

AP CSP - North Salem High School

David Moste - Adapted from Code.org

Unit	Intro to Programming
Lesson	Topic: Creating Functions
Learning Target(s)	Students will be able to: <ul style="list-style-type: none">• Recognize functions in programs as a form of abstraction.• Write a program that solves a turtle drawing problem using multiple levels of abstraction (i.e. functions that call other functions within your code).• Explain why and how functions can make code easier to read and maintain.• Define and call simple functions that solve turtle drawing tasks.
Standard(s)	CSTA K-12 Computer Science Standards (2011) <ul style="list-style-type: none">• CL - Collaboration• CPP - Computing Practice & Programming• CT - Computational Thinking Computer Science Principles <ul style="list-style-type: none">• 2.2 - Multiple levels of abstraction are used to write programs or create other computational artifacts• 5.3 - Programming is facilitated by appropriate abstractions.• 5.4 - Programs are developed, maintained, and used by people for different purposes. CSTA K-12 Computer Science Standards (2017) <ul style="list-style-type: none">• AP - Algorithms & Programming• CS - Computing Systems
Accompanying Documents	Intro Video

Lesson Plan	
Warm Up	5 mins
Prompt: In the previous lesson we created simple turtle drawings using only four commands. At some point you probably wished that more commands were available to you. Describe a command you wanted to be able to use and explain why you wanted to use it.	

Discuss: Provide students time to discuss their ideas with their neighbors before sharing with the class. This can be done fairly quickly but insist that students provide both the command they would have wanted and the situation in which they wanted to use it.

Lesson Body

35 mins

Programming with Functions - Code Studio

35 mins

Group: Place students in pairs. Consider using pair programming for this activity. If each student will work on their own computer, have them check in with their partner throughout the activity.

Either as a class or individually, students should watch a video introducing the way that functions are defined and called in JavaScript. You may wish to take a minute following the video to address any questions that may have developed from watching the video.

Defining and Calling Functions

Using Functions With Turtle Commands

Challenge: Draw a Diamond Using Functions

Check Your Understanding

Exit Ticket

5 mins

Display the following questions somewhere they can be seen and ask students to write short responses before discussing with a neighbor. Once all pairs have had a chance to talk, bring the whole class back together to clarify points and share ideas.

Prompt 1: List the benefits of being able to define and call functions in a program. Who specifically gets to enjoy those benefits?

Prompt 2: How is the use of a function an example of abstraction?