CHAPTER 2: Functions, Equations and Graphs (Algebra 2 Honors)

Math.A-CED.A.2   Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
Math.A-CED.A.4   Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.
Math.A-REI.A.1   Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.
Math.A-REI.B.3   Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.
Math.A-REI.D.10   Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).
Math.A-REI.D.11   Explain why the x-coordinates of the points where the graphs of the equations y = f(x) and y = g(x) intersect are the solutions of the equation f(x)=g(x); find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations.

CONTENT:

2.1 Relations and Functions pg. 59 #'s (6-20)even, (26-32)even, 46,48, 51-54

2.2 Linear Equations PG. 68 #26-31, (44-64)even, 66-70, (72-76)even

2.3 Direct Variation pg. 75 #'s (30-54)even

Quiz 2.1 – 2.3

pg. 76 standardized test prep #60 – 64, and mixed review #65 - 73

2.4 Using Linear Models pg.81 #'s 12,15, 17,19,20,(22-26)

2.5 Absolute Value Functions and Graphs pg. 89 #(29-32), 38, 40, 42, 49, 52

2.6 Vertical and Horizontal Translations pg. 96 #(31-39),43,45,47,48,49,(50-54)even

Quiz 2.4 – 2.6
pg. 97 Standardized test prep: #62-65 and Mixed review: #66-72

2.7 Two-Variable Inequalities Pg. 103 #'s 23,26,30,34,(38-43),45

Chapter 2 Review pg. 107 # 1-11,13,15-19,22, 24, 39,42,43,45

Chapter 2 Test

CHAPTER 4: Matrices (Algebra 2 Honors)

CONTENT:

4.1: Organizing Data into Matrices pg. 166 #15-26

4.2: Adding and Subtracting Matrices pg. 174 #18-22, 24,25,27,30,31

4.3: Matrix Multiplication pg. 183 #23-26, 36,39,40,41,(47-50),52,54

Quiz 4.1 – 4.3
Pg. 185 STP/MR #61-66, 70-72

4.4: Geometric Transformations with Matrices pg. 192 #25,26,27,30-35,39,42,43

4.5: 2 x 2 Matrices, Determinants, and Inverses pg. 200 #26-32,38-43

4.6: 3 x 3 Matrices, Determinants, and Inverses pg. 205 #1,2,10,15,(19-25)odd

Quiz 4.4 – 4.6
Pg. 206 STP/MR # 31 - 39

4.7: Inverse Matrices and Systems pg. 213 #(23-33)odd, 36,37

4.8: Augmented Matrices and Systems pg. 221 #12,14,17,24,27,28,29,32,(33-39)odd

Chapter 4 Review: pg. 225 #(11-21)odd, (30-42)even,47,48

Chapter 4 Test

CHAPTER 5: Quadratic Equations and Functions (Algebra 2 Honors)

Math.A-REI.4.a Use the method of completing the square to transform any quadratic equation in x into an equation of the form $(x-p)^2 = q$ that has the same solutions. Derive the quadratic formula from this form.

Math.A-REI.4.b Solve quadratic equations by inspection, taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation.

Math.A.CED.A.1 Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.

Math.A-APR.B.3 Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.

Math.N-CN.A.1 Know there is a complex number I such that i^2 = -1, and every complex number has the form a + bi with a and b real.

Math.N-CN.A.2 Use the relation i^2 = -1 and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.

CONTENT:

5.1 Modeling Data with Quadratic Functions pg. 237 #5,7,11,14,17,19,25-29, 36,37

5.2 Properties of Parabolas pg. 244 #16,18,25,32,34-39,41,42, (45-51)odd, 54

5.3 Translating Parabolas pg. 252 #36,37,39,40,45,50,54,58 - 61,65,68

Quiz 5.1 – 5.3
Pg. 254 standardized test prep and mixed review #85-93

5.4 Factoring Quadratic Expressions pg. 260 #(18-30)even, 48-50, (52-64)even, 67,70

5.5 Quadratic Equations pg.266 #11-14,(36-56)even, 59,61

5.6 Complex Numbers pg. 274 #22-25,50,52,53,54,56, (58-64)even

QUIZ 5.4 – 5.6
Pg. 276 STP/MR #76-80, 84-86

5.7 Completing the Square pg. 281 #5,6,23,24,28,30,33,41,43,51,53,55

5.8 The Quadratic Formula pg. 289 #18,20,43,44,45,49,51,57,59, 63,65

Chapter 5 Review page 293 #(7-21)odd, (32-50)even, (63-71)odd

Chapter 5 Assessment

CHAPTER 6: Polynomials and Polynomial Functions Standards

Math.A.SSE.A.1a: Interpret parts of an expression, such as terms, factors, and coefficients.

Math.A-SSE.B.3: Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.

Math.A-APR.A.1: Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.

Math.A-APR.B.2: 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).

Math.A-APR.B.3: Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.

Math.A-APR.C.5: Know and apply that the Binomial Theorem gives 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 example by Pascal's Triangle. (The Binomial Theorem can be proved by mathematical induction or by a combinatorial argument.)

CONTENT:

6.1: Polynomial Functions pg. 303 #(24 – 30)even, (33 – 45)every 3rd, (48 – 58)even

6.2: Polynomials and Linear Factors pg. 312 # 39, 41, 43 – 46, 51. 52, 54, 55, 57

6.3: Dividing Polynomials pg. 318 # 26,28,34,35,37,39,40,42,43,49,53,55

<p style="text-align:center">**QUIZ 6.1 – 6.3**
STP/MR page 319 #61-73</p>

6.4: Solving Polynomial Equations pg. 324 #42 – 45, 51, 54, 55, 57

6.5: Theorems About roots of Poly. Equations pg. 333 #13,14,17,18,25,20,25,27,29,31

6.6: The Fundamental Theorem of Algebra pg. 337 # 17 – 24

6.7: Permutations and Combinations pg. 342 #(6-30)even, 33,34,35,(46-52)even, 57,59,61

<p style="text-align:center">**QUIZ 6.4 – 6.7**
STP/MR pg. 344(74-94)even</p>

6.8: The Binomial Theorem pg. 350 #23,30,38,46,47,49,51,56

Chapter 6 review: Pg. 356 #(2-44) even

<p style="text-align:center">**CHAPTER 6 ASSESSMENT**</p>

CHAPTER 9: Rational Functions STANDARDS

Math.A-APR.D.6: Rewrite simple rational expressions in different forms; write a(x)/b(x) in the form q(x) + r(x)/b(x), where a(x), b(x), q(x), and r(x) are polynomials with the degree of r(x) less than the degree of b(x), using inspection, long division, or, for the more complicated examples, a computer algebra system.

Math.A-APR.D.7: Rewrite simple rational expressions in different forms; write a(x)/b(x) in the form q(x) + r(x)/b(x), where a(x), b(x), q(x), and r(x) are polynomials with the degree of r(x) less than the degree of b(x), using inspection, long division, or, for the more complicated examples, a computer algebra system.

Math.F-IF.B.5: Rewrite simple rational expressions in different forms; write a(x)/b(x) in the form q(x) + r(x)/b(x), where a(x), b(x), q(x), and r(x) are polynomials with the degree of r(x) less than the degree of b(x), using inspection, long division, or, for the more complicated examples, a computer algebra system.

Math.F-IF.C.7: Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.*
- **Math.F-IF.C.7d:** Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior. (+)

CONTENT

- 9.1: Inverse Variations pg. 481 #'s 5,7,(13-31)odd
- 9.2: Graphing Inverse Variations pg. 488 #(1-9)odd, (14-24)even, 33, 34
- 9.3: Rational Functions and Their Graphs pg. 495 #(6-16)even, 27-30, 36, 40
<div align="center">

QUIZ: 9.1 – 9.3
Mixed Review pg. 498 #51-59
</div>

- 9.4: Rational Expressions pg. 501 #20-22, 29, 30, 31, 33 – 36
- 9.5: Add and Subtract Rational Expressions pg.507#(6-20)even, 24,26,36,38,51
<div align="center">

QUIZ: 9.4 – 9.5
Mixed Review pg. 517 #(65-73)odd
</div>

- 9.6: Solving Rational Equations pg. 514 #(2-30)even
- 9.7: Probability of Multiple Events pg. 523 #(6-20)even, 26 – 29

Chapter 9 Review: pg. 527 #6,9,14,17,20,21,24,27,30,34,36,38,40,45,46
<div align="center">

CHAPTER 9 ASSESSMENT
</div>

CHAPTER 7: Radical Functions and Rational Exponents STANDARDS

Math.N-RN.A.1: Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents. For example, we define 5^(1/3) to be the cube root of 5 because we want [5^(1/3)]^3 = 5^[(1/3) x 3] to hold, so [5^(1/3)]^3 must equal 5.
Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents. For example, we define 5^(1/3) to be the cube root of 5 because we want [5^(1/3)]^3 = 5^[(1/3) x 3] to hold, so [5^(1/3)]^3 must equal 5.

Math.F-BF.A.1c: Compose functions. For example, if T(y) is the temperature in the atmosphere as a function of height, and h(t) is the height of a weather balloon as a function of time, then T(h(t)) is the temperature at the location of the weather balloon as a function of time. (+)

Math.F-BF.B.4: Find inverse functions.
a. Solve an equation of the form f(x) = c for a simple function f that has an inverse and write an expression for the inverse. For example, f(x) =2(x^3) for x > 0 or f(x) = (x+1)/(x-1) for x =? 1 (x not equal to 1).
b. Verify by composition that one function is the inverse of another. (+)
c. Read values of an inverse function from a graph or a table, given that the function has an inverse.

CONTENT:

7.1: Roots and Radical Expressions pg. 366 #'s 33-37, (40 - 48) even, 59, 61
7.2: Mult. and Div. Rational Exp. pg. 371 #'s (3-36)multiples of 3, (41-53)odd, 56,57
7.3: Binomial Radical Expressions pg. 376 #(28-40)even, 41,43,47
<p style="text-align:center;color:red;font-weight:bold;">QUIZ 7.1 – 7.3</p>

7.4: Rational Exponents pg. 382 #'s (4-25)every 3, (46-56)even, 70,72
7.5: Solving Radical Equations pg. 388 #'s 35,37,40,43,45,50,51
7.6: Function Operations pg. 395 #'s 20,21,(26 - 42)every 4, 46,48,55,58,59,63,65
<p style="text-align:center;color:red;font-weight:bold;">QUIZ 7.4 – 7.6</p>

7.7: Inverse Relations and Functions pg. 404 #'s (23-39)odd, 46, (47-57)odd
7.8: Graphing Radical Functions pg. 412 #'s (36-48)even, 55,58,59,60,61
Chapter 7 review: page 416 (15 – 30) every 3rd , 38,39,42,45,54,61,62,70,71,75
<p style="text-align:center;color:red;font-weight:bold;">CHAPTER 7 ASSESSMENT</p>

CHAPTER 8: Exponential and Logarithmic Functions STANDARDS

Math.A-SSE.B.3: Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.

Math.ASSE.B.3c: Use the properties of exponents to transform expressions for exponential functions. For example the expression 1.15^t can be rewritten as [1.15^(1/12)]^(12t) ? 1.012^(12t) to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.

MathF-IF.A.1: Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then f(x) denotes the output of f corresponding to the input x. The graph of f is the graph of the equation y = f(x).

Math.F-IF.C.7: Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.*
- **MathF.IF.C.7e:** Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.

Math.F-IF.C.8: Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.

Math.F-LE.A.4: For exponential models, express as a logarithm the solution to ab^(ct) = d where a, c, and d are numbers and the base b is 2, 10, or e; evaluate the logarithm using technology.*

<u>CONTENT</u>

8.1: Exploring Exponential Models pg. 426 #'s 6,9,14, (15-27)odd, 37-39, 47,48,51
8.2: Properties of Exponential Functions pg. 434 #'s 11,14,15, 27-30,37,41, 42-47
QUIZ 8.1 – 8.2

8.3: Logarithmic Functions as Inverses pg. 442 #'s(10-20)even,36,39,40,(57–61)odd
8.4: Properties of Logarithms pg. 449 #'s (7-25)odd,(33-39)odd
8.5: Exponential and Logarithmic Equation pg. 456 #(6-24)even, 35-37, 44,45
QUIZ 8.3 – 8.5

8.6: Natural Logarithms pg. 464 #'s (1-11)odd, (16-26)even, 31,34
Chapter 8 review: page 469 # 9,12,14, 21,22,34-37,40,41,47,48,56,59,61,67,68
CHAPTER 8 ASSESSMENT

CHAPTER 11: Sequences and Series STANDARDS

Math.F-BF.A.1: Write a function that describes a relationship between two quantities.*
a. Determine an explicit expression, a recursive process, or steps for calculation from a context.

Math.F-BF.A.2: Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.*

Math.A-SSE.B.4: Derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems. For example, calculate mortgage payments.

CONTENT:

11.1: Mathematical Patterns pg. 591 # (6-28)even, (33-39)odd, 46,49
11.2: Arithmetic Sequences pg. 596 #(6-10)2n,(16-20)2n,(26-30)2n, 31, 32, 46, 50
11.3: Geometric Sequences pg. 603 # 31-37, 41, (44 - 50)even

QUIZ 11.1 – 11.3
STP/MR pg. 604 # 61-70, 74-76

11.4: Arithmetic Series pg. 610 # 8,20,23,26-29, 32, 35-38
11.5: Geometric Series pg. 617 # 25-28, 33-37, 40

QUIZ 11.4 – 11.5
STP/MR pg. 618 #51-59, 63-66

Chapter 11 Review pg. 629 # 9,10,15,20,21,26,27,30,36,37,38,39,44-47
Chapter 11 ASSESSMENT

CHAPTER 12: Probability and Statistics STANDARDS

Math.S-ID.A.1: Represent data with plots on the real number line (dot plots, histograms, and box plots).

Math.S-ID.A.2: Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.

Math.S-IC.A.1: Understand statistics as a process for making inferences about population parameters based on a random sample from that population.

Math.S-IC.B.4: Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling.

Math.S-CP.A.3: Understand the conditional probability of A given B as P(A and B)/P(B), and interpret independence of A and B as saying that the conditional probability of A given B is the same as the probability of A, and the conditional probability of B given A is the same as the probability of B.

Math.S-CP.A.2: Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent.

CONTENT:

12.1: Probability Distribution Pg. 639 #3 – 10
12.2: Conditional Probability Pg. 644 # 1 – 8, 14 – 22
12.3: Analyzing Data pg. 652 #3,4,7,9, 12 – 19
<p style="text-align:center"><strong style="color:red">12.1 – 12.3 Quiz</p>

12.4: Standard Deviation pg. 660 #15,17 – 21,23,25,26,27
12.5:Working With Samples pg. 666 # 1 – 7,9-20,24-29
12.6: Binomial Distribution pg. 674 # 4 – 20, 22,24
<p style="text-align:center"><strong style="color:red">12.4 – 12.6 Quiz
MR. pg. 677 #33-37, 40-45</p>

12.7: Normal Distribution pg. 681 # 5-27
Chapter 12 Review: pg. 688 #(12-23)
<p style="text-align:center"><strong style="color:red">Chapter 12 Test</p>