

Prepare for the exam by studying these topics in conjunction with your previous tests, notes, text, activity and other handouts, and graded and practice HW problems. Solutions to this semester's graded assignments and exams are posted on the bulletin board outside my office; exam solutions are also online.

**Integers:** (Remember the symbol **Z** and the listing notation for the SET of integers.)

1. Understand the number line and that LEFT is **always** LESS. Understand absolute value.
2. Draw AND verbally explain how to use plus/minus chips to act out integer computations.
  - (a) You **MUST** use the original numbers/operations (i.e.,  $2 - (-5)$  is "2 minus negative 5").
3. Recognize or create computations that are impossible to act out with chips, telling why.
4. Create Fact Patterns leading to a given computation, applying the guidelines.
5. Work problems using variables on a number line, as in Q/HW #2. Prepare to explain.

**Fractions:**

1. Understand, SPELL, use: numerator, denominator, unit fraction, proper, improper.
2. Explain CAREFULLY what numerator, denominator MEAN. ("5 is the whole" is wrong!)
3. Use numer., denom. meanings to explain which position in a fraction can/cannot be zero.
4. Solve and explain part-of-a-whole diagram problems like those on Activity #1, HW, etc.
5. Recognize, use the FLF where needed: reducing to lowest terms, creating CDs, etc.
6. Demonstrate different methods for determining whether two fractions are equal, or which is bigger.
7. Explain carefully when using meanings of numerator and denominator to compare fractions.
8. Know the term denseness, and explain clearly what it says.
9. Find fractions equivalent to a given one, between two given ones.
10. Add, subtract, multiply, divide fractions entirely by hand if asked, showing all steps.
11. Convert between mixed numbers and improper fractions both with and WITHOUT shortcuts.
12. Add or subtract two or more mixed numbers entirely IN correct mixed number notation.
13. Demonstrate complete pre-cancelling; convert division problems so that it can be used there too.
14. Draw, label diagrams to add, subtract, multiply, divide fractions. Explain how all aspects of the answer are seen/interpreted in the diagram.

**Statistics:**

1. Find the mean, median, mode of a given list, including multiple or no mode.
2. When possible, make up a set of numbers in a given range (usually 0-100) that have specified mean, median, mode behavior. Beware: I don't always ask for 5 numbers!
3. Explain what goes wrong when it is NOT possible to make up such sets.

**Decimal Numbers:**

1. Convert among standard decimal notation, word form, expanded form with or without exponents.
2. Solve decimal clue problems.
3. Round decimal numbers - use a trailing zero when you **MUST**.
4. Give the definitions of the terms real, rational, and irrational.
5. Recognize which appearances of decimal numbers are rational and which are not.
6. Use bar and ellipsis notation correctly, and recognize when it's needed.
7. Convert between terminating or repeating decimal notation and fractions.
8. Arrange a collection of decimal numbers in order of size.
9. Know that denseness applies; find a rational, irrational numbers between two others.

**Number Sentences:** For FRACTIONS OR DECIMALS.

1. Make up a number sentence using given numbers in assigned roles.
2. Make up a number sentence with given qualities, such as "has two equal addends."

**Ratio and Proportion:**

1. Understand "for/out of every" sentences and "to" or colon descriptions of ratios.
2. Use, explain representative sets, scaling, unit-rate thinking to solve proportion problems.
3. Use proportional equations when allowed; prepare for problems having "parts" or changing ratios.

**Percents:**

1. Use correct notation to convert among decimals, percents, and fractions.
2. Round to the nearest tenth, hundredth, etc. of a percent when asked.
3. Choose the largest/smallest of several quantities described as fractions, decimals, or %, as in HW.
4. Solve percent word problems that don't have any "real life" context.

**Probability:**

1. Recognize whether a given sample space is uniform or not; create ones that are.
2. Determine probabilities of events, including ones using "and," "or," "at least," "at most," etc.
3. Be prepared for multi-stage experiments: two or more dice, coins, spinners, etc.
4. Compute conditional probabilities by limiting sample spaces based on the "given..." phrase.
5. Create spinner diagrams so that certain probabilities apply.
6. Explain how experimental probability helps to see whether a sample space is uniform or not.
7. Solve problems like 9-1A and 9-1B #21-22.
8. State the Law of Large Numbers.

**Bring an approved calculator - 3-point deduction if you have to borrow from me!**

**End-of-Course Information:**

- The Final Exam is worth 150 points out of 500 total points for the course.
- Material will be split roughly equally between content from the 3 earlier exams.
- I don't expect to have the finals graded any earlier than Saturday, May 7, at best.
- Please don't email for your grade - that only slows me down.
- Please don't ask afterwards for extra credit or "is there any way I can make up/re-do...?" - I don't do that once the final is over, **EVER**, and certainly not for just one student!
- However, if you think there's an \*error\* calculating your score, I will definitely look into that ASAP.
- I'll TRY to post your course scores on D2L so that you can see your grades before they're submitted Tuesday afternoon, May 10, but can't promise anything.
- Remember that D2L grades for any course are NOT OFFICIAL per SRU rules - only the grade reported by your professor on MySRU/Banner is official.