## Algebra Teaching & Learning Framework

### Block Schedule

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<th>Unit 1</th>
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<td>2.5 weeks</td>
<td>3 weeks</td>
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### Units Overview

- **Quadratics Revisited**
  - MGSE9-12.N.CN.1 (Complex numbers)
  - MGSE9-12.N.CN.2 (Complex numbers & properties)
  - MGSE9-12.N.CN.3 (Conjugate of complex numbers)
  - MGSE9-12.N.CN.7 (Solve quadratics with complex solutions)
  - MGSE9-12.N.CN.8 (Factoring with complex solutions)
  - MGSE9-12.A.RE.4 (Solve quadratics in 1 variable)
  - MGSE9-12.B.RE.4b (Solve quadratic equations by inspection)
  - MGSE9-12.N.RN.1 (Rational exponents)
  - MGSE9-12.N.RN.2 (Expressions with radicals & rational exponents)
- **Operations with Polynomials**
  - MGSE9-12.A.APR.1 (Add, subract & multiply polynomials)
  - MGSE9-12.A.APR.5 (Binomial Theorem)
  - MGSE9-12.A.APR.6 (Rewrite rational expressions)
  - MGSE9-12.F.BF.1 (Write a function)
  - MGSE9-12.F.BF.1b (Combine standard functions)
  - MGSE9-12.F.BF.4c (Values of inverse function from graph or table)
- **Polynomial Functions**
  - MGSE9-12.A.SSE.9 (Fundamental Theorem of Algebra)
  - MGSE9-12.A.SSE.1a,b (Interpret expressions; Interpret parts & terms of expressions)
  - MGSE9-12.A.SSE.2 (Equivalent expressions)
  - MGSE9-12.A.SSE.3 (Write a function)
  - MGSE9-12.A.SSE.7 (Graph polynomial functions)
- **Rational & Radical Relationships**
  - MGSE9-12.A.APR.7 (Rewrite rational expressions)
  - MGSE9-12.A.CED.1 (Create equations & inequalities-1 variable)
  - MGSE9-12.A.CED.2 (Create equations & inequalities-2 variables)
  - MGSE9-12.A.RE.2 (Solve simple radical & rational equations)
  - MGSE9-12.A.RE.4 (Polynomial Identities)
  - MGSE9-12.A.F.4 (Characteristics of functions)
  - MGSE9-12.A.F.7 (Graph functions)
  - MGSE9-12.A.F.7c (Graph rational functions)
- **Exponentials & Logarithms**
  - MGSE9-12.A.SSE.3 (Equivalent expressions)
  - MGSE9-12.A.SSE.3c (Properties of exponents)
  - MGSE9-12.F.IF.7 (Graph functions)
  - MGSE9-12.F.IF.7e (Graph exponential & logarithmic functions)
  - MGSE9-12.F.IF.8 (Write a function)
  - MGSE9-12.F.IF.9 (Compare functions)
  - MGSE9-12.F.IF.10 (Build new functions from existing functions)
- **Mathematical Modeling**
  - MGSE9-12.A.SSE.4 (Derive formula for sum of finite geometric series)
  - MGSE9-12.A.SSE.5 (Create equations & inequalities-1 variable)
  - MGSE9-12.A.SSE.6 (Create equations & inequalities-2 variables)
  - MGSE9-12.A.SSE.7 (Represent constraints)
  - MGSE9-12.A.SSE.8 (Rearrange formulas)
  - MGSE9-12.A.SSE.9 (Solutions to equations)
  - MGSE9-12.A.SSE.10 (Average rate of change)
  - MGSE9-12.A.SSE.11 (Evaluate reports based on data)

### Notes

- These units were written to build upon concepts from prior units, so later units contain tasks that depend upon the concepts addressed in earlier units.
- All units will include the Mathematical Practices and indicate skills to maintain.

**NOTE:** Mathematical standards are interwoven and should be addressed throughout the year in as many different units and topics as possible in order to stress the natural connections that exist among mathematical topics.

**Grades 9-12 Key: Algebra Strand:** SSE = Seeing Structure in Expressions, APR = Arithmetic with Polynomial and Rational Expressions, CED = Creating Equations, REI = Reasoning with Equations and Inequalities

**Functions Strand:** IF = Interpreting Functions, LE = Linear and Exponential Models, BF = Building Functions, TF = Trigonometric Functions

**Geometry Strand:** CO = Congruence, SRT = Similarity, Right Triangles, and Trigonometry, C = Circles, GPE = Expressing Geometric Properties with Equations, GMD = Geometric Measurement and Dimension, MG = Modeling with Geometry

**Statistics and Probability Strand:** ID = Interpreting Categorical and Quantitative Data, IC = Making Inferences and Justifying Conclusions, CP = Conditional Probability and the Rules of Probability, MD = Using Probability to Make Decisions

Extend: MGSE9-2.N.C.N.4 (Complex plane)