

## **Mathematics for the Liberal Arts Student (Topical List)**

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### **Core Topics (Mandatory)**

- \*Sets and Set Notation
- \*Venn Diagrams
- \*Unit (Dimension) Analysis
- \*Metric-USCS Conversions
- \*Temperature Conversions
- \*Critical Thinking and Problem Solving Skills
- \*Conversions between percentages/fractions/decimals
- \*Absolute Change/Relative Change
- \*Solving Percentage Problems
- \*Scientific Notation
- \*Big Numbers and Estimation
- \*Simple and Compound Interest
- \*Continuous Compounded Interest
- \*Savings Plan Formulas (With Regular Payments)
- \*Total and Annual Return
- \*Annual Percentage Yield
- \*Loan Payment Calculations (Student Loans/Mortgages/Credit Cards)
- \*Statistical Terminology
- \*Statistical Sampling Techniques
- \*Types of Statistical Studies and Blinding
- \*Bias in Statistical Studies & Confounding Variables
- \*Measures of Center (Average)
- \*Fundamentals of Probability (Theoretical, Empirical, and Subjective)
- \*Probability of an Event Not Occurring
- \*Constructing a Probability Distribution
- \*Odds For and Odds Against
- \*Combining Probabilities (And Probabilities/Or Probabilities)
- \*Independent Events/Mutually Exclusive Events
- \*At Least Once Probabilities
- \*The Law of Large Numbers
- \*Gambler's Fallacy
- \*Expected Value
- \*Counting and Arrangements with Repetition
- \*Combinations/Permutations
- \*Exponential Growth and the Impact of Doubling
- \*Doubling Time/Half-Life Time.
- \*Approximate Doubling Time Formula

Note: It is difficult to cover both statistics and probability with any great detail. So the preference is that you choose one of the two topics and cover it in detail and the other topic is covered but may not cover as much.

### **Optional Topics**

\*Informal Fallacies

\*How Numbers Deceive (Polygraphs, Mammograms, Simpson's Paradox)

\*Constructing and Interpreting Statistical Tables and Graphs (Bar Graphs/Histograms /Line Charts/Stem and Leaf Plots/Boxplots).

\*Reading and Interpreting Graphics from the Media

\*Correlation and Causality

\*Characterizing Data Sets and Distributions (Skew, Symmetry, Variation)

\*Five Number Summary

\*Constructing Functions

\*Mathematics and Music

\*Mathematics and Politics

\*Mathematics and Art/Perspective

### **Technology Exposure**

Exposure to basic computations on a calculator including exponents and factorials.