 8:00-9:50 a.m., Darwin 109**

Final exam (20% of grade) A comprehensive in-class final exam on December 12 from 8 a.m.-9:50 a.m.

**No early, late or makeup exams will be given.** You are allowed your notebook and a calculator of your choice. Manipulatives will be available. You do not need a bluebook. If you are entitled to an accommodation through Disabled Student Services, you must make arrangements well in advance with them to take the exam there and with me so that I can get the exam to them. I cannot arrange for extra time or space.