

Prepare for the exam by carefully studying this list with reference to your notes, in-class activities, and homework assignments. Strive to master the concepts, explanations, and computational techniques for use in general; trying just to memorize the specific problems we've practiced is unlikely to be reliable or successful on the exam.

Meaning of Fractions:

1. Correctly spell the terms for top and bottom of a fraction.
2. Name the three meanings of a fraction; explain what numerator and denominator represent in each.
3. Know which part of a fraction cannot be zero; explain why using one of the non-division meanings.
4. Determine the fraction represented by a given diagram, including ones like #9 on p. 311.
5. Draw a figure representing a given fraction, as in #6 on p. 311 or #6 on HW #1.
6. Answer questions about Fraction Tile representations, as in HW. Explain your reasoning.
7. Define "equivalent fractions"; find fractions equivalent to a given one, including problems like #19 on p. 312.
8. Precisely state the FLF; explain why it is true without referring to multiplication by 1.
9. Demonstrate, recognize the FLF in creating equal fractions, in reducing to lowest terms.
10. Apply various techniques for ordering two fractions; name and choose the most effective.
11. Put a set of fractions in order using the techniques of Summary #2.
12. Explain what "denseness" means; demonstrate it using all three techniques.

Fraction Arithmetic:

1. Add, subtract, multiply, and divide fractions using ordinary classroom algorithms.
2. Solve puzzle problems like that on "Fair Use" p. 4.
3. Solve word problems requiring fraction arithmetic.
4. Explain why a common denominator (CD) is required for adding/subtracting.
5. Draw and label pictures to add/subtract without pre-determining a CD; explain how the numerator and denominator of the answer are shown.
6. Convert between mixed number and improper fraction notation, with and without the shortcut.
7. Add, subtract entirely in mixed numbers. Use the Distributive Property to multiply.
8. Use paper-folding or diagrams to multiply fractions, including improper ones; explain how numerator, denominator result.
9. Demonstrate complete "pre-cancelling" in multiplying or dividing a set of fractions.
10. Explain why "invert and multiply" works for a specific division problem.
11. Demonstrate alternative division algorithms: CD and drawing diagrams.
12. Use pictures (or optionally Fraction Tiles) to perform fraction division, including problems that have a "remainder." Explain your work and answer.
13. Estimate answers to fractions or mixed number computations, as in text homework.

Bring a non-cell phone calculator and your paper Fraction Tiles for the exam.