## Beginning Algebra Course Lesson Plan: 37 weeks

Welcome to Thinkwell's Homeschool Beginning 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, notes, and sample problems. If you follow our day-by-day schedule, you'll complete the full curriculum for the course in 37 weeks. Feel free to modify and amend the plan as it best works for you. And, as always, please <u>let us know</u> what we can do to help get you up and running with Thinkwell's Beginning Algebra!

Week 1	
Chapter 1: Pre-Algebra Review	
Assignments	Notes
<u>Week 1, Day 1</u>	
• 1.1.1 Beginning Algebra	
Week 1, Day 2	
• 1.1.2 Review of Arithmetic: Addition and Subtraction	
Week 1, Day 3	
<ul> <li>1.1.3 Review of Arithmetic: Multiplication and Division</li> </ul>	
<ul> <li>1.1.4 Top Ten List of Mistakes</li> </ul>	
Week 1, Day 4	
• 1.2.1 Factors and Primes	
Week 1, Day 5	
1.2.2 Greatest Common Factor and Least Common Multiples	

Week 2	
Chapter 1: Pre-Algebra Review	
Assignments	Notes
<u>Week 2, Day 1</u>	
1.2.3 Introduction to Fractions	
Week 2, Day 2	
<ul> <li>1.2.4 Multiplying Fractions</li> </ul>	
Week 2, Day 3	
• 1.2.5 Dividing Fractions	
Week 2, Day 4	
• 1.2.6 Adding Fractions	
Week 2, Day 5	
• 1.2.7 Subtracting Fractions	
• 1.2.8 Mixed Numbers	

Week 3	
Chapter 1: Pre-Algebra Review	
Assignments	Notes
Week 3, Day 1	
<ul> <li>1.2.9 Adding and Subtracting Mixed Numbers</li> </ul>	
Week 3, Day 2	
<ul> <li>1.2.10 Multiplying and Dividing Mixed Numbers</li> </ul>	
Week 3, Day 3	
• 1.3.1 Decimal Numbers	
Week 3, Day 4	
<ul> <li>1.3.2 Multiplying and Dividing Decimals</li> </ul>	
Week 3, Day 5	
• 1.3.3 Percent	
• 1.3.4 Conversion between Fractions, Percents, and Decimals	

Week 4	
Chapter 1 Test	
Chapter 2: Foundations of Algebra	
Assignments	Notes
<u>Week 4, Day 1</u>	
Chapter 1 Practice Test	
Week 4, Day 2	Chapter 1 Test
Chapter 1 Test	Score:
Week 4, Day 3	
• 2.1.1 Real Numbers	
2.1.2 Ordering Real Numbers	
Week 4, Day 4	
• 2.1.3 Arithmetic on the Number Line	
Week 4, Day 5	
2.1.4 Multiplying Real Numbers	

Week 5	
Chapter 2: Foundations of Algebra	
Assignments	Notes
Week 5, Day 1	
<ul> <li>2.1.5 Multiplying a Negative by a Negative: The Why</li> </ul>	
Week 5, Day 2	
• 2.1.6 Dividing Real Numbers	
Week 5, Day 3	
• 2.1.7 Order of Operations	
Week 5, Day 4	
• 2.1.8 Properties of Real Numbers	
Week 5, Day 5	
2.2.1 Introduction to Exponents	

2.2.2 Evaluating Exponential Expressions	
Week 6	
Chapter 2: Foundations of Algebra	
Assignments	Notes
Week 6, Day 1	
• 2.2.3 Applying the Rules of Exponents	
Week 6, Day 2	
<ul> <li>2.2.4 Evaluating Expressions with Negative Exponents</li> </ul>	
Week 6, Day 3	
<ul> <li>2.2.5 Converting between Decimal and Scientific Notation</li> </ul>	
Week 6, Day 4	
• 2.3.1 Algebraic Expressions	
Week 6, Day 5	
<ul> <li>2.3.2 Introduction to Word Problems</li> </ul>	

Week 7	
Chapter 2 Test	
Assignments	Notes
Week 7, Day 1	
Chapter 2 Practice Test	
<u>Week 7, Day 2</u>	Chapter 2 Test
Chapter 2 Test	Score:
Week 7, Day 3	
• 3.1.1 Equations	
<ul> <li>3.1.2 Addition Property of Equality</li> </ul>	
Week 7, Day 4	
<ul> <li>3.1.3 Multiplication Property of Equality</li> </ul>	
Week 7, Day 5	
<ul> <li>3.2.1 Solving Equations with the Variable on One Side</li> </ul>	

Notes
Chapter 3 Test
Score:

Week 9	
Chapter 4: Linear Equations and Inequalities	
Assignments	Notes
<u>Week 9, Day 1</u>	
• 4.1.1 Formulas	
<ul> <li>4.1.2 Formulas: Temperature Conversion and Rate</li> </ul>	
<u>Week 9, Day 2</u>	
4.1.3 Ratios and Proportions	
Week 9, Day 3	
<ul> <li>4.1.4 More Ratios and Proportions</li> </ul>	
Week 9, Day 4	
• 4.1.5 Finding a Perimeter	
Week 9, Day 5	
<ul> <li>4.1.6 Solving a Linear Geometry Problem</li> </ul>	
<ul> <li>4.1.7 Solving for Constant Velocity</li> </ul>	

Week 10	
Chapter 4: Linear Equations and Inequalities	
Assignments	Notes
<u>Week 10, Day 1</u>	
<ul> <li>4.1.8 Solving a Business Problem</li> </ul>	
<u>Week 10, Day 2</u>	
<ul> <li>4.1.9 Solving a Mixture Problem</li> </ul>	
Week 10, Day 3	
<ul> <li>4.1.10 Solving an Investment Problem</li> </ul>	
<u>Week 10, Day 4</u>	
<ul> <li>4.1.11 Solving for Consecutive Numbers</li> </ul>	
• 4.1.12 Finding an Average	
Week 10, Day 5	
4.2.1 Introduction to Inequalities	

Week 11	
Chapter 4: Linear Equations and Inequalities	
Assignments	Notes
<u>Week 11, Day 1</u>	
4.2.2 Solving Inequalities	
<ul> <li>4.2.3 Solving Word Problems with Inequalities</li> </ul>	
Week 11, Day 2	
<ul> <li>4.3.1 Sets, Intersections, and Unions</li> </ul>	
Week 11, Day 3	
<ul> <li>4.3.2 Solving Compound Inequalities</li> </ul>	
Week 11, Day 4	

4.3.3 More On Compound Inequalities	
<u>Week 11, Day 5</u>	
<ul> <li>4.4.1 Matching Number Lines with Absolute Value</li> </ul>	
Week 12	
Chapter 4: Linear Equations and Inequalities	
Chapter 4 Test	
Assignments	Notes
<u>Week 12, Day 1</u>	
<ul> <li>4.4.2 Solving Absolute-Value Equations</li> </ul>	
• 4.4.3 Solving Equations with Two Absolute-Value Expressions	
Week 12, Day 2	
<ul> <li>4.5.1 Solving Absolute-Value Inequalities</li> </ul>	
Week 12, Day 3	
<ul> <li>4.5.2 Solving Absolute-Value Inequalities: More Examples</li> </ul>	
Week 12, Day 4	
Chapter 4 Practice Test	
Week 12, Day 5	Chapter 4 Test
Chapter 4 Test	Score:

Week 13	
Chapter 5: Polynomials	
Assignments	Notes
<u>Week 13, Day 1</u>	
<ul> <li>5.1.1 Determining Components and Degree</li> </ul>	
<ul> <li>5.1.2 Adding and Subtracting Polynomials</li> </ul>	
Week 13, Day 2	
• 5.1.3 Multiplying Polynomials	
Week 13, Day 3	
• 5.2.1 The FOIL Method	
Week 13, Day 4	
• 5.2.2 Multiplying Big Products	
Week 13, Day 5	
5.2.3 Using Special Products	

Week 14	
Chapter 5: Polynomials	
Assignments	Notes
<u>Week 14, Day 1</u>	
• 5.3.1 Factoring Using the Greatest Common Factor	
• 5.3.2 Factoring by Grouping	
<u>Week 14, Day 2</u>	
• 5.3.3 Factoring Trinomials Completely	
<u>Week 14, Day 3</u>	

٠	5.3.4 Factoring Trinomials: The Guess and Check Method	
Week	14, Day 4	
•	5.4.1 Factoring Perfect-Square Trinomials	
Week	14, Day 5	
•	5.4.2 Factoring the Difference of Two Squares	
•	5.4.3 Factoring the Sums and Differences of Cubes	

Week 15	
Chapter 5: Polynomials	
Assignments	Notes
<u>Week 15, Day 1</u>	
<ul> <li>5.4.4 Factoring by Any Method</li> </ul>	
Week 15, Day 2	
• 5.5.1 The Zero-Factor Property	
Week 15, Day 3	
<ul> <li>5.6.1 Using Long Division with Polynomials</li> </ul>	
Week 15, Day 4	
<ul> <li>5.6.2 Long Division: Another Example</li> </ul>	
Week 15, Day 5	
• 5.7.1 Using Synthetic Division with Polynomials	

Week 16	
Chapter 5: Polynomials	
Chapter 5 Test	
Assignments	Notes
<u>Week 16, Day 1</u>	
• 5.7.2 More Synthetic Division	
Week 16, Day 2	
<ul> <li>5.8.1 Using the Remainder Theorem</li> </ul>	
Week 16, Day 3	
• 5.8.2 More on the Remainder Theorem	
Week 16, Day 4	
Chapter 5 Practice Test	
Week 16, Day 5	Chapter 5 Test
Chapter 5 Test	Score:

Week 17	
Midterm Exam	
Chapter 6: Rational Expressions	
Assignments	Notes
<u>Week 17, Day 1</u>	

Study for Midterm Exam	
Week 17, Day 2	
Practice Midterm Exam	
Week 17, Day 3	Midterm Exam
Midterm Exam	Score:
Week 17, Day 4	
<ul> <li>6.1.1 An Introduction to Rational Expressions</li> </ul>	
<u>Week 17, Day 5</u>	
<ul> <li>6.1.2 Working with Fractions</li> </ul>	
<ul> <li>6.1.3 Writing Rational Expressions in Lowest Terms</li> </ul>	

Week 18	
Chapter 6: Rational Expressions	
Assignments	Notes
<u>Week 18, Day 1</u>	
<ul> <li>6.2.1 Multiplying and Dividing Rational Expressions</li> </ul>	
<u>Week 18, Day 2</u>	
<ul> <li>6.2.2 Adding and Subtracting Rational Expressions</li> </ul>	
<u>Week 18, Day 3</u>	
<ul> <li>6.2.3 Rewriting Complex Fractions</li> </ul>	
Week 18, Day 4	
<ul> <li>6.3.1 Solving a Linear Equation with Rationals</li> </ul>	
Week 18, Day 5	
6.3.2 Solving a Linear Equation with Restrictions	

Week 19	
Chapter 6: Rational Expressions	
Assignments	Notes
<u>Week 19, Day 1</u>	
<ul> <li>6.4.1 Solving Rational Inequalities</li> </ul>	
<ul> <li>6.4.2 Solving Rational Inequalities: Another Example</li> </ul>	
Week 19, Day 2	
6.4.3 Determining Domain	
Week 19, Day 3	
<ul> <li>6.5.1 Solving a Problem about Work</li> </ul>	
Week 19, Day 4	
6.5.2 Resistors in Parallel	
Week 19, Day 5	
6.6.1 An Introduction to Variation	

## Week 20

Chapter 6: Rational Expressions

Chapter 6 Test	
Assignments	Notes
<u>Week 20, Day 1</u>	
6.6.2 Direct Proportion	
<u>Week 20, Day 2</u>	
6.6.3 Inverse Proportion	
Week 20, Day 3	
<ul> <li>6.6.4 Joint and Combined Proportion</li> </ul>	
<u>Week 20, Day 4</u>	
Chapter 6 Practice Test	
Week 20, Day 5	Chapter 6 Test
Chapter 6 Test	Score:

Week 21	
Chapter 7: Relations and Functions	
Assignments	Notes
<u>Week 21, Day 1</u>	
<ul> <li>7.1.1 Using the Cartesian System</li> </ul>	
• 7.1.2 Thinking Visually	
<u>Week 21, Day 2</u>	
• 7.2.1 Introducing Relations and Functions	
Week 21, Day 3	
<ul> <li>7.2.2 Functions and the Vertical-Line Test</li> </ul>	
<u>Week 21, Day 4</u>	
• 7.2.3 Function Notation and Values	
<u>Week 21, Day 5</u>	
• 7.3.1 Finding Domain and Range	
• 7.3.2 Domain and Range: An Explicit Example	

Week 22	
Chapter 7: Relations and Functions	
Assignments	Notes
<u>Week 22, Day 1</u>	
<ul> <li>7.3.3 Satisfying the Domain of a Function</li> </ul>	
Week 22, Day 2	
• 7.3.4 Graphing Important Functions	
Week 22, Day 3	
<ul> <li>7.4.1 Operations on Functions</li> </ul>	
• 7.4.2 Composite Functions	
Week 22, Day 4	
<ul> <li>7.4.3 Components of Composite Functions</li> </ul>	
Week 22, Day 5	
• 7.5.1 An Introduction to Slope	

Week 23	
Chapter 7: Relations and Functions	
Assignments	Notes
<u>Week 23, Day 1</u>	
<ul> <li>7.5.2 Finding the Slope Given Two Points</li> </ul>	
<ul> <li>7.6.1 Using Intercepts to Graph Lines</li> </ul>	
Week 23, Day 2	
• 7.6.2 Working with Specific Lines	
<u>Week 23, Day 3</u>	
<ul> <li>7.6.3 Interpreting Slope from a Graph</li> </ul>	
Week 23, Day 4	
<ul> <li>7.6.4 Graphing with a Point and the Slope</li> </ul>	
Week 23, Day 5	
<ul> <li>7.7.1 Writing an Equation in Slope-Intercept Form</li> </ul>	

Week 24	
Chapter 7: Relations and Functions	
Assignments	Notes
<u>Week 24, Day 1</u>	
<ul> <li>7.7.2 Writing an Equation Given Two Points</li> </ul>	
<ul> <li>7.7.3 Writing an Equation in Point-Slope Form</li> </ul>	
<u>Week 24, Day 2</u>	
<ul> <li>7.7.4 Matching a Slope-Intercept Equation with Its Graph</li> </ul>	
<u>Week 24, Day 3</u>	
<ul> <li>7.7.5 Slope for Parallel and Perpendicular Lines</li> </ul>	
Week 24, Day 4	
<ul> <li>7.8.1 Constructing a Linear Model from a Set of Data</li> </ul>	
Week 24, Day 5	
<ul> <li>7.8.2 Scatterplots and Predictions</li> </ul>	
• 7.8.3 Linear Cost and Revenue	

Week 25	
Chapter 7 Test	
Chapter 8: Roots and Radicals	
Assignments	Notes
Week 25, Day 1	
Chapter 7 Practice Test	
Week 25, Day 2	Chapter 7 Test
Chapter 7 Test	Score:
Week 25, Day 3	
<ul> <li>8.1.1 Radical Notation and Properties of Roots</li> </ul>	

<u>Week 25, Day 4</u>		
<ul> <li>8.1.2 Variables and Negative Values under a Radical</li> </ul>		
Week 25, Day 5		
• 8.1.3 Converting Rational Exponents and Radicals		

Week 26	
Chapter 8: Roots and Radicals	
Assignments	Notes
<u>Week 26, Day 1</u>	
8.2.1 Simplifying Radicals	
<ul> <li>8.2.2 Simplifying Radical Expressions with Variables</li> </ul>	
Week 26, Day 2	
<ul> <li>8.3.1 Adding and Subtracting Radical Expressions</li> </ul>	
<u>Week 26, Day 3</u>	
<ul> <li>8.3.2 Rationalizing Denominators</li> </ul>	
Week 26, Day 4	
<ul> <li>8.4.1 Solving an Equation Containing a Radical</li> </ul>	
Week 26, Day 5	
<ul> <li>8.4.2 Solving Equations with Two Radical Expressions</li> </ul>	

Week 27	
Chapter 8: Roots and Radicals	
Assignments	Notes
<u>Week 27, Day 1</u>	
8.4.3 Extraneous Roots	
Week 27, Day 2	
<ul> <li>8.4.4 Solving Equations with Rational Exponents</li> </ul>	
Week 27, Day 3	
<ul> <li>8.5.1 Introducing and Writing Complex Numbers</li> </ul>	
• 8.5.2 Rewriting Powers of <i>i</i>	
Week 27, Day 4	
<ul> <li>8.5.3 Adding and Subtracting Complex Numbers</li> </ul>	
Week 27, Day 5	
<ul> <li>8.5.4 Multiplying Complex Numbers</li> </ul>	

Week 28	
Chapter 8: Roots and Radicals	
Chapter 8 Test	
Assignments	Notes
<u>Week 28, Day 1</u>	

•	8.5.5 Dividing Complex Numbers	
Week	<u>28, Day 2</u>	
•	8.6.1 Finding the Length of the Diagonal of a Cube	
Week	<u>28, Day 3</u>	
•	8.6.2 Finding the Distance and the Midpoint between Two	
	Points	
•	8.6.3 Applications in Meteorology	
Week	<u>28, Day 4</u>	
•	Chapter 8 Practice Test	
Week	<u>28, Day 5</u>	Chapter 8 Test
•	Chapter 8 Test	Score:

Week 29	
Chapter 9: Quadratic Equations	
Assignments	Notes
Week 29, Day 1	
<ul> <li>9.1.1 An Introduction to Quadratics</li> </ul>	
<ul> <li>9.1.2 Solving Quadratics by Factoring</li> </ul>	
Week 29, Day 2	
• 9.2.1 Finding x- and y-intercepts	
Week 29, Day 3	
9.2.2 Nice-Looking Parabola	
Week 29, Day 4	
<ul> <li>9.2.3 Graphing Parabolas</li> </ul>	
Week 29, Day 5	
<ul> <li>9.3.1 Solving by Completing the Square</li> </ul>	

Week 30	
Chapter 9: Quadratic Equations	
Assignments	Notes
<u>Week 30, Day 1</u>	
<ul> <li>9.3.2 Completing the Square: Another Example</li> </ul>	
Week 30, Day 2	
<ul> <li>9.3.3 Finding the Vertex by Completing the Square</li> </ul>	
Week 30, Day 3	
<ul> <li>9.4.1 Using the Vertex to Write the Equation</li> </ul>	
<ul> <li>9.4.2 Building a Polynomial Equation from Its Solutions</li> </ul>	
Week 30, Day 4	
<ul> <li>9.5.1 Proving the Quadratic Formula</li> </ul>	
Week 30, Day 5	
9.5.2 Using the Quadratic Formula	

Week 31	
Chapter 9: Quadratic Equations	
Assignments	Notes
<u>Week 31, Day 1</u>	
<ul> <li>9.5.3 Predicting Types of Solutions From the Discriminant</li> </ul>	
<ul> <li>9.5.4 Using the Discriminant to Graph Parabolas</li> </ul>	
Week 31, Day 2	
<ul> <li>9.6.1 Solving for a Squared Variable</li> </ul>	
<u>Week 31, Day 3</u>	
<ul> <li>9.6.2 Finding Real-Number Restrictions</li> </ul>	
<u>Week 31, Day 4</u>	
<ul> <li>9.6.3 Solving Fancy Quadratics</li> </ul>	
<u>Week 31, Day 5</u>	
<ul> <li>9.6.4 Horizontal Parabolas</li> </ul>	

Week 32	
Chapter 9: Quadratic Equations	
Assignments	Notes
<u>Week 32, Day 1</u>	
<ul> <li>9.7.1 Solving a Quadratic Geometry Problem</li> </ul>	
<ul> <li>9.7.2 Solving with the Pythagorean Theorem</li> </ul>	
Week 32, Day 2	
<ul> <li>9.7.3 Solving a Motion Problem</li> </ul>	
Week 32, Day 3	
<ul> <li>9.7.4 Solving a Projectile Problem</li> </ul>	
Week 32, Day 4	
<ul> <li>9.7.5 Solving Other Problems</li> </ul>	
Week 32, Day 5	
<ul> <li>9.8.1 Solving Quadratic Inequalities</li> </ul>	
<ul> <li>9.8.2 Solving Quadratic Inequalities: Another Example</li> </ul>	

Week 33	
Chapter 9 Test	
Chapter 10: Systems of Equations	
Assignments	Notes
Week 33, Day 1	
Chapter 9 Practice Test	
Week 33, Day 2	Chapter 9 Test
Chapter 9 Test	Score:
Week 33, Day 3	
<ul> <li>10.1.1 An Introduction to Linear Systems</li> </ul>	
<ul> <li>10.1.2 Solving a System by Graphing</li> </ul>	
Week 33, Day 4	

<ul> <li>10.1.3 Solving a System by Substitution</li> </ul>	
Week 33, Day 5	
<ul> <li>10.1.4 Solving a System by Elimination</li> </ul>	

Week 34		
Chapter 10: Systems of Equations		
Assignments	Notes	
<u>Week 34, Day 1</u>		
<ul> <li>10.2.1 An Introduction to Systems in Three Variables</li> </ul>		
<ul> <li>10.2.2 Solving Systems with Three Variables</li> </ul>		
Week 34, Day 2		
<ul> <li>10.2.3 Solving Inconsistent Systems</li> </ul>		
Week 34, Day 3		
<ul> <li>10.2.4 Solving Dependent Systems</li> </ul>		
Week 34, Day 4		
<ul> <li>10.2.5 Solving Systems with Two Equations</li> </ul>		
Week 34, Day 5		
• 10.3.1 Investments		
• 10.3.2 Partial Fractions		

Week 35	
Chapter 10: Systems of Equations	
Assignments	Notes
<u>Week 35, Day 1</u>	
<ul> <li>10.4.1 An Introduction to Matrices</li> </ul>	
Week 35, Day 2	
<ul> <li>10.4.2 Using the Gauss-Jordan Method</li> </ul>	
<ul> <li>10.4.3 Using Gauss-Jordan: Another Example</li> </ul>	
Week 35, Day 3	
<ul> <li>10.5.1 Evaluating 2x2 Determinants</li> </ul>	
Week 35, Day 4	
• 10.5.2 Evaluating nxn Determinants	
Week 35, Day 5	
• 10.6.1 Using Cramer's Rule	

Week 36	
Chapter 10: Systems of Equations	
Assignments	Notes
<u>Week 36, Day 1</u>	
<ul> <li>10.6.2 Using Cramer's Rule in a 3x3 Matrix</li> </ul>	
Week 36, Day 2	
• 10.7.1 An Introduction to Graphing Linear Inequalities	

•	10.7.2 Graphing Linear and Nonlinear Inequalities	
Week	36, Day <u>3</u>	
•	10.7.3 Graphing the Solution Set a System of Inequalities	
Week	36, Day 4	
•	10.8.1 Solving a Nonlinear System by Elimination	
Week 36, Day 5		
•	10.8.2 Solving a Nonlinear System by Substitution	

Week 37	
Chapter 10 Test	
Final Exam	
Assignments	Notes
<u>Week 37, Day 1</u>	
Chapter 10 Practice Test	
Week 37, Day 2	
Chapter 10 Test	
Week 37, Day 3	
Study for Final Exam	
Week 37, Day 4	
Practice Final Exam	
Week 37, Day 5	Final Exam Score:
Final Exam	