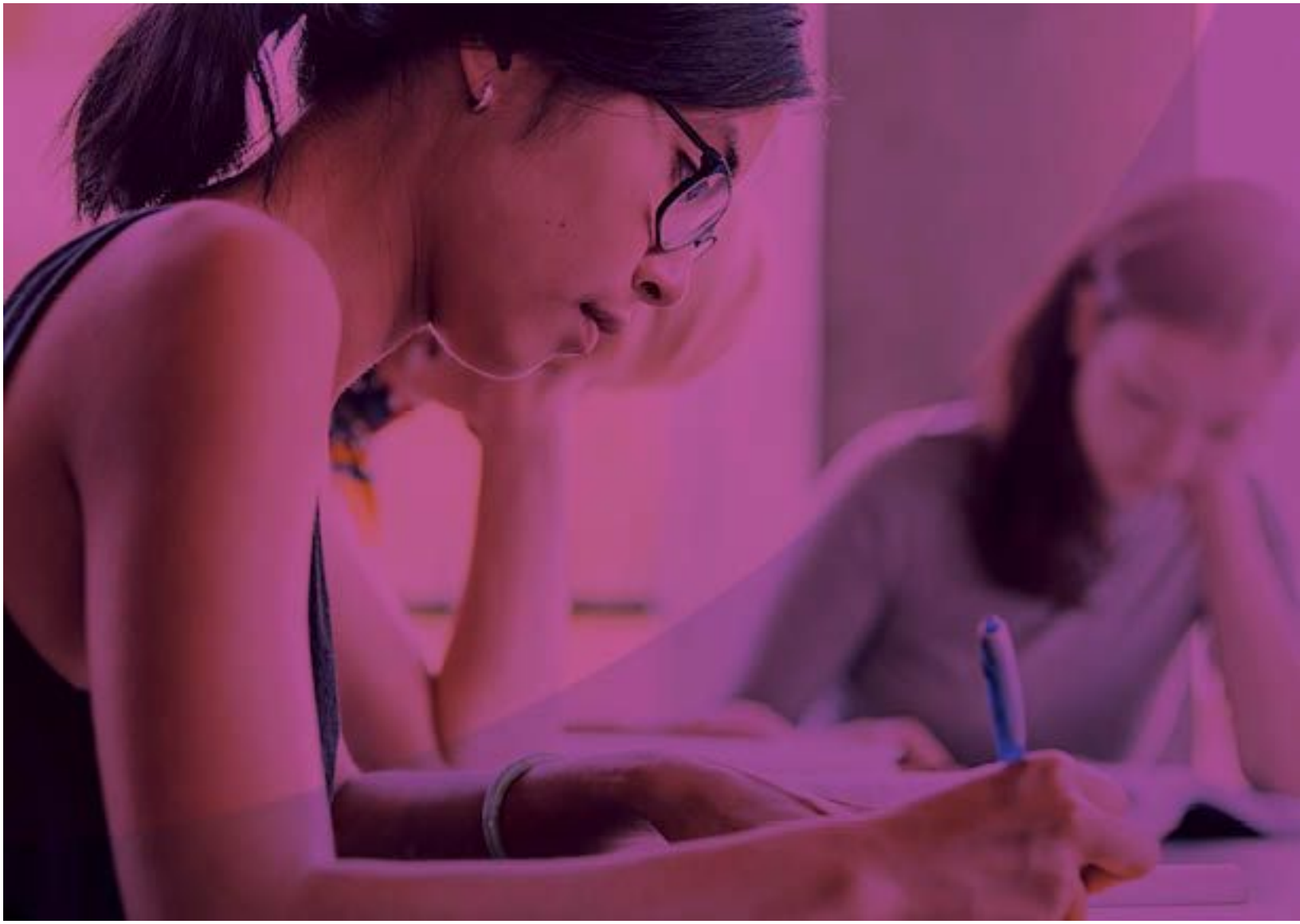
KNEWTON

Elementary Algebra

978-1-63545-008-8



To learn more about all our offerings
Visit **Knewton.com/highered**

KNEWTON

Source	Author(s) (Text or Video)	Title(s)	Link (where applicable)
Flatworld Text	John Redden	Elementary Algebra	Elementary Algebra: FlatWorld
Mathispower4u Videos	James Sousa	MathIsPower4U	Mathispower4u Videos

Knewton Elementary Algebra was developed to meet the scope and sequence of a typical one semester algebra course. To develop the course, Knewton used three main sources of content: Flatworld, videos created by a Math Professor we have partnered with, and a team of Subject Matter Experts. The SMEs come from diverse backgrounds and are all academics in the field of Mathematics.

Knewton Elementary Algebra has two instructional sequences for every learning objective, giving students multiple opportunities to learn new concepts. Between our Flatworld, Video, and Knewton SMEs, we were able to solicit ideas from math instructors and students at all levels of higher education. Knewton Elementary Algebra covers the typical breadth of algebra topics and also provides the necessary depth to ensure the course is manageable and engaging for instructors and students alike.

KNEWTON

Elementary Algebra | Table of Contents

KNEWTON

Chapter 2: Linear Equations and Inequalities

Simplify and Solve Algebraic Expressions and Equations

- Distribute and Combine Like Terms
    - Simplify expressions using order of operations
    - Simplify expressions with distribution
    - Simplify expressions by combining like terms
- Solve Linear Equations with Integers
    - Determine if a given value is a solution to a linear equation
    - Solve linear equations in one step
    - Solve linear equations in two steps
- Solve Linear Equations with Fractions and Decimals
    - Solve equations involving fractions
    - Solve equations involving decimals
- Solve Literal Equations
    - Solve a formula for a given variable

Linear Inequalities

- Solve Single Variable Inequalities
    - Use interval notation and number line graphs to model linear inequalities in one variable
    - Solve a linear inequality in one variable
    - Solve a compound linear inequality in one variable

Chapter 3: Graphing Lines

Graphing

- Introduction to Graphing
    - Plot and identify points on 4 quadrants
    - Determine if a point is a solution to an equation with two variables
- Graph Linear Equations by Plotting Points and Intercepts
    - Graph linear equations by plotting points
    - Use intercepts to graph linear equations
- Graph Linear Equations Using Slope
    - Find the slope given a line or given two points
    - Graph linear equations using slope-intercept form
    - Graph linear equations using point-slope form
    - Graph parallel and perpendicular lines
- Solve and Graph Linear Inequalities
    - Solve linear inequalities in two variables
    - Graph a solution set for linear inequalities in two variables

Relations and Functions

- The Definition of a Function
    - Representing relations on a Cartesian coordinate plane
    - Determine the domain and range from a graph
    - Determine if a relation is a function given ordered pairs
    - Determine if a relation is a function given a graph

- Function Notation
    - Use function notation with a numerical argument
    - Use function notation with an algebraic argument
    - Evaluate a function from a graph
    - Find the input from the output in function notation

Chapter 4: Solving Linear Systems

Systems of Linear Equations and Inequalities

- Solve Systems of Linear Equations
    - Determine if an ordered pair is a solution to a system of linear equations
    - Solve systems of equations by graphing
    - Solve a system of equations using the substitution method
    - Solve a system of linear equations using the elimination method
- Solve Systems of Linear Inequalities
    - Solve a system of linear inequalities in two variables

Chapter 5: Exponents and Polynomials

Exponents

- Exponent Rules and Scientific Notation
    - Use the product rule to multiply exponents
    - Use integer exponents
    - Write numbers in scientific notation
- Operations with Exponents
    - Use operations with scientific notation
    - Use the quotient rule to divide exponents
    - Use the power rule for exponents

Polynomials

- Operations with Polynomials
    - Perform addition and subtraction with polynomials
    - Use the distributive property to multiply monomials by polynomials
    - Multiply binomials using FOIL
    - Multiply trinomials or higher
    - Divide polynomials by monomials
- Long Division of Polynomials
    - Divide polynomials using long division
- Greatest Common Factor and Factor by Grouping
    - Factor the greatest common factor of polynomials
    - Factor polynomials by grouping
- Factor Trinomials
    - Factor trinomials using the "b-c method"
    - Factor trinomials where leading coefficient is not 1

- Factor Special Products and Solve Quadratic Equations by Factoring
    - Factor difference of squares
    - Factor perfect square trinomials
    - Factor sum and difference of cubes
    - Solve quadratic equations by factoring

Chapter 6: Rational Expressions and Equations

Rational Expressions

- Evaluate and Simplify Rational Expressions
    - Evaluate rational expressions
    - Simplify a rational expression
- Multiply and Divide Rational Expressions
    - Perform multiplication with rational expressions
    - Perform division with rational expressions
- Add and Subtract Rational Expressions and Complex Fractions
    - Add and subtract rational expressions with like denominators
    - Add and subtract rational expressions with unlike denominators
    - Simplify complex fractions containing variables

Rational Equations

- Solve Rational Equations
    - Solve rational equations, no extraneous solutions
    - Solve rational equations with extraneous solutions or no solution
- Direct and Inverse Variation
    - Solve problems that involve direct variation
    - Solve problems that involve inverse variation

Radical Expressions

- Cube and nth Roots
    - Evaluate cube and nth roots
    - Simplify an expression with an nth root
- Simplify Radical Expressions and Add and Subtract Radicals
    - Simplify radical expressions
    - Add and subtract like radicals
    - Add and subtract unlike radicals
- Multiply and Divide Radical Expressions
    - Multiply radical expressions
    - Multiply binomial radical expressions
    - Multiply radical conjugates
    - Rationalize monomial denominators
    - Rationalize binomial denominators
- Rational Exponents
    - Rewrite an expression with a rational exponent as a radical
    - Rewrite a radical expression as an expression with rational exponents
    - Evaluate expressions with a rational exponent that have a negative base

        - Simplify expressions including rational exponents
        - Simplify radical expressions with different indices
    - Solve Radical Equations
        - Solve radical equation which leads to a linear
        - Solve radical equation which leads to a quadratic
        - Solve radical equations involving two radicals

Chapter 7: Radical Expressions and Equations

Radical Expressions

- Cube and nth Roots
    - Evaluate cube and nth roots
    - Simplify an expression with an nth root
- Simplify Radical Expressions and Add and Subtract Radicals
    - Simplify radical expressions
    - Add and subtract like radicals
    - Add and subtract unlike radicals
- Multiply and Divide Radical expressions
    - Multiple radical expressions
    - Multiply binomial expressions
    - Multiply radical conjugates
    - Rational monomial denominators
    - Rational binomial denominators
- Rational Exponents
    - Rewrite an expression with a rational exponent as a radical
    - Rewrite a radical expression as an expression with rational exponents
    - Simplify expressions including rational exponents

Radical Equations

- Solve radical equations
    - Solve radical equation which leads to a linear
    - Solve radical equation which leads to a quadratic
    - Solve radical equations involving two radicals

Chapter 8: Solving Quadratic Equations and Graphing Parabolas

Quadratic Equations

- Completing the Square and the Quadratic Formula
    - Solve quadratic equations using the square root property
    - Solve quadratic equations using completing the square
    - Solve quadratic equations by using the quadratic formula, rational solutions
    - Solve quadratic equations by using the quadratic formula, irrational solutions
- Introduction to Complex Numbers
    - Understand and simplify complex numbers
    - Perform addition and subtraction with complex numbers