

## **Smith, MATH for Liberal Arts, TOC**

### **1. THE NATURE OF NUMERATION.**

Math Anxiety Source. What's the Problem? Early Numeration Systems. Hindu-Arabic Numeration Systems. Different Numeration Systems. Binary Numeration Systems. History of Calculating Devices.

### **2. THE NATURE OF NUMBERS.**

It's Natural. Prime Numbers. Numbers — Up and Down. It's a Long Way From Zero to One. It's Irrational. Be Real. Mathematical Modeling.

### **3. THE NATURE OF ALGEBRA.**

Polynomials. Factoring. Evaluation, Application, and Spreadsheets. Equations. Inequalities. Algebra in Problem Solving. Ratios, Proportions, and Problem Solving. Percents. Modeling Uncategorized Problems.

### **4. THE NATURE OF GEOMETRY.**

Geometry. Polygons and Angles. Triangles. Mathematics, Art, and Non-Euclidean Geometries. Perimeter and Area. Surface Area, Volume and Capacity.

### **5. THE NATURE OF NETWORKS.**

Euler Circuits and Hamiltonian Cycles. Trees and Minimum Spanning Trees. Topology and Fractals.

### **6. THE NATURE OF GROWTH.**

Exponential Equations. Logarithmic Equations. Applications of Growth and Decay.

### **7. THE NATURE OF MONEY.**

It's Simple. Buying on Credit. Credit Card Interest. Compound Interest. Buying a Home.

### **8. THE NATURE OF SETS AND LOGIC.**

Introduction to Sets. Set Relationships. Operations with Sets. Venn Diagrams. Survey Problems Using Sets. Inductive and Deductive Reasoning.

### **9. THE NATURE OF COUNTING.**

Permutations. Combinations. Counting Without Counting. Rubik's Cube and Instant Insanity.

### **10. THE NATURE OF CHANCE.**

It's Not Certain. Probability Models. Odds and Conditional Probability. Mathematical Expectation. Frequency Distributions and Graphs. Descriptive Statistics. It's Normal.

### **11. THE NATURE OF GRAPHS – THE MARRIAGE OF ALGEBRA AND GEOMETRY.**

Cartesian Coordinate System. Functions. Lines. Systems and Inequalities. Graphing Curves.

### **12. THE NATURE OF VOTING AND APPORTIONMENT.**

Voting. Voting Dilemmas. Apportionment. Apportionment Paradoxes.