

Week	Marking Period 1	
1	Intro to Greenfoot	
2	Little Crabs	
3	Little Crabs	
4	Fishing the Crab Game	
5	Fishing the Crab Game	
6	Fat Cat	
7	Fat Cat Catching Flying Pizza Slices	
8	Fat Cat looks for Pizza if it Can Avoid Mean Animal	
9	Cool Cat Plays the Piano	
10	Arrays	
Week	Marking Period 2	
11	Arrays	
12	Arrays	
13	Making Music: On Green Piano	
14	Making Music: On Green Piano	
15	Interaction Objects: Newton's Lab	
16	Asteroids	
17	Asteroids	
18	Asteroids	
19	The Greeps Competition	
20	The Greeps Competition	

# Programming Through Games and Simulation.

<b>Time Frame</b>	Standard- 1 Week	Block- 3 days					
<b>Topic</b>							
Introduction to Greenfoot							
<b>Essential Questions</b>							
What is the Greenfoot interface? How do objects interact with each other? How do you invoke methods? How do you run a scenario?							
<b>Enduring Understandings</b>							
Students will be able to read and understand a class diagram. Students will be able to add object into the world.							
<b>Alignment to NJCCCS</b>							
<i>TEC.9-12.8.1.12</i>	<i>TEC.9-12.8.2.12</i>						
<b>Key Concepts and Skills</b>							
To understand the concepts of objects							
<b>Learning Activities</b>							
PowerPoint Exercise questions Asteroid Lab							
<b>Assessments</b>							
Exercise questions Worksheet Test/Quiz							
<b>21<sup>st</sup> Century Skills</b>							
x	Creativity	x	Critical Thinking	x	Communication	x	Collaboration
x	Life & Career Skills	x	Information Literacy	x	Media Literacy		
<b>Interdisciplinary Connections</b>							
Connection with Math and Business Curriculum							
<b>Technology Integration</b>							
Use of internet, personal commuter and various software resources							

# Programming Through Games and Simulation.

<b>Time Frame</b>	Standard- 2 Weeks	Block- 5 days					
<b>Topic</b>							
Little Crab							
<b>Essential Questions</b>							
How do you write code? How do you make a crab move? How do you make a crab move in a random position? How does the crab react when it reaches the end of the world? How does the programmer make the keyboard work? How does the programmer put sound into program?							
<b>Enduring Understandings</b>							
The concepts inheritance. How and when to use conditional statements. Return types for methods							
<b>Alignment to NJCCCS</b>							
<i>TEC.9-12.8.1.12</i>		<i>TEC.9-12.8.2.12</i>					
<b>Key Concepts and Skills</b>							
Method Calls Parameters If-Statements Dot Notation Adding Objects Comments							
<b>Learning Activities</b>							
Little-Crab Lab Exercise questions PowerPoint							
<b>Assessments</b>							
Exercise questions Worksheet Test/Quiz							
<b>21<sup>st</sup> Century Skills</b>							
x	Creativity	x	Critical Thinking	x	Communication	x	Collaboration
x	Life & Career Skills	x	Information Literacy	x	Media Literacy		
<b>Interdisciplinary Connections</b>							
Connection with Math and Business Curriculum							
<b>Technology Integration</b>							
Use of internet, personal commuter and various software resources							

# Programming Through Games and Simulation.

<b>Time Frame</b>	Standard- 1.5 weeks	Block- 4 days					
<b>Topic</b>							
Fishing the Crab Game							
<b>Essential Questions</b>							
What is a constructor used for? How do you instantiate a constructor? How do you create new object? What is the proper method for assigning variables? How do you create a counter?							
<b>Enduring Understandings</b>							
The concept and the application of a class.							
<b>Alignment to NJCCCS</b>							
<i>TEC.9-12.8.1.12</i>		<i>TEC.9-12.8.2.12</i>					
<b>Key Concepts and Skills</b>							
Constructor Instance variables Assignment The key work “new”. If-Else Statements							
<b>Learning Activities</b>							
Little Crab Lab Exercise questions PowerPoint							
<b>Assessments</b>							
Exercise questions Worksheet Test/Quiz							
<b>21<sup>st</sup> Century Skills</b>							
x	Creativity	x	Critical Thinking	x	Communication	x	Collaboration
x	Life & Career Skills	x	Information Literacy	x	Media Literacy		
<b>Interdisciplinary Connections</b>							
Connection with Math and Business Curriculum							
<b>Technology Integration</b>							
Use of internet, personal commuter and various software resources							

# Programming Through Games and Simulation.

<b>Time Frame</b>	Standard- 1 Week	Block- 2 days					
<b>Topic</b>							
Fat Cat							
<b>Essential Questions</b>							
Can students call methods? Can students us conditional statement?							
<b>Enduring Understandings</b>							
The concept of calling methods and writing conditional statement.							
<b>Alignment to NJCCCS</b>							
<i>TEC.9-12.8.1.12</i>		<i>TEC.9-12.8.2.12</i>					
<b>Key Concepts and Skills</b>							
Assignment The key work “new”. If-Else Statements							
<b>Learning Activities</b>							
Worksheet PowerPoint							
<b>Assessments</b>							
Exercise questions Worksheet Test/Quiz							
<b>21<sup>st</sup> Century Skills</b>							
x	Creativity	x	Critical Thinking	x	Communication	x	Collaboration
x	Life & Career Skills	x	Information Literacy	x	Media Literacy		
<b>Interdisciplinary Connections</b>							
Connection with Math and Business Curriculum							
<b>Technology Integration</b>							
Use of internet, personal commuter and various software resources							

# Programming Through Games and Simulation.

<b>Time Frame</b>	Standard- 1 Week	Block- 2 days					
<b>Topic</b>							
Fat Cat catching flying pizza's slices							
<b>Essential Questions</b>							
Can the students use keyboard to control the object?							
Can the students randomize the behavior?							
<b>Enduring Understandings</b>							
To use methods.							
To control objects using the keyboard.							
To use random movement.							
<b>Alignment to NJCCCS</b>							
<i>TEC.9-12.8.1.12</i>	<i>TEC.9-12.8.2.12</i>						
<b>Key Concepts and Skills</b>							
keyboard control							
methods							
constructors							
random							
image switching							
<b>Learning Activities</b>							
Worksheet							
PowerPoint							
<b>Assessments</b>							
Exercise questions							
Worksheet							
Test/Quiz							
<b>21<sup>st</sup> Century Skills</b>							
x	Creativity	x	Critical Thinking	x	Communication	x	Collaboration
x	Life & Career Skills	x	Information Literacy	x	Media Literacy		
<b>Interdisciplinary Connections</b>							
Connection with Math and Business Curriculum							
<b>Technology Integration</b>							
Use of internet, personal commuter and various software resources							

# Programming Through Games and Simulation.

<b>Time Frame</b>	<b>Standard- 1 Week</b>	<b>Block- 3 days</b>					
<b>Topic</b>							
Fat Cat looks for pizza if it can avoid mean animal.							
<b>Essential Questions</b>							
Can students use inheritance to create another animal. Can student use conditional statements?							
<b>Enduring Understandings</b>							
Inheritance Instance Variable							
<b>Alignment to NJCCCS</b>							
<i>TEC.9-12.8.1.12</i>		<i>TEC.9-12.8.2.12</i>					
<b>Key Concepts and Skills</b>							
method call method definition sequence of statements if-statement instance variables							
<b>Learning Activities</b>							
Worksheet PowerPoint							
<b>Assessments</b>							
Exercise questions Worksheet Test/Quiz							
<b>21<sup>st</sup> Century Skills</b>							
x	Creativity	x	Critical Thinking	x	Communication	x	Collaboration
x	Life & Career Skills	x	Information Literacy	x	Media Literacy		
<b>Interdisciplinary Connections</b>							
Connection with Math and Business Curriculum							
<b>Technology Integration</b>							
Use of internet, personal commuter and various software resources							

<b>Time Frame</b>	<b>Standard- 1 Week</b>	<b>Block- 2 days</b>
<b>Topic</b>		
Cool Cat plays the Piano		
<b>Essential Questions</b>		
Can the students write a loop to repeat code?		

# Programming Through Games and Simulation.

<b>Enduring Understandings</b>							
Method calls							
<b>Alignment to NJCCCS</b>							
<i>TEC.9-12.8.1.12</i>				<i>TEC.9-12.8.2.12</i>			
<b>Key Concepts and Skills</b>							
For Loops							
<b>Learning Activities</b>							
Worksheet PowerPoint							
<b>Assessments</b>							
Exercise questions Worksheet Test/Quiz							
<b>21<sup>st</sup> Century Skills</b>							
x	Creativity	x	Critical Thinking	x	Communication	x	Collaboration
x	Life & Career Skills	x	Information Literacy	x	Media Literacy		
<b>Interdisciplinary Connections</b>							
Connection with Math and Business Curriculum							
<b>Technology Integration</b>							
Use of internet, personal commuter and various software resources							



# Programming Through Games and Simulation.

<b>Time Frame</b>	<b>Standard- 3 Weeks</b>	<b>Block- 8 days</b>					
<b>Topic</b>							
Arrays							
<b>Essential Questions</b>							
How is an array declared? How is data put into the array? What is an initializer list? What is an ArrayIndexOutOfBoundsException? What is the different between an array and a two-dimensional array?							
<b>Enduring Understandings</b>							
Arrays are used to store data. Arrays can hold primitive data and objects. An array can only hold one type of data. Arrays are zero based.							
<b>Alignment to NJCCCS</b>							
<i>TEC.9-12.8.1.12</i>		<i>TEC.9-12.8.2.12</i>					
<b>Key Concepts and Skills</b>							
For loops Declaring variables							
<b>Learning Activities</b>							
Labs 6.1, 6.7 on page 315 Exercise questions PowerPoint							
<b>Assessments</b>							
Exercise questions Test/Quiz							
<b>21<sup>st</sup> Century Skills</b>							
x	Creativity	x	Critical Thinking	x	Communication	x	Collaboration
x	Life & Career Skills	x	Information Literacy	x	Media Literacy		
<b>Interdisciplinary Connections</b>							
Connection with Math and Business Curriculum							
<b>Technology Integration</b>							
Use of internet, personal commuter and various software resources							

# Programming Through Games and Simulation.

<b>Time Frame</b>	Standard- 1.5 Weeks	Block- 4 days					
<b>Topic</b>							
Making Music: An on-screen piano							
<b>Essential Questions</b>							
How does the mouse click activate the piano button to push down?							
How does the program know what note to play?							
How is an array used to hold the notes of the piano button?							
<b>Enduring Understandings</b>							
Strings are objects that can be used as a single variable.							
Array can hold object that are string.							
Logical operators are used to combine multiple Boolean statements.							
<b>Alignment to NJCCCS</b>							
<i>TEC.9-12.8.1.12</i>		<i>TEC.9-12.8.2.12</i>					
<b>Key Concepts and Skills</b>							
Abstraction							
Loops							
Arrays							
While Loops							
<b>Learning Activities</b>							
Piano Lab							
Exercise questions							
PowerPoint							
<b>Assessments</b>							
Exercise questions							
Worksheet							
Test/Quiz							
<b>21<sup>st</sup> Century Skills</b>							
x	Creativity	x	Critical Thinking	x	Communication	x	Collaboration
x	Life & Career Skills	x	Information Literacy	x	Media Literacy		
<b>Interdisciplinary Connections</b>							
Connection with Math and Business Curriculum							
<b>Technology Integration</b>							
Use of internet, personal commuter and various software resources							

# Programming Through Games and Simulation.

<b>Time Frame</b>	Standard- 1 Week	Block- 3 days					
<b>Topic</b>							
Interacting objects: Newton's Lab							
<b>Essential Questions</b>							
How the keyword "this" is used for identifying a class variable or a constructor.							
How do you use a method from different classes?							
What is the difference between a private or public method?							
How do you apply gravitational pull to an object?							
<b>Enduring Understandings</b>							
The for-each loop is suited to process all elements of a collection.							
Classes can access and use other method for different classes.							
A List is an example of a collection.							
<b>Alignment to NJCCCS</b>							
<i>TEC.9-12.8.1.12</i>		<i>TEC.9-12.8.2.12</i>					
<b>Key Concepts and Skills</b>							
List							
For-Each loop							
Private Methods							
Public Methods							
<b>Learning Activities</b>							
Newton's Lab							
Exercise questions							
PowerPoint							
<b>Assessments</b>							
Exercise questions							
Worksheet							
Test/Quiz							
<b>21<sup>st</sup> Century Skills</b>							
x	Creativity	x	Critical Thinking	x	Communication	x	Collaboration
x	Life & Career Skills	x	Information Literacy	x	Media Literacy		
<b>Interdisciplinary Connections</b>							
Connection with Math and Business Curriculum							
<b>Technology Integration</b>							
Use of internet, personal commuter and various software resources							

# Programming Through Games and Simulation.

<b>Time Frame</b>	<b>Standard- 3 Weeks</b>	<b>Block- 7 days</b>					
<b>Topic</b>							
Asteriods							
<b>Essential Questions</b>							
How does the rocket turn? How does the rocket fly forward? How does the proton wave work? Why does the asteroid hit the rocket when appears to just miss the rocket? How is casting used to get the scoreboard to work?							
<b>Enduring Understandings</b>							
The object in the Asteroids work hold rectangular shape.							
<b>Alignment to NJCCCS</b>							
<i>TEC.9-12.8.1.12</i>		<i>TEC.9-12.8.2.12</i>					
<b>Key Concepts and Skills</b>							
Collections For Loops For-Each Loops Casting							
<b>Learning Activities</b>							
Asteroids Lab Exercise questions PowerPoint							
<b>Assessments</b>							
Exercise questions Worksheet Test/Quiz							
<b>21<sup>st</sup> Century Skills</b>							
x	Creativity	x	Critical Thinking	x	Communication	x	Collaboration
x	Life & Career Skills	x	Information Literacy	x	Media Literacy		
<b>Interdisciplinary Connections</b>							
Connection with Math and Business Curriculum							
<b>Technology Integration</b>							
Use of internet, personal commuter and various software resources							

# Programming Through Games and Simulation.

<b>Time Frame</b>	<b>Standard- 2 Weeks</b>	<b>Block- 4 days</b>					
<b>Topic</b>							
The Greeps Competition							
<b>Essential Questions</b>							
What direction does a Greep move? What happens when a Greep encounter water? How does a Greep know when it is at a tomato pile?							
<b>Enduring Understandings</b>							
Greeps are not intelligent. Greeps can only perform limited movement. Greeps need to be told and prepared for anything they may encounter,							
<b>Alignment to NJCCCS</b>							
<i>TEC.9-12.8.1.12</i>		<i>TEC.9-12.8.2.12</i>					
<b>Key Concepts and Skills</b>							
If statements Calling methods How to access random values							
<b>Learning Activities</b>							
Greeps competition							
<b>Assessments</b>							
Seven additional maps							
<b>21<sup>st</sup> Century Skills</b>							
x	Creativity	x	Critical Thinking	x	Communication	x	Collaboration
x	Life & Career Skills	x	Information Literacy	x	Media Literacy		
<b>Interdisciplinary Connections</b>							
Connection with Math and Business Curriculum							
<b>Technology Integration</b>							
Use of internet, personal commuter and various software resources							