

Georgetown County School District



2017-2018 Algebra II Pacing Guide

Description and Purpose of the Pacing Guide: A pacing guide is an interval centered description of what teachers teach in various grade levels or courses; the order in which it should be taught, and the allotted time designated to teach the content area. Its purpose is to guarantee that all of the standards are addressed during the academic year. Pacing is flexible based on student need. Bold lines indicate approximate breaks for each quarter.

| | | | |
|--|--|--|--|
| <p>South Carolina College- and Career- Ready Mathematical Process Standards</p> | <p>1. Make sense of problems and persevere in solving them.</p> <ul style="list-style-type: none"> a. Relate a problem to prior knowledge. b. Recognize there may be multiple entry points to a problem and more than one path to a solution. c. Analyze what is given, what is not given, what is being asked, and what strategies are needed, and make an initial attempt to solve a problem. d. Evaluate the success of an approach to solve a problem and refine it if necessary. | <p>2. Reason both contextually and abstractly.</p> <ul style="list-style-type: none"> a. Make sense of quantities and their relationships in mathematical and real-world situations. b. Describe a given situation using multiple mathematical representations. c. Translate among multiple mathematical representations and compare the meanings each representation conveys about the situation. d. Connect the meaning of mathematical operations to the context of a given situation. | <p>3. Use critical thinking skills to justify mathematical reasoning and critique the reasoning of others.</p> <ul style="list-style-type: none"> a. Construct and justify a solution to a problem. b. Compare and discuss the validity of various reasoning strategies. c. Make conjectures and explore their validity. d. Reflect on and provide thoughtful responses to the reasoning of others. |
| <p>4. Connect mathematical ideas and real-world situations through modeling.</p> <ul style="list-style-type: none"> a. Identify relevant quantities and develop a model to describe their relationships. b. Interpret mathematical models in the context of the situation. c. Make assumptions and estimates to simplify complicated situations. d. Evaluate the reasonableness of a model and refine if necessary. | <p>5. Use a variety of mathematical tools effectively and strategically.</p> <ul style="list-style-type: none"> a. Select and use appropriate tools when solving a mathematical problem. b. Use technological tools and other external mathematical resources to explore and deepen understanding of concepts. | <p>6. Communicate mathematically and approach mathematical situations with precision.</p> <ul style="list-style-type: none"> a. Express numerical answers with the degree of precision appropriate for the context of a situation. b. Represent numbers in an appropriate form according to the context of the situation. c. Use appropriate and precise mathematical language. d. Use appropriate units, scales, and labels. | <p>7. Identify and utilize structure and patterns.</p> <ul style="list-style-type: none"> a. Recognize complex mathematical objects as being composed of more than one simple object. b. Recognize mathematical repetition in order to make generalizations. c. Look for structures to interpret meaning and develop solution strategies. |

| Unit Title | Yearlong Pacing | Block Pacing | South Carolina College and Career Ready (SCCCR) Standards | Textbook Lessons | FALs | Other |
|--|-----------------|--------------|---|------------------|---|---|
| Algebra Review and Systems of Equations and Inequalities | 15 days | 7.5 days | <p>A2.ACE.1* Create and solve equations and inequalities in one variable that model real-world problems involving linear, quadratic, simple rational, and exponential relationships. Interpret the solutions and determine whether they are reasonable.</p> <ul style="list-style-type: none"> • emphasis is placed on the application of these skills to real-world and contextual situation type scenarios • Provide examples that are real world applications and more complex than those begun in Algebra 1. • Included in the study of Inequalities in Algebra 2 are compound inequalities and absolute value inequalities. • Emphasize the meaning of the variables in the situational and real-world applications <p>A2.ACE.2* Create equations in two or more variables to represent relationships between quantities. Graph the equations on coordinate axes using appropriate labels, units, and scales.</p> <ul style="list-style-type: none"> • Extend knowledge and applications of linear equations/relationships begun in Algebra 1. • Emphasize the importance of appropriate labels, units, and scales. Appropriate labels, units, and scales are essential for accurately modeling the relationship between the two quantities (mathematical process standard #6). Incorrect scales on the graph will distort the visual appearance of the relationship. Labels and units are important to accurately understand and interpret graphs. • Emphasize the meaning of the variables in the situational and real-world applications. <p>A2.ACE.3 Use systems of equations and inequalities to represent constraints arising in real-world situations. Solve such systems using graphical and analytical methods, including linear programming. Interpret the solution within the context of the situation. (Limit to linear programming.)</p> <ul style="list-style-type: none"> • Extend knowledge of graphing inequalities learned in Algebra 1 to graphing systems of inequalities. • Included in this unit are linear systems of equations and inequalities. Unit 4 (Quadratic Functions/Equations/Inequalities) will address systems that include quadratic equations and inequalities. • Include solving and analytical method applications to linear programming. • Emphasize the meaning of the variables in the situational and real-world applications. • Ensure understanding of the difference in meaning and appearance of the graph for an inequality or system of inequalities that include \geq, \leq, $>$, <p>A2.ACE.4* Solve literal equations and formulas for a specified variable including equations and formulas that arise in a variety of disciplines.</p> <ul style="list-style-type: none"> • Extend knowledge and applications of linear equations/relationships begun in Algebra 1. • Provide applications that allow students to see the usefulness/purpose of rewriting a formula by solving for one of the variables in the formula. <p>A2.FIF.6* Given a function in graphical, symbolic, or tabular form, determine the average rate of change of the function over a specified interval. Interpret the meaning of the average rate of change in a given context (reference lesson 1.4 in textbook for examples if needed).</p> | | <p>Maximizing Profit: Representing Inequalities Graphically</p> | <p>Marbleslides: Lines Put the Point on the Line</p> |

| Unit Title | Yearlong Pacing | Block Pacing | South Carolina College and Career Ready (SCCCR) Standards | Textbook Lessons | FALs | Other |
|---------------------------|-----------------|--------------|--|---------------------------|---|-------|
| Foundations for Functions | 10 days | 5 days | <p>A2.ACE.3 Use systems of equations and inequalities to represent constraints arising in real-world situations. Solve such systems using graphical and analytical methods, including linear programming. Interpret the solution within the context of the situation. (Limit to linear programming.) <i>(in review unit)</i></p> <p>A2.FBF.3* Describe the effect of the transformations $kf(x)$, $f(x)+k$, $f(x+k)$, and combinations of such transformations on the graph of $y=f(x)$ for any real number k. Find the value of k given the graphs and write the equation of a transformed parent function given its graph.</p> <p>A2.FIF.5* Relate the domain and range of a function to its graph and, where applicable, to the quantitative relationship it describes.</p> <p>A2.FIF.7* Graph functions from their symbolic representations. Indicate key features including intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior and periodicity. Graph simple cases by hand and use technology for complicated cases.</p> | Ch 1. - Lessons 1.1 - 1.3 | Representing Functions of Everyday Situations | |

| | | | | |
|---|---------|---------|-------------|---|
| Quadratic Functions | 30 days | 15 days | A2.ACE.1* | Create and solve equations and inequalities in one variable that model real-world problems involving linear, quadratic, simple rational, and exponential relationships. Interpret the solutions and determine whether they are reasonable. (in review unit) |
| | | | A2.ACE.2* | Create equations in two or more variables to represent relationships between quantities. Graph the equations on coordinate axes using appropriate labels, units, and scales. (in review unit) |
| | | | A2.AREI.4* | Solve mathematical and real-world problems involving quadratic equations in one variable. (Note: A2.AREI.4b is not a Graduation Standard.) (lesson 2.3, 2.4, 2.6) 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. Recognize when the quadratic formula gives complex solutions and write them as $a+bi$ for real numbers a and b . |
| | | | A2.AREI.11* | Solve an equation of the form $f(x)=g(x)$ graphically by identifying the x -coordinate(s) of the point(s) of intersection of the graphs of $y=f(x)$ and $y=g(x)$. |
| | | | A2.AREI.7 | Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically. Understand that such systems may have zero, one, two, or infinitely many solutions. (Limit to linear equations and quadratic functions.) (linear system review; only by graphing when linear and quadratic) |
| | | | A2.ASE.3* | Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. (Note: A2.ASE.3b is not a Graduation Standard.) b. Determine the maximum or minimum value of a quadratic function by completing the square. |
| | | | A2.FBF.1* | Write a function that describes a relationship between two quantities. (Note: A2.FBF.1a is not a Graduation Standard.) a. Write a function that models a relationship between two quantities using both explicit expressions and a recursive process and by combining standard forms using addition, subtraction, multiplication and division to build new functions. b. Combine functions using the operations addition, subtraction, multiplication, and division to build new functions that describe the relationship between two quantities in mathematical and real-world situations. |
| | | | A2.FBF.3* | Describe the effect of the transformations $kf(x)$, $f(x)+k$, $f(x+k)$, and combinations of such transformations on the graph of $y=f(x)$ for any real number k . Find the value of k given the graphs and write the equation of a transformed parent function given its graph. (lesson 2.1) |
| | | | A2.FIF.4* | Interpret key features of a function that models the relationship between two quantities when given in graphical or tabular form. Sketch the graph of a function from a verbal description showing key features. Key features include intercepts; intervals where the function is increasing, decreasing, constant, positive, or negative; relative maximums and minimums; symmetries; end behavior and periodicity. (lesson 2.1) |
| | | | A2.FIF.5* | Relate the domain and range of a function to its graph and, where applicable, to the quantitative relationship it describes. (lesson 2.1) |
| | | | A2.FIF.8* | Translate between different but equivalent forms of a function equation to reveal and explain different properties of the function. (lesson 2.2) |
| | | | A2.NCNS.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. (lesson 2.5, 2.9) (complex number operations add, subtract, and multiplying) |
| | | | A2.NCNS.7* | Solve quadratic equations in one variable that have complex solutions. (lesson 2.5) |
| 2- Lesson 2.1 - 2.6, 2.9 | | | | |
| Representing Quadratic Functions Graphically; Generalizing Patterns: Table Tiles | | | | |
| Will it hit the hoop Marbleslides: Parabolas Free – Range Functions | | | | |

| Unit Title | Yearlong Pacing | Block Pacing | South Carolina College and Career Ready (SCCCR) Standards | Textbook Lessons | FALs | Other |
|--------------------------------|-----------------|--------------|---|---------------------------|--|-------|
| Polynomials | 25 days | 12.5 days | <p>A2.AAPR.1* Add, subtract, and multiply polynomials and understand that polynomials are closed under these operations. (no long division) (lessons 3.1 - 3.3)</p> <p>A2.AAPR.3 Graph polynomials identifying zeros when suitable factorizations are available and indicating end behavior. Write a polynomial function of least degree corresponding to a given graph. (Limit to polynomials with degrees 3 or less.) (lesson 3.4, 3.7)</p> <p>A2.ASE.1* Interpret the meanings of coefficients, factors (synthetic division; show it is a factor or not), terms, and expressions based on their real-world contexts. Interpret complicated expressions as being composed of simpler expressions. (lesson 3.1, 3.4, 3.5)</p> <p>A2.ASE.2* Analyze the structure of binomials, trinomials, and other polynomials in order to rewrite equivalent expressions. (Lesson 3.1 and 3.4; standard form, difference and sum of cubes)</p> <p>**no rational root theorem or fundamental theorem of algebra</p> | 3- lessons 3.1 - 3.5, 3.7 | Representing Polynomials Graphically: Generating Polynomials | |
| Rational and Radical Functions | 20 days | 10 days | <p>A2.ACE.1* Create and solve equations and inequalities in one variable that model real-world problems involving linear, quadratic, simple rational, and exponential relationships. Interpret the solutions and determine whether they are reasonable. (in review unit)</p> <p>A2.AREI.2* Solve simple rational and radical equations in one variable and understand how extraneous solutions may arise.(incorporate operations with rational expressions; lesson 5.2, 5.3, 5.5 5.6)</p> <p>A2.AREI.11* Solve an equation of the form $f(x)=g(x)$ graphically by identifying the x-coordinate(s) of the point(s) of intersection of the graphs of $y=f(x)$ and $y=g(x)$. (lesson 5.4, 5.7)</p> <p>A2.FIF.4* Interpret key features of a function that models the relationship between two quantities when given in graphical or tabular form. Sketch the graph of a function from a verbal description showing key features. Key features include intercepts; intervals where the function is increasing, decreasing, constant, positive, or negative; relative maximums and minimums; symmetries; end behavior and periodicity. (lesson 5.4, 5.7)</p> <p>A2.FIF.5* Relate the domain and range of a function to its graph and, where applicable, to the quantitative relationship it describes. (lesson 5.4, 5.7)</p> <p>A2.FIF.8* Translate between different but equivalent forms of a function equation to reveal and explain different properties of the function.</p> | 5- Lesson 5.2 - 5.7 | Evaluating Statements about Radicals | |

| Unit Title | Yearlong Pacing | Block Pacing | South Carolina College and Career Ready (SCCCR) Standards | Textbook Lessons | FALs | Other |
|---------------------------------------|-----------------|--------------|--|---------------------|--|-------|
| Exponential and Logarithmic Functions | 20 days | 10 days | <p>A2.ACE.1* Create and solve equations and inequalities in one variable that model real-world problems involving linear, quadratic, simple rational, and exponential relationships. Interpret the solutions and determine whether they are reasonable. (in review unit)</p> <p>A2.ACE.2* Create equations in two or more variables to represent relationships between quantities. Graph the equations on coordinate axes using appropriate labels, units, and scales. (in review unit)</p> <p>A2.ACE.4* Solve literal equations and formulas for a specified variable including equations and formulas that arise in a variety of disciplines. (in review unit)</p> <p>A2.ASE.3* Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. (lesson 4.3, 4.4) (Note: A2.ASE.3c is not a Graduation Standard.)</p> <p> c. Use the properties of exponents to transform expressions for exponential functions.</p> <p>A2.FBF.3* Describe the effect of the transformations $kf(x)$, $f(x)+k$, $f(x+k)$, and combinations of such transformations on the graph of $y=f(x)$ for any real number k. Find the value of k given the graphs and write the equation of a transformed parent function given its graph. (lesson 4.7)</p> <p>A2.FIF.8* Translate between different but equivalent forms of a function equation to reveal and explain different properties of the function. (lesson 4.3) (Note: A2.FIF.8b is not a Graduation Standard.)</p> <p> b. Interpret expressions for exponential functions by using the properties of exponents.</p> <p>A2.FLQE.1* Distinguish between situations that can be modeled with linear functions or exponential functions by recognizing situations in which one quantity changes at a constant rate per unit interval as opposed to those in which a quantity changes by a constant percent rate per unit interval. (lesson 4.1) (Note: A2.FLQE.1b is not a Graduation Standard.)</p> <p> b. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.</p> <p>A2.FLQE.2* Create symbolic representations of linear and exponential functions, including arithmetic and geometric sequences, given graphs, verbal descriptions, and tables. (include inverses before graphing logarithms) (lesson 4.2 and 4.3)</p> <p>A2.FLQE.5* Interpret the parameters in a linear or exponential function in terms of the context. (lesson 4.1)</p> | 4- Lesson 4.1 - 4.7 | Modeling Population Growth: Having Kittens | |

| Unit Title | Yearlong Pacing | Block Pacing | South Carolina College and Career Ready (SCCCR) Standards | Textbook Lessons | FALs | Other |
|---|-----------------|--------------|---|------------------|---|-------|
| Properties and Attributes of Functions | 15 days | 7.5 days | A2.ACE.2* Create equations in two or more variables to represent relationships between quantities. Graph the equations on coordinate axes using appropriate labels, units, and scales. (in review unit) | 6- | Representing Everyday Functions | |
| | | | A2.FBF.1* Write a function that describes a relationship between two quantities. (Note: A2.FBF.1a is not a Graduation Standard.) a. Write a function that models a relationship between two quantities using both explicit expressions and a recursive process and by combining standard forms using addition, subtraction, multiplication and division to build new functions. b. Combine functions using the operations addition, subtraction, multiplication, and division to build new functions that describe the relationship between two quantities in mathematical and real-world situations. | | | |
| | | | A2.FBF.3* Describe the effect of the transformations $kf(x)$, $f(x)+k$, $f(x+k)$, and combinations of such transformations on the graph of $y=f(x)$ for any real number k . Find the value of k given the graphs and write the equation of a transformed parent function given its graph. | | | |
| | | | A2.FIF.4* Interpret key features of a function that models the relationship between two quantities when given in graphical or tabular form. Sketch the graph of a function from a verbal description showing key features. Key features include intercepts; intervals where the function is increasing, decreasing, constant, positive, or negative; relative maximums and minimums; symmetries; end behavior and periodicity. | | | |
| | | | A2.FIF.5* Relate the domain and range of a function to its graph and, where applicable, to the quantitative relationship it describes. | | | |
| | | | A2.FIF.6* Given a function in graphical, symbolic, or tabular form, determine the average rate of change of the function over a specified interval. Interpret the meaning of the average rate of change in a given context. (moved to review) | | | |
| | | | A2.FIF.7* Graph functions from their symbolic representations. Indicate key features including intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior and periodicity. Graph simple cases by hand and use technology for complicated cases. | | | |
| | | | A2.FIF.9* Compare properties of two functions given in different representations such as algebraic, graphical, tabular, or verbal. | | | |
| ** most standards are incorporated throughout other units. Use as a review? | | | | | | |

| Unit Title | Yearlong Pacing | Block Pacing | South Carolina College and Career Ready (SCCCR) Standards | Textbook Lessons | FALs | Other |
|----------------------|-----------------|--------------|---|------------------|---|-------|
| Sequences and Series | 15 days | 7.5 days | <p>A2.FBF.1* Write a function that describes a relationship between two quantities. (Note: A2.FBF.1a is not a Graduation Standard.)</p> <p>a. Write a function that models a relationship between two quantities using both explicit expressions and a recursive process and by combining standard forms using addition, subtraction, multiplication and division to build new functions.</p> <p>A2.FBF.2* Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.</p> <p>A2.FIF.3* Define functions recursively and recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers.</p> <p>A2.FIF.9* Compare properties of two functions given in different representations such as algebraic, graphical, tabular, or verbal.</p> <p>A2.FLQE.2* Create symbolic representations of linear and exponential functions, including arithmetic and geometric sequences, given graphs, verbal descriptions, and tables.</p> <p>A2.FLQE.5* Interpret the parameters in a linear or exponential function in terms of the context.</p> <p>*all standards use lesson 9.1, 9.2, 9.3, 9.4</p> | 9- 9.1 - 9.4 | Polynomials from Patterns | |
| Course Review | 20 days | 10 days | | | | |