Mathematics Pacing Guide: *High School Algebra 2 Course*

Time Frame		TNReady Standards for Mathematics	Program Materials *Discovering Algebra 2*	Summative Assessment
1st 9 Weeks	**Expressions, Equations, and Inequalities**	**Conceptual Category:** Algebra **Content Standard: A2. A.CED. A.1 P** **Scope & Clarifications** *Include equations arising from linear and quadratic functions, ad rational and exponential functions* *Tasks have a real-word context.*	**Chapter 1: Expressions, Equations, and Inequalities** **Lesson 1.4** Solving Equations **Lesson 1.5** Solving Inequalities	
1st 9 Weeks	**Functions, Equations, and Graphs**	**Conceptual Category:** Functions **Content Standard: A2. F.BF.B.3 P** **Scope & Clarifications** **-***Task may involve polynomial, exponential, and logarithmic functions.* *-Tasks may involve recognizing even and odd functions.* **Conceptual Category**: Statistics and Probability **Content Standard**: A2. S.ID.B.2 P **Scope & Clarifications**	**Chapter 2: Functions, Equations, and Graphs** **Lesson 2.3** Linear Functions and Slope-Intercept Form **Concept Byte 2.4:** Piecewise Functions **Lesson 2.5** Using Linear Models **Lesson 2.6** Families of Functions **Lesson 2.7** Absolute Value Functions and Graphs	

		-Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models. *-Task are limited to exponential functions with domains not in the integers.*		
1ˢᵗ 9 Weeks	**Linear Systems**	**Conceptual Category**: Algebra **Content Standard: A2. A.REI. C.4** $\mathbf{P}$ **Standard Scope & Clarifications** *When solving algebraically, task are limited to systems of at most three equations and three variables. With graphic solutions, systems are limited to only two variables.*	**Chapter 3: Linear Systems** **Lesson 3.1** Solving Systems Using Tables and Graphs **Lesson 3.2** Solve Systems Algebraically **Lesson 3.5** Systems with Three Variables	**Chapter 3 Test:** Linear Systems

| 1st 9 Weeks | Quadratic Functions and Equations | **Conceptual Category:** Functions

Content Standard: A2. F.BF.B.3 P
Scope & Clarifications
-Task may involve polynomial, exponential, and logarithmic functions.
-Tasks may involve recognizing even and odd functions.

Content Standard: A2. F.IF.A.1 P
Scope & Clarification
-Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; and end behavior.

-Tasks may involve square root, cube root, polynomials, exponential, and logarithmic functions.

Conceptual Category: Statistics and Probability

Content Standard: A2. S.ID.B.2 P
Scope & Clarifications | **Chapter 4: Quadratic Functions and Equations**

Lesson 4.1 Quadratic Functions and Transformations
Lesson 4.2 Standard Form of a Quadratic Function
Lesson 4.3 Modeling with Quadratic Function
Concept Byte 4.3: Identifying Quadratic Date
Lesson 4.4 Factoring Quadratic Expressions
Lesson 4.5 Quadratic Equations
Lesson 4.6 Completing the Square
Lesson 4.7 The Quadratic Formula
Lesson 4.8 Complex Numbers
Lesson 4.9 Quadratic Systems
Concept Byte 4.9: Powers of Complex Numbers | **Chapter 4 Test:** Quadratic Functions and Equations |

-Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models.

-Task are limited to exponential functions with domains not in the integers.

Conceptual Category: Number and Quantity

Content Standard: A2. N.RN.A.2
Scope & Clarifications
There are no assessment limits for this standard.

Content Standard: A2. N.CN.A.1, A2. N.CN.A.2, A2. N.CN.B.3
Scope & Clarifications
There are no assessment limits for this standard.

Conceptual Category: Algebra

Content Standard: A2. A.APR. A.2 P
Scope & Clarifications
Tasks include quadratic, cubic, and quartic polynomials and polynomials for which factors are not provided.

Content Standard: A2. A.CED. A.1
Scope & Clarifications
Include equations arising from linear and quadratic functions, ad rational and exponential functions
Tasks have a real-word context.

		Content Standard: A2. A.REI. B.3 P **Scope & Clarifications** *In the case of equations that have roots with nonzero imaginary parts, students write the solutions as a + bi and a – bi for real numbers a and b.* **Content Standard: A2.A.REI.C.5** **Scope & Clarifications** There are no assessment limits for this standard.		

| 2nd 9 Weeks | Polynomials and Polynomial Functions | **Conceptual Category:** Number and Quantity
Content Standard: A2. N.CN.B.3
Scope & Clarifications
There are no assessment limits for this standard.

Conceptual Category: Algebra

Content Standard: A2. A.SSE. A.1 P
Scope & Clarifications
Tasks are limited to polynomial, rational, or exponential expressions.

Conceptual Category: Functions

Content Standard: A2. F.BF.B.3 P
Scope & Clarifications
-Task may involve polynomial, exponential, and logarithmic functions.
-Tasks may involve recognizing even and odd functions.

Content Standard: A2. F.IF.B.5 P
Scope & Clarifications
-Task may involve polynomial, exponential, and logarithmic functions.

Content Standard: A2. F.IF.B.3 P
Scope & Clarification
Tasks are limited to square root and cube root functions. | **Chapter 5: Polynomials and Polynomial Functions**

Lesson 5.1 Polynomial Functions
Lesson 5.2 Polynomials, Linear Factors, and Zeros
Lesson 5.3 Solving Polynomial Equations
Lesson 5.4 Dividing Polynomials
Lesson 5.5 Theorems About Roots of Polynomial Equations
Concept Byte 5.5: Using Polynomial Identities
Lesson 5.6 The Fundamental Theorem of Algebra
Concept Byte 5.6: Graphing Polynomials Using Zeros
Lesson 5.8 Polynomial Models in the Real World
Lesson 5.9 Transforming Polynomial Functions | **Chapter 5 Test:** Polynomials and Polynomial Functions |

Content Standard: A2. F.IF.A.2 P
Scope & Clarification
Tasks may involve polynomial, exponential, and logarithmic functions.

Content Standard: A2. F.IF.A.1 P
Scope & Clarification
-Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; and end behavior.

-Tasks may involve square root, cube root, polynomials, exponential, and logarithmic functions.

Conceptual Category: Algebra
Content Standard: A2. A.APR. A.1
Scope & Clarifications
There are no assessment limits for this standard.

Content Standard: A2. A.APR. A.2 P
Scope & Clarifications
Tasks include quadratic, cubic, and quartic polynomials and polynomials for which factors are not provided.

Content Standard: A2. A.APR. B.3
Scope & Clarifications

		For example, compare (31) (29) = (30+1) (30-1) $=30^2-1^2$ *with (x+y) (x-y) =* x^2-y^2 **Content Standard: A2. A.CED. A.2 P,** **A2. A.CED. A.1 P** **Scope & Clarification** *Tasks are limited to square root, cube root, polynomial, rational, and logarithmic.* **Content Standard: A2. A.REI. D.6 P** **Scope & Clarification** *Include cases where f(x) and/or g(x) are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.*		

2nd 9 Weeks	**Rational Functions and Rational Exponents**	**Conceptual Category:** Number and Quantity **Content Standard: A2. N.RN.A.1** **Scope and Clarifications** *For example, we define $5^{1/3}$ to be the cube root of 5.* **Content Standard: A2. N.RN.A.2** **Scope & Clarifications** *There are no assessment limits for this standard.* **Conceptual Category:** Functions **Content Standard: A2. F.BF.A.1a** **P** **Scope & Clarifications** *-For example, given cost and revenue functions, create a profit function.* **Content Standard: A2. F.BF.A.1b** **Scope & Clarifications** *-Task are a real-world context.* *-Tasks may involve linear functions, quadratic functions, and exponential functions.* **Content Standard: A2. F.BF.B.4a** **Scope & Clarifications** *There are no assessment limits for this standard.*	**Chapter 6: Radical Functions and Rational Exponents** **Concept Byte 6.1** Properties of Exponents **Lesson 6.4** Rational Exponents **Lesson 6.5** Solving Square Root and Other Radical Equations **Lesson 6.6** Function Operations **Lesson 6.7** Inverse Relations and Functions **Lesson 6.8** Graphing Radical Functions	**Chapter 6 Test:** Radical Functions and Rational Exponents

		Content Standard: A2. F.IF.B.3 Scope & Clarification *Tasks are limited to square root and cube root functions.* Content Standard: A2. F.IF.B.3 **P** Scope & Clarification *Tasks are limited to square root and cube root functions.* Content Standard: A2. F.IF.A.1 **P** Scope & Clarification *-Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; and end behavior.* *-Tasks may involve square root, cube root, polynomials, exponential, and logarithmic functions.* **Conceptual Category: Algebra** Content Standard: A2. A.CED. A.2 **P**, A2. A.CED. A.1 **P** Scope & Clarification *Tasks are limited to square root, cube root, polynomial, rational, and logarithmic.* Content Standard: A2. A. REI.A.2 Scope & Clarification		

		There are no assessment limits for this standard.		

| 2nd 9 Weeks | Exponential and Logarithmic Functions | **Conceptual Category:** Functions

Content Standard: A2. F.IF.B.4a P
Scope & Clarifications
-For example, identify percent rate of change in functions such as $y=2^x, y=2^{-x}, y=(\frac{1}{2})^x, y=(\frac{1}{2})^{-x}$

Content Standard: A2. F.IF.A.2 P
Scope & Clarification
Tasks may involve polynomial, exponential, and logarithmic functions.

Content Standard: A2. F.IF.A.1 P
Scope & Clarification
-Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; and end behavior.

-Tasks may involve square root, cube root, polynomials, exponential, and logarithmic functions.

Conceptual Category: Statistics and Probability | **Chapter 7: Exponential and Logarithmic Functions**

Lesson 7.1 Exploring Exponential Models
Lesson 7.2 Properties of Exponential Functions
Lesson 7.3 Logarithmic Functions as Inverses
Lesson 7.4 Properties of Logarithmic Equations | **Chapter 7 Test:** Exponential and Logarithmic Functions |

		Content Standard: A2. S.ID.B.2 P **Scope & Clarifications** *-Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models.* *-Task are limited to exponential functions with domains not in the integers*.		

| 2nd 9 Weeks | Exponential and Logarithmic Functions | **Conceptual Category:** Functions

Content Standard: A2. F.LE.A.2
Scope & Clarifications
There are no assessment limits for this standard.

Content Standard: A2. F.LE.B.3
Scope & Clarifications
For example, the equation y= 5000(1.06)^{x}models the rising population of a city with 5000 residents when the annual growth rate is 6 percent. What will be the effect on the equation if the city's growth rate was 7 percent instead of 6 percent?

Content Standard: A2. F.IF.B.5
Scope & Clarifications
-Task may involve polynomial, exponential, and logarithmic functions.

Content Standard: A2. F.IF.B.3 P
Scope & Clarification
Tasks are limited to square root and cube root functions.

Conceptual Category: Algebra

Content Standard: A2. A.SSE. A.1 P
Scope & Clarifications
Tasks are limited to polynomial, rational, or exponential expressions. | **Chapter 7: Exponential and Logarithmic Functions**

Lesson 7.5 Exponential and logarithmic Equations
Concept Byte 7.5: Using Logarithms for Exponential Models
Lesson 7.6 Natural logarithms
Concept Byte 7.6: Exponential and logarithmic Inequalities | **Chapter 7 Test:** Exponential and Logarithmic Functions |

Conceptual Category: Algebra

Content Standard: A2. A.SSE. B.2a ^{P}
Scope & Clarifications
Tasks are limited to exponential expressions with rational or real exponents.

Content Standard: A2. A.CED. A.2 ^{P},

A2. A.CED. A.1 ^{P}
Scope & Clarification
Tasks are limited to square root, cube root, polynomial, rational, and logarithmic.

Content Standard: A2. A.REI. D.6 ^{P}
Scope & Clarification
Include cases where f(x) and/or g(x) are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.

3rd 9 Weeks	**Rational Functions**	**Conceptual Category:** Functions **Content Standard: A2. F.BF.B.3** P **Scope & Clarifications** *-Task may involve polynomial, exponential, and logarithmic functions.* *-Tasks may involve recognizing even and odd functions.* **Conceptual Category**: Algebra **Content Standard: A2. A.SSE. A.1** P **Scope & Clarifications** *Tasks are limited to polynomial, rational, or exponential expressions.* **Content Standard: A2. A.APR.C.4** **Scope & Clarifications** *There are no assessment limits for this standard.* **Content Standard: A2. A.CED. A.2** P, **A2. A.CED. A.1** P **Scope & Clarification** *Tasks are limited to square root, cube root, polynomial, rational, and logarithmic.*	**Chapter 8: Rational Functions** **Lesson 8.2** The Reciprocal Function Family **Lesson 8.4** Rational Expressions Lesson 8.5 Adding and Subtracting Rational Expressions **Lesson 8.6** Solving Rational Equations **Concept Byte 8.6**: Rational Inequalities	**Chapter 8 Test:** Rational Functions

| 3rd 9 Weeks | Sequences and Series | **Conceptual Category:** Functions
Content Standard: A2. F.BF.A.2
Scope & Clarifications
There are no assessment limits for this standard.

Content Standard: A2. F.LE.A.1 P
Scope & Clarifications
There are no assessment limits for this standard.

Conceptual Category: Algebra
Content Standard: A2. A.SSE. B.3
Scope & Clarifications
There are no assessment limits for this standard.

Content Standard: A2. A. REI.A.2
Scope & Clarification
There are no assessment limits for this standard. | **Chapter 9: Sequences and Series**

Lesson 9.2 Arithmetic Sequences
Lesson 9.3 Geometric Sequences
Lesson 9.5 Geometric Series | **Chapter 9 Test:**
Sequences and Series |

| 3rd 9 Weeks | Probability and Statistics | **Conceptual Category**: Statistics and Probability
Content Standard: A2. S.ID.A.1
Scope & Clarifications
There are no assessment limits for this standard.

Content Standard: A2. S.IC.A.1
Scope & Clarifications
For example, in a given situation, is it more appropriate to use a sample survey, an experiment, or an observational study? Explain how randomization affects the bias in a study.

Content Standard: A2. S.IC.A.2, A2 S.CP.A.2, A2. S.CP.A.3
Scope & Clarifications
There are no assessment limits for this standard.

Content Standard: A2. S.CP.A.4
Scope & Clarifications
For example, compare the chance of having lung cancer if you are a smoker with the chance of being a smoker if you have lung cancer.

Content Standard: A2. S.CP.B.5
Scope & Clarifications
For example, a teacher gave two exams, 75 percent passed the first quiz and 25 percent passed both. What percent who passed the first quiz also passed the second quiz?
Content Standard: A2. S.CP.B.6
Scope & Clarifications
For example, in a math class of 32 students, 14 are boys and 18 are girls. On a unit test 6 boys and 5 girls made an A. If a student is chosen at random from a class, what is the probability of choosing a girl or an A student? | **Chapter 11: Probability and Statistics**

Lesson 11.3 Probability of Multiple Events
Lesson 11.4 Conditional Probability
Lesson 11.5 Probability Models
Lesson 11.8 Samples and Surveys
Lesson 11.10 Normal Distributions
Concept Byte 11.10: Margin of Error
Concept Byte 11.10: Drawing Conclusion from Sample | **Chapter 11 Test:**
Probability and Statistics |

4th 9 Weeks	Periodic Functions and Trigonometry	**Conceptual Category**: Functions **Content Standard: A2. F.TF.A.1a, A2. F.TF. A1b** **Scope & Clarifications** Commonly recognize angles include all multiples $\frac{n\pi}{6}$ and $\frac{n\pi}{4}$ where n is an integer. **Content Standard: A2. F.TF.A.2** **Scope & Clarifications** *There are no assessment limits for this standard.*	**Chapter 13: Periodic Functions and Trigonometry** **Lesson 13.2** Angles and the Unit Circle **Lesson 13.3** Radian Measure **Lesson 13.4** The Sine Function **Lesson 13.5** The Cosine Function **Lesson 13.6** The Tangent Function	**Chapter 13 Test:** Periodic Functions and Trigonometry

4th 9 Weeks	Trigonometric Identities and Equations	**Conceptual Category**: Functions **Content Standard: A2. TF.B.3a, A2. TF.B.3b Scope & Clarifications** Commonly recognize angles include all multiples $\frac{n\pi}{6}$ and $\frac{n\pi}{4}$ where n is an integer.	**Chapter 14: Trigonometric Graphs, Identities, and Equations** **Lesson 14.1** Trigonometric Identities **Lesson 14.3** Right Triangles and Trigonometric Ratios	**Chapter 14 Test:** Trigonmetric Identities and Equations

Notes

  Additional resources needed for **Standard A2. S.CP.A.1** *Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events ("or", "and", "not").*