Each exam's Topics/Objectives List tells what I'll expect of you on that exam, and gives an outline for creating your own, detailed study guide. Compare the list to your **notes, in-class materials, reading, online links, Weekly Assessments, Required Practice, and extra practice problems** - you might recopy key definitions and explanations, rewrite thorough examples of tasks and solutions, jot down warnings of what not to do, etc. Strive to master concepts, explanations, and computational techniques in general; memorizing specific examples is seldom successful.

Number Sentences, Fact Families - Using whole numbers, fractions, and now also **integers**

1. Identify, closely spell names of all parts/roles in addition, subtraction, multiplication, division sentences.

2. Create a number sentence having specified numbers or behaviors for certain roles, as in WA #2 and extra non-required practice HW #1 on the web. If not possible, say so.

   (a) Pay attention to which types of numbers the question allows. That affects possible/impossible.

3. Create a complete Fact Family that goes with a given number sentence or list of numbers.

   (a) This can use whole numbers, fractions, or integers, so practice carefully - especially integers.

Word Problem Scenarios: Memorize names, operations, characteristics from Summaries #1-1.5.

1. Define the term <u>scenario</u> as it's used in our class. (See notes!)

2. Given a whole number or fraction word problem, prepare for any or all of these tasks:

   (a) Write the complete number sentence it requires.
   (b) Name the operation it requires.
   (c) Name the scenario it illustrates.
   (d) Distinguishing between using objects versus measurements will **NOT** be asked.

3. Create an original word problem that requires a given computation and scenario, as in Problem #6 from WA #2 and extra, non-required practice HW #2 listed on the web.

Integers: Know that the set **Z** of integers consists of the whole numbers and their opposites/negatives.

1. Understand that a "−" sign in front of a VARIABLE does not make a negative <u>number</u> or value (as in, $-x$ could be a positive number/positive value if x is itself negative). Zero is neither positive nor negative.

   (a) Do NOT rename a variable to include a − that isn't given: for instance, in Problem #5 of WA #3, S is already negative, so don't refer to it as "$-S$" in your explanations.

2. Understand integers on the number line and that LEFT is always LESS.

3. AVOID confusing statements like "−5 is a greater negative than −2." Rephrase correctly.

4. Understand, use absolute value in BOTH ways: as distance from zero on a number line, and as the "positive version" of a number.

5. Interpret absolute value tasks like those from WA #3 and extra practice (#3 from p.246-247, in the Sept. 4/5 daily web list); know that $|0| = 0$ and is not positive.

6. As in Activity #3, WA #3, and extra practice HW #4 (again, see Sept. 4/5 web listing), answer questions about integer arithmetic rules applied to variables on a number line; explain carefully.

7. Place variables on a number line to fit given info about their operations, absolute values, and/or greater/less.

8. Given a specific integer arithmetic computation, write entirely in words how to read it aloud.

9. Work with models: Clown, temperature stories, Number Sentence Patterns, chips (they'll be available). Memorize the rules and interpretations that go with each.

   (a) Explain why we use models: to helps kids make sense of or discover abstract rules.
   (b) Work with models MUST use the original numbers and operations, no rewriting. (I.e., 2 - (-5) must be treated as "2 minus negative 5," and NOT as "2 plus 5.")
   (c) Describe the movements, start, and end of the Clown-on-a-Tightrope for a given computation.
   (d) Write the complete, precise integer number sentence acted out by the Clown in a given story.
   (e) Write the full number sentence for a given temperature story. Answer the actual story in words.
   (f) Write a temperature story that models a given integer arithmetic computation (expression).

i. Remember: multiplication temperature stories can only ask comparisons, not actual temperatures. Ask "Was it warmer/colder, and by how much?," not "What was the temperature?"
   (g) Correctly interpret negative signs when reporting verbal answers to temperature stories, as in "3 degrees colder," NOT "−3 degrees colder."
   (h) Create Number Sentence Patterns leading to a given computation, applying our guidelines. (Memorize the guidelines.)
   (i) Explain the appearance and effect of zero pairs with chips.
   (j) Verbally explain steps to act out a given add/subtract/multiply/divide task using chips. If you put in zero pairs, tell how many and WHY. State the chip AND numeric answers.
   (k) Beware using zero pairs when they aren't needed in subtraction.
   (l) For chip multiplication or division, recognize/create computations that are impossible to act out, explaining what goes wrong.
   (m) For chip division tasks that can be acted out, be able to recognize which scenario (partitioning vs. repeated subtraction) must be used.

Decimal Numbers: Define the CONCEPT "place value." (See notes.)

   1. Identify positions in a numeral by written name, numeral/fraction (as in 100s or 1/10s), and exponent.
   2. Convert among: standard notation, word form, expanded form with multiplication/with exponents.
   3. Round decimal numbers; remember that the rounding place MUST contain a digit, even if it's 0.
   4. Find one or more numbers that round TO a desired result, including rounding up vs. down.
   5. Find some/all decimal numbers satisfying given clues, including rounding or exponent clues.

You will have the entire class period to take the exam. When you finish, you may hand it in and leave.

Chairs will face the projector; sit in alternate rows, for easier walking without disturbing others.
(If we make the rows long, we'll fit against the left wall, the right wall, and one middle row.)

You will need a basic calculator (not cell phone, no alphabet), but no other aids are permitted.
(If you forget, you can borrow from me, but mine don't have +/− keys.)

Students with documented accommodations should speak with me and process ODS requests ASAP.
ODS should proctor your accommodations since our classroom and my schedule are not automatically free.

Make-up Policy:
   1. Notify me immediately if you'll miss the exam.
   2. Documentation will be required: get a doctor's note, accident report, newspaper notice, etc.
   3. If I excuse your absence, the Exam #1 content on our cumulative Final Exam in December will also be your make-up exam.
   4. (D2L will show an artificial 0 for any excused absence until the end of the course.)