Test #2 Concepts Review (Ch 2-§3.1, 4.4, & 5.3)

Functions (§2.1-2.3)

- Domains & Ranges
- Evaluation using f(x) notation: The Algebra of Functions
  - Find f +g(2)
  - f(x) = 5, find x on a graph

Special Functions as they apply to f(n)

Shapes & Functions' Forms

- Parabolas
- Cubic
- Absolute Value
- Square Root

Set Notation as it applies for F(n) etc.

- Roster Form – List Finite or describable infinite
- Set Builder – Describes infinite sets

Linear Equations in 2 Variables (§2.4 & 2.5)

Slope

- Equation of line parallel or perp.
- Rise over Run on graph
- $(y_2 - y_1)/ (x_2 - x_1)$ from 2 ordered pairs

Intercepts

- X-Intercept: Crosses x-axis, where y=0
- Y-Intercept: Crosses y-axis, where x=0, (0, b) as ordered pair

Slope Intercept Form: y=mx + b

- m = slope & b is y-intercept

Graphing using y =mx + b

- Horizontal & Vertical Lines
  - Equations
  - Ordered Pairs
  - Slopes

Parallel & Perpendicular Lines

- Based on slopes

Building Equations of Lines

- Know slope & y-intercept use : y =mx + b
  - Slope found in 3 ways
    - Equation of line parallel or perp.
    - Rise over Run on graph
    - $(y_2 - y_1)/ (x_2 - x_1)$ from 2 ordered pairs
    - Y-Intercept
    - Crosses y-axis on graph
      - (0, b) in ordered pair
      - b =
- Know only slope & not y-intercept use: $y - y_1 = m(x - x_1)$
  - See above for slope

Linear Inequalities in 2 Variables (§4.4)

Graphing is Solving

- Boundary Line to start (equation as an equality)
  - Dotted for strict < or > & Solid for ≤ or ≥
  - Shade according to y > mx + b or y< mx +b
  - Check point in shaded region to check

Factoring (§5.3)

GCF

- Numeric GCF – Find all factors & highest is GCF
- Variable GCF – Lowest exponent; remember DNE then not in GCF
- Binomial GCF – When factored ends up binomial x binomial

Factoring by Grouping

- Two applications of GCF, 1st after grouping & 2nd is binomial GCF

Solving Systems of Linear Equations in 2 Variables (§3.1)

- 3 Differing Solutions: A single ordered pair, No Solution/Null Set, Infinite Sol.
- Solve using Graphing
- Solve using Substitution
- Solve using Elimination/Addition

Don't forget about these things as they apply to above concepts

Translation of Mathematical & Algebraic Expression and Algebraic Equations

Know words for operators

- Addition: sum, total, plus, increased by, added to, greater than, years older than
- Subtraction: subtract, less, difference of, decreased by, take away, subtracted from, years younger than, less than
- Multiplication: multiply, product, twice, times, at, of, repeated addition
- Division: divided by, ratio, quotient, divide
- Exponents: squared, cubed, raised to the power of (or a portion of this)
- Equals: any form of "to be" (is, was, were, etc.), yields, equals
- Parentheses: 4 phrasings

Define variable if used

Simplifying Algebraic Expressions

Can't be solved

Can't be cleared

Use distributive property

Combine like terms (use skills with **fractions**, decimals, mixed #'s, integers)

Solving Equations

Clearing of Fractions & Decimals (not solving, just clearing)

Solving using distributive prop., simplification, add. prop. & mult. prop.

- Give solution set as x = # or {#} or Null Set or All Reals

Know the indicators for Identities & Contradictions & Solutions as a Result

- Identity Indicator is #1 = #1 and the solution is All Reals
- Contradiction Indicator is #1=#2 and the solution is Null Set

Rectangular Coordinate System & Graphing

Plotting & Labeling Ordered Pairs & Quadrant Information

Linear Equations in 2 Variables

- Using Slope-Intercept Form

Non-Linear Equations

- 2^{nd} Degree Equations/Quadratic
  - Recognize: Shape, Up/Down, Vertex, Symmetry
- Cubic Function
  - Recognize: Shape, Increasing/Decreasing, Center, Symmetry
- Absolute Value
  - Recognize: Shape, Up/Down, Vertex, Symmetry