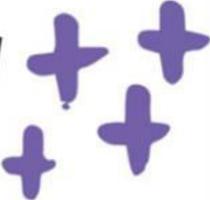


**Hempstead Union Free School District**  
**Algebra 1**  
**Mathematics Pacing Guide**  
**2025–2026 School Year**



**M**ISTAKES  
**A**LLOW   
**T**HINKING  
**H**APPEN 



### Mission Statement

We value each student's voice and background, using their work to deepen understanding and guide instruction. By meeting learners where they are and embracing mistakes as thinking opportunities, we foster a culture of reflection, growth, and meaningful mathematical learning.

### Vision Statement

We envision a learning community where students are equipped with the critical thinking, problem-solving, and adaptive skills needed to thrive in a world yet to be imagined. Through rigorous, relevant, and responsive math instruction, we prepare all learners to be college- and career-ready, confident in their ability to tackle future challenges with curiosity and resilience.



# Table of Contents

- **Pacing Guides**
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- **Resources**

# Effective Math Teaching Practices

## Mathematics Teaching Practices

**Establish mathematics goals to focus learning.** Effective teaching of mathematics establishes clear goals for the mathematics that students are learning, situates goals within learning progressions, and uses the goals to guide instructional decisions.

**Implement tasks that promote reasoning and problem solving.** Effective teaching of mathematics engages students in solving and discussing tasks that promote mathematical reasoning and problem solving and allow multiple entry points and varied solution strategies.

**Use and connect mathematical representations.** Effective teaching of mathematics engages students in making connections among mathematical representations to deepen understanding of mathematics concepts and procedures and as tools for problem solving.

**Facilitate meaningful mathematical discourse.** Effective teaching of mathematics facilitates discourse among students to build shared understanding of mathematical ideas by analyzing and comparing student approaches and arguments.

**Pose purposeful questions.** Effective teaching of mathematics uses purposeful questions to assess and advance students' reasoning and sense making about important mathematical ideas and relationships.

**Build procedural fluency from conceptual understanding.** Effective teaching of mathematics builds fluency with procedures on a foundation of conceptual understanding so that students, over time, become skillful in using procedures flexibly as they solve contextual and mathematical problems.

**Support productive struggle in learning mathematics.** Effective teaching of mathematics consistently provides students, individually and collectively, with opportunities and supports to engage in productive struggle as they grapple with mathematical ideas and relationships.

**Elicit and use evidence of student thinking.** Effective teaching of mathematics uses evidence of student thinking to assess progress toward mathematical understanding and to adjust instruction continually in ways that support and extend learning.

# Algebra 1 Pacing Guide

2025-2026

## Unit 1: Foundations of Algebra ( September 2-september 15<sup>th</sup> )

### Topics:

- Understanding and applying the order of operations (PEMDAS)

[AI-N.RN.3b]

[https://drive.google.com/file/d/1Qa4-4RICZY8KhZSRkeT1hjW\\_xcFnz6J/view?usp=sharing](https://drive.google.com/file/d/1Qa4-4RICZY8KhZSRkeT1hjW_xcFnz6J/view?usp=sharing)

- Classifying numbers within the real number system

[AI-N.RN.3b]

[https://docs.google.com/document/d/1befczgVFL1JcqV9rSBn3wOVu3yd5yEIt/edit?usp=drive\\_link&oid=109329614260929183942&rtpof=true&sd=true](https://docs.google.com/document/d/1befczgVFL1JcqV9rSBn3wOVu3yd5yEIt/edit?usp=drive_link&oid=109329614260929183942&rtpof=true&sd=true)

- Evaluating algebraic expressions

[AI-N.Q.1]

[https://docs.google.com/document/d/1-TSc7iRoUiPA1fYsN0SLBoYBNJLK33sV/edit?usp=drive\\_link&oid=109329614260929183942&rtpof=true&sd=true](https://docs.google.com/document/d/1-TSc7iRoUiPA1fYsN0SLBoYBNJLK33sV/edit?usp=drive_link&oid=109329614260929183942&rtpof=true&sd=true)

- Translating verbal expressions into algebraic expressions

[AI-A.SSE.1a]

[https://docs.google.com/document/d/1XUvzNUME7aGnriXViA-riIsshWF5KrWw/edit?usp=drive\\_link&oid=109329614260929183942&rtpof=true&sd=true](https://docs.google.com/document/d/1XUvzNUME7aGnriXViA-riIsshWF5KrWw/edit?usp=drive_link&oid=109329614260929183942&rtpof=true&sd=true)

- Identifying and using properties of operations (commutative, associative, distributive)

[AI-A.SSE.1b]

<https://drive.google.com/file/d/1YeaF5IXMDp2R9I2WjfVe7HrdQtRGnEFc/view?usp=sharing>

### Learning Objectives:

- Students will be able to apply the order of operations to evaluate expressions.
- Students will classify numbers within the real number system.
- Students will evaluate and simplify algebraic expressions.
- Students will translate verbal expressions into algebraic expressions.
- Students will identify and use properties of operations.

### Essential Questions:

- How do the properties of operations help us simplify expressions?
- Why is it important to classify numbers within the real number system?

### Vocabulary:

- Order of Operations (PEMDAS)
- Real Numbers
- Rational Numbers
- Irrational Numbers
- Integers
- Whole Numbers
- Algebraic Expression
- Variable
- Coefficient
- Constant
- Commutative Property
- Associative Property
- Distributive Property
- Evaluate
- Simplify

 Useful Websites

- <https://www.jmap.org/>

- <https://www.ixl.com/math/algebra-1>

- <https://www.khanacademy.org/math/algebra>

## Unit 2: Solving Equations & Inequalities (September 16th- October 10th)

### Topics:

- Solving one-step, two-step, and multi-step equations

[AI-A.REI.1]

[https://drive.google.com/file/d/1ppe7sKQYkw0T5Cu4jgsItS3uuBCqurZn/view?usp=drive\\_link](https://drive.google.com/file/d/1ppe7sKQYkw0T5Cu4jgsItS3uuBCqurZn/view?usp=drive_link)

[https://drive.google.com/file/d/1sRfbggcq1wXv7cB00VuHhb7qZu6L9U5i/view?usp=drive\\_link](https://drive.google.com/file/d/1sRfbggcq1wXv7cB00VuHhb7qZu6L9U5i/view?usp=drive_link)

[https://drive.google.com/file/d/1vWM8fMiiG5K1ns1PAsbLLpS1pGqNZso/view?usp=drive\\_link](https://drive.google.com/file/d/1vWM8fMiiG5K1ns1PAsbLLpS1pGqNZso/view?usp=drive_link)

Solving inequalities on a x-y coordinate plane [AI-A.REI.12]

[https://drive.google.com/file/d/17tajNsNh60-wEL9L2R\\_T0mLvoJa4qEzT/view?usp=drive\\_link](https://drive.google.com/file/d/17tajNsNh60-wEL9L2R_T0mLvoJa4qEzT/view?usp=drive_link)

- Solving and graphing inequalities on a number line

[AI-A.REI.3]

[https://drive.google.com/file/d/1OTPt5F9UOTapDi\\_ZcW4amxE8UZVdVns/view?usp=drive\\_link](https://drive.google.com/file/d/1OTPt5F9UOTapDi_ZcW4amxE8UZVdVns/view?usp=drive_link)

[https://drive.google.com/file/d/1phk8LhLNDzbo4505DyFCN0cXVc0Lszm/view?usp=drive\\_link](https://drive.google.com/file/d/1phk8LhLNDzbo4505DyFCN0cXVc0Lszm/view?usp=drive_link)

[https://drive.google.com/file/d/1FcguzrymtJtlg50uK4Cpxaz5D3qq90r/view?usp=drive\\_link](https://drive.google.com/file/d/1FcguzrymtJtlg50uK4Cpxaz5D3qq90r/view?usp=drive_link)

[https://drive.google.com/file/d/15ZU0jbCxcErxaKpfnxt5OZgXgM8KEySf/view?usp=drive\\_link](https://drive.google.com/file/d/15ZU0jbCxcErxaKpfnxt5OZgXgM8KEySf/view?usp=drive_link)

- Solving literal equations (formulas)

[AI-A.REI.3]

[https://drive.google.com/file/d/1iXxb1VFMLQjejfKq7cMNBo7vOk2mE\\_r/view?usp=drive\\_link](https://drive.google.com/file/d/1iXxb1VFMLQjejfKq7cMNBo7vOk2mE_r/view?usp=drive_link)

- Applying equations and inequalities to real-world problems

[AI-CED.1] [AI-A.REI.3]

[https://drive.google.com/file/d/1vHQxcDiNNgLSjvbQt1J2lHM1vpapqzus/view?usp=drive\\_link](https://drive.google.com/file/d/1vHQxcDiNNgLSjvbQt1J2lHM1vpapqzus/view?usp=drive_link)

[https://drive.google.com/file/d/1FcuzrymtJtlg50uK4Cpxxaz5D3qq90r/view?usp=drive\\_link](https://drive.google.com/file/d/1FcuzrymtJtlg50uK4Cpxxaz5D3qq90r/view?usp=drive_link)

- Checking solutions and understanding solution sets

[AI-A.REI.1]

[https://docs.google.com/document/d/1-CUrr14ECeqyi55-R2kE0paNuyTD-B0y/edit?usp=drive\\_link&oid=109329614260929183942&rtpof=true&sd=true](https://docs.google.com/document/d/1-CUrr14ECeqyi55-R2kE0paNuyTD-B0y/edit?usp=drive_link&oid=109329614260929183942&rtpof=true&sd=true)

### Learning Objectives:

- Students will solve one-step, two-step, and multi-step equations.
- Students will solve and graph inequalities on a number line.
- Students will solve literal equations.
- Students will apply equations and inequalities to real-world problems.
- Students will check solutions and understand solution sets.

### Essential Questions:

- How can we solve equations and inequalities?
- How can we apply equations and inequalities to real-world problems?

## Vocabulary:

- Equation
- Inequality
- Solution
- Inverse Operations
- One-step Equation
- Two-step Equation
- Multi-step Equation
- Literal Equation
- Formula
- Graph of an Inequality
- Solution Set
- Substitution
- Isolate the Variable

## Useful Websites

- <https://www.jmap.org/>

- <https://www.ixl.com/math/algebra-1>

- <https://www.khanacademy.org/math/algebra>

## **Unit 3: Linear Functions (October 14<sup>th</sup> – November 10<sup>th</sup> )**

### Topics:

- Identifying and interpreting slope and y-intercept  
[AI-F.IF.4]

[https://drive.google.com/file/d/1N78ArxVyonMUuMnpj9sg3Fwi3cvMH00/view?usp=drive\\_link](https://drive.google.com/file/d/1N78ArxVyonMUuMnpj9sg3Fwi3cvMH00/view?usp=drive_link)

- Writing linear equations in slope-intercept, point-slope, and standard form  
[AI-F.BF.1]

[https://drive.google.com/file/d/1ZfHr7xX2m-2NMcrDVSd0DoMiW6DYA3PY/view?usp=drive\\_link](https://drive.google.com/file/d/1ZfHr7xX2m-2NMcrDVSd0DoMiW6DYA3PY/view?usp=drive_link)

[https://drive.google.com/file/d/1y0tpZtPWdbv\\_kd-SYi\\_IP8FpippePsem/view?usp=drive\\_link](https://drive.google.com/file/d/1y0tpZtPWdbv_kd-SYi_IP8FpippePsem/view?usp=drive_link)

- Graphing linear equations and functions  
[AI-A.REI.10]

<https://drive.google.com/file/d/1P1vjtJrMUijMwF0hiHljwzJyS6rqHKOt/view?usp=sharing>

[https://drive.google.com/file/d/1-r\\_Z3NhJM3CwmQKlnZnwNNGxvX0PUumr/view?usp=drive\\_link](https://drive.google.com/file/d/1-r_Z3NhJM3CwmQKlnZnwNNGxvX0PUumr/view?usp=drive_link)

- Determining if a relation is a function  
[AI-F.IF.1]

[https://drive.google.com/file/d/1txMyidTYhT2XwdXg-W8agg\\_Xn2m\\_z107/view?usp=drive\\_link](https://drive.google.com/file/d/1txMyidTYhT2XwdXg-W8agg_Xn2m_z107/view?usp=drive_link)

[https://drive.google.com/file/d/1GQ5r2RDu7aRrwNz\\_S445t-uf4xurJdBS/view?usp=drive\\_link](https://drive.google.com/file/d/1GQ5r2RDu7aRrwNz_S445t-uf4xurJdBS/view?usp=drive_link)

- Using function notation and evaluating functions  
[AI-F.IF.2]

[https://drive.google.com/file/d/1QpZnaGuDKeZrvqbLhl\\_sAemVtrzGMgq1/view?usp=drive\\_link](https://drive.google.com/file/d/1QpZnaGuDKeZrvqbLhl_sAemVtrzGMgq1/view?usp=drive_link)

- Modeling real-world situations with linear functions  
[AI-CED.2]

[https://drive.google.com/file/d/1FpcW-ijqB3jhTQJPq6XeJ0reJzRSUQTL3/view?usp=drive\\_link](https://drive.google.com/file/d/1FpcW-ijqB3jhTQJPq6XeJ0reJzRSUQTL3/view?usp=drive_link)

### Learning Objectives:

- Students will identify and interpret slope and y-intercept.
- Students will write linear equations in various forms.
- Students will graph linear equations and functions.
- Students will determine if a relation is a function.
- Students will use function notation and evaluate functions.
- Students will model real-world situations with linear functions.

### Essential Questions:

- How can we represent real-world situations with linear functions?
- What is the significance of slope and y-intercept in linear functions?

### Vocabulary:

- Function
- Domain
- Range
- Input
- Output
- Slope
- Y-intercept
- X-intercept
- Slope-Intercept Form
- Point-Slope Form
- Standard Form
- Function Notation
- Linear Equation
- Rate of Change

## Useful Websites

- <https://www.jmap.org/>

- <https://www.ixl.com/math/algebra-1>

- <https://www.khanacademy.org/math/algebra>

Check for understanding:

## **Unit 4: Systems of Equations & Inequalities (November 12<sup>th</sup> - December 12<sup>th</sup> )**

### Topics:

- Solving systems of linear equations by graphing, substitution, and elimination

[AI-A.REI.6]

[https://drive.google.com/file/d/1G5LE\\_7ppzKt6NnbSg14JTmbQgeMbRytV/view?usp=drive\\_link](https://drive.google.com/file/d/1G5LE_7ppzKt6NnbSg14JTmbQgeMbRytV/view?usp=drive_link)

[https://drive.google.com/file/d/1bLG4lvJC9-iaQmp5h\\_fwX3S5X5qksfQ\\_/view?usp=drive\\_link](https://drive.google.com/file/d/1bLG4lvJC9-iaQmp5h_fwX3S5X5qksfQ_/view?usp=drive_link)

[https://drive.google.com/file/d/1YAQoB4nYusJakYOXEMcySXee9pNWzvK/view?usp=drive\\_link](https://drive.google.com/file/d/1YAQoB4nYusJakYOXEMcySXee9pNWzvK/view?usp=drive_link)

- Interpreting solutions of systems in context

[AI-A.REI.6]

- Solving systems of linear inequalities and graphing solution sets

[AI-A.REI.12] [AI-A.REI.11]

[https://drive.google.com/file/d/1Smo\\_2kAE-O\]krKPH5EmAEO-h\\_sbZqUSj/view?usp=drive\\_link](https://drive.google.com/file/d/1Smo_2kAE-O]krKPH5EmAEO-h_sbZqUSj/view?usp=drive_link)

- Applying systems to real-world problems

[AI-CED.3]

[https://drive.google.com/file/d/1uu7KuLiOLgUJrbzpOsGLHUMI1XHHj2V8/view?usp=drive\\_link](https://drive.google.com/file/d/1uu7KuLiOLgUJrbzpOsGLHUMI1XHHj2V8/view?usp=drive_link)

### Learning Objectives:

- Students will solve systems of linear equations by graphing, substitution, and elimination.
- Students will interpret solutions of systems in context.
- Students will solve systems of linear inequalities and graph solution sets.
- Students will apply systems to real-world problems.

### Essential Questions:

- How can we solve systems of equations and inequalities?
- How can we apply systems of equations and inequalities to real-world problems?

### Vocabulary:

- System of Equations
- System of Inequalities
- Solution of a System
- Substitution Method
- Elimination Method
- Graphing Method
- Consistent System
- Inconsistent System
- Dependent System
- Boundary Line
- Feasible Region

### Useful Websites

- <https://www.jmap.org/>

- <https://www.ixl.com/math/algebra-1>

- <https://www.khanacademy.org/math/algebra>

## Unit 5: Exponents & Exponential Functions (December 15<sup>th</sup>-January 16<sup>th</sup>)

### Topics:

- Applying the laws of exponents (product, quotient, power rules)  
[AI-SSE.3c]

[https://drive.google.com/file/d/1sUIH-I02mKkC\\_v6IeJEVtG8UzXedi9az/view?usp=drive link](https://drive.google.com/file/d/1sUIH-I02mKkC_v6IeJEVtG8UzXedi9az/view?usp=drive_link)

- Working with zero and negative exponents  
[AI-N.RN.2]

- writing polynomials into standard form  
[AI-SSE.1a]

[https://drive.google.com/file/d/1fHwJ6Jq\\_TTaXfO\\_nyXELGYeYcsTlzeZP/view?usp=drive link](https://drive.google.com/file/d/1fHwJ6Jq_TTaXfO_nyXELGYeYcsTlzeZP/view?usp=drive_link)

- Graphing exponential growth and decay functions  
[AI-F.IF.7e]

[https://docs.google.com/document/d/1-nxxbvQ8ULr8tFsJSikrG5HmIF3LLNUU/edit?usp=drive link&oid=109329614260929183942&rtpof=true&sd=true](https://docs.google.com/document/d/1-nxxbvQ8ULr8tFsJSikrG5HmIF3LLNUU/edit?usp=drive_link&oid=109329614260929183942&rtpof=true&sd=true)

- Comparing linear and exponential models  
[AI-F.LE.1]

[https://drive.google.com/file/d/1\\_syvS8\\_F4rqkFRh\\_zd0juOYV1nA768Ng/view?usp=drive link](https://drive.google.com/file/d/1_syvS8_F4rqkFRh_zd0juOYV1nA768Ng/view?usp=drive_link)

### Learning Objectives:

- Students will apply the laws of exponents.
- Students will work with zero and negative exponents.
- Students will write numbers to scientific notation. Be able to convert between scientific notation and standard form.
- Students will graph exponential growth and decay functions.
- Students will compare linear and exponential models.

### **Essential Questions:**

- How do the laws of exponents help us simplify expressions?
- How can we model real-world situations with exponential functions?

### **Vocabulary:**

- Exponent
- Base
- Power
- Product Rule
- Quotient Rule
- Power of a Power
- Zero Exponent
- Negative Exponent
- Exponential Growth
- Exponential Decay
- Growth Factor
- Decay Factor
- Standard Form
- Scientific Notation
- AI-SSE.2
- AI-SSE.3a

 Useful Websites

- <https://www.jmap.org/>

- <https://www.ixl.com/math/algebra-1>

- <https://www.khanacademy.org/math/algebra>

## Unit 6: Polynomials & Factoring (4 Weeks Total)

### Part A: Polynomial Operations (January 26<sup>th</sup> -February 6<sup>th</sup>)

 Topics:

- Adding, subtracting, and multiplying polynomials  
[AI-A.APR.1]

[https://drive.google.com/file/d/1Dq59OIqYqSogmCkN5x7JRaU1kdIrRtmT/view?usp=drive\\_link](https://drive.google.com/file/d/1Dq59OIqYqSogmCkN5x7JRaU1kdIrRtmT/view?usp=drive_link)

[https://drive.google.com/file/d/1BXoxdd27HcK\\_PMdwIURfsQrcK-WWzPtg/view?usp=drive\\_link](https://drive.google.com/file/d/1BXoxdd27HcK_PMdwIURfsQrcK-WWzPtg/view?usp=drive_link)

- Identifying degrees and leading coefficients  
[AI-SSE.1a]

[https://drive.google.com/file/d/1KXmsGKNYIeEBVTUpuDSMZqZSUyTAYqe8/view?usp=drive\\_link](https://drive.google.com/file/d/1KXmsGKNYIeEBVTUpuDSMZqZSUyTAYqe8/view?usp=drive_link)

- Classifying polynomials (monomial, binomial, trinomial)  
[AI-SSE.1a]

[https://drive.google.com/file/d/1JoDWKxx4RvxgGb7lyq1nsZ3qr7TJ\\_wxe/view?usp=drive\\_link](https://drive.google.com/file/d/1JoDWKxx4RvxgGb7lyq1nsZ3qr7TJ_wxe/view?usp=drive_link)

 Learning Objectives:

- Students will perform operations (add, subtract, multiply) on polynomials

- Students will identify the degree and leading coefficient of a polynomial
- Students will recognize different types of polynomials based on number of terms

### Essential Questions:

- What strategies can we use to simplify and classify polynomials?
- How do we find the degree and leading coefficient of a polynomial?

## Part B: Factoring & Solving Quadratics (February 9<sup>th</sup> – March 6<sup>th</sup>)

### Topics:

- Factoring trinomials, binomials, and special products

[AI-SSE.3a]

[https://drive.google.com/file/d/1ZUW8miwmTeM\\_LrsjxPEpz43h7gtqx7kK/view?usp=drive\\_link](https://drive.google.com/file/d/1ZUW8miwmTeM_LrsjxPEpz43h7gtqx7kK/view?usp=drive_link)

[https://drive.google.com/file/d/1DtsRrGMLe96VYg\\_LXpdGxAzuvw-3ID3M/view?usp=drive\\_link](https://drive.google.com/file/d/1DtsRrGMLe96VYg_LXpdGxAzuvw-3ID3M/view?usp=drive_link)

[https://drive.google.com/file/d/1RWHWmDwHf57xQ9-q2kmtnQEh1QlqB3aK/view?usp=drive\\_link](https://drive.google.com/file/d/1RWHWmDwHf57xQ9-q2kmtnQEh1QlqB3aK/view?usp=drive_link)

- Greatest Common Factor (GCF) and the Distributive Property  
[AI-SSE.2]
- Recognizing and factoring difference of squares and perfect square trinomials  
[AI-SSE.3a]
- Solving quadratic equations using factoring  
[AI-A.REI.4a]

[https://docs.google.com/document/d/1Hm0SeimJRz8Mg\\_vw5prbJ6Frny\\_I6TmH/edit?usp=drive\\_link&oid=109329614260929183942&rtpof=true&sd=true](https://docs.google.com/document/d/1Hm0SeimJRz8Mg_vw5prbJ6Frny_I6TmH/edit?usp=drive_link&oid=109329614260929183942&rtpof=true&sd=true)

### Learning Objectives:

- Students will factor a variety of polynomial expressions including special products
- Students will solve quadratic equations by factoring
- Students will express polynomial expressions in factored form

### Essential Questions:

- How can factoring help solve polynomial and quadratic equations?
- What patterns can help us factor expressions more efficiently?

## **Unit Vocabulary (Applies Across Part A & Part B):**

- Quadratic Expression
- Factored Form
- Perfect Square Trinomial
- Difference of Squares
- Greatest Common Factor (GCF)
- Factoring
- Distributive Property
- Like Terms
- Leading Coefficient
- Degree of a Polynomial
- Trinomial
- Binomial
- Monomial
- Polynomial

### Useful Websites

- <https://www.jmap.org/>

- <https://www.ixl.com/math/algebra-1>

- <https://www.khanacademy.org/math/algebra>

## **Unit 7: Quadratic Functions (March 9<sup>th</sup> – April 1st)**

### **Topics:**

- Graphing quadratic functions and identifying key features (vertex, axis of symmetry, intercepts)  
[AI-F.IF.7a]

[https://drive.google.com/file/d/1BHYITBFRMagg9p2tROWPrquTwbZVwEke/view?usp=drive\\_link](https://drive.google.com/file/d/1BHYITBFRMagg9p2tROWPrquTwbZVwEke/view?usp=drive_link)

[https://drive.google.com/file/d/1Z2I29gplsQkBV477tZb-38NsnrEbzS6j/view?usp=drive\\_link](https://drive.google.com/file/d/1Z2I29gplsQkBV477tZb-38NsnrEbzS6j/view?usp=drive_link)

- Solving quadratics by factoring, completing the square, and using the quadratic formula  
[AI-A.REI.4b]

[https://drive.google.com/file/d/1AAnLg3LrwK1UaWKPXJkcdmBnRRgzqJbv/view?usp=drive\\_link](https://drive.google.com/file/d/1AAnLg3LrwK1UaWKPXJkcdmBnRRgzqJbv/view?usp=drive_link)

[https://drive.google.com/file/d/1LvvcLQotYWcSybrbS2MgPFuuHRJmV7Qp/view?usp=drive\\_link](https://drive.google.com/file/d/1LvvcLQotYWcSybrbS2MgPFuuHRJmV7Qp/view?usp=drive_link)

- Comparing quadratic, linear, and exponential functions  
[AI-F.IF.9]

[https://drive.google.com/file/d/1s5vrkmjTML9xDFYdR2nOVMthYD-9zbi/view?usp=drive\\_link](https://drive.google.com/file/d/1s5vrkmjTML9xDFYdR2nOVMthYD-9zbi/view?usp=drive_link)

- Modeling real-world problems with quadratic functions  
[AI-CED.2]

[https://drive.google.com/file/d/14ghW7hNpTYxk5\\_hmnGx5BSadKyl\\_2A4/view?usp=drive\\_link](https://drive.google.com/file/d/14ghW7hNpTYxk5_hmnGx5BSadKyl_2A4/view?usp=drive_link)

### Learning Objectives:

- Students will graph quadratic functions and identify key features.
- Students will solve quadratics by factoring, completing the square, and using the quadratic formula.
- Students will compare quadratic, linear, and exponential functions.

- Students will model real-world problems with quadratic functions.

### Essential Questions:

- How can we solve quadratic equations?
- How can we model real-world situations with quadratic functions?

### Vocabulary:

- Quadratic Function
- Parabola
- Vertex
- Axis of Symmetry
- Maximum/Minimum
- Standard Form of a Quadratic
- Factoring
- Completing the Square
- Quadratic Formula
- Discriminant
- Roots/Zeros
- X-intercepts
- Y-intercept

### Useful Websites

- <https://www.jmap.org/>
- <https://www.ixl.com/math/algebra-1>
- <https://www.khanacademy.org/math/algebra>

## Unit 8: Systems of Nonlinear Functions (April 13<sup>th</sup>- April 24<sup>th</sup> )

### Topics:

- Solving systems involving quadratic and linear functions algebraically  
[AI-A.REI.7a]

[https://drive.google.com/file/d/1fD4sHF4ScI9JSzUHPz29wSD-PkF3Y0V6/view?usp=drive\\_link](https://drive.google.com/file/d/1fD4sHF4ScI9JSzUHPz29wSD-PkF3Y0V6/view?usp=drive_link)

- Graphing nonlinear systems and identifying points of intersection  
[AI-A.REI.7a]

[https://drive.google.com/file/d/1cNDBlecj\\_ZvwlapWw9LwI3XGVEhUz9rB/view?usp=drive\\_link](https://drive.google.com/file/d/1cNDBlecj_ZvwlapWw9LwI3XGVEhUz9rB/view?usp=drive_link)

- Interpreting solutions of nonlinear systems in context  
[AI-A.REI.7a]

### Learning Objectives:

- Students will solve systems involving quadratic and linear functions.
- Students will solve systems involving exponential and linear functions.
- Students will graph nonlinear systems and identify points of intersection.
- Students will interpret solutions of nonlinear systems in context.

### Essential Questions:

- How can we solve systems that include nonlinear functions?
- What do the solutions of nonlinear systems represent in real-world contexts?

### Vocabulary:

- Nonlinear System
- Quadratic Function
- Exponential Function
- Intersection Point
- Graphing

- Substitution
- Elimination
- Real-world Application

 Useful Websites

- <https://www.jmap.org/>

- <https://www.ixl.com/math/algebra-1>

- <https://www.khanacademy.org/math/algebra>

## Unit 9: Radicals and Rational Exponents (April 27<sup>th</sup> -May 15<sup>th</sup> )

### Topics:

- Simplifying radical expressions

{AI.N.RN.3a}

[https://drive.google.com/file/d/1LrcfPy3luupbDSBMTi75pTdlHeZPnX\\_W/view?usp=drive\\_link](https://drive.google.com/file/d/1LrcfPy3luupbDSBMTi75pTdlHeZPnX_W/view?usp=drive_link)

- Performing operations with radicals (add, subtract, multiply, divide)

[AI-N.RN.3a]

[https://drive.google.com/file/d/1w1ZP3sLI9jGbmY8KHFVVQwg4fvfhmMfG/view?usp=drive\\_link](https://drive.google.com/file/d/1w1ZP3sLI9jGbmY8KHFVVQwg4fvfhmMfG/view?usp=drive_link)

Rationalizing the denominator

[AI-N.RN.3a]

[https://docs.google.com/document/d/1qW7M7Yh0gh5uBEEFj\\_Yw5kpUerK1ySvA/edit?usp=drive\\_link&oid=109329614260929183942&rtpof=true&sd=true](https://docs.google.com/document/d/1qW7M7Yh0gh5uBEEFj_Yw5kpUerK1ySvA/edit?usp=drive_link&oid=109329614260929183942&rtpof=true&sd=true)

- Converting between radical and rational exponent form

[AI-N.RN.3a]

[https://drive.google.com/file/d/1\\_tj6cX-SxDLEtlwMtiacS7kEo5RHR-/view?usp=drive\\_link](https://drive.google.com/file/d/1_tj6cX-SxDLEtlwMtiacS7kEo5RHR-/view?usp=drive_link)

- Solving equations involving radicals and rational exponents

[AI-N.RN.3a]

[https://drive.google.com/file/d/19OiddUxvtYJLfSDDHVes6ZWjUc-pc446/view?usp=drive\\_link](https://drive.google.com/file/d/19OiddUxvtYJLfSDDHVes6ZWjUc-pc446/view?usp=drive_link)

- Applying radical expressions to real-world problems

[AI-CED.1]

[https://drive.google.com/file/d/1TspB8fl0DoRA7dKcnRHmzv5D1HUSYOpz/view?usp=drive\\_link](https://drive.google.com/file/d/1TspB8fl0DoRA7dKcnRHmzv5D1HUSYOpz/view?usp=drive_link)

### Learning Objectives:

- Students will simplify radical expressions.
- Students will perform operations with radicals.
- Students will convert between radical and rational exponent form.
- Students will solve equations involving radicals and rational exponents.
- Students will apply radical expressions to real-world problems.

### Essential Questions:

- How do we simplify and operate with radical expressions?
- How can we apply radical and rational exponent expressions to real-world contexts?

### Vocabulary:

- Radical
- Radicand
- Index
- Square Root
- Cube Root
- Rational Exponent
- Exponent Rules
- Simplify
- Like Radicals
- Conjugate
- Radical Equation

### Useful Websites

- <https://www.jmap.org/>

- <https://www.ixl.com/math/algebra-1>

- <https://www.khanacademy.org/math/algebra>

## **Unit 10: Data Analysis & Statistics (May 18<sup>th</sup> – June 5<sup>th</sup> )**

## Topics:

- Constructing and interpreting scatter plots

[AI-S.ID.1]

[https://docs.google.com/document/d/1h5oi9xzkpAym-uz4qonDpw24DQn6CL5/edit?usp=drive\\_link&oid=109329614260929183942&rtpof=true&sd=true](https://docs.google.com/document/d/1h5oi9xzkpAym-uz4qonDpw24DQn6CL5/edit?usp=drive_link&oid=109329614260929183942&rtpof=true&sd=true)

- Describing patterns and trends in data

[AI-S.ID.3]

- Calculating and interpreting measures of center and spread (mean, median, mode, range, IQR, standard deviation)

[AI-S.ID.2]

[https://drive.google.com/file/d/1kflI0jraFvxF6IkR6iuQpX1e6CbzF2m3/view?usp=drive\\_link](https://drive.google.com/file/d/1kflI0jraFvxF6IkR6iuQpX1e6CbzF2m3/view?usp=drive_link)

[https://drive.google.com/file/d/1eeLRMZgyxqUh1qoz7CuZwRXjieHWnXHB/view?usp=drive\\_link](https://drive.google.com/file/d/1eeLRMZgyxqUh1qoz7CuZwRXjieHWnXHB/view?usp=drive_link)

- Fitting linear models and interpreting correlation

[AI-S.ID.6]

[https://drive.google.com/file/d/1kqm3JPBeqFTdDGD5jyYRPqLwzm6RGcPj/view?usp=drive\\_link](https://drive.google.com/file/d/1kqm3JPBeqFTdDGD5jyYRPqLwzm6RGcPj/view?usp=drive_link)

## Learning Objectives:

- Students will construct and interpret scatter plots.
- Students will describe patterns and trends in data.
- Students will calculate and interpret measures of center and spread.
- Students will fit linear models and interpret correlation.

## Essential Questions:

- How can we analyze and interpret data?

- How can we use statistics to make informed decisions?

### Vocabulary:

- Data
- Scatter Plot
- Correlation
- Trend Line
- Line of Best Fit
- Outlier
- Mean
- Median
- Mode
- Range
- Interquartile Range (IQR)
- Standard Deviation
- Frequency
- Histogram

### Useful Websites

- <https://www.jmap.org/>
- <https://www.ixl.com/math/algebra-1>
- <https://www.khanacademy.org/math/algebra>

## **Unit 11: Review & Regents Prep (June 8<sup>th</sup> – June 16<sup>th</sup> )**

### Topics:

- Spiral review of all units

- Practice with Regents-style questions
- Test-taking strategies and time management
- Diagnostic assessments and targeted remediation

### **Standards:**

- All NGMLS covered

### **Learning Objectives:**

- Students will review all units and practice with Regents-style questions.
- Students will develop test-taking strategies and time management skills.
- Students will complete diagnostic assessments and targeted remediation.

### **Essential Questions:**

- How can we effectively review and prepare for the Regents exam?
- What strategies can we use to improve our test-taking skills?

### **Vocabulary:**

- Regents Exam
- Test-taking Strategies
- Review
- Diagnostic Assessment
- Remediation
- Practice Test
- Multiple Choice
- Constructed Response
- Time Management

## Assessment Preparation

- The pacing guide includes four benchmarks, five project assessments, and mock Regents exams, which reflect the performance-based and conceptual focus of the Next Gen Regents [2](#).

## Topics in the Pacing Guide That Match NGLS

NGLS Focus Area	Covered in Pacing Guide
Linear equations & inequalities	September–November
Functions (linear, exponential, quadratic)	November–February
Exponents & exponential functions	January
Quadratic equations & graphing	March–April
Statistics & data analysis	May
Modeling & real-world applications	Throughout, especially in projects and Regents review

**Check for understanding questions:**

<https://drive.google.com/file/d/1BsB56XKZYTjdtpsedtjsN-toDhQpyLzN/view?usp=drive link>

Standard for Mathematical Practice	Student Friendly Language
1. Make sense of problems and persevere in solving them. 	<ul style="list-style-type: none"> <li>I can try many times to understand and solve a math problem.</li> </ul>
2. Reason abstractly and quantitatively. 	<ul style="list-style-type: none"> <li>I can think about the math problem in my head, first.</li> </ul>
3. Construct viable arguments and critique the reasoning of others. 	<ul style="list-style-type: none"> <li>I can make a plan, called a strategy, to solve the problem and discuss other students' strategies too.</li> </ul>
4. Model with mathematics. 	<ul style="list-style-type: none"> <li>I can use math symbols and numbers to solve the problem.</li> </ul>
5. Use appropriate tools strategically. 	<ul style="list-style-type: none"> <li>I can use math tools, pictures, drawings, and objects to solve the problem.</li> </ul>
6. Attend to precision. 	<ul style="list-style-type: none"> <li>I can check to see if my strategy and calculations are correct.</li> </ul>
7. Look for and make use of structure. 	<ul style="list-style-type: none"> <li>I can use what I already know about math to solve the problem.</li> </ul>
8. Look for and express regularity in repeated reasoning. 	<ul style="list-style-type: none"> <li>I can use a strategy that I used to solve another math problem.</li> </ul>

Conceptual Category	Domain	Cluster	Cluster Code	Standard
Number & Quantity 4% - 10%	The Real Number System	Use properties of rational and irrational numbers.	N-RN.B	N-RN.3(a,b)
	Quantities	Reason quantitatively and use units to solve problems.	N-Q.A	N-Q.1 N-Q.3
Algebra 48% - 61%	Seeing Structure in Expressions	Interpret the structure of expressions.	A-SSE.A	A-SSE.1(a,b) A-SSE.2
		Write expressions in equivalent forms to reveal their characteristics.	A-SSE.B	A-SSE.3(c)
	Arithmetic with Polynomials and Rational Expressions	Perform arithmetic operations on polynomials.	A-APR.A	A-APR.1
		Understand the relationship between zeros and factors of polynomials.	A-APR.B	A-APR.3
	Creating Equations	Create equations that describe numbers or relationships.	A-CED.A	A-CED.1
				A-CED.2
				A-CED.3 A-CED.4
	Reasoning with Equations and Inequalities	Understand solving equations as a process of reasoning and explain the reasoning.	A-REI.A	A-REI.1a
		Solve equations and inequalities in one variable.	A-REI.B	A-REI.3 A-REI.4(a,b)
		Solve systems of equations.	A-REI.C	A-REI.6a A-REI.7a
		Represent and solve equations and inequalities graphically.	A-REI.D	A-REI.10 A-REI.11 A-REI.12
	Functions 24% - 32%	Interpreting Functions	Understand the concept of a function and use function notation.	F-IF.A
F-IF.2				
F-IF.3				
Interpreting Functions		Interpret functions that arise in applications in terms of the context.	F-IF.B	F-IF.4
				F-IF.5
				F-IF.6
Interpreting Functions		Analyze functions using different representations.	F-IF.C	F-IF.7(a,b)
				F-IF.8(a)
				F-IF.9
Building Functions	Build a function that models a relationship between two quantities.	F-BF.A	F-BF.1a	
	Build new functions from existing functions.	F-BF.B	F-BF.3a	
Linear, Quadratic and Exponential Models	Construct and compare linear, quadratic, and exponential models and solve problems.	F-LE.A	F-LE.1(a,b,c)	
			F-LE.2 F-LE.3	
Linear, Quadratic and Exponential Models	Interpret expressions for functions in terms of the situation they model.	F-LE.B	F-LE.5	
			Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on a single count or measurement variable.
S-ID.2				
S-ID.3				
Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on two categorical and quantitative variables.	S-ID.B	S-ID.5	
			S-ID.6(a)	
			S-ID.7	
Interpreting Categorical and Quantitative Data	Interpret linear models.	S-ID.C	S-ID.8	
			S-ID.9	

Conceptual Category	Percent of Test by Credits	Domains in Algebra I
Number & Quantity	4% - 10%	The Real Number System (N-RN) Quantities (N-Q)
Algebra	48% - 61%	Seeing Structure in Expressions (A-SSE) Arithmetic with Polynomials and Rational Expressions (A-APR) Creating Equations (A-CED) Reasoning with Equations and Inequalities (A-REI)
Functions	24% - 32%	Interpreting Functions (F-IF) Building Functions (F-BF) Linear, Quadratic, and Exponential Models (F-LE)
Statistics & Probability	7% - 15%	Interpreting Categorical and Quantitative Data (S-ID)

# Algebra Resources

[NextGen Math SCDN site](#)

[eMathinstruction videos](#)

[Math Medic Link](#)

[Amplify Desmos](#)

[Open Middle](#)

[Which One Doesn't Belong?](#)

[Geogebra](#)

[NYS Math Regents Prep](#)

[Enrichment Google Doc](#)

Conceptual Category	Domain	Cluster	Cluster Code	Standard	
Number and Quantity 4% - 8%	The Real Number System	Extend the properties of exponents to rational exponents.	N-RN.A	N-RN.1 N-RN.2	
	The Complex Number System	Perform arithmetic operations with complex numbers.	N-CN.A	N-CN.1 N-CN.2	
Algebra 30% - 39%	Seeing Structure in Expressions	Interpret the structure of expressions.	A-SSE.A	A-SSE.2	
		Write expressions in equivalent forms to reveal their characteristics.	A-SSE.B	A-SSE.3(a,c)	
	Arithmetic with Polynomials and Rational Expressions	Understand the relationship between zeros and factors of polynomials.	A-APR.B	A-APR.2 A-APR.3	
		Rewrite rational expressions.	A-APR.D	A-APR.6	
	Creating Equations	Create equations that describe numbers or relationships.	A-CED.A	A-CED.1	
	Reasoning with Equations and Inequalities	Understand solving equations as a process of reasoning and explain the reasoning.	A-REI.A	A-REI.1b A-REI.2	
		Solve equations and inequalities in one variable.	A-REI.B	A-REI.4b	
		Solve systems of equations.	A-REI.C	A-REI.7b	
		Represent and solve equations and inequalities graphically.	A-REI.D	A-REI.11	
	Interpreting Functions	Understand the concept of a function and use function notation.	F-IF.A	F-IF.3	
			F-IF.B	F-IF.4 F-IF.6	
F-IF.C			F-IF.7(c,e) F-IF.8b F-IF.9		
Building Functions		Build a function that models a relationship between two quantities.	F-BF.A	F-BF.1(a,b) F-BF.2 F-BF.3b F-BF.4a	
			F-BF.B	F-BF.5a F-BF.6 F-BF.7	
		Linear, Quadratic, and Exponential Models	Construct and compare linear, quadratic, and exponential models and solve problems.	F-LE.A	F-LE.2 F-LE.4
			Interpret expressions for functions in terms of the situation they model.	F-LE.B	F-LE.5
		Trigonometric Functions	Extend the domain of trigonometric functions using the unit circle.	F-TF.A	F-TF.1 F-TF.2 F-TF.4
				F-TF.B	F-TF.5
	Prove and apply trigonometric identities.		F-TF.C	F-TF.8	
Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on a single count or measurement variable.	S-ID.A	S-ID.4a S-ID.4b		
	Summarize, represent, and interpret data on two categorical and quantitative variables.	S-ID.B	S-ID.6a		
Statistics and Probability 14% - 22%	Making Inferences and Justifying Conclusions	Understand and evaluate random processes underlying statistical experiments.	S-IC.A	S-IC.2 S-IC.3	
		Make inferences and justify conclusions from sample surveys, experiments, and observational studies.	S-IC.B	S-IC.4 S-IC.6a S-IC.6b	
	Conditional Probability and the Rules of Probability	Understand independence and conditional probability and use them to interpret data.	S-CP.A	S-CP.1 S-CP.4	
		Use the rules of probability to compute probabilities of compound events in a uniform probability model.	S-CP.B	S-CP.7	

Conceptual Category	Percent of Test by Credits	Domains in Algebra II
Number & Quantity	4% - 8%	The Real Number System (N-RN) The Complex Number System (N-CN)
Algebra	30% - 39%	Seeing Structure in Expressions (A-SSE) Arithmetic with Polynomials and Rational Expressions (A-APR) Creating Equations (A-CED) Reasoning with Equations and Inequalities (A-REI)
Functions	38% - 45%	Interpreting Functions (F-IF) Building Functions (F-BF) Linear, Quadratic, and Exponential Models (F-LE) Trigonometric Functions (F-TF)
Statistics & Probability	14% - 22%	Interpreting Categorical and Quantitative Data (S-ID) Making Inferences and Justifying Conclusions (S-IC) Conditional Probability and the Rules of Probability (S-CP)

# Next-Generation Math Content Standards

# Next-Generation Math Practice Standards

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