

Algebra 2 Semester 1

Week (dates or numbers)	Standards (NVACS) Both academic and practice standards/Essential Skills/Objectives	<u>Lesson (Using Illustrative Mathematics Curriculum)</u>	Activities	Assessments
Week 1	<p>-HSF.IF.B.5 Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. For example, if the function $h(n)$ gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function.*</p> <p>-HSF.LE.A.2 Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).</p>	Alg2.1.9 <i>What's the equation?</i>	<ol style="list-style-type: none"> 1. Daily Warm-ups 2. Student Lecture Notes in class throughout the week (M-Th) 3. Extra Practice/Homework assigned on Monday, turned in on Thursday prior to quiz/cool down and reviewed on following Monday 	<ol style="list-style-type: none"> 1. Weekly Quiz/Cool Down Thursday (15 minutes before class ends) 2. Friday Check-Ins (Check for understanding question taken from weekly notes.)
Week 2	<p>-HSA.CED.A.2 Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.</p> <p>-HSF.IF.B.5 Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. For example, if the function $h(n)$ gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function.*</p>	Alg2.2.1 <i>Let's Make a Box</i>	<ol style="list-style-type: none"> 1. Daily Warm-ups 2. Student Lecture Notes in class throughout the week (M-Th) 3. Extra Practice/Homework assigned on Monday, turned in on Thursday prior to quiz/cool down and reviewed on following Monday 	<ol style="list-style-type: none"> 1. Weekly Quiz/Cool Down Thursday (15 minutes before class ends) 2. Friday Check-Ins (Check for understanding question taken from weekly notes.)
Week 3	<p>-HSA.CED.A.2 Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.</p> <p>-HSA.SSE.A.1 Interpret expressions that represent a quantity in terms of its context.*</p> <p>-HSA.SSE.A.1.a Interpret parts of an expression, such as terms, factors, and coefficients.</p>	Alg2.2.2 <i>Funding the Future</i>	<ol style="list-style-type: none"> 1. Daily Warm-ups 2. Student Lecture Notes in class throughout the week (M-Th) 3. Extra Practice/Homework assigned on Monday, turned in on Thursday prior to quiz/cool down and reviewed on following Monday 	<ol style="list-style-type: none"> 1. Weekly Quiz/Cool Down Thursday (15 minutes before class ends) 2. Friday Check-Ins (Check for understanding question taken from weekly notes.)

<p>Week 4</p>	<p>-HSA.SSE.B.3 Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.* -HSA.SSE.B.3.a Factor a quadratic expression to reveal the zeros of the function it defines. -HSA.SSE.B.3.b Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines. -HSF.BF.B.3 Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.</p>	<p>Alg2.2.6 <i>Different Forms</i></p>	<ol style="list-style-type: none"> 1. Daily Warm-ups 2. Student Lecture Notes in class throughout the week (M-Th) 3. Extra Practice/Homework assigned on Monday, turned in on Thursday prior to quiz/cool down and reviewed on following Monday 	<ol style="list-style-type: none"> 1. Weekly Quiz/Cool Down Thursday (15 minutes before class ends) 2. Friday Check-Ins (Check for understanding question taken from weekly notes.)
<p>Week 5</p>	<p>-HSA.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. -HSA.CED.A.2 Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. -HSA.CED.A.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law ($V = IR$) to highlight resistance R.</p>	<p>Alg2.2.16 <i>Minimizing Surface Area</i></p>	<ol style="list-style-type: none"> 1. Daily Warm-ups 2. Student Lecture Notes in class throughout the week (M-Th) 3. Extra Practice/Homework assigned on Monday, turned in on Thursday prior to quiz/cool down and reviewed on following Monday 	<ol style="list-style-type: none"> 1. Weekly Quiz/Cool Down Thursday (15 minutes before class ends) 2. Friday Check-Ins (Check for understanding question taken from weekly notes.)

<p>Week 6</p>	<p>-HSA.CED.A.2 Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. -HSF.BF.B.3 Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them. -HSF.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.* -HSF.IF.C.7.a Graph linear and quadratic functions and show intercepts, maxima, and minima.</p>	<p>Alg2.2.17 <i>Graphs of Rational Functions</i></p>	<ol style="list-style-type: none"> 1. Daily Warm-ups 2. Student Lecture Notes in class throughout the week (M-Th) 3. Extra Practice/Homework assigned on Monday, turned in on Thursday prior to quiz/cool down and reviewed on following Monday 	<ol style="list-style-type: none"> 1. Weekly Quiz/Cool Down Thursday (15 minutes before class ends) 2. Friday Check-Ins (Check for understanding question taken from weekly notes.)
<p>Week 7</p>	<p>HSA.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. inequalities, and systems of equations and the effect of change to variable(s) in these relationships. HSA.CED.A.2 Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. HSA.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.</p>	<p>Alg2.2.20, Alg2.2.22 <i>Rational Equations</i></p>	<ol style="list-style-type: none"> 1. Daily Warm-ups 2. Student Lecture Notes in class throughout the week (M-Th) 3. Extra Practice/Homework assigned on Monday, turned in on Thursday prior to quiz/cool down and reviewed on following Monday 	<ol style="list-style-type: none"> 1. Weekly Quiz/Cool Down Thursday (15 minutes before class ends) 2. Friday Check-Ins (Check for understanding question taken from weekly notes.)

Week 8	HSA.SSE.A.2 Use the structure of an expression to identify ways to rewrite it. For example, see $x^4 - y^4$ as $(x^2)^2 - (y^2)^2$, thus recognizing it as a difference of squares that can be factored as $(x^2 - y^2)(x^2 + y^2)$.	Alg2.2.23, Alg2.2.24 <i>Polynomial Identity</i>	1. Daily Warm-ups 2. Student Lecture Notes in class throughout the week (M-Th) 3. Extra Practice/Homework assigned on Monday, turned in on Thursday prior to quiz/cool down and reviewed on following Monday	1. Weekly Quiz/Cool Down Thursday (15 minutes before class ends) 2. Friday Check-Ins (Check for understanding question taken from weekly notes.)
Week 9	Midterm/Final Review		1. Daily Warm Up 2. Monday H/W Review 3. Tuesday/Wednesday Exam Review	1. Exam 2. ACT/Brilliant Practice

Algebra 2 Semester 2

Week (dates or numbers)	Standards (NVACS) Both academic and practice standards/Essential Skills/Objectives	<u>Lesson (Using Illustrative Mathematics Curriculum)</u>	Activities	Assessments
Week 1	<p>-HSF.LE.A.1 Distinguish between situations that can be modeled with linear functions and with exponential functions.</p> <p>-HSF.LE.A.1.a Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals.</p> <p>-HSF.LE.A.1.b Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.</p> <p>HSF.LE.A.1.c Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.</p> <p>-HSF.LE.A.2 Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).</p>	Alg2.2.23, Alg2.2.24 <i>Polynomial Identities</i>	1. Daily Warm-ups 2. Student Lecture Notes in class throughout the week (M-Th) 3. Extra Practice/Homework assigned on Monday, turned in on Thursday prior to quiz/cool down and reviewed on following Monday	1. Weekly Quiz/Cool Down Thursday (15 minutes before class ends) 2. Friday Check-Ins (Check for understanding question taken from weekly notes.)

<p>Week 2</p>	<p>-HSA.SSE.A.1 Interpret expressions that represent a quantity in terms of its context. *</p> <p>-HSF.LE.A.2 Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).</p> <p>-HSF.LE.B.5 Interpret the parameters in a linear or exponential function in terms of a context.</p>	<p>Alg2.4.1 <i>Growing and Shrinking</i></p>	<p>1. Daily Warm-ups 2. Student Lecture Notes in class throughout the week (M-Th) 3. Extra Practice/Homework assigned on Monday, turned in on Thursday prior to quiz/cool down and reviewed on following Monday</p>	<p>1. Weekly Quiz/Cool Down Thursday (15 minutes before class ends) 2. Friday Check-Ins (Check for understanding question taken from weekly notes.)</p>
<p>Week 3</p>	<p>-HSA.SSE.A.1 Interpret expressions that represent a quantity in terms of its context. *</p> <p>-HSA.SSE.A.1.a Interpret parts of an expression, such as terms, factors, and coefficients</p> <p>-HSF.IF.C.8.b Use the properties of exponents to interpret expressions for exponential functions. For example, identify percent rate of change in functions such as $y = (1.02)^t$, $y = (0.97)^t$, $y = (1.01)^{12t}$, $y = (1.2)^{t/10}$, and classify them as representing exponential growth or decay</p> <p>-HSF.LE.A.2 Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).</p>	<p>Alg2.4.2, Alg2.4.4 <i>Representations of Growth and Decay and Functions at Rational Inputs</i></p>	<p>1. Daily Warm-ups 2. Student Lecture Notes in class throughout the week (M-Th) 3. Extra Practice/Homework assigned on Monday, turned in on Thursday prior to quiz/cool down and reviewed on following Monday</p>	<p>1. Weekly Quiz/Cool Down Thursday (15 minutes before class ends) 2. Friday Check-Ins (Check for understanding question taken from weekly notes.)</p>

<p>Week 4</p>	<p>-HSA.SSE.A.1 Interpret expressions that represent a quantity in terms of its context. *</p> <p>-HSA.SSE.A.1.a Interpret parts of an expression, such as terms, factors, and coefficients.</p> <p>-HSA.SSE.B.3 Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.*</p> <p>HSA.SSE.B.3.a Factor a quadratic expression to reveal the zeros of the function it defines.</p> <p>-HSA.SSE.B.3.b Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.</p> <p>-HSF.LE.B.5 Interpret the parameters in a linear or exponential function in terms of a context.</p>	<p><i>Alg2.4.6 Writing Equations for Exponential Functions</i></p>	<ol style="list-style-type: none"> 1. Daily Warm-ups 2. Student Lecture Notes in class throughout the week (M-Th) 3. Extra Practice/Homework assigned on Monday, turned in on Thursday prior to quiz/cool down and reviewed on following Monday 	<ol style="list-style-type: none"> 1. Weekly Quiz/Cool Down Thursday (15 minutes before class ends) 2. Friday Check-Ins (Check for understanding question taken from weekly notes.)
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<p>Week 5</p>	<p>-HSF.BF.B.3 Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.</p> <p>-HSF.IF.C.8 Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.</p> <p>-HSF.IF.C.8.a Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.</p> <p>-HSF.IF.C.8.b Use the properties of exponents to interpret expressions for exponential functions. For example, identify percent rate of change in functions such as $y = (1.02)^t$, $y = (0.97)^t$, $y = (1.01)^{12t}$, $y = (1.2)^{t/10}$, and classify them as representing exponential growth or decay.</p>	<p><i>Alg2.4.7 Interpreting and Using Exponential Functions</i></p>	<ol style="list-style-type: none"> 1. Daily Warm-ups 2. Student Lecture Notes in class throughout the week (M-Th) 3. Extra Practice/Homework assigned on Monday, turned in on Thursday prior to quiz/cool down and reviewed on following Monday 	<ol style="list-style-type: none"> 1. Weekly Quiz/Cool Down Thursday (15 minutes before class ends) 2. Friday Check-Ins (Check for understanding question taken from weekly notes.)
<p>Week 6</p>	<p>-HSF.BF.B.3 Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.</p>	<p><i>Alg2.5.6 Symmetry in Equations</i></p>	<ol style="list-style-type: none"> 1. Daily Warm-ups 2. Student Lecture Notes in class throughout the week (M-Th) 3. Extra Practice/Homework assigned on Monday, turned in on Thursday prior to quiz/cool down and reviewed on following Monday 	<ol style="list-style-type: none"> 1. Weekly Quiz/Cool Down Thursday (15 minutes before class ends) 2. Friday Check-Ins (Check for understanding question taken from weekly notes.)

<p>Week 7</p>	<p>-HSF.BF.B.3 Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.</p>	<p>Alg2.5.8, Alg2.5.9 <i>Scaling the Outputs and Inputs</i></p>	<p>1. Daily Warm-ups 2. Student Lecture Notes in class throughout the week (M-Th) 3. Extra Practice/Homework assigned on Monday, turned in on Thursday prior to quiz/cool down and reviewed on following Monday</p>	<p>1. Weekly Quiz/Cool Down Thursday (15 minutes before class ends) 2. Friday Check-Ins (Check for understanding question taken from weekly notes.)</p>
<p>Week 8</p>	<p>-HSF.BF.B.3 Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.</p>	<p>Alg2.5.10, Alg2.5.11 <i>Combing Functions and Making a Model for Data</i></p>	<p>1. Daily Warm-ups 2. Student Lecture Notes in class throughout the week (M-Th) 3. Extra Practice/Homework assigned on Monday, turned in on Thursday prior to quiz/cool down and reviewed on following Monday</p>	<p>1. Weekly Quiz/Cool Down Thursday (15 minutes before class ends) 2. Friday Check-Ins (Check for understanding question taken from weekly notes.)</p>
<p>Week 9</p>	<p>Midterm/Final Reveiw</p>		<p>1. Daily Warm Ups 2. Monday H/W Reveiw 3. Tuesday/Wednesday Exam Reveiw</p>	<p>1. Exam 2. ACT/Brilliant Practice</p>