Intermediate Algebra
Course Lesson Plan: 36 weeks

Welcome to Thinkwell's Homeschool Intermediate Algebra! We're thrilled that you've decided to make us part of your homeschool curriculum. This lesson plan is meant to be a guide for you and your homeschool student. Each day, you'll tackle a different topic and all the materials associated with that topic, such as video lectures, exercises, and interactivities. If you follow our day-by-day schedule, you'll complete the full curriculum for the course in 36 weeks. Feel free to modify and amend the plan as it best works for you. And, as always, please let us know what we can do to help you get you up and running with Thinkwell's Intermediate Algebra!

Week 1 Chapter 1: The Real Numbers	
Assignments	Notes
Week 1, Day 1 ☐ 1.1.1 An Introduction to Algebra ☐ 1.1.2 The Top Ten List of Mistakes	
Week 1, Day 2 ☐ 1.2.1 Properties, Identities, & Inverses	
Week 1, Day 3 ☐ 1.3.1 Concepts of Inequality ☐ 1.3.2 Inequalities and Interval Notation	
Week 1, Day 4 ☐ 1.4.1 Properties of Absolute Value ☐ 1.4.2 Evaluating Absolute Value Expressions	
Week 1, Day 5 ☐ 1.5.1 Operations Considering Signs	

Week 2 Chapter 1: The Real Numbers Chapter 1 Test Chapter 2: Equations and Inequalities	
Assignments	Notes
Week 2, Day 1 ☐ 1.5.2 Prime and Composite Numbers and Their Roots ☐ 1.5.3 Order of Operations	
Week 2, Day 2 ☐ 1.6.1 Forms of Conditional Statements ☐ 1.6.2 Inductive Reasoning	
Week 2, Day 3 ☐ Chapter 1 Practice Test	
Week 2, Day 4 ☐ Chapter 1 Test	Chapter 1 Test Score: _____
Week 2, Day 5	

☐ 2.1.1 An Introduction to Solving Equations ☐ 2.1.2 Equality or Identity?	
Week 3 Chapter 2: Equations and Inequalities	
Assignments	Notes
Week 3, Day 1 ☐ 2.1.3 Equivalent Equations and Equations with No Solution ☐ 2.1.4 Solving Linear Equations	
Week 3, Day 2 ☐ 2.2.1 An Introduction to Solving Word Problems	
Week 3, Day 3 ☐ 2.2.2 Finding Perimeter	
Week 3, Day 4 ☐ 2.2.3 Solving a Linear Geometry Problem ☐ 2.2.4 Solving for Constant Velocity	
Week 3, Day 5 ☐ 2.3.1 Solving a Business Problem ☐ 2.3.2 Solving a Mixture Problem	

Week 4 Chapter 2: Equations and Inequalities	
Assignments	Notes
Week 4, Day 1 ☐ 2.3.3 Solving an Investment Problem ☐ 2.3.4 Solving for Consecutive Numbers	
Week 4, Day 2 ☐ 2.3.5 Finding an Average	
Week 4, Day 3 ☐ 2.4.1 An Introduction to Solving Inequalities ☐ 2.4.2 Solving Inequalities	
Week 4, Day 4 ☐ 2.4.3 Solving Word Problems with Inequalities	
Week 4, Day 5 ☐ 2.5.1 Sets, Intersections, and Unions ☐ 2.5.2 Solving Compound Inequalities	

Week 5 Chapter 2: Equations and Inequalities Chapter 2 Test	
Assignments	Notes
Week 5, Day 1 ☐ 2.5.3 More on Compound Inequalities ☐ 2.6.1 Matching Number Lines with Absolute Value	

Week 5, Day 2 ☐ 2.6.2 Solving Absolute Value Equations ☐ 2.6.3 Solving Equations with Two Absolute Value Expressions	
Week 5, Day 3 ☐ 2.7.1 Solving Absolute Value Inequalities ☐ 2.7.2 Solving Absolute Value Inequalities: More Examples	
Week 5, Day 4 ☐ Chapter 2 Practice Test	
Week 5, Day 5 ☐ Chapter 2 Test	Chapter 2 Test Score: _____

Week 6 Chapter 3: Exponents and Polynomials	
Assignments	Notes
Week 6, Day 1 ☐ 3.1.1 An Introduction to Exponents ☐ 3.1.2 Evaluating Exponential Expressions	
Week 6, Day 2 ☐ 3.1.3 Applying the Rules of Exponents ☐ 3.1.4 Evaluating Expressions with Negative Exponents	
Week 6, Day 3 ☐ 3.2.1 Converting between Decimal and Scientific Notation	
Week 6, Day 4 ☐ 3.3.1 Determining Components and Degree ☐ 3.3.2 Adding and Subtracting Polynomials	
Week 6, Day 5 ☐ 3.3.3 Multiplying Polynomials	

Week 7 Chapter 3: Exponents and Polynomials	
Assignments	Notes
Week 7, Day 1 ☐ 3.4.1 The FOIL Method ☐ 3.4.2 Multiplying Big Products	
Week 7, Day 2 ☐ 3.4.3 Using Special Products	
Week 7, Day 3 ☐ 3.5.1 Factoring Using the Greatest Common Factor ☐ 3.5.2 Factoring by Grouping	

Week 7, Day 4 ☐ 3.5.3 Factoring Trinomials Completely	
Week 7, Day 5 ☐ 3.5.4 Factoring Trinomials: The Guess and Check Method	
Week 8 Chapter 3: Exponents and Polynomials	
Assignments	Notes
Week 8, Day 1 ☐ 3.6.1 Factoring Perfect Square Trinomials ☐ 3.6.2 Factoring the Difference of Two Squares	
Week 8, Day 2 ☐ 3.6.3 Factoring Sums and Differences of Cubes ☐ 3.6.4 Factoring by Any Method	
Week 8, Day 3 ☐ 3.7.1 The Zero Factor Property	
Week 8, Day 4 ☐ 3.8.1 Using Long Division with Polynomials	
Week 8, Day 5 ☐ 3.8.2 Long Division: Another Example	

Week 9 Chapter 3: Exponents and Polynomials Chapter 3 Test	
Assignments	Notes
Week 9, Day 1 ☐ 3.9.1 Using Synthetic Division with Polynomials ☐ 3.9.2 More Synthetic Division	
Week 9, Day 2 ☐ 3.10.1 Using the Remainder Theorem	
Week 9, Day 3 ☐ 3.10.2 More on the Remainder Theorem	
Week 9, Day 4 ☐ Chapter 3 Practice Test	
Week 9, Day 5 ☐ Chapter 3 Test	Chapter 3 Test Score: _____

Week 10 Chapter 4: Rational Expressions	
Assignments	Notes
Week 10, Day 1 ☐ 4.1.1 An Introduction to Rational Expressions ☐ 4.1.2 Working with Fractions	
Week 10, Day 2	

☐ 4.1.3 Writing Rational Expressions in Lowest Terms	
Week 10, Day 3 ☐ 4.2.1 Multiplying and Dividing Rational Expressions ☐ 4.2.2 Adding and Subtracting Rational Expressions	
Week 10, Day 4 ☐ 4.2.3 Rewriting Complex Fractions	
Week 10, Day 5 ☐ 4.3.1 Solving a Linear Equation with Rationals ☐ 4.3.2 Solving a Linear Equation with Restrictions	

Week 11 Chapter 4: Rational Expressions	
Assignments	Notes
Week 11, Day 1 ☐ 4.4.1 Solving Rational Inequalities ☐ 4.4.2 Solving Rational Inequalities: Another Example	
Week 11, Day 2 ☐ 4.4.3 Determining Domain	
Week 11, Day 3 ☐ 4.5.1 Solving a Problem About Work ☐ 4.5.2 Resistors in Parallel	
Week 11, Day 4 ☐ 4.6.1 An Introduction to Variation ☐ 4.6.2 Direct Proportion	
Week 11, Day 5 ☐ 4.6.3 Inverse Proportion ☐ 4.6.4 Joint and Combined Proportion	

Week 12 Chapter 4 Test Chapter 5: Roots and Radicals	
Assignments	Notes
Week 12, Day 1 ☐ Chapter 4 Practice Test	
Week 12, Day 2 ☐ Chapter 4 Test	Chapter 4 Test Score: _____
Week 12, Day 3 ☐ 5.1.1 Radical Notation and Properties of Roots	

☐ 5.1.2 Variables and Negative Values under a Radical	
Week 12, Day 4	
☐ 5.1.3 Converting Rational Exponents and Radicals	
Week 12, Day 5	
☐ 5.2.1 Simplifying Radicals ☐ 5.2.2 Simplifying Radical Expressions with Variables	
Week 13 Chapter 5: Roots and Radicals	
Assignments	Notes
Week 13, Day 1 ☐ 5.3.1 Adding and Subtracting Radical Expressions ☐ 5.3.2 Rationalizing Denominators	
Week 13, Day 2 ☐ 5.4.1 Solving an Equation Containing a Radical ☐ 5.4.2 Solving Equations with Two Radical Expressions	
Week 13, Day 3 ☐ 5.4.3 Extraneous Roots ☐ 5.4.4 Solving Equations with Rational Exponents	
Week 13, Day 4 ☐ 5.5.1 Introducing and Writing Complex Numbers	
Week 13, Day 5 ☐ 5.5.2 Rewriting Powers of i	

Week 14 Chapter 5: Roots and Radicals Chapter 5 Test	
Assignments	Notes
Week 14, Day 1 ☐ 5.5.3 Adding and Subtracting Complex Numbers ☐ 5.5.4 Multiplying Complex Numbers	
Week 14, Day 2 ☐ 5.5.5 Dividing Complex Numbers ☐ 5.6.1 Finding the Length of the Diagonal of a Cube	
Week 14, Day 3 ☐ 5.6.2 Finding the Distance and Midpoint between Two Points ☐ 5.6.3 Applications in Meteorology	
Week 14, Day 4 ☐ Chapter 5 Practice Test	
Week 14, Day 5 ☐ Chapter 5 Test	Chapter 5 Test Score: _____

Week 15 Chapter 6: Relations and Functions	

Assignments	Notes
Week 15, Day 1 ☐ 6.1.1 Using the Cartesian System ☐ 6.1.2 Thinking Visually	
Week 15, Day 2 ☐ 6.2.1 Introducing Relations and Functions	
Week 15, Day 3 ☐ 6.2.2 Functions and the Vertical Line Test ☐ 6.2.3 Function Notation and Values	
Week 15, Day 4 ☐ 6.3.1 Finding Domain and Range	
Week 15, Day 5 ☐ 6.3.2 Domain and Range: An Explicit Example	

Week 16 Chapter 6: Relations and Functions	
Assignments	Notes
Week 16, Day 1 ☐ 6.3.3 Satisfying the Domain of a Function ☐ 6.3.4 Graphing Important Functions	
Week 16, Day 2 ☐ 6.4.1 Operations on Functions	
Week 16, Day 3 ☐ 6.4.2 Composite Functions ☐ 6.4.3 Components of Composite Functions	
Week 16, Day 4 ☐ Chapter 6 Practice Test	
Week 16, Day 5 ☐ Chapter 6 Test	Chapter 6 Test Score: _____

Week 17 Midterm Exam	
Assignments	Notes
Week 17, Day 1 ☐ Study for Midterm Exam	
Week 17, Day 2 ☐ Study for Midterm Exam	
Week 17, Day 3 ☐ Study for Midterm Exam	
Week 17, Day 4 ☐ Practice Midterm Exam	
Week 17, Day 5 ☐ Midterm Exam	Midterm Exam Score: _____

Week 18	
Chapter 7: The Straight Line	
Assignments	Notes
Week 18, Day 1 ☐ 7.1.1 An Introduction to Slope ☐ 7.1.2 Finding the Slope Given Two Points	
Week 18, Day 2 ☐ 7.2.1 Using Intercepts to Graph Lines ☐ 7.2.2 Working with Specific Lines	
Week 18, Day 3 ☐ 7.2.3 Interpreting Slope from a Graph	
Week 18, Day 4 ☐ 7.2.4 Graphing with a Point and the Slope	
Week 18, Day 5 ☐ 7.3.1 Writing an Equation in Slope-Intercept Form ☐ 7.3.2 Writing an Equation Given Two Points	

Week 19	
Chapter 7: The Straight Line Chapter 7 Test	
Assignments	Notes
Week 19, Day 1 ☐ 7.3.3 Writing an Equation in Point-Slope Form ☐ 7.3.4 Matching a Slope-Intercept Equation with its Graph	
Week 19, Day 2 ☐ 7.3.5 Slope for Parallel and Perpendicular Lines ☐ 7.4.1 Constructing a Linear Model from a Set of Data	
Week 19, Day 3 ☐ 7.4.2 Scatterplots and Predictions ☐ 7.4.3 Linear Cost and Revenue	
Week 19, Day 4 ☐ Chapter 7 Practice Test	
Week 19, Day 5 ☐ Chapter 7 Test	Chapter 7 Test Score: _____

Week 20	
Chapter 8: Systems of Equations	
Assignments	Notes
Week 20, Day 1 ☐ 8.1.1 An Introduction to Linear Systems ☐ 8.1.2 Solving a System by Graphing	
Week 20, Day 2	

Assignments	Notes
☐ 8.1.3 Solving a System by Substitution	
Week 20, Day 3	
☐ 8.1.4 Solving a System by Elimination	
Week 20, Day 4	
☐ 8.2.1 An Introduction to Systems in Three Variables	
☐ 8.2.2 Solving Systems with Three Variables	
Week 20, Day 5	
☐ 8.2.3 Solving Inconsistent Systems	
☐ 8.2.4 Solving Dependent Systems	
Week 21 Chapter 8: Systems of Equations	
Assignments	Notes
Week 21, Day 1	
☐ 8.2.5 Solving Systems with Two Equations	
Week 21, Day 2	
☐ 8.3.1 Investments	
☐ 8.3.2 Partial Fractions	
Week 21, Day 3	
☐ 8.4.1 An Introduction to Matrices	
☐ 8.4.2 Using the Gauss-Jordan Method	
Week 21, Day 4	
☐ 8.4.3 Using Gauss-Jordan: Another Example	
Week 21, Day 5	
☐ 8.5.1 Evaluating 2 x 2 Determinants	
☐ 8.5.2 Evaluating n x n Determinants	

Week 22 Chapter 8: Systems of Equations	
Assignments	Notes
Week 22, Day 1	
☐ 8.5.3 Evaluating a Determinant Using Elementary Row Operations	
Week 22, Day 2	
☐ 8.5.4 Finding a Determinant using Expanding by Cofactors	
Week 22, Day 3	
☐ 8.6.1 Using Cramer's Rule	
☐ 8.6.2 Using Cramer's Rule in a 3x3 Matrix	
Week 22, Day 4	
☐ 8.7.1 An Introduction to Graphing Linear Inequalities	
Week 22, Day 5	
☐ 8.8.1 Solving a Nonlinear System by Elimination	
☐ 8.8.2 Solving a Nonlinear System by Substitution	

Week 23	

Chapter 8 Test	
Chapter 9: Quadratic Equations and Inequalities	
Assignments	Notes
Week 23, Day 1 ☐ Chapter 8 Practice Test	
Week 23, Day 2 ☐ Chapter 8 Test	Chapter 8 Test Score: _____
Week 23, Day 3 ☐ 9.1.1 An Introduction to Quadratics ☐ 9.1.2 Solving Quadratics by Factoring	
Week 23, Day 4 ☐ 9.2.1 Finding x- and y-Intercepts ☐ 9.2.2 Nice-Looking Parabolas	
Week 23, Day 5 ☐ 9.2.3 Graphing Parabolas	

Week 24	
Chapter 9: Quadratic Equations and Inequalities	
Assignments	Notes
Week 24, Day 1 ☐ 9.3.1 Solving by Completing the Square ☐ 9.3.2 Completing the Square: Another Example	
Week 24, Day 2 ☐ 9.3.3 Finding the Vertex by Completing the Square	
Week 24, Day 3 ☐ 9.4.1 Using the Vertex to Write the Equation ☐ 9.4.2 Building a Polynomial Equation from Its Solutions	
Week 24, Day 4 ☐ 9.5.1 Proving the Quadratic Formula ☐ 9.5.2 Using the Quadratic Formula	
Week 24, Day 5 ☐ 9.5.3 Predicting Types of Solution from the Discriminant	

Week 25	
Chapter 9: Quadratic Equations and Inequalities	
Assignments	Notes
Week 25, Day 1 ☐ 9.5.4 Using the Discriminant to Graph Parabolas	
Week 25, Day 2	

☐ 9.6.1 Solving for a Squared Variable ☐ 9.6.2 Finding Real Number Restrictions	
Week 25, Day 3 ☐ 9.6.3 Solving Fancy Quadratics ☐ 9.6.4 Horizontal Parabolas	
Week 25, Day 4 ☐ 9.7.1 Solving a Quadratic Geometry Problem	
Week 25, Day 5 ☐ 9.7.2 Solving with the Pythagorean Theorem ☐ 9.7.3 Solving a Motion Problem	

Week 26 Chapter 9: Quadratic Equations and Inequalities Chapter 9 Test	
Assignments	Notes
Week 26, Day 1 ☐ 9.7.4 Solving a Projectile Problem ☐ 9.7.5 Solving Other Problems	
Week 26, Day 2 ☐ 9.8.1 Solving Quadratic Inequalities	
Week 26, Day 3 ☐ 9.8.2 Solving Quadratic Inequalities: Another Example	
Week 26, Day 4 ☐ Chapter 9 Practice Test	
Week 26, Day 5 ☐ Chapter 9 Test	Chapter 9 Test Score: _____

Week 27 Chapter 10: Conic Sections	
Assignments	Notes
Week 27, Day 1 ☐ 10.1.1 An Introduction to Conic Sections ☐ 10.1.2 An Introduction to Parabolas	
Week 27, Day 2 ☐ 10.2.1 Determining Information about a Parabola from the Equation ☐ 10.2.2 Writing an Equation for a Parabola	
Week 27, Day 3 ☐ 10.3.1 Shifting Curves along Axes	
Week 27, Day 4 ☐ 10.3.2 Shifting or Translating Curves along Axes ☐ 10.3.3 Stretching a Graph	
Week 27, Day 5	

☐ 10.3.4 Graphing Quadratics Using Patterns	

Week 28	
Chapter 10: Conic Sections	
Assignments	Notes
Week 28, Day 1 ☐ 10.4.1 Finding the Maximum or Minimum of a Quadratic ☐ 10.4.2 Maximum Height in the Real World: A Bridge	
Week 28, Day 2 ☐ 10.5.1 The Center-Radius Equation of a Circle	
Week 28, Day 3 ☐ 10.5.2 Finding the Center or Radius of a Circle ☐ 10.5.3 Decoding the Circle Formula	
Week 28, Day 4 ☐ 10.5.4 Solving Circle Problems	
Week 28, Day 5 ☐ 10.6.1 An Introduction to Ellipses ☐ 10.6.2 Finding the Equation for an Ellipse	

Week 29	
Chapter 10: Conic Sections	
Assignments	Notes
Week 29, Day 1 ☐ 10.6.3 Applying Ellipses: Satellites	
Week 29, Day 2 ☐ 10.7.1 An Introduction to Hyperbolas ☐ 10.7.2 Finding the Equation for a Hyperbola	
Week 29, Day 3 ☐ 10.7.3 Applying Hyperbolas: Navigation	
Week 29, Day 4 ☐ 10.8.1 Identifying a Conic ☐ 10.8.2 Name That Conic	
Week 29, Day 5 ☐ 10.9.1 Conic Halves	

Week 30	
Chapter 10 Test	
Chapter 11: Inverse, Exponential, and Logarithmic Functions	
Assignments	Notes

<u>Week 30, Day 1</u> ☐ Chapter 10 Practice Test	
<u>Week 30, Day 2</u> ☐ Chapter 10 Test	Chapter 10 Test Score: _____
<u>Week 30, Day 3</u> ☐ 11.1.1 Understanding Inverse Functions ☐ 11.1.2 The Horizontal Line Test	
<u>Week 30, Day 4</u> ☐ 11.1.3 Are Two Functions Inverses of Each Other? ☐ 11.1.4 Graphing the Inverse	
<u>Week 30, Day 5</u> ☐ 11.1.5 Finding the Inverse of a Function	

Week 31 Chapter 11: Inverse, Exponential, and Logarithmic Functions	
Assignments	Notes
<u>Week 31, Day 1</u> ☐ 11.2.1 An Introduction to Exponential Functions ☐ 11.2.2 Graphing Exponential Functions: Patterns	
<u>Week 31, Day 2</u> ☐ 11.2.3 Graphing Exponential Functions: More Patterns ☐ 11.2.4 The Number *e*	
<u>Week 31, Day 3</u> ☐ 11.3.1 Using Properties of Exponents to Solve Exponential Functions ☐ 11.3.2 Finding Present and Future Value	
<u>Week 31, Day 4</u> ☐ 11.3.3 Finding an Interest Rate to Match Goals	
<u>Week 31, Day 5</u> ☐ 11.4.1 An Introduction to Logarithmic Functions ☐ 11.4.2 Converting between Exponential and Logarithmic Functions	

Week 32 Chapter 11: Inverse, Exponential, and Logarithmic Functions	
Assignments	Notes
<u>Week 32, Day 1</u> ☐ 11.4.3 Graphing Logarithmic Functions ☐ 11.4.4 Matching Logarithmic Functions with Their Graphs	
<u>Week 32, Day 2</u> ☐ 11.5.1 Properties of Logarithms	
<u>Week 32, Day 3</u> ☐ 11.5.2 Expanding a Logarithmic Expression with Properties	

☐ 11.5.3 Combining Logarithmic Expressions	
Week 32, Day 4	
☐ 11.6.1 Finding the Value of a Logarithmic Function ☐ 11.6.2 Solving for x in Logarithmic Equations	
Week 32, Day 5	
☐ 11.6.3 Using the Logarithmic Change of Base Formula ☐ 11.6.4 Evaluating Logarithmic Functions with a Calculator	

Week 33 Chapter 11: Inverse, Exponential, and Logarithmic Functions	
Assignments	Notes
Week 33, Day 1 ☐ 11.7.1 Solving Exponential Equations ☐ 11.7.2 Solving Logarithmic Equations	
Week 33, Day 2 ☐ 11.7.3 Solving Equations with Logarithmic Exponents	
Week 33, Day 3 ☐ 11.8.1 Compound Interest ☐ 11.8.2 Predicting Change	
Week 33, Day 4 ☐ 11.9.1 An Introduction to Exponential Growth and Decay ☐ 11.9.2 Half Life	
Week 33, Day 5 ☐ 11.9.3 Newton's Law of Cooling ☐ 11.9.4 Continuously Compounded Interest	

Week 34 Chapter 11 Test Chapter 12: Further Topics	
Assignments	Notes
Week 34, Day 1 ☐ Chapter 11 Practice Test	
Week 34, Day 2 ☐ Chapter 11 Test	Chapter 11 Test Score: _____
Week 34, Day 3 ☐ 12.1.1 General and Specific Terms ☐ 12.1.2 Understanding Sequence Problems	
Week 34, Day 4 ☐ 12.1.3 Series Notation, Definitions and Evaluating	
Week 34, Day 5 ☐ 12.2.1 Finding Terms in Arithmetic Sequences ☐ 12.2.2 Finding the Sum of an Arithmetic Sequence	

Week 35 Chapter 12: Further Topics Chapter 12 Test	
Assignments	Notes
Week 35, Day 1 ☐ 12.3.1 Finding Terms in Geometric Sequences ☐ 12.3.2 Finding the Sum of a Geometric Sequence	
Week 35, Day 2 ☐ 12.4.1 Using the Binomial Theorem	
Week 35, Day 3 ☐ 12.4.2 Binomial Coefficients ☐ 12.4.3 Finding a Term of a Binomial Expansion	
Week 35, Day 4 ☐ Chapter 12 Practice Test	
Week 35, Day 5 ☐ Chapter 12 Test	Chapter 12 Test Score: _____
Week 36 Final Exam	
Assignments	Notes
Week 36, Day 1 ☐ Study for Final Exam	
Week 36, Day 2 ☐ Study for Final Exam	
Week 36, Day 3 ☐ Study for Final Exam	
Week 36, Day 4 ☐ Practice Final Exam	
Week 36, Day 5 ☐ Final Exam	Final Exam Score: _____