

Introduction to Variables



What is a Variable?

In computer programming, variables act like boxes to hold values.

They're called "variables" because what's in them can "vary" or change.



Why Use Variables?

Variables are used in computer coding for many reasons.

1. They make code shorter.
2. They make code easier to read.
3. They make code easier to change.

You'll see all of these coming up!



Variables in Blockly - Setting a Variable

The first thing you need to do with a variable is give it a starting value. This block allows you to set the value of a variable.

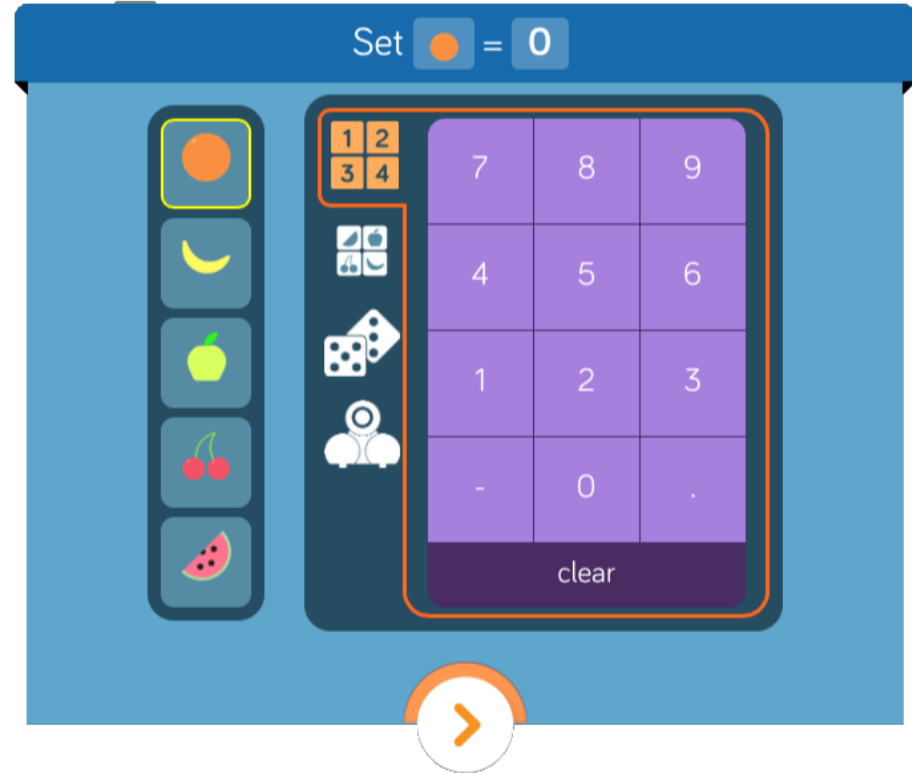


In Blockly, there are 5 different variables you can choose to use, represented by 5 different fruits.

Variables in Blockly - Setting a Variable

Click on that block to open a dialog to set the variable.

Choose which fruit you want.
Then pick a number to be the
starting value of the variable.
Right now, the orange has a
starting value of 0.



Variables in Blockly - Changing a Variable

Once you've set a variable, you can change it.

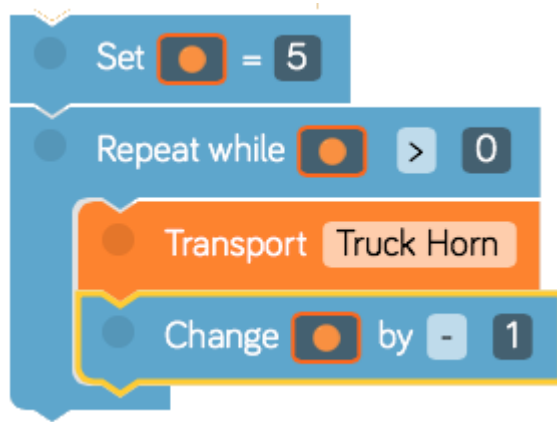


Click on this block to open a dialog. Select a variable, how to change it, and how much to change it by.

This is how you would say “Subtract 3 from what’s in the box.”

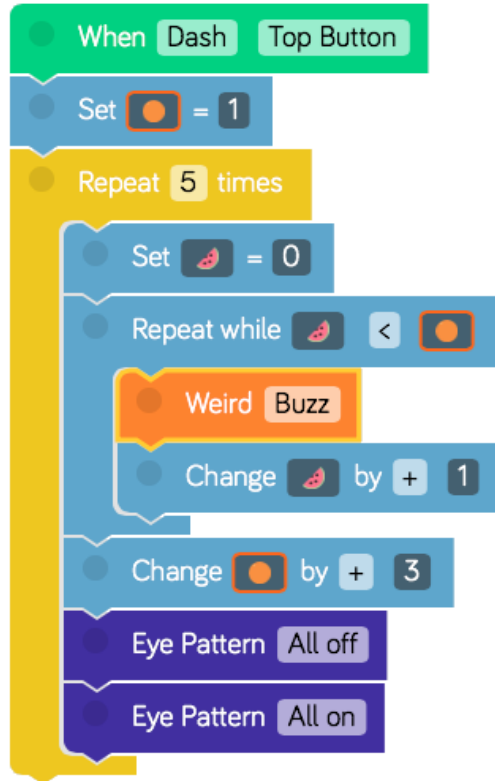
Variables in Blockly - Looping with Variables

You can loop based on variables. Instead of having to say “repeat this 5 times” you can say:



- Set orange to 5.
- Repeat while orange is greater than 0:
 - Honk horn
 - Decrease orange by 1.

Variables in Blockly - A Pattern Example

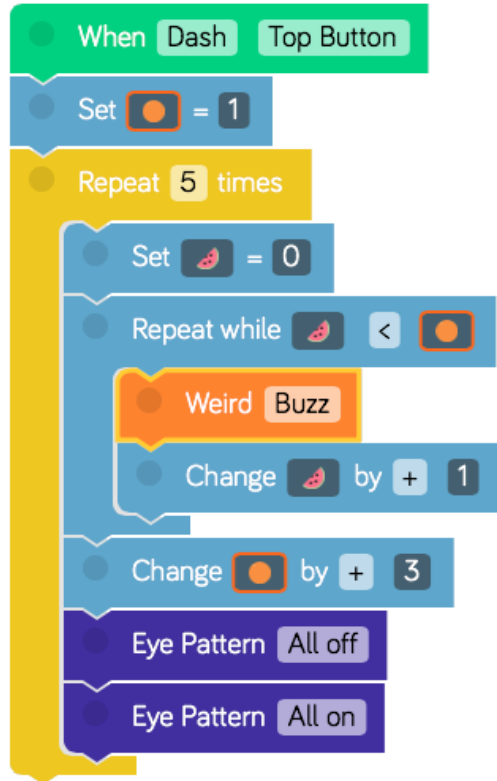


Let's look at an example program. This one uses two different variables to make Dash buzz in a pattern.

Orange is the first variable, it's the number of times Dash will buzz for each round.

First we give **orange** an initial value of 1. This means that Dash will first buzz once!

Variables in Blockly - A Pattern Example

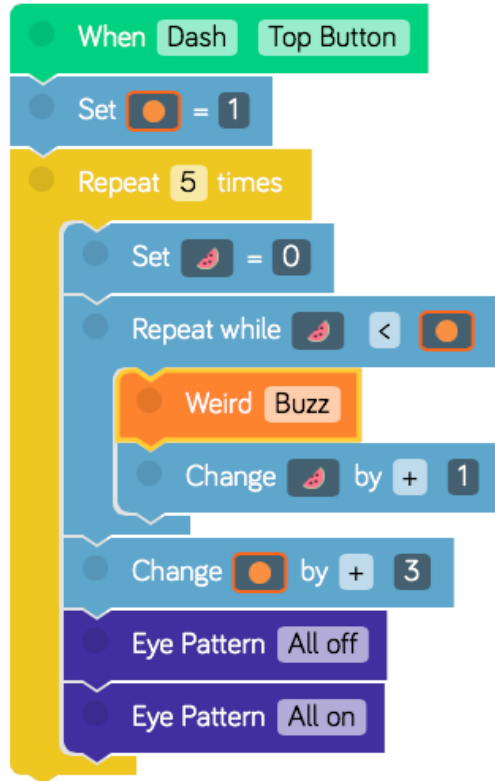


The next variable is the **watermelon**. It's used to count the number of buzzes that Dash has already done.

Watermelon starts at zero then loops, increasing by one, until the number of times Dash has buzzed reached **orange**.

Remember that **orange** represents the number of times that Dash is supposed to buzz.

Variables in Blockly - A Pattern Example



Lastly, **orange** is increased by 3 and the loop starts again.

Run the program on paper by keeping track of the numbers and buzzing when Dash would buzz.