

Junior Coder

Lesson plan - 5

Function Junction

Function and Abstraction

Lesson # 5 - Function

Time:	90-120 mins	
Objective:	Understanding the use of functions.	
Learning	<p>What is a function? In computer programming functions refer to set of instructions that can be called over and over again. Function lets you create a group of instructions in one place and call them when you need, instead of writing the same set of instructions again and again. They are also called procedure or method.</p>	
Computer Vocabulary:	<p>Abstraction - Separating and hiding the complex part of the instruction. Parameter - Information that you can pass to the function to give more specific details about the instruction.</p>	
Materials required:	<p>iPad with Junior Coder downloaded. Scissors, pencil and activity sheet for unplugged activity.</p>	
Common Core compliance:	CCSS.MATH.PRACTICE.MP1	<i>Make sense of problems and persevere in solving them.</i>
	CCSS.MATH.PRACTICE.MP2	<i>Reason abstractly and quantitatively</i>
	CCSS.MATH.PRACTICE.MP4	<i>Model with mathematics.</i>
	CCSS.MATH.PRACTICE.MP5	<i>Use appropriate tools strategically.</i>
	CCSS.MATH.PRACTICE.MP6	<i>Attend to precision.</i>
	CCSS.MATH.PRACTICE.MP7	<i>Look for and make use of structure.</i>
	CCSS.MATH.PRACTICE.MP8	<i>Look for and express regularity in repeated reasoning.</i>
Activity:	<p>Solve levels 1 to 5 in Function Junction. (Students can work in pairs.) Step 1 - Understand the problem. Step 2 - Recognize the repetitive patterns. Step 3 - Abstract the common information. Step 4 - Use loop blocks and function blocks where possible. Step 5 - Check your work.</p>	

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Creativity:

Click on "Create your own" button. Students can create their own train tracks. Place the engine at the start of the track, one block before the track starts. Use the arrow to change the direction of the engine if needed. Place the train station at the end of the track, one block after the last track. Have fun challenging each other to a game of function junction.

Discussion:

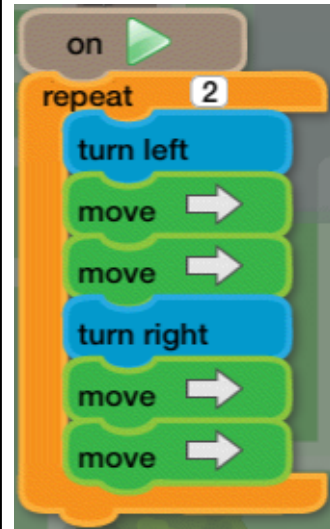
As a group discuss the importance of function. Discuss how functions help programmers save time. If they need to change anything in the instruction they can just do it in one place.

Solutions:

Level 1

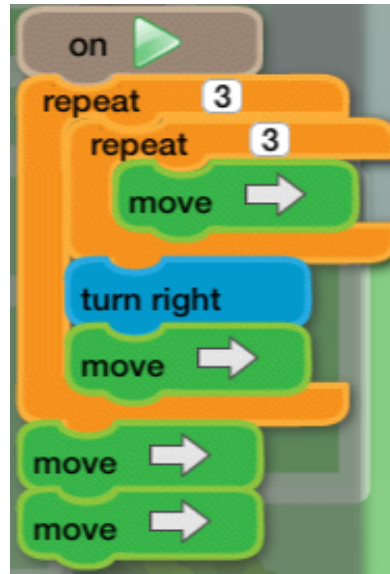


Level 2

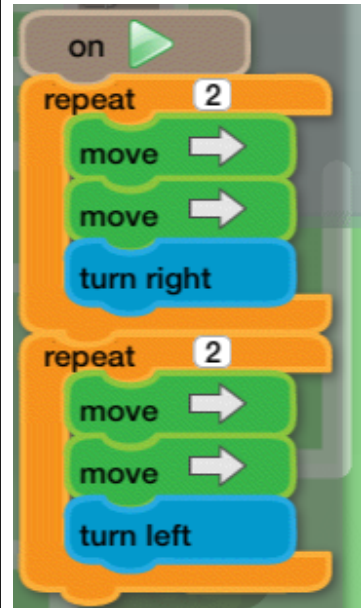


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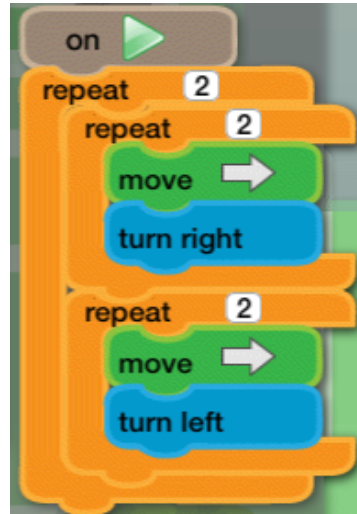
Level 3



Level 4



Level 5



Unplugged Activity

Hand out the activity sheet for Lesson #5.
Let students follow the instruction given on the sheet.

Unplugged activity discussion

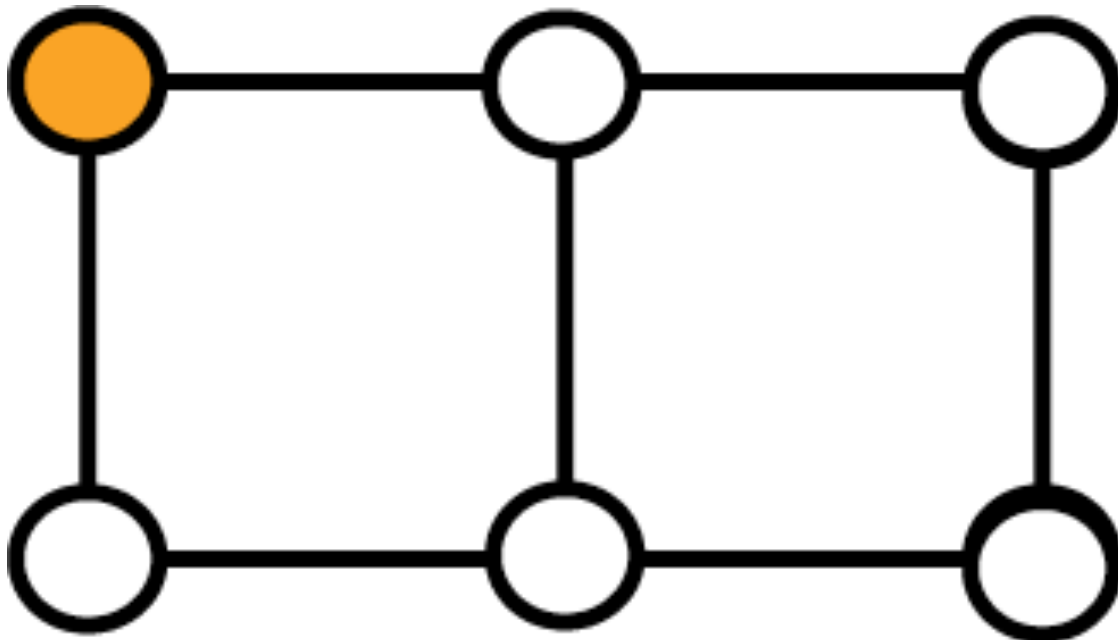
Discuss how function are useful? Discuss what is a parameter. Parameter are information passed to a function to customize the instruction performed by the function.

Activity#1






Cut out the coins below.



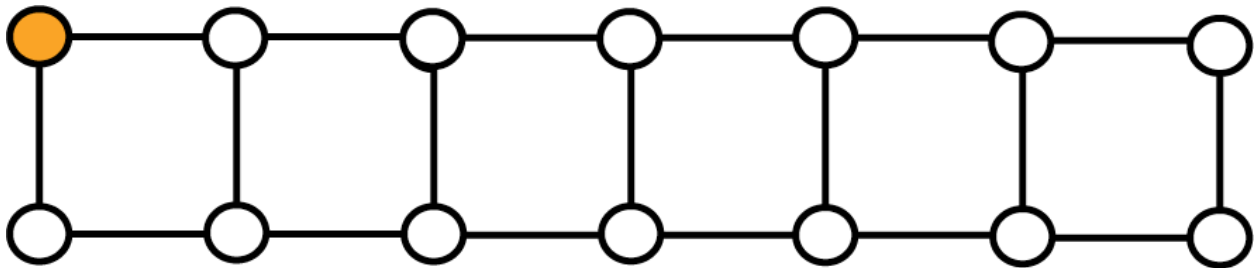
To start the game stack up 6 coins and place your hand at the colored circle. Now try putting the coins in every circle without going over the same line twice.



Now write the steps you followed using the symbols above.
Check each others work.

Symbol	Action
	Go up the grid one step
	Go back one step
	Go forward one step
	Go down the grid one step
	Put down one coin from the stack.

Now try writing the instruction for filling coins in all circles of
the board below.



Hint: Can you create common set of instruction that you can make a function. Now simply call the function as many times as required.

Activity # 2

You are preparing for a birthday party. You have to invite 3 friend and when they give you presents you have to write 3 thank you cards.

So you decided to program the computer to print cards for you. Below are the steps in your programming. Cut the blocks along the dotted lines.

Draw	Balloons and streamers
Write	You are invited.
Print	Card
Draw	Balloons and streamers
Write	You are invited.
Print	Card

Draw

Balloons and streamers

Write

You are invited.

Print

Card

Draw

Happy face

Write

Thank you for coming

Print

Card

Draw

Happy face

Write

Thank you for coming

Print	Card
Draw	Happy face
Write	Thank you for coming
Print	Card

Now arrange them in sequence and try to abstract the common information. Can you create a function? Name your function, (name will usually say what the function does.)
Call your function.