8

CS in Algebra | Lesson 8

Composite Functions

Lesson time: 30-60 Minutes

LESSON OVERVIEW

In the past lessons students have defined variables which will allow them to easily write expressions that refer to the same value repeatedly. In this stage, they will write simple functions that, like variables, allow students to abstract out repetitious elements of their programs.

LESSON OBJECTIVES

Students will:

- Analyze and use existing functions.
- Modify existing functions.
- Create new functions.
- Create similar shapes by changing size parameters on functions.

ANCHOR STANDARD

Common Core Math Standards

- **8.F.1**: Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.1

Additional standards alignment can be found at the end of this lesson

TEACHING SUMMARY

Getting Started

1) Vocabulary
2) Introduction

Activity: Composite Functions

2) Online Puzzles

TEACHING GUIDE

GETTING STARTED

1) Vocabulary

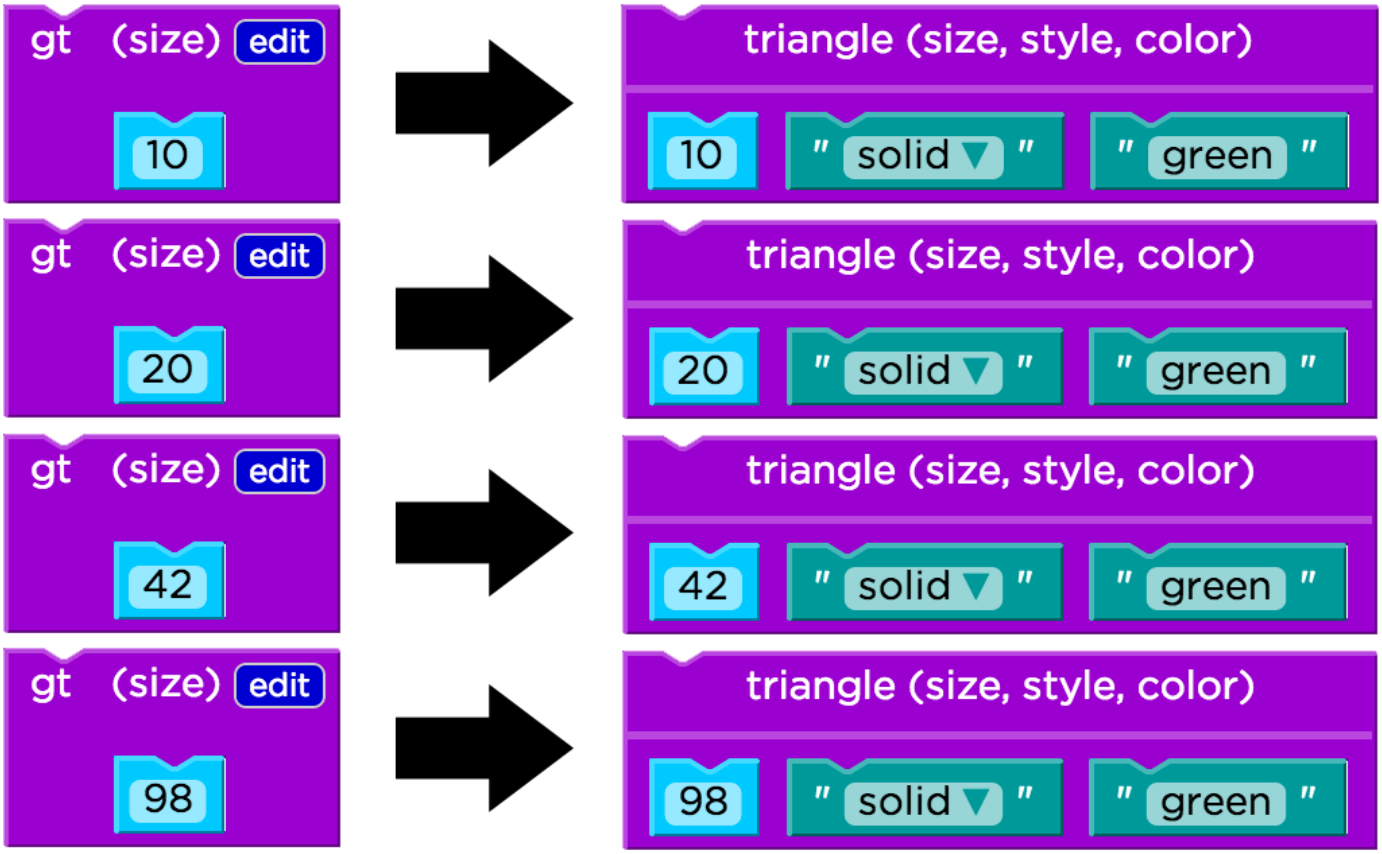
This lesson has one new and important word:

- **Parameter** - A value or expression belonging to the domain.

2) Introduction

Defining a reusable *value* is helpful when a program has lots of identical expressions. Sometimes, however, a program has expressions that aren't identical, but are just *very similar*. A program that has fifty solid, green triangles can be simplified by defining a single value, *as long as they are all the same size*. But what if a program has fifty solid, green triangles of different sizes?

Think about the Image functions you have already used, like star and circle. They take inputs and produce images. Similarly, we might want a green-triangle function that takes the size as an input and produces a green triangle. The programming language doesn't provide this function, but it does let you define your own functions. We want to define our own function (let's call it gt, for green triangle) that takes in a Number as the size parameter and produces a solid green triangle of whatever size we want. For example:



and so on...

ACTIVITY: COMPOSITE FUNCTIONS

2) Online Puzzles

In this stage you'll define simple functions. Head to CS in Algebra stage 8 in Code Studio to get started programming.

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