Prepare for the exam by carefully studying this list with reference to your notes, in-class activities, quizzes, Exams #1-#3, and homework assignments. You are expected to take the Final Exam with your regularly scheduled class.

For the TR class, the Final is Tuesday, May 4, 10:30-12:30.
For the MWF 10am class, the Final is Wednesday, May 5, 10:30-12:30.
For the MWF 11am class, the Final is Friday, May 7, 10:30-12:30.

Meaning of Fractions:
1. State PRECISELY what numerator, denominator represent in the part-of-a-whole (area) model for fractions. “The denominator is the whole” will NEVER receive full credit!
2. Know which part of a fraction cannot be zero; briefly explain why without referring to division.
3. Determine the fraction represented by a given diagram, including ones like #6 on p. 358.
4. Draw a figure representing a given fraction, as in #5 on p. 359 or #6 on HW #1.
5. Define “equivalent fractions”; find equivalent fractions, including problems like #14 on p. 358.
6. Demonstrate, recognize the FLF in creating equal fractions, reducing to lowest terms.
7. Order a set of fractions (ties allowed) using different, meaningful techniques from Summary #1.
8. Explain what the term denseness means for fractions OR decimals.

Fraction Arithmetic:
1. Add, subtract, multiply, and divide fractions by hand using ordinary classroom algorithms.
2. Solve or create word problems requiring fraction arithmetic. (See text and HW #7.)
3. Explain why a common denominator (CD) is required for adding/subtracting.
4. Draw pictures to add/subtract without pre-determining a CD; state how the answer is shown.
5. Convert between mixed numbers and improper fractions by hand, without shortcuts if instructed.
6. Add, subtract entirely in mixed numbers. Use the Distributive Property to multiply.
7. Use diagrams to multiply fractions, including improper; state how numerator, denominator result.
8. Use pictures to perform fraction division; explain your work and answer, including “leftovers.”

Arithmetic Properties:
1. Tell which property from Summary #3 is illustrated by a given number sentence. Spell correctly.
2. Complete a number sentence to show a requested property, as in Quiz #4.

Decimal Basics:
2. Find all decimals satisfying given clues, including clues about rounding and negative exponents.
3. Explain how position names and exponent patterns show that $10^0$ equals 1, that $10^{-1} = \frac{1}{10}$.
4. Add, subtract, multiply, and divide decimal numbers by hand.
5. Solve or create word problems requiring decimal arithmetic. (See text and HW #13.)
6. Tell whether a student’s answer to a decimal word problem is correct or not, as in Activity # 8.
7. Explain how to find the smallest place value in a given product, without counting positions.
8. Explain thoroughly why each decimal point in a division problem is treated as it is. Be especially thorough in showing the FLF computation.
Decimal Appearances:
1. Use and understand bar and ellipsis notation for representing nonterminating decimals.
2. Know which types of decimals can and cannot be converted to fractions (are/are not rational).
3. Write appropriate decimals as fractions, including when repetends aren’t next to decimal point.
4. Use correct notation to convert a fraction to a decimal OR percent; round when asked.
5. Create and recognize irrational numbers. Know that they cannot be converted to fractions.
6. Create rational or irrational numbers between others as instructed.
7. Order a given collection of decimals (including non-terminating ones), fractions, or percents.
8. Use remainders to explain why fractions create decimals that must either terminate or else repeat.

Ratio and Proportion:
1. Understand ratios written verbally (“for every,” “out of every,” etc. types of phrasing).
2. Solve word problems using your choice of representative sets, unit-rate, or scaling when instructed.
3. Solve word problems using proportional equations when permitted, as in HW #10.
4. Be prepared for problems in which ratios change, or they have more than two numbers.

Percents:
1. Round to the nearest tenth, hundredth, etc. of a percent when asked.
2. Choose the larger of two quantities described as fractions, decimals, or percents, as in HW #15.
3. Solve percent word problems that don’t have any “real-life” context.
4. Solve word problems with contexts, including percent increase/decrease, discount/mark-up.
5. Be prepared for the amount to which the percent applies (the “before” amount) to be unknown.
6. Solve problems about sequential application of percents, including finding overall percent change.
7. Identify correct steps or solutions, as in Quiz #7.

Statistics:
1. Tell what each type of statistical graph is best for; make the best choice for a given setting.
2. Find the mean, median, and mode(s) of a list of scores.
3. Find the mean or total when individual scores are not given (see 10-3 HW).
4. Given a mean, find the new mean when a few scores are added or removed.
5. Solve problems similar to #11 on p. 653.
6. Create data that has given mean, median, mode, or standard deviation behavior, as in HW #17.
7. Draw, label box-and-whisker plots for given scores. (No other graph drawing on this exam)
8. MEMORIZE and use the normal curve graph to solve word problems.

Probability:
1. Know the meanings of “experiment,” “outcome,” “event,” and “sample space.”
2. State the Law of Large Numbers: apply it to word problems like #9 on p. 529 or #1d on p. 530.
3. When computing theoretical probability, create uniform sample spaces.
4. Be prepared for multi-stage experiments: two or more dice, coins, spinners, etc.
5. Determine probabilities of events, including using “and,” “or,” and variations of “at least/most.”
6. Convert between the probability that an event happens and that it doesn’t happen.

Bring a NON-cell phone, NON-graphing calculator for the exam.

Also, please don’t phone for your score afterwards; that only slows me down in grading.