West Deptford Middle School Curriculum Map
Creative Computing - Grade 8

Unit/ Duration	Essential Questions	Content	Skills	Assessment	Standards
Unit 1: Scratch	• How can an algorithm be used to solve a problem? • How can I use technology to create my own programs and games? • How is computer programming related to the problem solving method you use in math and science class?	• The commands used in Scratch. • The definition of coordinate, area, circumference, variable, function, inequalities, and degree. • The definitions of setting and calling a variable, sprite, backdrop, conditional statements, and user input. • The geometric properties of various polygons.	• Consider the necessary commands to execute a program. • Create a polygon using the Scratch interface. • Develop an algorithm to complete a task given a set of parameters. • Navigate the coordinate plane within the Scratch limitations. • Implement inequalities and conditional statements into an algorithm.	• Drawing A Shape in Scratch • Creating Pong Game • Creating Scrolling Game • Debug It Chapter 4 • Classwork • Homework • Performance Task • Quiz • Ability to work well with others.	**Common Core State Standards (CCSS)** • **MA.8.CCSS.Math.Content.8.NS.A.2** • **MA.8.CCSS.Math.Content.8.EE.A.1** • **MA.8.CCSS.Math.Content.8.F.A.1** • **MA.8.CCSS.Math.Content.8.F.A.2** • **MA.8.CCSS.Math.Content.8.G.A.3** • **MA.8.EE.8.EE.7** • **MA.8.8.EE.7.b** **Computer Science Teachers Association (CSTA)** • **L1.6:CPP.5. Construct a program as a set of step-by-step instructions to be acted out.** • **L1.6:CPP.6. Implement problem solutions using a block-based visual programming language.** • **L1.6:CT.1. Understand and use the basic steps in algorithmic problem-solving (e.g., problem statement and exploration, examination of sample instances, design, implementation, and testing).**

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					• **L1:6CT.2. Develop a simple understanding of an algorithm using computer free exercises.**

Unit/ Duration	Essential Questions	Content	Skills	Assessment	Standards
Unit 2: Intro To Bootstrap Chapters 1 - 2	• How can you decide what steps to take to create, adjust, or troubleshoot a program? • What should you look for in a well-written program? • How can I work collaboratively with a group to improve my ideas and designs?	• The commands used in Bootstrap. • The definition of contract, domain, function, image, name, produce, range, string, type, and value. • The geometric properties of various polygons. • The definition of order of operations, PEMDAS, and	• Consider the necessary commands to execute a program. • Create a polygon using the Bootstrap interface. • Develop an algorithm to complete a task given a set of parameters. • Navigate the coordinate plane within the	• Classwork • Homework • Performance Task • Quiz • Circle of Evaluation Packet • Finding coordinates. • Video game outline. • Converting Circles of	**Common Core State Standards (CCSS)** • **MA.8.CCSS.Math.Content.8.EE.A.1** • **MA.8.CCSS.Math.Content.8.F.A.1** • **MA.8.CCSS.Math.Content.8.F.B.5** • **MA.8.CCSS.Math.Content.8.F.A.2** • **MA.8.CCSS.Math.Content.8.F.A.3** • **MA.8.EE.8.EE.7** • **MA.8.8.EE.7.b** **Bootstrap Standards** • **BS-CE: The student translates between structured expreseeions as arithmetic, code, and Circles of Evaluation.** • **BS-IDE: The student is familiar with using a REPL, entering expressions properly, and interperting error messages.**

		circles of evaluation. • The code rules used in Bootstrap.	Bootstrap limitations. • Be able to change arithmetic expressions into circles of evaluation. • Use PEMDAS to help evaluate Circles of evaluation. • Develop an algorithm using strings and contracts. • Begin to recognize the error messages and what the mean.	Evaluation to code. • Identifying parts of an expression. • Matching expressions and contracts. • Ability to work well with others.	• **BS-M: The students models a problem in context and determines the data needed to describe the problem.** • **BS-PL.1: The student is familiar with declaring values and applying built-in functions using the programming language.** • **BS-PL.2: The student is comfortable using and writing contracts for built-in functions.**

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| Unit 3: Bootstrap I

Chapters 3 - 4 | • What should you look for in a well-written program?

• How can I work collaboratively with a group to improve my ideas and designs?

• How is computer programming related to the problem solving method you use in math and science class? | • The commands used in Bootstrap.

• The definition of definitions window, design recipe, domain, name, range, value and purpose statement

• Define variable and define function in WeScheme.

• Using the design recipe in computer coding and Algebra.

• The geometric properties of various polygons. | • Consider the necessary commands to execute a program.

• Defining Variables in computer programming and Algebra.

• Begin to add game images to their game.

• Defining Functions in computer programming and Algebra.

• Begin to use the design recipe to solve word problems and write algorithms. | • Classwork
• Homework
• Performance Task
• Quiz
• Adding images to their game.
• Matching examples and function definitions.
• Creating contract from examples.
• Classwork on examples and contracts.
• Design recipe practice.
• Ability to work well with others. | **Common Core State Standards (CCSS)**

• **MA.8.CCSS.Math.Content.8.F.A.1**
• **MA.8.CCSS.Math.Content.8.F.A.2**
• **MA.8.CCSS.Math.Content.8.F.A.2**
• **MA.8.CCSS.Math.Content.8.EE.C.7.A**
• **MA.8.CCSS.Math.Content.8.EE.C.7.B**
• **MA.8.CCSS.Math.Content.8.EE.C.8.**
Bootstrap Standards
• **BS-DR.1 The student is able to translate a word problem into a contract statement and purpose statement.**
• **BS-DR.2: The student can derive test cases for a given contract and purpose statement.**
• **BS-DR.3: Given multiple test cases, the student can define a function.**
• **BS-IDE: The student is familiar with using a REPL, entering expressions properly, and interpreting error messages.**
• **BS-PL.2: The student is comfortable using and writing contracts for built-in functions.**
• **BS-PL.3: The student is able to use the syntax of the programming language to define values and functions.** |

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Unit/ Duration	Essential Questions	Content	Skills	Assessment	Standards
Unit 4: Bootstrap I Chapters 5 - 7	• What should you look for in a well-written program? • How can I work collaboratively with a group to improve my ideas and designs? • How is computer programming related to the problem solving method you use in math	• The commands used in Bootstrap. • The definition of contract, example, variable, purpose statement, boolean, string, clause, conditional, and piecewise function. • The dimensions of Bootstraps interface. • Game animation.	• Consider the necessary commands to execute a program. • Adding movement to their game's danger, target, and projectile. • Determine when the game elements move offscreen. • Boolean are answers to yes-or-no questions • Using inequalities in Algebra and	• Classwork • Homework • Performance Task • Quiz • Adding movement to their game's danger, target, and projectile. • Adding movement to the player. • Design recipe practice. • Converting circles of evaluation to Boolean code. • Using the design recipe to solve word problems.	**Common Core State Standards (CCSS)** • **MA.8.CCSS.Math.Content.8.EE.C.8.C** • **MA.8.CCSS.Math.Content.8.EE.C.8.A** • **MA.8.CCSS.Math.Content.8.F.A.1** • **MA.8.CCSS.Math.Content.8.F.A.2** • **MA.8.CCSS.Math.Content.8.F.A.3** **Bootstrap Standards** • **BS-DR.2: The student can derive test cases for a given contract and purpose statement.** • **BS-DR.3: Given multiple test cases, the student can define a function.** • **BS-IDE: The student is familiar with using a REPL, entering expressions properly, and interpreting error messages.** • **BS-PL.1: The student is familiar with**

| | and science class? | | computer programming. | • Using the error messages to help fix code.
• Ability to work well with others. | **declaring values and applying built-in functions using the programming language.**
• **BS-PL.2: The student is comfortable using and writing contracts for built-in functions.**
• **BS-PL.3: The student is able to use the syntax of the programming language to define values and functions.**
• **BS-PL.4: The student is familiar with the syntax for conditionals.** |

Unit/ Duration	Essential Questions	Content	Skills	Assessment	Standards
Unit 5: Bootstrap I Chapter 8 - 9	• What should you look for in a well-	• The commands used in Bootstrap.	• Consider the necessary commands to	• Classwork • Homework • Performance Task • Quiz	**Common Core State Standards (CCSS)** • **MA.8.CCSS.Math.Content.8.NS.A.1** • **MA.8.CCSS.Math.Content.8.NS.A.2**

	written program? • How can I work collaboratively with a group to improve my ideas and designs? • How is computer programming related to the problem solving method you use in math and science class?	• The definition of hypotenuse, distance, and Pythagorean Theorem. • Creating algorithms for distance and collision. • How Pythagorean Theorem, distance, and hypotenuses are related. • Game presentation. .	execute a program. • Use Pythagorean Theorem to help find distance. • Develop an algorithm to complete a task given a set of parameters. • Add the distance function to their game files. • Add collide to detect when the player and danger have collided. • Presentation to the class about their game.	• Review the design recipe. • Line – length and distance formula practice. • Pythagorean Theorem practice. • Adding the algorithm for distance and collision to your game. • Game presentation. • Reflection on your game and other student's games. • Ability to work well with others.	• **MA.8.CCSS.Math.Content.8.F.A.1** • **MA.8.CCSS.Math.Content.8.F.A.2** • **MA.8.CCSS.Math.Content.8.F.A.3** • **MA.8.CCSS.Math.Content.8.G.B.6** • **MA.8.CCSS.Math.Content.8.G.B.7** • **MA.8.CCSS.Math.Content.8.G.B.8** **Bootstrap Standards** • **BS-DR.3: Given multiple test cases, the student can define a function.** • **BS-PL.3: The student is able to use the syntax of the programming language to define values and functions.** • **BS-PL.4: The student is familiar with the syntax for conditionals.** •

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