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Vocabulary

Module 1
Average rate of change
Domain
End behavior
Function vs. Relation
Inverse function
Maximum value
Minimum value
Range

Module 2
Absolute Value Equations and Inequalities
Coeffiecient
Disjunction
Parameter
Symmetry
Vertex

Module 3
Complex roots
Imaginary numbers
Imaginary root
Quadratic
Quadratic formula
Square root

Research-based Instructional Practices

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Algebra II • First Quarter Pacing Guide

Go Math! Units 1-2, Modules 1-3

Mathematics

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Algebra II | Mathematics | First Quarter

Unit 1: Functions

Module 1: Analyzing Functions

1.2 F.IF.4, F.IF.6, A.CED.2, S.ID.6
Characteristics of Function Graphs
For a function that models a relationship between two quantities, interpret key features and sketch graphs showing key features.

☐ **I CAN** determine key attributes of a function and how they are related to the function's graph.

1.4 F.BF.4(+)
Inverses of Functions
Find inverse functions.

☐ **I CAN** find the inverse of a function and prove that it is an inverse of the given function.

Module 2: Absolute Value Functions, Equations, and Inequalities

2.1 F.IF.4, F.IF.7, A.CED.2, F.BF.3
Graphing Absolute Value Functions
Graph piecewise-defined functions including absolute value functions.

☐ **I CAN** identify the features of the graph of an absolute value function.

2.2 A.CED.1, A.REI.3, A.REI.11
Solving Absolute Value Equations
Create equations and inequalities in one variable and use them to solve problems.

☐ **I CAN** solve an absolute value equation.

2.3 A.CED.1, A.REI.3, F.IF.7
Solving Absolute Value Inequalities
Create equations and inequalities in one variable and use them to solve problems.

☐ **I CAN** solve an absolute value inequality graphically or algebraically.

Unit 2: Quadratic Equations

Module 3: Quadratic Equations

3.1 N.CN.1, A.REI.4
Solving Equations by Taking Square Roots
Know there is a complex number i such that $i^2 = -1$, and every complex number has the form a+bi with a being real.

☐ **I CAN** tell what an imaginary number is and how it is useful in solving Quadratic equations.

3.2 N.CN.1, N.CN.2
Complex Numbers
Use the relation $i^2 = -1$ and the commutative, associative, distributive properties to add, subtract, & multiply complex numbers.

☐ **I CAN** add, subtract, and multiply complex numbers

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Vocabulary

Module 4
Center
Circles
Directrix
Distance
Focus
Linear systems with 2 and 3 unknowns
Parabolas
Radius
System of linear quadratic equations
Vertex

Module 5:
Cubic functions and transformations
End behavior
Factor
Polynomial functions
Turning points
x-intercepts
Zeros

Research-based Instructional Practices

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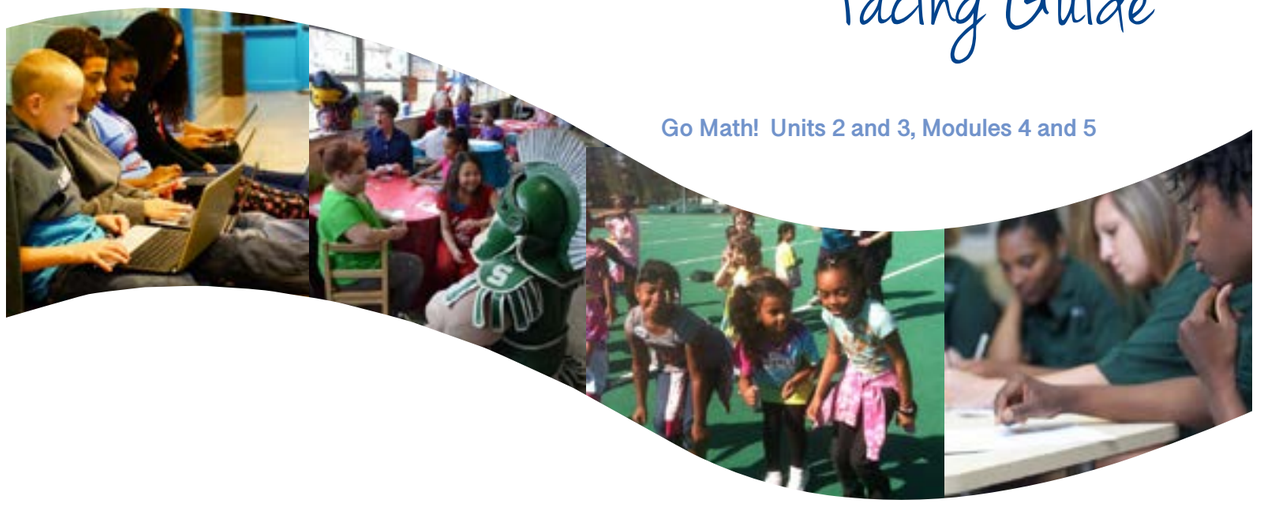
Algebra II • Second Quarter

Pacing Guide

Go Math! Units 2 and 3, Modules 4 and 5



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Algebra II Mathematics Second Quarter

Unit 2: Quadratic Equations and Relations

Module 4: Quadratic Relations and Systems of Equations

4.1: A.CED.2, A.CED.3, G.GPE.1, G.GPE.4
Circles
Represent constraints by equations or inequalities, and interpret solutions as viable or non-viable options in a modeling context.

☐ **I CAN** put the equation of a circle in standard form and I know how to find the center of the circle and the radius from the equation.

4.2: A.CED.2, A.CED.3, G.GPE.2
Parabolas
Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.

☐ **I CAN** use the distance formula to drive the equations for both vertical and horzontal parabolas.

4.3: A.REI.7
Solving Linear-Quadratic Systems
Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically.

☐ **I CAN** solve a system composed of a linear equation in two variables and a quadratic equation in two variables.

4.4: A.REI.6, A.CEI.3
Solving Linear Systems in Three Variables
Solve systems of linear equations exactly.

☐ **I CAN** find the solutions of a system of three linear equations in three variables.

Unit 3: Polynomial Functions and Expressions

Module 5: Polynomial Functions

5.2: F.IF.7
Graphing Polynomial Functions
Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.

☐ **I CAN** sketch the graph of a polynomial function in intercept form.

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Vocabulary

Module 6
Binomial
Binomial Experiment
Binomial Probability
Binomial Theorem
Factoring
Factor Theorem
Irreducible Factor
Pascal's Triangle
Polynomial
Remainder Theorem
Synthetic division
Synthetic substitution

Module 7
Coeffiecients
Multiplicity
Rational
Root
Zeros

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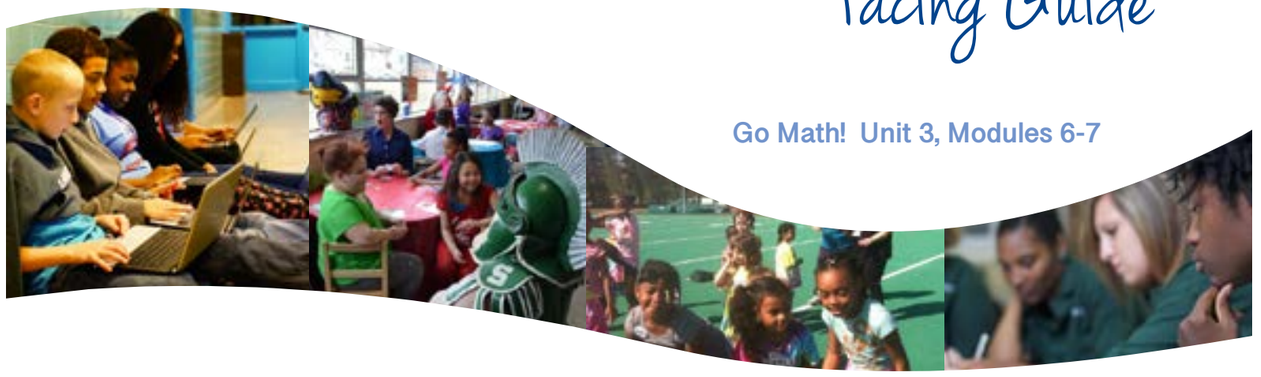
Algebra II • Third Quarter
Pacing Guide



Go Math! Unit 3, Modules 6-7

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Unit 3: Polynomials

Module 6: Polynomials

6.1: A.APR.1, F.BF.1
Adding and Subracting Polynomials
Understand that polynomials form a system closed under the operations of addition and subtraction.

☐ **I CAN** add or subtract two polynomials and define the type of the resulting expression.

6.2: A.APR.1, A.APR.4, F.BF.1
Multiplying Polynomials
Understand the polynomials form a system closed under multiplication.

☐ **I CAN** multiply polynomials and define the type of the resulting expression.

6.3: A.APR.5(+)
The Binomial Theorem
Know and apply the Binomial Theorem for the expansion of $(x + y)^n$ in powers of x and y for a positive integer n, where x and y are any numbers, with coefficients determined for the example by Pascal's Triangle.

☐ **I CAN** understand how to use the Binomial Theorem to find coefficients.

6.4: A.SSE.1, A.SSE.2, N.CN.8(+), A.APR.3, A.CED.1
Factoring Polynomials
Use the structure of an expression to identify ways to rewrite it.

☐ **I CAN** factor a polynomial and I can tell why factoring is useful.

6.5: A.APR.1, A.APR.3, A.APR.6
Dividing Polynomials
Rewrite simple rational expressions in different forms; write a()/b(x) in the form q(x) + r(x)/b(x) using inspection and long division.

☐ **I CAN** divide a polynomial with the correct divisor using synthetic division and long division.

Unit 3: Equations

Module 7: Polynomial Equations

7.1: A.APR.2, A.APR.3, A.CED.3
Finding Rational Solutions of Polynomial Equations
Know and apply the Remainder Theorem. For a polynomial p(x) and a number a, the remainder on division by x – a is p(a), so p(a) = 0 if and only if (x – a) is a factor of p(x).

☐ **I CAN** find the rational roots of a polynomial equation.

7.2: A.APR.2, A.APR.3, N.CN.9(+), A.REI.1, F.IF.7
Finding Complex Solutions of Polynomial Functions
Know and apply the Remainder Theorem.

☐ **I CAN** use the Fundamental Theorem of Algebra and its corollary to find the roots of the polynomial equation p(x) = 0 where p(x) has degree n.

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Vocabulary

Module 9
Excluded Values
Etraneous solution
LCD (least common denominator)
Factor
Rational expression
Reciprocal

Module 10
Many-to-one function
One-to-one function
Parameters
Parent cube root function
Parent square root function
Point symmetry
Roots
Transformations

Module 11
Power of a power
Power of a product
Power of a quotie
Product of powers
Quotient of powers
Radical expression
Rational exponent

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Algebra II • Fourth Quarter

Pacing Guide

Go Math! Units 4-9
Modules 9, 10, 11, 13, 14, 17, 18, 19-22

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Algebra II Mathematics Fourth Quarter

Unit 4: Rational Functions, Expressions, and Equations

Module 9: Rational Expressions and Equations

9.3: A.REI.1, A.REI.2, A.CED.1, A.CED.4
Solving Rational Functions
Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.

☐ **I CAN** solve rational equations algebraically and graphically.

Unit 5: Rational Functions, Expressions, and Equations

Module 10: Rational Functions

10.2: F.IF.4, F.IF.6, F.IF.7, F.BF.3
Graphing Square Root Functions
Graph square root functions.

☐ **I CAN** use transformations of a parent square root function to graph functions of the form g(x) = a multiplied by the square root of (x – h) plus k or g(x) = the square root of 1/b(x – h) plus k.

10.3: F.IF.3, F.IF.4, F.IF.6, F.IF.7, F.BF.3
Graphing Cube Root Functions
Graph cube root functions.

☐ **I CAN** use transformations of a parent cube root function to graph functions of the form f(x) = a multiplied by the cube root of (x – h) plus k or g(x) = the cube root of 1/b(x – h) plus k.

Module 11: Radical Expressions and Equations

11.3: A.REI.1, A.REI.2, A.CED.1
Solving Radical Equations
Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions my arise.

☐ **I CAN** solve equations involving square roots and cube roots algebraically and graphically.

Unit 6: Exponential and Logarithmic Functions & Equations

Module 13: Exponential Functions

13.4: F-LE.A.2, F.IF.C.7e, F-IF.C.7, A-REI.D.11
Construct Linear and Exponential Functions and Explain Simple Versus Compound Interest
Find an exponential regression model from data.

☐ **I CAN** write a linear or exponential equation from a graph, a discription, or coordinate pairs.

Module 14: Modeling with Exponential and Other Functions

14.1: S.ID.B.6a, A-CED.A.2, F.IF.B.4, F.IF.C.7e
Fitting Exponential Functions to Data
Fit a function to the data and use them to solve problems.

☐ **I CAN** write an exponential equation from given data and use it to solve problems.

14.2: S.ID.B.6a, A-CED.A.2, F.IF.B.4, F.IF.C.7e
Choosing Among Linear, Quadratic, and Exponential Models
Determine which kind of model is best represented by points on a coordinate plane.

I CAN determine the correct type of equation to fit given data.

Unit 7: Trigonometric Functions

Module 17: Unit-Circle Definition of Trigonometric Functions

17.1: F-TF.A.1, G-C.C.5
Angles of Rotation and Radian Measure
Show an angle's initial and terminal sides and defining standard position of an angle.

☐ **I CAN** understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle.

17.2: TF.F.A.2, F-TF.A.3
Defining and Evaluating Basic Trigonometric Functions
Label sine, cosine and tangent in right triangles with a unit circle.

☐ **I CAN** explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers.

Module 18: Graphing Trigonometric Functions

18.1: F-IF.C.7e,F-BF.B.3, F-IF.B.4
Stretching, Compressing and Reflecting Sine and Cosine
Describe features of since and cosine.

I CAN graph exponential and logarithmic functions intercepts and end behaviors and trigonometric functions showing period, mid-line, and amplitude.

18.2: F-IF.C.7e,F-BF.B.3, F-IF.B.4, F-IF.C.9
Stretching, Compressing, and Reflecting Tangent Graphs
Describe features of sine, cosine, and tangent functions

☐ **I CAN** graph exponential and logarithmic functions intercepts and end behaviors, and trigonometric functions showing period, mid-line, and amplitude.

Unit 7: Trigonometric Functions

18.3 : 3 F-IF.C.7e,F-BF.B.3, F-IF.B.4, F-IF.C.9
Translating Graphs
Explain how the constants in trigonometric functions affect their graphs

☐ **I CAN** graph exponential and logarithmic functions intercepts and end behaviors, and trigonometric functions showing period, mid-line, and amplitude.

18.4: F-IF.C.7e, N-Q.A.2, S-ID.B.6a, A-CED.A.2, F/IF.B.4, A-REI.D.11
Fitting Sine Functions to Data
Match sine functions to their graphs and to data sets.

☐ **I CAN** correctly choose trigonometric functions to model periodic phenomena.

Unit 8: Probability

Module 19: Introduction to Probability

19.4: S-CP.A.4, S-CP.B.7
Mutually Exclusive and Over-lapping Events
Explain how to determine whether events are mutually exclusive or overlapping.

☐ **I CAN** use a Venn diagram to decide if events are independent and to approximate conditional probabilities.

Module 20: Conditional Probability and Independence of Events

20.1: S-CP.A.4, S-CP.A.3, S-CP.A.5, S-CP.B.6
Conditional Probability.
Find conditional probabilities.

☐ **I CAN** use a Venn diagram to approximate conditional probabilities.

Module 21: Probability and Decision Making

21.2 S-CP.A.4, S-CP.A.5, S-MD.B.7
Analyzing Decisions
Analyze a decision using probability.

☐ **I CAN** construct and interpret 2-way frequency tables of data to help analyze decision making.

Unit 9: Statistics

Module 22: Gathering and Displaying Data

22.1: 22.1S-IC.A.1
Data-gathering Techniques
Show the relationships among population, census, and parameter, as well as sample, sampling and statistic.

☐ **I CAN** understand statistics as a process for making inferences about a given population.