Algebra: A Complete Course

STRUCTURE OF MATHEMATICS (Unit I)	FIRST DEGREE RELATIONS			SECOND DEGREE RELATIONS (or higher		RATIONAL DEGREE RELATIONS (Unit VII)	SUMMARY OF SECOND DEGREE RELATIONS		LITERAL DEGREE RELATIONS (Unit X)
	One Placeholder (Unit II)	Two Placeholders (Unit III)	Three Placeholders (Unit IV)	Polynomials (Unit V)	Algebraic Fractions (Unit VI)		Quadratic (Unit VIII)	Conic Sections (Unit IX)	

STRUCTURE OF MATHEMATICS (Unit I)

A. Mathematics as a Language

1 – Parts of Speech
2 – Expressions
3 – Translations

B. More on Numbers

1 – Number System
2 – Fraction & Decimal
3 – Equivalent Forms (1)
4 – Equivalent Forms (2)
5 – Percent
6 – Primes & Composites
7 – Least Common Multiple
8 – Greatest Common Factor

C. More on Operations

1 – Order
2 – Properties (1)
3 – Properties (2)
4 – Fractions (1)
5 – Fractions (2)
6 – Fractions (3)
7 – Decimals
8 – Signed Numbers (1)
9 – Signed Numbers (2)
10 – Signed Numbers (3)
11 – Signed Numbers (4)

D. More on Relations

1 – Order
2 – Properties (1)
3 – Properties (2)

E. Models

1 – Sets
2 – Functions

UNIT TEST I

FIRST DEGREE RELATIONS

One Placeholder (Unit II)

A. Basic Relations

1 – Solutions
2 – Making Zeros
3 – Making Ones
4 – Combinations

B. Complications

1 – Grouping Symbols
2 – Like Terms on the Same Side
3 – Placeholders on Both Sides
4 – Combinations

C. Special Cases

1 – No Solution
2 – Infinite Solutions

D. Systems

1 – "And"
2 – "Or"
3 – Absolute Value (1)
4 – Absolute Value (2)
5 – Absolute Value (3)

E. Problem Solving

1 – Setup
2 – "Numbers"
3 – "Consecutive Integers"
4 – "Age"
5 – "Geometric Figures"
6 – "Motion"
7 – "Percent"

UNIT TEST II

Two Placeholders (Unit III)

A. Solution Sets

1 – Equations
2 – Inequalities
3 – Graphing Terms
4 – $y = mx$
5 – $y = mx + b$
6 – Intercepts

B. Special Cases

1 – $y =, >, < a$
2 – $x =, >, < a$
3 – Absolute Value

C. Relations from Solutions

1 – Given Slope and y-intercept
2 – Given Slope and One Solution
3 – Given Two Solutions
4 – Special Cases

D. Systems

1 – Graphic (1)
2 – Graphic (2)
3 – Algebraic (1)
4 – Algebraic (2)

E. Special Cases

1 – No Solution
2 – Infinite Solutions

F. Problem Solving

1 – Setup
2 – "Numbers"
3 – "Age"
4 – "Geometric Figures"
5 – "Motion"
6 – "Percent"
7 – "Mixture"

UNIT TEST III

Three Placeholders (Unit IV)

A. Solution Sets

1 – One Sentence
2 – Two Sentences
3 – Three or More Sentences

B. Special Cases

1 – No Solution
2 – Infinite Solutions

C. Problem Solving

1 – "Numbers"
2 – "Age"
3 – "Geometric Figure"
4 – "Mixture"

UNIT TEST IV

SECOND DEGREE RELATIONS (or higher

Polynomials (Unit V)

A. Exponent Notation

1 – Terminology
2 – Operations (1)
3 – Operations (2)
4 – Special Cases
5 – Scientific Notation

B. Polynomials

1 – Terminology (1)
2 – Terminology (2)
3 – Operations (1)
4 – Operations (2)
5 – Operations (3)

C. Solving Relations

1 – Principle of Zero Products
2 – Common Factor
3 – Difference of Squares
4 – Perfect Square Trinomial
5 – General Trinomial
6 – Four or More Terms
7 – Sum or Difference of Cubes
8 – General Strategy
9 – Synthetic Division
10 – Literal Equations

D. Problem Solving

1 – "Numbers"
2 – "Consecutive Integers"
3 – "Geometric Figures"
4 – "Formula"

UNIT TEST V

Algebraic Fractions (Unit VI)

A. Operations

1 – Simplifying
2 – Multiplying
3 – Dividing
4 – Adding or Subtracting
5 – Complex

B. Solving Relations

1 – Equations (1)
2 – Equations (2)
3 – Inequalities
4 – Literal Equations

C. Problem Solving

1 – "Fractions"
2 – "Work"
3 – "Motion"
4 – "Direct Variation"
5 – "Inverse Variation"
6 – "Mixed Variation"

UNIT TEST VI

RATIONAL DEGREE RELATIONS (Unit VII)

A. Rational Exponents

1 – Radicals
2 – " k^{th} " Roots

B. Operations

1 – Multiplying
2 – Simplifying
3 – Dividing
4 – Adding or Subtracting
5 – In Polynomials
6 – Rationalizing

C. Solving Relations

1 – One Radical
2 – Two Radicals

D. Problem Solving

1 – "Distance"
2 – "Formula"

E. Complex Numbers

1 – Definition
2 – Adding or subtracting
3 – Multiplying
4 – Dividing

UNIT TEST VII

SUMMARY OF SECOND DEGREE RELATIONS

Quadratic (Unit VIII)

A. Standard Form

1 – a, b, or $c = 0$
2 – a, b, or $c \neq 0$
3 – Quadratic Formula
4 – Checking Solutions
5 – Inequalities

B. Quadratic in Form

1 – Higher Order to Lower Order > 0
2 – Lower Order to Higher Order > 0
3 – Integer Order < 0

C. Problem Solving

1 – "Geometric Figures"
2 – "Pythagorean Theorem"
3 – "Work"
4 – "Motion"

UNIT TEST VIII

Conic Sections (Unit IX)

A. Parabolas

1 – Origins
2 – Standard Form (1)
3 – Standard Form (2)
4 – Standard Form (3)
5 – Standard Form (4)
6 – Intercepts

B. Circles

1 – Standard Form
2 – Non-standard Form

C. Ellipses

1 – Standard Form
2 – Non-standard Form

D. Hyperbolas

1 – Standard Form
2 – Non-standard Form

E. Systems

1 – One 1st Degree and One 2nd Degree
2 – Two 2nd Degree

F. Problem Solving

1 – "Numbers"
2 – "Geometric Figures"

UNIT TEST IX

LITERAL DEGREE RELATIONS (Unit X)

A. Exponential Functions

1 – Functions of x
2 – Functions of y

B. Logarithmic Functions

1 – Translating
2 – Graphs of Solution Sets

C. Operations

1 – Properties
2 – Finding Logarithms
3 – Computation

D. Solving Equations

1 – Exponential
2 – Logarithmic

UNIT TEST X

Module A	Module B	Module C	Module D	Module E	Module F