

Algebra 1B

Mathematics

Grade(s) 9th - 12th, Duration 1 Year, 1 Credit
Required Course

Course Overview

GENERAL DESCRIPTION: This course is designed to cover the second half of Algebra I outcomes in one year.

HOMEWORK OR READING NECESSARY: Homework will be assigned daily with some class time allotted toward its completion.

FORMAT: Each day, some time will be allotted toward discussion of previous assignments, lecture, and independent or group work time.

TESTS: Assessments will be given at the end of each unit when the class shows general readiness.

Scope And Sequence

Timeframe	Unit	Instructional Topics
92 Day(s)	Exponential and Quadratic Relationships	1. Exponents and Exponential Functions 2. Quadratic Expressions and Equations 3. Quadratic Functions and Equations
50 Day(s)	Advanced Functions and Equations	1. Radical Functions and Geometry 2. Rational Functions and Equations
22 Day(s)	Data Analysis	1. Statistics and Probability

Materials and Resources

Glencoe McGraw-Hill Algebra 1 book

Prerequisites

Pass Algebra 1A

In order to enroll in the second semester of Algebra 1B, students need to pass the first semester of Algebra 1B

Course Details

Unit: Exponential and Quadratic Relationships

Duration: 92 Day(s)

Unit Overview

Students will learn properties of exponents and exponential functions. They will also discover how to add, subtract, and multiply polynomials. Finally, students will solve quadratic equations.

Materials and Resources

connectED.mcgraw-hill.com

Khan Academy

Study Island

Academic Vocabulary

Monomial

Cube root

Exponential equation

Scientific notation

Polynomial

Binomial

Trinomial

Degree of monomial and polynomial

FOIL method

Quadratic expression/ equation

Factoring

Summative Assessment

Chapter Tests

Topic: Exponents and Exponential Functions

Duration: 30 Day(s)

Topic Overview

Students will simplify polynomial expressions and apply the laws of exponents in problem-solving situations. They will also graph and analyze exponential functions including exponential growth and decay.

Learning Targets

Section 7-1 a

Multiply monomials using the properties of exponents.

Section 7-1 b

Simplify expressions using the multiplication properties of exponents.

Section 7-2 a

Divide monomials using the properties of exponents.

Section 7-2 b

Simplify expressions containing negative and zero exponents.

Section 7-2 b

Simplify expressions containing negative and zero exponents.

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Section 7-3 b
Solve equations involving expressions with rational exponents.

Section 7-4 a
Express numbers in scientific notation.

Section 7-4 b
Find products and quotients of numbers expressed in scientific notation.

Section 7-5
Graph exponential functions and identify data that display exponential behavior.

Section 7-6
Solve problems involving exponential growth and decay.

Section 7-7 a
Identify and generate geometric sequences.

Section 7-7 b
Relate geometric sequences to exponential functions.

Section 7-8
Use and write recursive formulas to list terms in a sequences.

Topic: Quadratic Expressions and Equations

Duration: 32 Day(s)

Topic Overview

Students will add, subtract, and multiply polynomials. Students will factor when necessary and solve quadratic equations.

Learning Targets

Section 8-1a
Write polynomials in standard form.

Section 8-1b
Add and subtract polynomials.

Section 8-2a
Multiply a polynomial by a monomial.

Topic: Quadratic Functions and Equations

Duration: 30 Day(s)

Topic Overview

Students will analyze and solve quadratic equation/ functions.

Unit: Advanced Functions and Equations

Duration: 50 Day(s)

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Unit Overview

Students will simplify and solve radical expressions/ equations. Students will learn and apply the Pythagorean Theorem. Students will also simplify, add, subtract, multiply, and divide rational expressions.

Materials and Resources

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Khan Academy
Study Island

Academic Vocabulary

Square Root Function
Radical Function
Radicand
Radical expression
Rationalizing the denominator
Hypotenuse
Legs
Pythagorean Theorem
Trigonometry
Sine
Cosine
Tangent
Inverse Variation
Rational Expression/ Equation

Summative Assessment

Chapter Tests

Topic: Radical Functions and Geometry

Duration: 24 Day(s)

Topic Overview

Students will add, subtract, multiply, simplify, and solve radical expressions/ equations. Students will also learn and apply the Pythagorean Theorem and trigonometric ratios to solve problems.

Learning Targets

Section 10-1a

Graph and analyze dilations of radical functions.

Section 10-1b

Graph and analyze reflections and translations of radical functions.

Section 10-2

Simplify radical expressions by using the Product/ Quotient Property of Square Roots.

Section 10-3a

Add and subtract radical expressions.

Section 10-3 b

Multiply radical expressions.

Section 10-4a

Solve radical equations.

Section 10-4b

Solve radical equations with extraneous solutions.

Section 10-5a

Solve problems by using the Pythagorean Theorem.

Topic: Rational Functions and Equations

Duration: 26 Day(s)

Topic Overview

Students will simplify, add, subtract, multiply and divide rational expressions/ equations.

Unit: Data Analysis

Duration: 22 Day(s)

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Unit Overview

Students will study statistics, distributions of data, and permutations & combinations.

Materials and Resources

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Academic Vocabulary

Stastic

Variance

Standard Deviation

Bias

Theoretical Probability

Experimental Probability

Permutation

Combination

Compound Event

Summative Assessment

Chapter Test

Topic: Statistics and Probability

Duration: 22 Day(s)

Topic Overview

Students will use combinations and permutations to determine probabilities. Students will compute probability and use probability distributions.