

Prepare for the exam by studying the topics listed below, in conjunction with your notes, text, activity and other handouts, and graded and practice HW problems. You will be more successful if you strive to master the concepts in general, rather than simply memorizing specific examples that we have already done. Studying together is also a plus.

**Bring an approved calculator - 3-point deduction if you have to borrow from me!**  
**Also bring your paper Fraction Tiles, which I will examine when you leave.**

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

1. Understand how to arrange integers (and fractions) on the number line and that LEFT is **always** LESS, no matter what signs or other information occurs.
2. Given a specific integer arithmetic computation, write in words how to aloud.
3. For models, you **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.”)
4. Draw or verbally tell contents of different groups of plus/minus chips that represent the same overall amount (such as  $3 \oplus$  for positive 3, but also  $5 \oplus$  and  $2 \ominus$ ).
5. Given a specific integer arithmetic computation, draw **AND** verbally explain how to use plus/minus chips to act it out. State the numeric answer, too.
6. Recognize or create integer multiplication and division computations that are impossible to act out with chips, explaining what goes wrong.
7. Create Fact Patterns leading to a given computation, applying the guidelines.
8. Describe the actions and answer of the Clown-on-a-Tightrope for a given integer computation.
9. Write the precise integer computation and answer acted out by the Clown in a given “story.”
10. Work problems about arithmetic rules using variables on a number line, as in Activity #22, HW, and Q/HW #2. Prepare to explain carefully.
11. Understand absolute value as both distance from zero physically, and as the “positive version” of a number. Treat the bars like parentheses in the Order of Operations (see text HW problems).
12. Find a number’s additive inverse; give examples of pairs of additive inverses.
13. Solve problems like those assigned in 5-1A, 5-1B, 5-2A, and 5-2B.

**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 problems like those on Activity #1, HW, and Q/HW #3. Prepare for problems using Fraction Tiles and problems using diagrams.
5. State the Fundamental Law of Fractions (FLF) without using variables or formulas.
6. Use the FLF where needed: reducing to lowest terms, creating CDs, etc.
7. Demonstrate different methods for determining whether two fractions are equal, or which is bigger: drawing, lowest terms, CDs, cross-multiplying, and numerator/denominator meanings.
8. Explain carefully when using meanings of numerator and denominator to compare fractions. Recognize, create examples where this method fails.
9. Know the term denseness, and explain clearly what it says.
10. Find fractions equivalent to a given one, between two given ones.
11. Show  $+$ ,  $\times$ ,  $\div$  symbols **SEPARATELY** on top and bottom when using the FLF, the mediant.
12. Estimate fractions with or without having to choose from a given list (as in text HW).
13. Tell whether your estimate is high or low, and explain.
14. Add and/or subtract two or more fractions by hand.
15. Convert between mixed numbers and improper fractions both with and **WITHOUT** shortcuts.
16. ~~Add or subtract two or more mixed numbers entirely IN correct mixed number notation.~~