Pearson

Honors Algebra 2

Semester A Summary:

In this course, students will learn, practice, and apply skills and strategies that will help them grow into strong mathematical thinkers. The course presents math as a complete subject to be studied, not merely sets of rules and formulas to be followed. Arriving at solutions is important, as are precision and vocabulary, but instruction does not center on procedural math only. Instead, instruction encourages depth of understanding, connections within and outside courses, flexibility of approaches, and usage of various tools. Daily instruction supports student learning of core algebraic concepts and development of procedural fluency regarding investigating functions; polynomials; polynomial functions and graphs; rational expressions and equations; complex numbers; equations and inequalities; and systems of equations. Each instructional learning object is aligned to and framed by one of eight Standards for Mathematical Practice. Students are encouraged to use visual representations of their thinking to bridge their understanding between the concrete and abstract, allowing patterns and geometric principles to come to life. In peer model videos throughout the course, the learner's peers demonstrate apply targeted mathematical skills, often using real-world examples. Instruction in 21st century skills further illustrates connections between mathematical concepts and real-world situations to support students' development of the abilities, knowledge, and expertise they need to thrive in today's world. Mathematical discussion prompts encourage students to revise misconceptions, uncover nuances in application, make connections to prior knowledge, identify patterns, and engage with vocabulary. Students are encouraged to share their thinking, justify their own solutions, read critically, and constructively critique the reasoning of others. The course is designed to support a growth mindset regarding math and encourages students to engage in productive struggle; instructional materials implicitly and explicitly remind students that mistakes are opportunities for learning and acquiring new skills. Together the course elements ensure the student grows as a mathematical thinker and develops the tools necessary for success at work and in life.

Semester A Outline

1. **Honors Algebra 2 A Course Overview**
    1. Honors Algebra 2 A Course Overview
2. **Investigating Functions**
    1. Investigating Functions Introduction
    2. Characteristics of Functions
        - In this section, you will contrast key characteristics of functions.
        - In this section, you will investigate functions using a graphing utility.
    3. Parent Functions and Transformations
        - In this section, you will recognize the general shape of function families using a graphing utility.
        - In this section, you will determine linear and absolute value function transformations.
        - In this section, you will construct a function given a description and the

parent function.

4. Quadratic Functions
    - In this section, you will differentiate the characteristics of quadratic functions.
    - In this section, you will use quadratic functions to solve a practical problem using a graphing utility.
5. Square Root & Cube Root Functions
    - In this section, you will contrast key characteristics of square root and cube root functions.
    - In this section, you will use technology to represent square root and cube root functions.
6. Continuity
    - In this section, you will describe various functions as continuous or discontinuous.
    - In this section, you will determine where the discontinuity of functions occurs.
7. Investigating Functions Apply
8. Investigating Functions Review
9. Investigating Functions Unit Test

3. **Polynomials**
    1. Polynomials Introduction
    2. Successive Differences
        - In this section, you will show that the 2nd differences of sequences from quadratic polynomials are constant.
        - In this section, you will show that the *n*th differences of sequences from *n*-degree polynomials are a constant value.
        - In this section, you will use successive differences to construct polynomial expressions from sequences.
    3. Polynomial Multiplication
        - In this section, you will multiply polynomials using a table.
        - In this section, you will multiply polynomials using the distributive property.
    4. Polynomial Division
        - In this section, you will divide polynomials by recognizing division as the inverse operation of multiplication.
        - In this section, you will divide polynomials using long division in a way analogous to dividing numbers.
    5. Polynomial Operations
        - In this section, you will perform addition, subtraction, multiplication, and division on polynomials.
        - In this section, you will determine the first and last terms of polynomials resulting from addition, subtraction, multiplication, and division without performing the operations completely.
    6. Polynomial Operations Prompt
    7. Polynomial Operations Discussion
    8. Polynomial Identities Day 1
        - In this section, you will divide polynomials by $(x + a)$ or $(x - a)$ to establish polynomial identities.
    9. Polynomial Identities Day 2
        - In this section, you will use polynomial identities to find products by framing the multiplication as the difference of two squares.
    10. Polynomial Power

- In this section, you will use polynomial identities to find prime numbers.
- In this section, you will learn how to generate Pythagorean triples using a polynomial identity.

11. The Binomial Theorem
    - In this section, you will learn how Pascal's Triangle relates to the expansion of binomials in the form of $(a+b)^n$.
    - In this section, you will use the Binomial Theorem to raise binomials like $(a+b)$ to whatever power you choose.
    - In this section, you will apply the Binomial Theorem to write out the full expansion of binomials raised to higher powers.
12. Polynomials Apply
13. Polynomials Review
14. Polynomials Unit Test

4. **Polynomial Functions & Graphs**
    1. Polynomial Functions & Graphs Introduction
    2. Roots of Polynomials
        - In this section, you will solve polynomial equations by decomposing polynomials into linear factors.
        - In this section, you will connect the zeros of a polynomial function to the x-intercepts on its graph.
    3. Repeating Roots
        - In this section, you will identify the multiplicities of linear factors of polynomial equations.
        - In this section, you will construct polynomial functions given the zeros and the multiplicity of each.
    4. Factoring Techniques
        - In this section, you will factor high-degree polynomials by decomposing them into quadratic factors.
        - In this section, you will factor high-degree polynomials by grouping.
        - In this section, you will factor high-degree polynomials by using their structures to identify patterns.
    5. Zeros of Polynomials
        - In this section, you will describe the relationship between the degree of a polynomial and the number of zeros it has.
        - In this section, you will use the zeros of a polynomial function to sketch its graph.
    6. Relative Extrema of Polynomials
        - In this section, you will identify relative maximum and minimum values on a polynomial graph.
        - In this section, you will describe the relationship between the degree of a polynomial and the number of relative minima and maxima it has.
    7. Graphs of Polynomials Portfolio
        - In this section, you will use the factored form of a polynomial function to find the zeros of its graph.
        - In this section, you will sketch the portions of a polynomial function's graph that exist between its zeros.
        - In this section, you will describe and sketch the end behavior of the graph of a polynomial function using its leading term.
    8. Remainders
        - In this section, you will divide polynomials and represent the remainders.
        - In this section, you will apply the Remainder Theorem to evaluate

polynomials.
    - In this section, you will apply the Factor Theorem to find factors of polynomial functions.
9. Modeling with Polynomials
    - In this section, you will represent polynomial relationships between two quantities.
    - In this section, you will interpret polynomial relationships between two quantities.
10. Polynomial Functions & Graphs Apply
11. Polynomial Functions & Graphs Review
12. Polynomial Functions & Graphs Unit Test

5. **Rational Expressions & Equations**
    1. Rational Expressions & Equations Introduction
    2. Rational Expressions
        - In this section, you will identify rational expressions.
        - In this section, you will create equivalent rational expressions.
        - In this section, you will compare rational expressions by writing them in different, equivalent forms.
    3. Multiplication & Division of Rational Expressions
        - In this section, you will multiply rational expressions.
        - In this section, you will divide rational expressions.
    4. Addition & Subtraction of Rational Expressions
        - In this section, you will add rational expressions.
        - In this section, you will subtract rational expressions with like and unlike denominators.
    5. Solving Rational Equations Day 1
        - In this section, you will solve rational equations by creating equivalent expressions.
    6. Solving Rational Equations Day 2
        - In this section, you will solve rational equations by multiplying both sides by a common denominator.
        - In this section, you will use models involving rational equations to solve real-world problems.
    7. Solving Algebraic Equations
        - In this section, you will solve rational equations with real solutions containing factorable algebraic expressions algebraically and graphically.
    8. Inverse & Joint Variation Portfolio
        - In this section, you will write inverse variation equations to model given datasets or practical situations.
        - In this section, you will write joint variation equations to model given datasets or practical situations.
        - In this section, you will solve a combination of direct and inverse variation problems.
    9. Rational Expressions & Equations Apply
    10. Rational Expressions & Equations Review
    11. Rational Expressions & Equations Unit Test
6. **Complex Numbers**
    1. Complex Numbers Introduction
    2. No Real Solutions
        - In this section, you will characterize graphs and equations that have no real solutions.

- In this section, you will characterize systems of equations and graphs that have no real solutions.

3. The Existence of Imaginary Numbers
    - In this section, you will show that the set of imaginary numbers is a subset of the set of all numbers, separate from the set of real numbers.
    - In this section, you will re-express numbers containing the square root of negative numbers as complex numbers.
4. The Complexity of Numbers Discussion Day 1
    - In this section, you will show that every number is a complex number composed of a real part and an imaginary part.
5. The Complexity of Numbers Discussion Day 2
6. Properties of Complex Numbers
    - In this section, you will show that the Commutative and Associative Properties hold for the set of complex numbers.
    - In this section, you will show that the Distributive Property holds for the set of complex numbers.
7. Operations with Complex Numbers Day 1
    - In this section, you will use the properties of complex numbers to add complex numbers.
8. Operations with Complex Numbers Day 2
    - In this section, you will use the properties of complex numbers to subtract complex numbers.
9. Operations with Complex Numbers Day 3
    - In this section, you will use the properties of complex numbers to multiply complex numbers.
10. Complex Numbers & Quadratic Equations
    - In this section, you will test quadratic equations to see that they have two solutions, though the solutions may involve imaginary or complex numbers.
    - In this section, you will estimate what the graph of a quadratic equation looks like based on the equation and its roots.
11. Two Solutions for all Quadratic Equations
    - In this section, you will use the discriminant to determine the number of real solutions to a quadratic equation.
    - In this section, you will solve quadratic equations and express their solutions as complex numbers.
12. Complex Numbers & Higher Order Polynomials
    - In this section, you will test solutions to polynomial equations to show they can have real solutions, complex solutions, or both.
    - In this section, you will show that if a complex number is a solution to a polynomial equation, its conjugate is also a solution.
    - In this section, you will show that for every polynomial equation, real solutions correspond to x-intercepts, but non-real solutions do not.
13. The Fundamental Theorem of Algebra
    - In this section, you will examine quadratic equations to learn how the Fundamental Theorem of Algebra applies to quadratic polynomials.
    - In this section, you will apply the Fundamental Theorem of Algebra given the degree of the polynomial to find the number of roots.
    - In this section, you will solve polynomial equations and justify their solutions using the Fundamental Theorem of Algebra.
14. Complex Numbers Apply
15. Complex Numbers Review

16. Complex Numbers Unit Test

7. **Equations & Inequalities**
    1. Equations & Inequalities Introduction
    2. Quadratic Equations
        - In this section, you will use technology to create quadratic equations given a table of data.
        - In this section, you will solve quadratic equations algebraically using a variety of methods.
    3. Quadratic Inequalities
        - In this section, you will solve quadratic inequalities.
    4. Absolute Value Linear Equations
        - In this section, you will solve absolute value linear inequalities in one variable algebraically.
    5. Absolute Value Linear Inequalities
        - In this section, you will represent the solutions to absolute value linear inequalities in one variable by graphing them on number lines.
    6. Absolute Value Graphs
        - In this section, you will create absolute value linear equations from different representations of the function.
    7. Equations & Inequalities Apply
    8. Equations & Inequalities Review
    9. Equations & Inequalities Unit Test
8. **Systems of Equations**
    1. Systems of Equations Introduction
    2. Solutions of Quadratic Equations
        - In this section, you will determine the number of solutions to linear-quadratic and to quadratic-quadratic systems of equations by verifying solutions on a graphing utility.
    3. Solutions of Linear-Quadratic Equations
        - In this section, you will solve linear-quadratic systems of equations in two variables.
        - In this section, you will solve a linear-quadratic system of two equations in two variables by using graphs.
    4. Systems of Quadratic-Quadratic Equations
        - In this section, you will solve systems of equations involving two quadratic equations in two variables using algebra.
        - In this section, you will solve systems of equations in two variables involving two quadratic equations using graphs.
    5. Solving Systems of Equations
        - In this section, you will solve systems of equations and verify them using a graphing utility.
    6. Systems of Equations Apply
    7. Systems of Equations Review
    8. Systems of Equations Unit Test
9. **Algebra 2 A Semester Review & Exam**
    1. Algebra 2 A Semester Review
    2. Algebra 2 A Semester Exam

Semester B Summary:

In this course, students will learn, practice, and apply skills and strategies that will help them grow into strong mathematical thinkers. The course presents math as a complete subject to be studied, not merely sets of rules and formulas to be followed. Arriving at solutions is important, as are precision and vocabulary, but instruction does not center on procedural math only. Instead, instruction encourages depth of understanding, connections within and outside courses, flexibility of approaches, and usage of various tools. Daily instruction supports student learning of core algebraic concepts and development of procedural fluency regarding exponents and radicals; logarithms; inverses; exponential and logarithmic functions; finite geometric series; storytelling with functions; and probability and statistics. Each instructional learning object is aligned to and framed by one of eight Standards for Mathematical Practice. Students are encouraged to use visual representations of their thinking to bridge their understanding between the concrete and abstract, allowing patterns and geometric principles to come to life. In peer model videos throughout the course, the learner's peers demonstrate apply targeted mathematical skills, often using real-world examples. Instruction in 21st century skills further illustrates connections between mathematical concepts and real-world situations to support students' development of the abilities, knowledge, and expertise they need to thrive in today's world. Mathematical discussion prompts encourage students to revise misconceptions, uncover nuances in application, make connections to prior knowledge, identify patterns, and engage with vocabulary. Students are encouraged to share their thinking, justify their own solutions, read critically, and constructively critique the reasoning of others. The course is designed to support a growth mindset regarding math and encourages students to engage in productive struggle; instructional materials implicitly and explicitly remind students that mistakes are opportunities for learning and acquiring new skills. Together the course elements ensure the student grows as a mathematical thinker and develops the tools necessary for success at work and in life.

Semester B Outline

1. **Honors Algebra 2 B Course Overview**
    1. Honors Algebra 2 B Course Overview
2. **Exponents & Radicals**
    1. Exponents & Radicals Introduction
    2. Revisiting Exponents & Their Functions
        - In this section, you will use the laws of exponents to solve algebraic equations containing integer exponents.
        - In this section, you will use the laws of exponents to solve algebraic equations containing rational exponents and roots.
        - In this section, you will model situations involving exponential growth and decay.
    3. Radical Equations
        - In this section, you will solve radical equations with variables on one side of the equal sign.
        - In this lesson, you will solve radical equations with variables on both sides of the equal sign.
        - In this section, you will verify the solutions of radical equations using a graphing utility.
    4. Radical Equations & Models
        - In this section, you will use models that involve radical equations with no more than one radical expression to solve real-world problems algebraically.
        - In this section, you will use models that involve radical equations with no more than one radical expression to solve real-world problems using a graphing utility.

5. Irrational Exponents
    - In this section, you will estimate quantities involving positive rational exponents.
    - In this section, you will use sequences to closely approximate quantities with irrational exponents.
6. Euler's Number, e
    - In this section, you will discover Euler's number e, and examine the application of e in a variety of mathematical situations.
    - In this section, you will apply Euler's number (e) in a variety of situations.
7. Exponents & Radicals Apply
8. Exponents & Radicals Review
9. Exponents & Radicals Unit Test

3. **Logarithms**
    1. Logarithms Introduction
    2. The Need for Logarithms
        - In this section, you will solve exponential equations with variable exponents using tables of over and under estimates.
        - In this section, you will rewrite exponential expressions as logarithms and logarithms as exponential expressions.
        - In this section, you will explore which numbers can be used as a logarithmic base and which numbers for which you can find the logarithms.
    3. The Exponent-Logarithm Relationship
        - In this section, you will use the properties of exponents to prove $log1 = 0$ and $log10 = 1$ and generalize to find that $log(10^m) = m$.
        - In this section, you will use the relationship between exponents and logarithms to prove $10^{\log x} = x$.
        - In this section, you will use the properties $log1 = 0, log10 = 1, log(10^m) = m$, and $10^{\log x} = x$ to evaluate logarithms.
    4. The Product Rule of Logarithms
        - In this section, you will use numerical analysis and logarithm rules to establish that $log(10^m \cdot 10^n) = log(10^m) + log(10^n)$, leading to $log(10^k \cdot x) = k + logx$.
        - In this section, you will use numerical reasoning and the rules of exponents to show that $log(xy) = logx + logy$.
        - In this section, you will use the property $log(xy) = logx + logy$ to evaluate logarithms.
    5. The Power Rule of Logarithms
        - In this section, you will show that $log(xy) = logx + logy$ means that $log(x^k) = klogx$.
        - In this section, you will use the property $log(x^k) = klogx$ to evaluate logarithms.
    6. The Quotient Rule of Logarithms
        - In this section, you will use numerical analysis and the property $log(x^k) = klogx$ to establish that $log(\frac{1}{x}) = -logx$.
        - In this section, you will use numerical analysis and the properties of $log(mn) = logm + logn$ and $log(\frac{1}{m}) = -logm$ to establish that $log(\frac{m}{n}) = logm - logn$.
        - In this section, you will use the properties $log(\frac{1}{m}) = -logm$ and $log(\frac{m}{n}) = logm - logn$ to evaluate logarithms.
    7. Changing Logarithm Bases

- In this section, you will change the bases of logarithms.
- In this section, you will evaluate logarithms by changing their bases.

8. Properties of Logarithms with any Base
    - In this section, you will show that the properties of logarithms hold for logarithms of any base, b.
    - In this section, you will use the properties of logarithms of base b to evaluate logarithms.
9. Solving Logarithmic Equations
    - In this section, you will solve equations of the form of $log_b\, Y = L$ by rewriting them in the form $b^L = Y$.
    - In this section, you will solve equations of the form $log_b\, Y = log_b\, Z$ by equating Y to Z.
10. Logarithms Apply
11. Logarithms Review
12. Logarithms Unit Test

4. **Inverses**
    1. Inverses Introduction
    2. Inverses Represented Graphically
        - In this section, you will show that inverses are graphs reflected over the line $y = x$.
        - In this section, you will determine whether two graphs are inverses of each other.
        - In this section, you will create the inverse of a given graph.
    3. Inverses Represented Numerically
        - In this section, you will show numerically that $y = x$ means the domain of a relation becomes the range and vice versa.
        - In this section, you will determine whether two relations are inverses of each other based on their domains and ranges.
        - In this section, given a table that represents a relation, you will create its inverse.
    4. Inverses Represented Verbally
        - In this section, you will determine whether two relations are inverses of each other by their descriptions.
        - In this section, you will create an inverse given a scenario representing a relation.
    5. Inverses Represented Algebraically
        - In this section, you will show algebraically that $y = x$ means to create the equation of the inverse by switching the variables and solving for y.
        - In this section, you will determine whether two functions are inverses of each other by function composition.
        - In this section, you will identify the inverse of a function.
    6. Inverses Apply
    7. Inverses Review
    8. Inverses Unit Test
5. **Exponential & Logarithmic Functions**
    1. Exponential & Logarithmic Functions Introduction
    2. Locating Irrational Numbers
        - In this section, you will locate irrational numbers on a number line by squeezing them into increasingly smaller intervals.
        - In this section, you will perform operations on irrational numbers by making increasingly smaller rational approximations.

3. Graphing Logarithmic Functions
    - In this section, you will graph logarithmic functions with different bases.
    - In this section, you will identify key features of a logarithmic function.
    - In this section, you will compare the key features of logarithmic functions with different bases.
4. Corresponding Exponential & Logarithmic Functions
    - In this section, you will compare the key features of an exponential function to that of its corresponding logarithmic function.
    - In this section, you will describe the geometric relationship between the graph of an exponential function and its corresponding logarithmic function.
5. General Form of an Exponential Function
    - In this section, you will identify the transformations in the functions of the form $f(x) = ab^{(x-h)}+x$.
    - In this section, you will use transformations to graph exponential functions of the form $f(x) = a(b)^{x-h}+k$.
    - In this section, you will use the properties of exponents to rewrite functions of the form $f(x) = a(b)^{x-h}+k$ that can be graphed using transformations.
6. General Form of a Logarithmic Function
    - In this section, you will identify transformations of logarithmic functions in the form of $f(x) = alog_b(x-h)+k$.
    - In this section, you will use transformations to graph functions of the form $f(x) = alog_b(x-h)+k$.
    - In this section, you will use the properties of logarithms to rewrite functions of the form $f(x) = alog_b(x-h)+k$ that can be graphed using transformations.
7. Solving Exponential Equations
    - In this section, you will solve exponential equations using the properties of logarithms and the inverse relationship between exponential and logarithmic functions.
    - In this section, you will solve exponential equations by locating the point of intersection on a graph of two exponential functions or an exponential and a linear function.
8. Vertical & Horizontal Asymptotes
    - In this section, you will determine the equations of vertical and horizontal asymptotes of rational functions.
    - In this section, you will determine the equations of vertical and horizontal asymptotes of logarithmic functions.
    - In this section, you will determine the equations of horizontal asymptotes of exponential functions.
9. Exponential & Logarithmic Functions Apply
10. Exponential & Logarithmic Functions Review
11. Exponential & Logarithmic Functions Unit Test

6. **Finite Geometric Series**
    1. Finite Geometric Series Introduction
    2. Sequences Portfolio
        - In this section, you will evaluate whether a list of numbers is an arithmetic sequence, geometric sequence, another type of sequence, or is not a sequence providing a generalization of the pattern.
        - In this section, you will write arithmetic and geometric sequences using explicit and recursive formulas given the first n terms and determining the nth term.
        - In this section, you will represent how arithmetic sequences lead to linear

functions and geometric sequences lead to exponential functions.

3. From Sequences Come Series
    - In this section, you will create a geometric series in summation notation from a geometric sequence.
    - In this section, you will create a geometric series from a verbal description.
    - In this section, you will manually sum the first n terms of a geometric sequence.
4. The Sum of a Finite Geometric Series
    - In this lesson, you will derive the formula for the sum of a finite geometric series.
    - In this section, you will calculate the sum of a finite geometric series when given a geometric sequence.
    - In this section, you will calculate the sum of a finite geometric series when given a verbal description.
5. Sigma Notation
    - In this section, you will express the formula for the sum of a finite geometric series in sigma notation.
    - In this section, you will express the sum of the first n terms of the related series in sigma notation when given a sequence.
    - In this section, you will write the series represented by a sum given in sigma notation.
6. Saving Money
    - In this section, you will adapt the formula for the sum of a finite geometric series to express the future value of an annuity.
    - In this section, you will calculate the future values of annuities in the context of saving money.
7. Spending Money
    - In this section, you will explain how the formula for the future value of an annuity can be adapted for large purchases that require regular payments.
    - In this section, you will calculate the payment plan to determine the present value of an annuity.
8. Finite Geometric Series Apply
9. Finite Geometric Series Review
10. Finite Geometric Series Unit Test

7. **Storytelling with Functions**
    1. Storytelling with Functions Introduction
    2. The Library of Functions
        - In this section, you will relate the shapes of parent functions to their equations and descriptions.
        - In this section, you will analyze the key features of a variety of functions.
        - In this section, you will compare parent functions that have similar behaviors.
    3. Choosing Models
        - In this section, you will determine the type of function that best models a given sequence of data in context.
        - In this section, you will determine the type of function that best models a description of a scenario.
    4. Interpreting Models
        - In this section, you will interpret the key features of a function that models a situation in terms of the quantities that are represented.
        - In this section, you will sketch a graph that highlights the key features of the

function in terms of the quantities represented given the description of a situation.
    - In this section, you will relate the domain of a function to the situation it describes.
5. Average Rate of Change
    - In this section, you will estimate average rates of change in context when given a function, or its graph, that models a situation.
    - In this section, you will calculate average rates of change given a function that models a situation.
    - In this section, you will interpret average rates of change in the context of a given situation.
6. Comparing & Creating Models
    - In this section, you will compare features of two function models represented in different ways in context.
    - In this section, you will use a variety of techniques to develop an appropriate model given a scenario.
7. Intersecting Models
    - In this section, you will create an equation to find the intersection of two functions given a scenario.
    - In this section, you will graph a pair of functions from a given situation in a coordinate plane in order to determine where they intersect.
    - In this section, you will interpret the meaning of solutions to an equation in the form $f(x) = g(x)$.
8. Combining Models
    - In this section, you will build functions to represent models combining functions of different types.
    - In this section, you will build functions and create models to represent scenarios combining functions of different types.
9. Composition of Functions
    - In this section, given a description of a scenario involving two functions, you will determine the composition of the two functions algebraically.
    - In this section, given a description of a scenario involving two functions, you will determine the composition of the two functions graphically.
10. Storytelling with Functions Apply
11. Storytelling with Functions Review
12. Storytelling with Functions Portfolio

8. **Probability & Statistics**
    1. Probability & Statistics Introduction
    2. Permutations & Combinations
        - In this section, you will calculate the number of permutations of n objects taken r at a time.
        - In this section, you will calculate the number of combinations of n objects taken r at a time.
        - In this section, you will compare and contrast permutations and combinations.
    3. Practical Permutations & Combinations
        - In this section, you will use permutations and combinations as counting techniques to solve practical problems.
        - In this section, you will calculate and verify permutations and combinations using a graphing utility.
    4. Shape, Center, and Spread

- In this lesson, you will distinguish between symmetric and skewed distributions.
- In this section, you will interpret the mean as a typical value of a distribution and the standard deviation as a typical distance a value is from the mean.
- In this section you will discuss estimates of the mean and standard deviation, and their reasonableness, for symmetric and skewed distributions.

5. Shape, Center, and Spread Discussion
6. The Normal Curve
    - In this section, you will use a smooth curve to model a data distribution.
    - In this section, you will learn about the attributes of a normal curve and how to use them to describe different probability distributions.
    - In this section, you will recognize when it is reasonable to use a normal curve as a model for a distribution.
7. Area Under a Normal Curve
    - In this section, you will calculate z-scores.
    - In this section, you will use z-scores to estimate the area under a normal curve.
    - In this section, you will use the area under normal curves to calculate probabilities of events.
8. Modeling with Normal Distributions
    - In this section, you will use technology to estimate the area under a normal curve.
    - In this section, you will model data distributions with appropriate normal distributions.
9. Graphing & Data
    - In this section, you will use a graphing tool to determine an equation of the curve of best fit given a set of no more than 20 data points in a table or graph.
    - In this section, you will use a graphing tool to determine an equation of the curve of best fit, given a set of no more than 20 data points in a practical situation.
10. Predictions and Practical Problems
    - In this section, you will make predictions using data, scatterplots, or the equation of the curve of best fit.
    - In this section, you will solve practical problems involving an equation of the curve of best fit.
11. Probability & Statistics Apply
12. Probability & Statistics Review
13. Probability & Statistics Unit Test

9. **Algebra 2 B Semester Review and Exam**
    1. Algebra 2 B Semester Review
    2. Algebra 2 B Semester Exam