Using Algebra 2 Common Core as a Resource for engage^{ny}

Use the following engage^{ny} chart to find correlated *Algebra 2 Common Core* lessons.

engage^{ny} Module	engage^{ny} Lesson	Algebra 2 Common Core Lesson
Module 1	**Lesson 1** Successive Differences in Polynomials	
	Lesson 2 The Multiplication of Polynomials	R.5, 2.1 Additional support in Algebra 1: 6.1, 6.4, 6.5
	Lesson 3 The Division of Polynomials	4.1
	Lesson 4 Comparing Methods—Long Division, Again?	3.2
	Lesson 5 Putting It All Together	3.2 Additional support in Algebra 1: 6.1, 6.4, 6.5
	Lesson 6 Dividing $x - a$ and by $x + a$	3.2
	Lesson 7 Mental Math	
	Lesson 8 The Power of Algebra—Finding Primes	
	Lesson 9 Radicals and Conjugates	5.1, 5.2
	Lesson 10 The Power of Algebra—Finding Pythagorean Triples	2.3
	Lesson 11 The Special Role of Zero in Factoring	3.3, 3.5
	Lesson 12 Overcoming Obstacles in Factoring	2.1, 2.3, 2.4, 3.4
	Lesson 13 Mastering Factoring	2.1, 2.2
	Lesson 14 Graphing Factored Polynomials	3.5
	Lesson 15 Structure in Graphs of Polynomial Functions	3.5
	Lessons 16–17 Modeling with Polynomials—An Introduction	3.8
	Lesson 18 Overcoming a Second Obstacle in Factoring—What If There Is a Remainder?	4.1
	Lesson 19 The Remainder Theorem	3.3
	Lessons 20–21 Modeling Riverbeds with Polynomials	3.3, 3.8
	Lesson 22 Equivalent Rational Expressions	4.1
	Lesson 23 Comparing Rational Expressions	4.1, 4.2
	Lesson 24 Multiplying and Dividing Rational Expressions	4.1
	Lesson 25 Adding and Subtracting Rational Expressions	4.2
	Lesson 26 Solving Rational Equations	4.3
	Lesson 27 Word Problems Leading to Rational Equations	4.3
	Lesson 28 A Focus on Square Roots	5.4
	Lesson 29 Solving Radical Equations	5.4

engage^ny Module	engage^ny Lesson	Algebra 2 Common Core Lesson
Module 1	**Lesson 30** Linear Systems in Three Variables	1.4
	Lesson 31 Systems of Equations	3.9
	Lesson 32 Graphing Systems of Equations	3.9
	Lesson 33 The Definition of a Parabola	2.8
	Lesson 34 Are All Parabolas Congruent?	R.6, 2.8, 3.7
	Lesson 35 Are All Parabolas Similar?	2.8 Additional support in Algebra 1: 8.7
	Lesson 36 Overcoming a Third Obstacle to Factoring—What If There Are No Real Number Solutions?	2.6
	Lesson 37 A Surprising Boost from Geometry	2.5
	Lesson 38 Complex Numbers as Solutions to Equations	2.6
	Lesson 39 Factoring Extended to the Complex Realm	2.6
	Lesson 40 Obstacles Resolved—A Surprising Result	3.5
Module 2	**Lesson 1** Ferris Wheels—Tracking the Height of a Passenger Car	
	Lesson 2 The Height and Co-Height Functions of a Ferris Wheel	
	Lesson 3 The Motion of the Moon, Sun, and Stars—Motivating Mathematics	
	Lesson 4 From Circle-ometry to Trigonometry	9.1, 9.2, 9.3, 9.4
	Lesson 5 Extending the Domain of Sine and Cosine to All Real Numbers	9.4
	Lesson 6 Why Call It Tangent?	9.2, 9.3, 9.4
	Lesson 7 Secant and the Co-Functions	9.6
	Lesson 8 Graphing the Sine and Cosine Functions	9.5
	Lesson 9 Awkward! Who Chose the Number 360, Anyway?	9.3, 9.5
	Lesson 10 Basic Trigonometric Identities from Graphs	9.5
	Lesson 11 Transforming the Graph of the Sine Function	9.5
	Lesson 12 Ferris Wheels—Using Trigonometric Functions to Model Cyclical Behavior	9.5
	Lesson 13 Tides, Sound Waves, and Stock Markets	9.7
	Lesson 14 Graphing the Tangent Function	9.4, 9.5
	Lesson 15 What Is a Trigonometric Identity?	9.4
	Lesson 16 Proving Trigonometric Identities	9.4
	Lesson 17 Trigonometric Identity Proofs	9.4
Module 3	**Lesson 1** Integer Exponents	R.5
	Lesson 2 Base 10 and Scientific Notation	Additional support in Algebra 1: 1.8

engage^{ny} Module	engage^{ny} Lesson	Algebra 2 Common Core Lesson
Module 3	**Lesson 3** Rational Exponents—What are $2^{1/2}$ and $2^{1/3}$?	5.1, 5.3
	Lesson 4 Properties of Exponents and Radicals	5.1, 5.3
	Lesson 5 Irrational Exponents—What are $2^{\sqrt{2}}$ and 2^{π}?	6.1
	Lesson 6 Euler's Number, *e*	6.1
	Lesson 7 Bacteria and Exponential Growth	6.1
	Lesson 8 The "WhatPower" Function	7.1
	Lesson 9 Logarithms—How Many Digits Do You Need?	7.5
	Lesson 10 Building Logarithmic Tables	7.1, 7.4
	Lesson 11 The Most Important Property of Logarithms	7.4, 7.6
	Lesson 12 Properties of Logarithms	7.4, 7.6
	Lesson 13 Changing the Base	7.3, 7.4, 7.6
	Lesson 14 Solving Logarithmic Equations	7.1, 7.4, 7.6
	Lesson 15 Why Were Logarithms Developed?	7.4
	Lesson 16 Rational and Irrational Numbers	
	Lesson 17 Graphing the Logarithm Function	7.2
	Lesson 18 Graphs of Exponential Functions and Logarithmic Functions	6.1, 7.2
	Lesson 19 The Inverse Relationship Between Logarithmic and Exponential Functions	6.1, 6.4, 7.1, 7.2
	Lesson 20 Transformations of the Graphs of Logarithmic and Exponential Functions	R.6, 1.1, 6.1, 7.2
	Lesson 21 The Graph of the Natural Logarithm Function	7.3
	Lesson 22 Choosing a Model	1.2, 1.3, 2.7, 6.2, 9.7
	Lesson 23 Bean Counting	9.7
	Lesson 24 Solving Exponential Equations	7.4
	Lesson 25 Geometric Sequences and Exponential Growth and Decay	6.1, 8.1, 8.3
	Lesson 26 Percent Rate of Change	6.1, 6.2
	Lesson 27 Modeling with Exponential Functions	6.2, 7.4
	Lesson 28 Newton's Law of Cooling, Revisisted	6.2
	Lesson 29 The Mathematics Behind a Structured Savings Plan	8.2, 8.4
	Lesson 30 Buying a Car	8.4
	Lesson 31 Credit Cards	8.4
	Lesson 32 Buying a House	8.4
	Lesson 33 The Million Dollar Problem	8.4
Module 4	**Lesson 1** Chance Experiments, Sample Spaces, and Events	10.1
	Lesson 2 Calculating Probabilities of Events Using Two-Way Tables	10.4

engage^ny Module	engage^ny Lesson	Algebra 2 Common Core Lesson
Module 4	**Lessons 3–4** Calculating Conditional Probabilities and Evaluating Independence Using Two-Way Tables	10.4
	Lesson 5 Events and Venn Diagrams	10.1, 10.2, 10.3, 10.4
	Lessons 6–7 Probability Rules	10.2, 10.3, 10.4
	Lesson 8 Distributions—Center, Shape, and Spread	10.5
	Lesson 9 Using a Curve to model a Data Distribution	10.5
	Lessons 10–11 Normal Distributions	10.5
	Lesson 12 Types of Statistical Studies	10.6, 10.7
	Lesson 13 Using Sample Data to Estimate a Population Characteristic	10.6, 10.7
	Lessons 14–15 Sampling Variability in the Sample Proportion	10.1, 10.5
	Lessons 16–17 Margin of Error when Estimating a Population Proportion	10.5, 10.7
	Lessons 18–19 Sampling Variability in the Sample Mean	10.6
	Lessons 20–21 Margin of Error when Estimating a Population Mean	10.5, 10.6, 10.7
	Lesson 22 Evaluating Reports Based on Data from a Sample	10.6, 10.7
	Lesson 23 Experiments and the Role of Random Assignment	10.7
	Lesson 24 Differences Due to Random Assignment Alone	10.7
	Lessons 25–27 Ruling Out Chance	10.1, 10.6, 10.7
	Lessons 28–29 Drawing a Conclusion from an Experiment	10.6
	Lesson 30 Evaluating Reports Based on Data from an Experiment	10.7

Chapter R Review

LESSON PLANNING

Lesson	Student Edition	Standards	Digital Lesson	engage^{ny} Lessons
R.1 Expressions, Equations, and Functions 	pp. 5–14	A-CED.1; A-CED.4; A-REI.3	Lesson R.1	
R.2 Linear Functions and Rate of Change	pp. 14–21		Lesson R.2	
R.3 Functions	pp. 22–25	A-REI.10; F-IF.1; F-IF.2	Lesson R.3	
R.4 Solving Systems of Linear Equations and Inequalities 	pp. 25–35	A-CED.3; A-REI.5; A-REI.6; A-REI.11; A-REI.12	Lesson R.4	
R.5 Polynomial Operations	pp. 36–41	A-SSE.2; A-APR.1	Lesson R.5	M1 Lesson 2 M3 Lesson 1
R.6 Parabolas 	pp. 41–43	F-BF.3	Lesson R.6	M1 Lesson 34 M3 Lesson 20

Key to the icons:

The computer icon  indicates Digital Activities that can be found at **www.amscomath.com.**

The globe icon  indicates where Real-World Model Problems are found in the text.

The black diamond icon ◆ (next to the answers in this Teacher Manual) indicates challenge problems.

Chapter 1

Themes in Algebra 2

LESSON PLANNING

Lesson	Student Edition	Standards	Digital Lesson	engage^{ny} Lessons
1.1 Functions 	pp. 45–54		Lesson 1.1	M3 Lesson 20
1.2 Models	pp. 54–63		Lesson 1.2	M3 Lesson 22
1.3 Working with Models  	pp. 64–70	N-Q.2; A-SSE.1a; A-CED.3; F-BF.1a	Lesson 1.3	M3 Lesson 22
1.4 Seeing Structure in Equations and Expressions	pp. 71–74	A-SSE.1b; A-REI.6	Lesson 1.4	M1 Lesson 30

Chapter 2

Quadratics

LESSON PLANNING

Lesson	Student Edition	Standards	Digital Lesson	engage^{ny} Lessons
2.1 Algebra 1 Review: Factoring Polynomials	pp. 79–84	A-SSE.2	Lesson 2.1	M1 Lessons 2, 12–13
2.2 Polynomial Patterns	pp. 85–88	A-SSE.2	Lesson 2.2	M1 Lesson 13
2.3 Patterns and Equations 	pp. 88–94	A-SSE.2; A-APR.4	Lesson 2.3	M1 Lesson 10, 12
2.4 Algebra 1 Review: The Quadratic Formula 	pp. 94–102	A-REI.4a; A-REI.4b	Lesson 2.4	M1 Lesson 12
2.5 Imaginary and Complex Numbers	pp. 103–108	N-CN.1; N-CN.2; N-CN.8	Lesson 2.5	M1 Lesson 37
2.6 Solutions of Quadratic Equations	pp. 108–114	N-CN.7; A-APR.3; A-REI.4b; F-IF.8a	Lesson 2.6	M1 Lessons 36, 38–39
2.7 Modeling with Quadratic Functions  	pp. 114–118	A-CED.2; F-IF.4; S-ID.6a	Lesson 2.7	M3 Lesson 22
2.8 Parabolas at the Origin  	pp. 118–126	F-IF.4; G-GPE.2	Lesson 2.8	M1 Lessons 33–35

Chapter 3 Polynomials

LESSON PLANNING

Lesson	Student Edition	Standards	Digital Lesson	engage^{ny} Lessons
3.1 Multivariable Polynomials	pp. 133–137	A-SSE.2; A-APR.1	Lesson 3.1	
3.2 Dividing Polynomials	pp. 138–147	A-APR.6	Lesson 3.2	M1 Lessons 4–6
3.3 Remainder and Factor Theorems	pp. 147–151	A-APR.2	Lesson 3.3	M1 Lessons 11, 19–20
3.4 Solving Polynomial Equations Algebraically	pp. 152–154	A-SSE.1a; A-APR.3	Lesson 3.4	M1 Lesson 12
3.5 Finding Zeros of Polynomial Functions 	pp. 154–164	N-CN.9; A-APR.3; F-IF.7c	Lesson 3.5	M1 Lessons 11, 14–15, 40
3.6 Optional: Descartes' Rule of Signs	pp. 165–167		Lesson 3.6	
3.7 Transformations of Polynomial Functions	pp. 168–170	F-BF.3	Lesson 3.7	M1 Lesson 34
3.8 Modeling with Polynomial Functions 	pp. 170–174	A-CED.2; A-CED.3; F-IF.4; F-IF.6; F-IF.7c; F-IF.9	Lesson 3.8	M1 Lessons 16–17, 20–21
3.9 Solving Systems of Polynomial Equations	pp. 175–178	A-REI.7; A-REI.11	Lesson 3.9	M1 Lessons 31–32

Chapter 4

Rational Expressions

LESSON PLANNING

Lesson	Student Edition	Standards	Digital Lesson	engage^{ny} Lessons
4.1 Multiplying and Dividing Rational Expressions 	pp. 185–192	A-SSE.1a; A-SSE.1b; A-SSE.2; A-APR.6; A-APR.7	Lesson 4.1	M1 Lessons 3, 18, 22–24
4.2 Adding and Subtracting Rational Expressions	pp. 192–197	A-SSE.1a; A-SSE.1b; A-SSE.2; A-APR.7	Lesson 4.2	M1 Lessons 23, 25
4.3 Rational Equations  	pp. 197–204	A-CED.1; A-REI.1; A-REI.2	Lesson 4.3	M1 Lessons 26–27
4.4 Graphing Rational Functions 	pp. 205–216	A-REI.11; F-IF.4; F-IF.5; F-BF.3	Lesson 4.4	

Chapter 5

Powers and Radicals

LESSON PLANNING

Lesson	Student Edition	Standards	Digital Lesson	engage^{ny} Lessons
5.1 Radical Operations	pp. 223–232	N-RN.2	Lesson 5.1	M1 Lesson 9 M3 Lessons 3–4
5.2 More Operations with Radicals	pp. 232–238	N-RN.2	Lesson 5.2	M1 Lesson 9
5.3 Exponent Notation	pp. 239–245	N-RN.1; N-RN.2; A-SSE.2	Lesson 5.3	M3 Lessons 3–4
5.4 Radical Equations	pp. 245–250	A-REI.1; A-REI.2	Lesson 5.4	M1 Lessons 28–29
5.5 Radical Function Graphs 	pp. 251–255	F-IF.5; F-IF.7b; F-BF.3	Lesson 5.5	

Chapter 6

Exponential Functions

LESSON PLANNING

Lesson	Student Edition	Standards	Digital Lesson	engage^{ny} Lessons
6.1 Exponential Function Graphs 	pp. 261–268	F-IF.6; F-IF.8b; F-BF.3	Lesson 6.1	M3 Lessons 5–7, 18–20, 25–26
6.2 Modeling with Exponential Functions 	pp. 268–277	A-SSE.1b; A-SSE.3c; F-IF.4; F-IF.7e; F-LE.5; S-ID.6a	Lesson 6.2	M3 Lessons 22, 26–28
6.3 Combining Functions 	pp. 278–281	F-BF.1b	Lesson 6.3	
6.4 Inverse and Composite Functions  	pp. 281–289	F-BF.4a	Lesson 6.4	M3 Lesson 19

Chapter 7

Logarithmic Functions

LESSON PLANNING

Lesson	Student Edition	Standards	Digital Lesson	engage^{ny} Lessons
7.1 Logarithms 	pp. 295–299	F-LE.4	Lesson 7.1	M3 Lessons 8, 10, 14, 19
7.2 Logarithmic Function Graphs	pp. 300–305	A-REI.11; F-BF.3	Lesson 7.2	M3 Lessons 17–20
7.3 Natural Logarithms and *e* 	pp. 305–307	F-LE.4	Lesson 7.3	M3 Lessons 13, 21
7.4 Laws of Logarithms	pp. 308–317	F-LE.4	Lesson 7.4	M3 Lessons 10–15, 24, 27
7.5 Modeling with Logarithms 	pp. 317–323	A-CED.1; F-IF.4; F-IF.6; F-IF.7e; F-IF.9	Lesson 7.5	M3 Lesson 9
7.6 More Logarithmic Operations	pp. 324–327	A-SSE.2; F-LE.4	Lesson 7.6	M3 Lessons 11–14

Chapter 8

Sequences and Series

LESSON PLANNING

Lesson	Student Edition	Standards	Digital Lesson	engage^{ny} Lessons
8.1 Arithmetic Sequences  	pp. 333–342	F-IF.3; F-BF.1a; F-BF.2; F-LE.2	Lesson 8.1	M3 Lesson 25
8.2 Optional: Arithmetic Series	pp. 342–349		Lesson 8.2	M3 Lesson 29
8.3 Geometric Sequences  	pp. 350–360	F-IF.3; F-BF.1a; F-BF.2; F-LE.2	Lesson 8.3	M3 Lesson 25
8.4 Geometric Series 	pp. 361–370	A-SSE.4	Lesson 8.4	M3 Lessons 29–33
8.5 Binomial Theorem	pp. 370–380	A-APR.5	Lesson 8.5	

Chapter 9 Trigonometry

LESSON PLANNING

Lesson	Student Edition	Standards	Digital Lesson	engage^{ny} Lessons
9.1 Geometry Review: Right Triangles 	pp. 387–393	G-SRT.8	Lesson 9.1	M2 Lesson 4
9.2 Geometry Review: Trigonometric Functions  	pp. 394–406	G-SRT.6; G-SRT.7; G-SRT.8	Lesson 9.2	M2 Lessons 4, 6
9.3 Angles of Rotation and Trigonometric Functions 	pp. 406–416	F-TF.1	Lesson 9.3	M2 Lessons 4, 6, 9
9.4 Trigonometric Functions and the Unit Circle 	pp. 417–423	F-TF.2; F-TF.8	Lesson 9.4	M2 Lessons 4–6, 14–16
9.5 Trigonometric Function Graphs  	pp. 424–441	F-IF.4; F-IF.7e; F-BF.3; F-TF.5	Lesson 9.5	M2 Lessons 8–12, 14
9.6 Optional: Reciprocal Trigonometric Functions	pp. 441–447		Lesson 9.6	M2 Lesson 7
9.7 Modeling with Functions	pp. 448–455	S-ID.6a	Lesson 9.7	M2 Lesson 13 M3 Lessons 22–23

Chapter 10 Probability

LESSON PLANNING

Lesson	Student Edition	Standards	Digital Lesson	engage^{ny} Lessons
10.1 Introduction to Probability  	pp. 463–471	S-CP.1; S-MD.6	Lesson 10.1	M4 Lessons 1, 5, 15, 25
10.2 Independent Events and the Multiplication Rule  	pp. 471–477	S-CP.1; S-CP.2; S-MD.6	Lesson 10.2	M4 Lessons 5–6
10.3 Addition and Subtraction Rules 	pp. 477–484	S-CP.1; S-CP.7; S-MD.7	Lesson 10.3	M4 Lessons 5–7
10.4 Conditional Probability 	pp. 485–496	S-CP.3; S-CP.4; S-CP.5; S-CP.6	Lesson 10.4	M4 Lessons 2–6
10.5 Normal Distribution 	pp. 496–505	S-ID.4	Lesson 10.5	M4 Lessons 8–11, 14–15, 17, 21
10.6 Surveys and Samples	pp. 505–508	S-IC.1; S-IC.2; S-IC.3	Lesson 10.6	M4 Lessons 12–13, 18–20, 22, 26–28
10.7 Observational Studies  	pp. 509–516	S-IC.1; S-IC.2; S-IC.3; S-IC.4; S-IC.5; S-IC.6; S-CP.4; S-MD.7	Lesson 10.7	M4 Lessons 12–13, 16–17, 20–27, 30