Teacher Guide: Getting Started with Dash

Welcome to Wonder Workshop! Dash is an exciting, hands-on learning tool for students in grades K-8. Targeted at teaching creative problem solving and computational thinking, Dash helps students learn fundamental processes relevant for all 21st century skills.

Here are some helpful tips to set up and manage multiple Dash robots in your classroom. Dash can't wait to meet your students!

Setting up your classroom

Setting up your robots is easy, and a getting started guide is included in every box! Here are some tips for classrooms that have multiple robots. For additional information, go to https://www.makewonder.com/en/getting-started/.

1 **Charge your robots.** Dash has rechargeable batteries, so you will need to ensure they are charged for class. Simply plug them into the wall or a computer using the charging cable included in the box or one like it. A full charge cycle takes about 60-90 minutes.

When the light on the charging port turns off, your robot is fully charged!
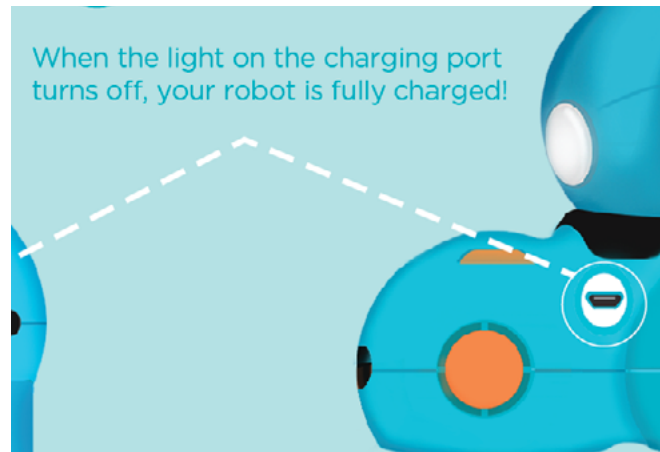
2 **Name your robots.**
Step 1: Click on the "+" to access the robot settings.

Step 2: Change the name

In this settings menu, you can change the settings of the robot, increase and decrease the robot's volume, change the color of the robot, and even set its wake-up animations.
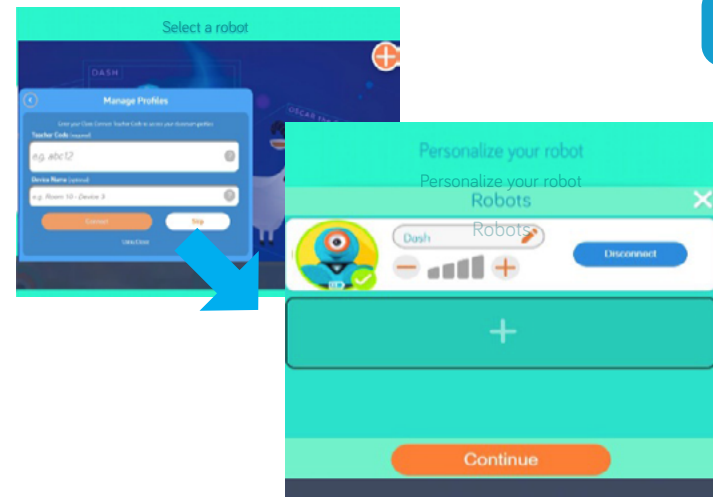
3 **Getting Started with Blockly** Students can access Blockly in two different ways:
1. **For iOS** Download the Blocky App, find the blockly app and click the icon to launch the application.
2. **For Blockly Web**, you will need to navigate to code.makewonder.com Then students click on "Play with Dash and Dot"
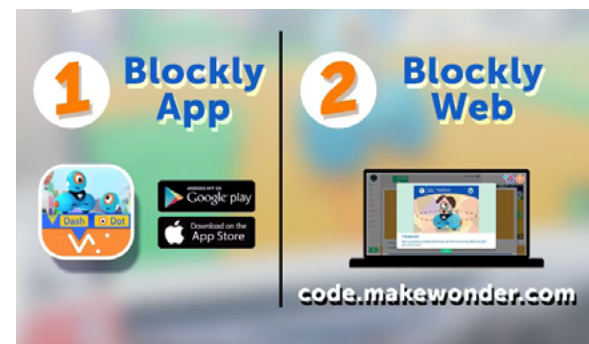
Watch this video to learn more about Getting Started with Blockly.

Tech specs for Dash

Students can program Dash using intuitive, drag-and-drop interfaces on Chromebooks, iPads, and Android tablets. Here are some of the features they can control!
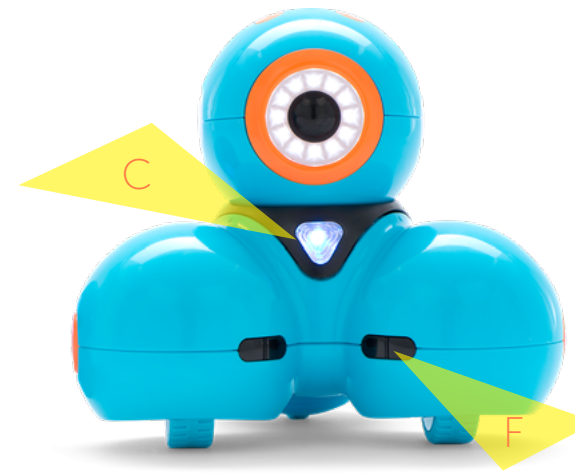
Dash

Drive - Dash can drive forward, backward, turn left (spin), and turn right (spin). There are two wheels beneath the left and right side of Dash's body. You can steer Dash by changing the speed and/or direction of either wheel.

Head Motion - Dash can look up (25 degrees), down (10 degrees), left (120 degrees), or right (120 degrees).

Lights - There are 12 LEDs in Dash's eye. In Dash's ears (E) and chest (C), there are RGB LEDs. In Dash's tail, there are 2 red LEDs.

Sounds - Includes a variety of pre-programmed sounds!

Microphone - Dash has 3 microphones, allowing Dash to hear claps and identify the direction of your voice.

Distance sensors - Dash 2 distance sensors in front (F) and 1 in back (B), allowing Dash to detect obstacles in front and objects behind with infrared lights.

Buttons. Dash has 4 programmable buttons.

Button 1

Button 3

Top Button

When Top Button

When Dash Bu

Button 2
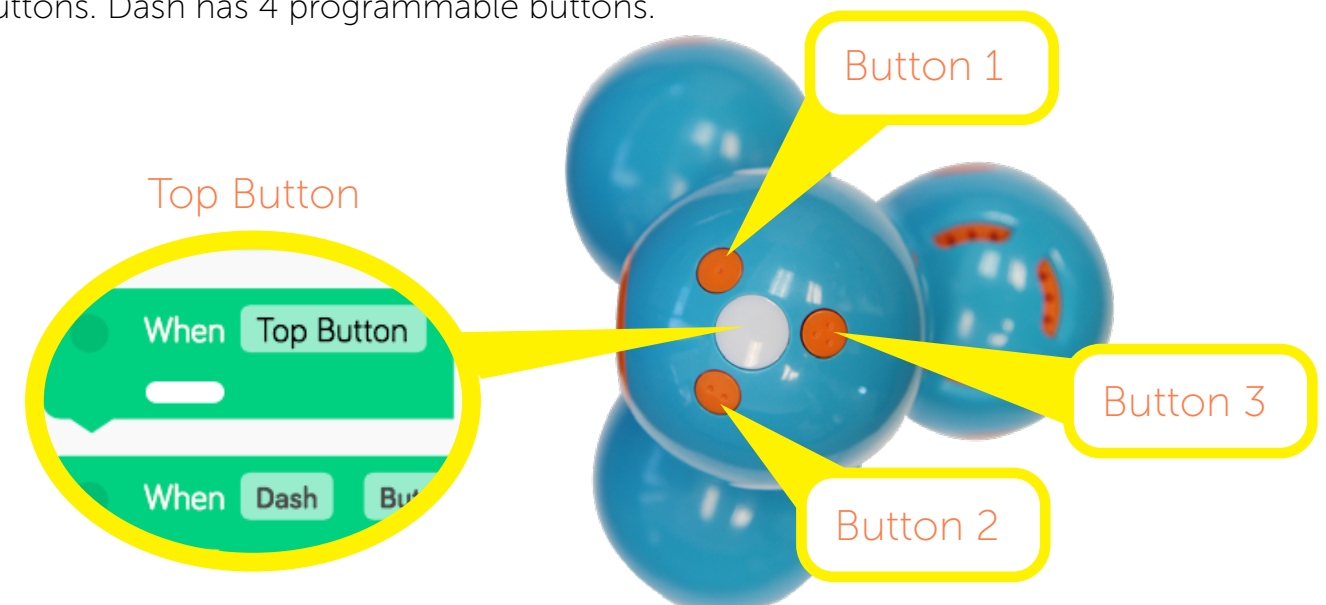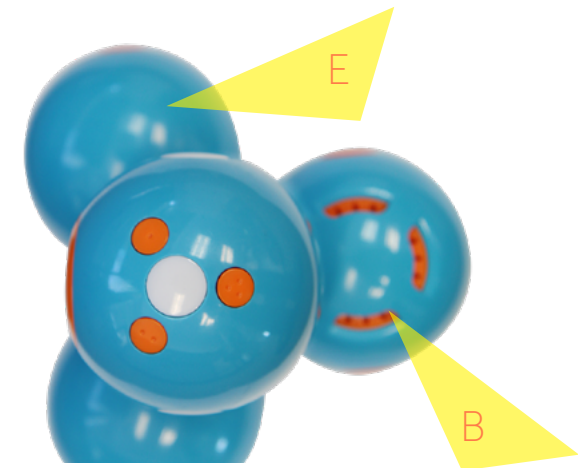
Blockly Puzzles

We recommend that all students start working with Blockly Puzzles. The puzzles introduce students to block coding and the Wonder Workshop Blocky platform. Covers Level A-F with quick, challenges in an easy-to-use read-aloud format. You will use these to benchmark students' coding levels and determine what students need to keep practicing.
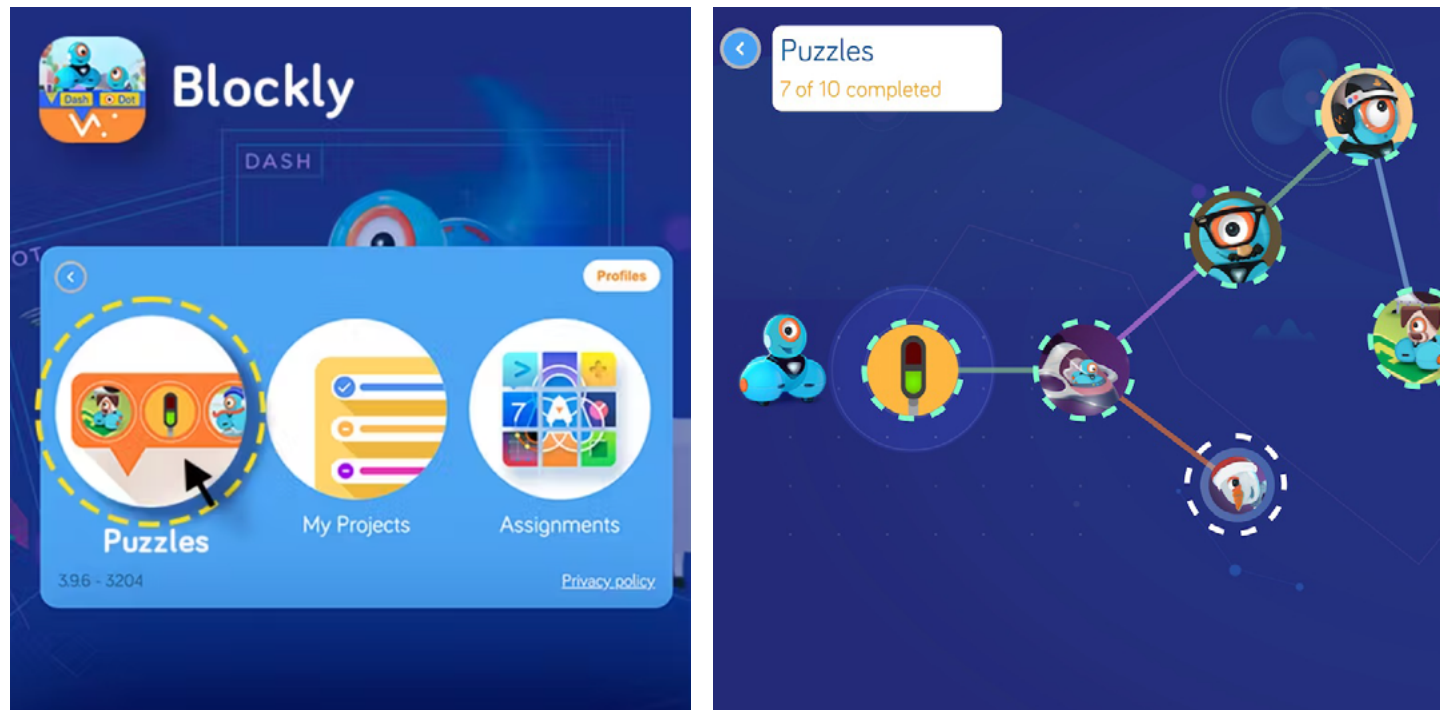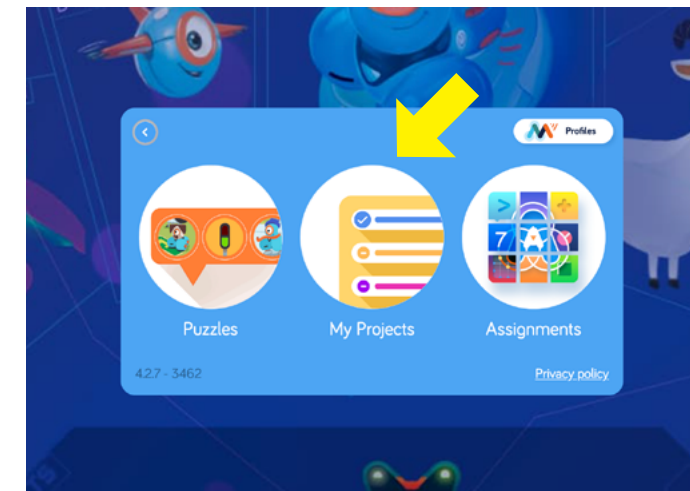

Students work with puzzles starting with basic coding concepts and working their way to more advanced ones.
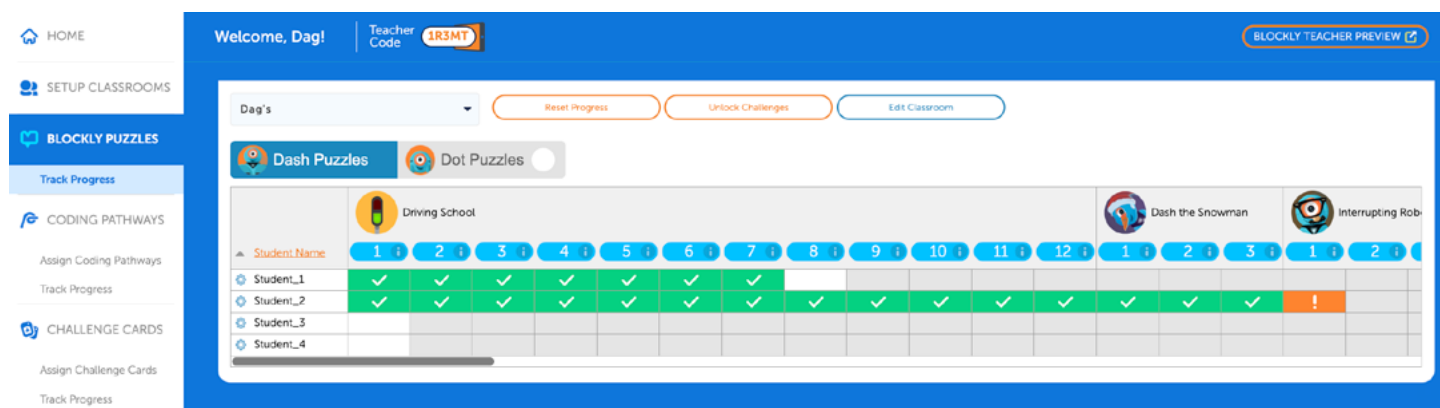
Teachers can track student progress and offer help where needed.

Saving and Creating Projects

Blockly allows you to save, create, and load sample projects.

You can find sample projects by tapping the "My projects" button on the main menu.

Suggested Implementation:

When you have a content area or project you want to support in the classroom, you can have students create a New Project in Blockly. You will have students share their KEY with you and then you can type it in to see what they have done.
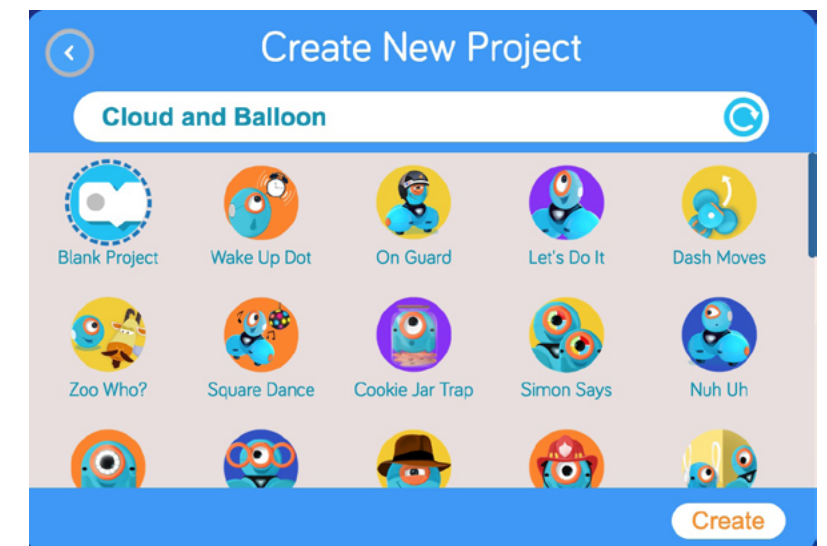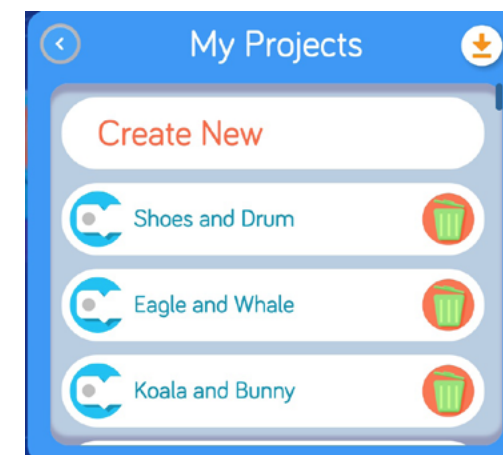
Light

Control Dash & Dot's lights to give your program some color! All Colors will light up Dash's ears and chest, or Dot's ears and backlight. Mood will light up Dash's chest or Dot's backlight.

**Eye Pattern** [ ] **Start at** [ ]

The Eye Pattern block indicates the pattern of the 12 LED eye lights in the 1st drop-down and where the pattern starts at in the 2nd drop-down. #1 is at the top of Dash & Dot's eye, and then the numbers increase in a clockwise direction.

Look

Make Dash's head move any way you want! Units refer to degrees. Degree units are absolute, meaning Left 30 sets the head at 30 degrees left from a neutral straight position.

The Look towards Voice block allows you to program Dash's head to look towards the direction of the sound of your voice. This works best in a quiet room with minimal background noise.

Look towards Voice
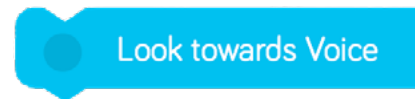
Sound

Dash & Dot love to play sounds—use the drop down menus to add some fun effects to your programs!

Control

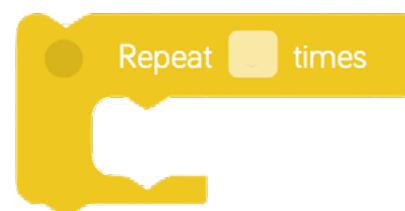Control how Dash & Dot interact with each other and their environment!

Wait For [ ] **seconds**

Wait For [ ] [ ]

Have Dash & Dot wait for a set period of time before continuing your program.

Dash & Dot will wait for an event to be triggered before moving to execute the rest of the program.

Repeat [ ] **times**

Dash or Dot will repeat your program for a set number of loops!

Blockly Glossary

Here's the scoop on everything you need to know to use Blockly, a visual drag-and-drop coding tool.

Start

This is where you control how your program will start. Use a block beginning with "When" to indicate the event that will start executing your program. Hint: using both Dash & Dot? Try using a Dot gesture like "Shake" or "Toss" and add movement blocks underneath to move Dash around.

When Top Button
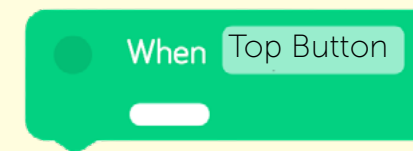
When [ ] [ ]

This block will start running your program when you press the top button on Dash's head or on the bottom left corner of the Blockly screen. Drag and stack additional blocks below a When block to write your program.
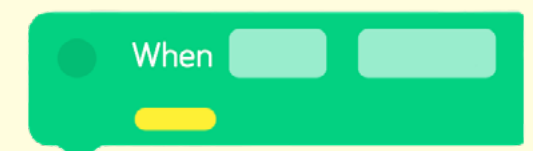
To begin a program with a different event, use the yellow When block. Tap on each drop-down menu to select the event that triggers your program. Then, stack blocks underneath to build and run your program!
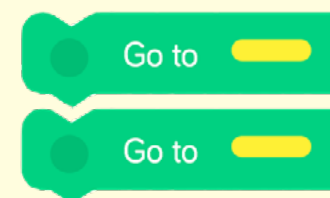
Go to [ ]

Go to [ ]

Using multiple When blocks? Use Go to when you want to repeat a sequence. The yellow or white bar indicates the stack that will repeat. For example, to repeat the sequence under When Top Button, use the white Go to block.

Drive

Drive blocks control where and how Dash moves! Forward and Backward blocks use centimeters as units, and turns refer to degrees as the unit of the turn angle.

The Turn to Voice block allows you to program Dash to turn towards the sound of your voice. This works best in a quiet room with minimal background noise.

Turn to Voice

Set Wheel Speed

Left [ ] [ ]

Right [ ] [ ]
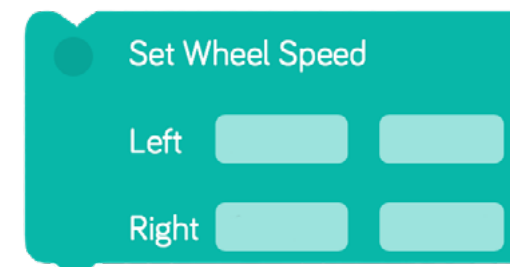
The Set Wheel Speed block gives you individual control of Dash's wheels. Forward and backward at the same speed makes Dash spin. Forward at different speeds makes Dash go in an arc. Try different combinations out! Note: to stop Dash's wheels add the Stop Wheels block.
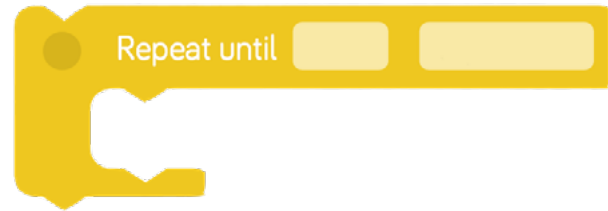
Repeat until

Dash & Dot will repeat the program inside the brackets until the event in the drop-down menu on the right is triggered.
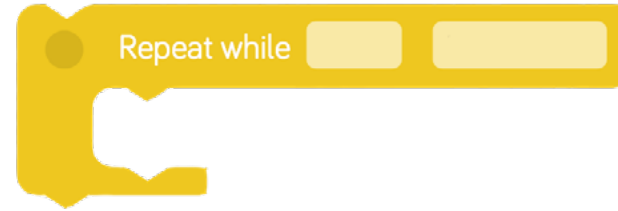
Repeat while

Your program will repeat the whole time while the event in the drop-down menu on the right is being triggered.

If

Dash or Dot will run the program inside the bracket if the condition in the right drop down menu is present.

Variables

Use this section to take your coding to a move advanced level with different types of variable blocks. You will use fruit image to represent different variables in Blockly.

Set ● = 0

Change ● by + 0

If ● > 0

If ● > 0
Else

Do Drive ● cm

Repeat while ● > 0
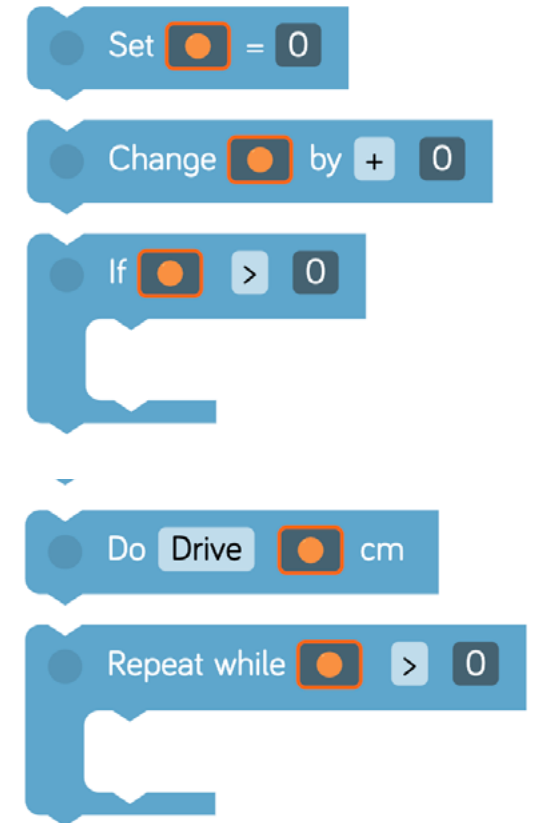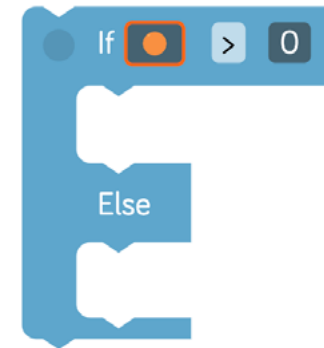
Animations

Use this section to add blocks that help code Dash to use animations.

Greet Dash Hi

Dance Dash Confident

Expression Dash Laugh

Race Dash Take Off

Accessories

Use this section to access blocks that support with coding Dash to use accessories like launcher, gripper, and sketch kit.

Launcher

Load Launcher Left

Launch with 70 % Power

? Sketch Kit

Marker Down

Marker Up

? Gripper Building Kit

Gripper Open

Gripper Close