

Evo: The Speaking Inchworm

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Introduction

This lesson is motivated by Laura Collins's creative lesson [Non-Standard Measurement Using Ozobot: How many Ozoloops tall are you?](#) Designed for grades K-2, her lesson allowed students to determine their height in a non-standard measure that she referred to as *Ozoloops*.

In contrast, the *Speaking Inchworm* is designed for Evo, and uses the *inch* as a standard for measurement. This lesson also allows you to study a simple OzoBlockly program in which Evo speaks the number of inches he has traveled in his loop. You can use *Evo—the Speaking Inchworm* to measure the length of almost anything lying on a flat horizontal surface. You can compare the length measured by the inchworm to that obtained by a 12" ruler or a yardstick. To test your math skills, you can compute the percentage error in the length. To get scientific, you can even provide possible explanations for error.

Figure 1 shows Evo—the Speaking Inchworm. He moves on a line that runs the entire length of the loop of paper. There are short perpendicular lines every inch along the loop. Evo stops momentarily at each of these perpendicular lines, speaking the total number of inches he has traveled thus far on the loop. He can measure lengths up to 127 inches, a little more than ten feet. Click [here](#) to see Evo—the Speaking Inchworm in an action video.



Figure 1

The OzoBlockly Program

Figure 2 shows the blocks of the OzoBlockly program for *Evo—the Speaking Inchworm*. The code begins by setting the line-following speed to 60 mm/s, somewhat faster than the default speed. The top light color is then set to red followed by a 10 second pause, giving time to properly place Evo in the paper loop. The light then turns green indicating that Evo is about to begin measuring. A *count with* loop then sets the variable *inches* to the value 1, incrementing the variable by 1 each time through the loop. Within the loop, Evo follows the line to the next intersection, picking the direction straight. Evo then speaks the number of inches traveled thus far.

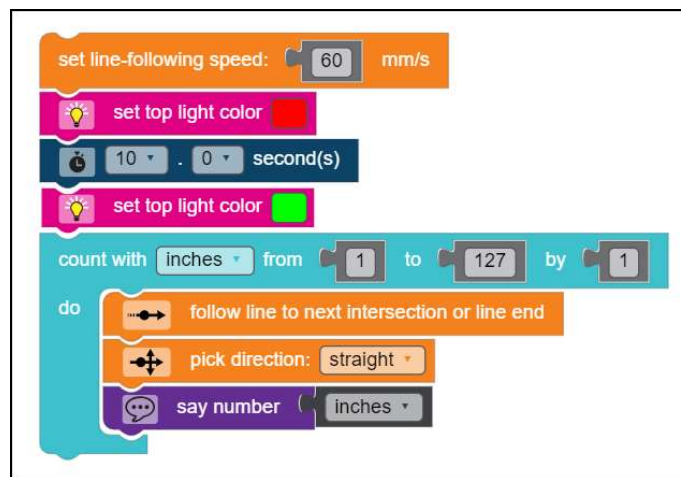


Figure 2

The Paper Loop

Figure 3 shows dimensions for the suggested paper loop for this lesson. A pdf document with this paper loop accompanies this lesson. A regular piece of 8½"x11" paper, not a stiff piece of cardstock, works best when printing the loop.

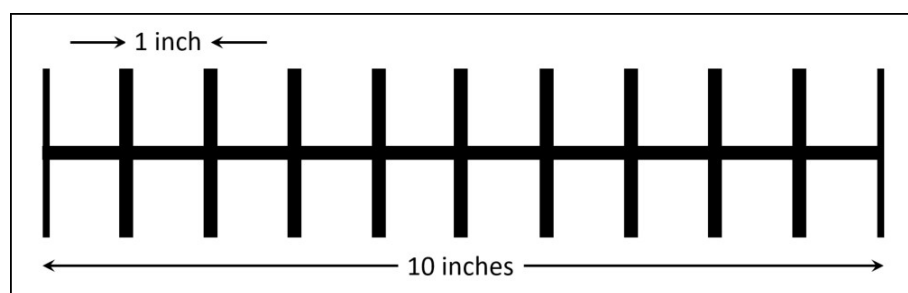


Figure 3

An OzoBlockly Program Maintenance Exercise

Modify the *Evo Speaking Inchworm* OzoBlockly program as follows. Adjust the color of the top light on Evo so that it alternates between green and blue with each inch traveled, blue for odd inches and green for even inches.