Concepts on Test #1

Section 1.1

- Subsets of the Real Numbers
  - Definition of sets
  - Logic and Critical Thinking
  - Graphing/Plotting on a # Line
- Computing an Average
- Real World Problems
  - Setup with constants & variables
  - Translation

Section 1.2

- Rectangular Coordinate System
  - Axes
  - Quadrants
  - Plotting Ordered Pairs & Labeling OP's
  - Independent vs Dependent
- Bar Graphs
  - Reading information to solve a problem
- Scattergram
  - Plotting related ordered pairs

Section 1.3

- Making a linear model from a scattergram
- Predicting/Estimation from linear model
- Intercepts
  - Ordered pair representation
  - Interpretation in a real world model

Section 1.4

- Approximate linear model
  - Best in theory
  - Why?
  - Interpreting
  - Extrapolation vs Interpolation Definitions
  - Understand model breakdown
  - Calculate error

Pre-Algebra

- Comparing numbers with <, > or =
- Basic order of operations knowledge PEMDAS
- Solving Basic Equations with addition or multiplication property of equality
- Working with decimals
  - Addition
  - Subtraction
  - Multiplication
  - Division
- Basic fraction knowledge
  - Picture to fraction & vice versa
  - Proper vs. Improper Fractions
    - ✓ Mixed # for improper & back

Pre-Algebra

- Prime Factorization of a Number
  - Prime # vs. Composite #
  - Using Exponential Notation to write prime factorization
  - Written as a product ALWAYS
- Reduce a Fraction
  - Using Prime Factorization
    Must know which by words
  - Using Greatest Common Factor
    - ✓ Must know which by words
- Building a Higher Term
  - Use of Fundamental Theorem of Fractions
  - Equivalent Fraction
- Multiplying Fractions & Mixed Numbers
  - Mixed #'s must be improper fractions 1st
  - Cancel 1st to reduce work in end
  - Simplify by reducing **and/or** changing to mixed # when needed
- Dividing Fractions & Mixed Numbers
  - Mixed #'s must be improper fractions 1st
  - Multiply by a reciprocal
    - ✓ Definition of a reciprocal as multiplicative inverse
    - ✓ Ways to find inverse: whole #, fraction, mixed #
- Adding/Subtract Fractions & Mixed #'s with Like Denominators
  - Add/Subtract and only then can you simplify
  - Mixed #'s can be done 2 ways
    - ✓ w/ columnar method borrowing & carrying is a place to pay attention
- Finding a Least Common Denominator (LCD)
  - Using prime factorization
  - Not the LCD and I will take points off
  - This isn't a guess & check method – must know mathematically rigorous method for me
- Adding/Subtracting Fractions & Mixed #'s with Unlike Denominators
  - Find LCD first (showing work)
  - Build higher terms (showing work)
  - For remainder of process see add/subt w/ like denominators
- Zero & Division
  - Division by zero is undefined: $a \div 0$, $^{a}/_{0}$ or $0\overline{)}a$
  - Dividing zero by any # results in zero $0 \div a$, $^{0}/_{a}$ or $a\overline{)}0$
- Identity Element for Multiplication – One
  - Anything times 1 yields the thing – $a \bullet 1 = a$
  - Divide anything by one and it yields the thing – $a \div 1 = a$
- Inverse Property of Multiplication
  - Any number multiplied by its reciprocal is 1 (said another way # ÷ self = 1) – $a \div a = 1$

To study for this test you should know to what each of these concepts refers. If you don't know use your notes (remember that Word documents are searchable) and the index of the book to find out. From there you should find examples and/or exercises that exhibit the concept and make sure that you understood how to do those type problems. Spend the majority of your study time on what you don't understand, making your ***5x8 notecard*** *as you study those concepts that you don't know. Remember that your 5x8 notecard may have step-through-processes and formulas but may not have definitions and examples. You* ***will not be allowed the use of a calculator*** *for this exam. Pay attention on to my website because on Sunday or Monday I will post the key to the practice exam.*