Mathematical Reasoning Notes

54% is algebraic thinking!

"The GED Math test covers content fields like Number Operations and Number Sense (**20 to 30 percent**), Measurement and Geometry (**20 to 30 percent**), Data Analysis, Statistics, and Probability (**20 to 30 percent**), and Algebra, Functions, and Patterns (**20 to 30 percent**). The GED Math subtest includes two parts. www.ged.com

- Part 1➔5-6 questions, no calculator allowed.
- Part 2➔40-41 questions, calculator may be used but it may not be needed for most.

Number Operations and Number Sense (**20 to 30 percent**)

- Basic math skills are need for all problems, including a knowledge of
  - Addition (10s) and the inverse operation of subtraction
  - Multiplication (16s) and the inverse operation of division
  - Some knowledge of all factors from table of 16s can assist in basic division, finding common denominators, and the factoring of quadratic equations.
  - Powers/Roots charts of square to 25 and cube to 10 for simplifying some problems containing them.
- Number Sense: Knowledge of the properties of arithmetic is needed:
  - Numerical Sets of numbers used in arithmetic.
    - Counting numbers, Whole numbers, Integers
    - Rational numbers, Irrational numbers, Real numbers
  - Properties of Real Numbers (Field Properties)
    - Closure, Associative, Commutative
    - Identity
    - Inverse and its applications.
    - Distributive (this is important for the factoring of expressions)
  - Properties of Equality and Inequality
    - Multiplication property of Zero (solving quadratic equations)
    - Reflexive property, Symmetric property
    - Zero product property (solving quadratic equations)
    - Transitive property
    - Addition property
    - Subtraction property
    - Multiplication property
    - Division property
    - Substitution property
  - Word Problems
  - Distance and Cost
  - Decimals, Fractions, Percent
  - Calculator skills (TI-30XS Multiview)

Measurement and Geometry (20 to 30 percent)
- Measurement (U.S. Customary System vs Metric System)
- Proportions
- 2D Geometry. Plane Figures
  - Circles, Triangles, Quadrilaterals, Miscellaneous
  - Perimeter and Area
- 3D Geometry
  - Tetrahedron, Cuboids, Prisms, Pyramids, Cones, Sphere
  - Surface Area and Volume
- Combined 2D and 3D Figures

Data Analysis, Statistics, and Probability (20 to 30 percent)
- Mean, median, mode, range (this is on 3 GED Exams➔Math, Science, Social Studies)
- Weighted averages, find missing values in averaging
- Central Tendency
- Counting methods
  - Combinations
  - Factorials
  - Permutations
- Probability (dice, cards, etc.)
- Proportions
- Reading/interpreting graphs➔Math, Science, Social Studies
  - Tables and Pictographs
  - Bar, Line, Box and Whiskers, Bell-shaped, Histograms
  - Line Plots, Circle Graphs

Algebra, Functions, and Patterns (20 to 30 percent)
- Number Line: positive and negative values
- Powers, Roots, Scientific Notation
- Order of Operations
- Absolute Value (distance on number line)
- Expressions and the calculator skills
- Polynomials understanding and arithmetic skills with them
- Operations with polynomial expressions
- Equations and finding the solution skills
- Inequalities and finding the solution skills
- Word Problems
- Graphing linear graphs and slope
- Slope Equations
- Systems of linear equations
- Patterns and Functions