

# Unplugged

## Hour of Code: Input and Output, Math Activity

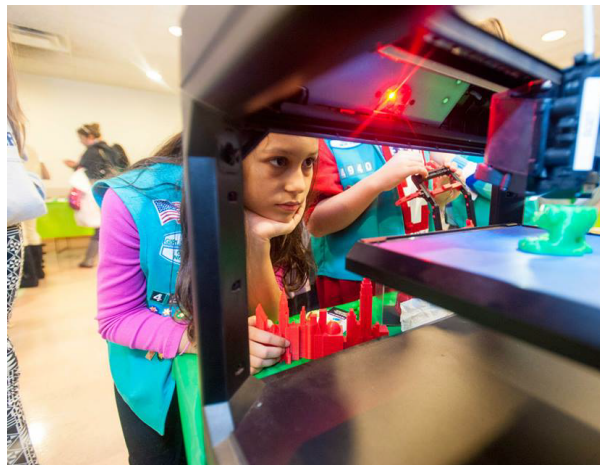
**Suggested Time:** 1 hour

**Materials:** A pencil and notebook paper.

### Overview

In programming, functions are kind of like verbs. They're instructions that can be called to tell a computer exactly what to do.

In this exercise, you'll walk through with your students how this relates to what they already know about math by solving a math equation with programming.



### Project: Functions in Math

Take a mathematical function and translate it into a function you'd find in computer programming.

Let's look at an example of a simple math equation (or function)

$$y = x + 5$$

Now we want to rewrite this using the notation of a JavaScript function. To start, ask yourself these questions:

- What would be the argument (input) for the function? The "x" or "y"?
- What would be the output?
- What might go inside the curly brackets of our function?

Answer

```
function addNumbers (x) {  
  return x + 5;  
}
```

```
addNumbers(3)  
//result is 8
```



This is an example of an algorithm. This is a simple example as it only has one line of instruction, but functions can be really complex. They might have hundreds or thousands of lines of instructions!

### Project: Functions in the World

If I had a function called

**turnLeft(x);**

and x was the number of times that a person turned left 90 degrees, how would I call this function so that a person turns all the way around in a circle.

Answer: **turnLeft(4);**

Because if they turn 90 degrees four times, they turn in a full circle, and end up back where they started.

How would I rewrite the function so that I have a function that turns someone to the right instead?

Answer: If a person turns left 3 times, they turn right. So one way to make them turn right is **turnLeft(3);**

But now we need to rewrite that as a function. So:

```
turnRight(x){  
  x * turnLeft(3);  
}
```

## Reflection

What are some things in your life that have an input and an output? These are the kinds of things we can model with functions in computer programming!

In Vidcode, you could write a function to change an effect over time, or to animate a graphic across your video.

