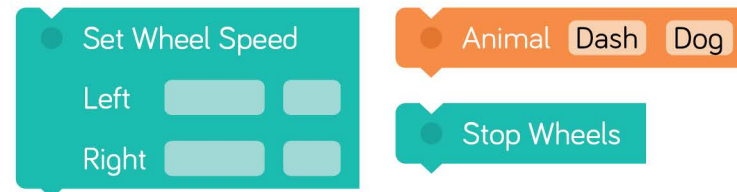# Dog Trainer

Dash is acting like a puppy and you are the trainer.
Train Dash to turn in a circle!

wonder workshop

1. Create a **function** to teach Dash to drive in a **circle**. Give the function a name (such as **FCircle**).

Function **FCircle**

2. Put a **Set Wheel Speed** block, a **sound** block, and a **Stop Wheels** block **inside** the **function**.

Set Wheel Speed
Left
Right

Animal **Dash** **Dog**

Stop Wheels

3. Under the **When Start** block, **Call** the **Circle Function**.

Call **FCircle**

4. Add some **lights** and **sounds** to give Dash praise for doing a good job!

5. Then **Call** the **Circle Function** again so that Dash gets more practice.

Call **Function**

Dog Trainer

Time: 10-15 minutes

Hints

- To name a function, tap on the name, erase the word "Function," and add your own title. The "F" in Function does not delete, so all your function names will begin with an "F."

- Set each wheel at a different speed in order to get Dash to spin in a circle.

- To choose which function to call, tap on the **Call** block and select the function you want to use from the menu.

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   Function FCircle

2. Put a **Set Wheel Speed** block, a **sound** block, and a **Stop Wheels** block **inside** the **function**.

   Set Wheel Speed
   Left
   Right

   Animal Dash Dog
   Stop Wheels

3. Under the **When Start** block, **Call** the **Circle Function**.

   Call FCircle

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   Call Function

Suggested Solution:
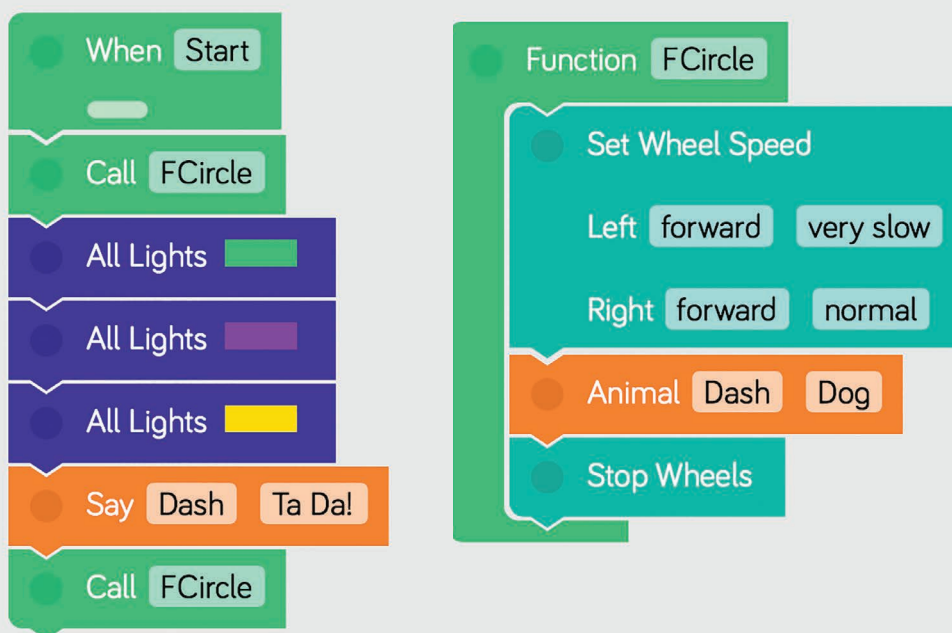
Discussion Questions

1. A **function** is a coding shortcut. Instead of writing the entire code sequence each time you want to use it, you can create a function. Whenever you're ready to use the coding sequence, just use the **Call** block. When is it helpful to use a function instead of a **Repeat** or **When** block?

2. What other tricks would you like Dash to perform? What kind of **functions** would you need to make for each trick? What blocks would you use?

Cross-Curricular Connections

MATH

- Have students add functions that make Dash turn 5 full circles. Then have students try making Dash turn 10 full circles. (CCSS.MATH.4.MD.C.5.A)

- Make Dash's trick more complicated by using the **Set Wheel Speed** and **Stop Wheel** blocks and having Dash turn a specific number of degrees. (CCSS.MATH.4.MD.C.5.A)

ELA

- Have students research techniques used to train two different animals. Have them write a composition comparing and contrasting the techniques. Then have them write a function to demonstrate Dash completing a trick after successful training techniques had been used. Finally, have students write a different function showing how Dash would complete a trick if the training techniques used were unsuccessful. (CCSS.ELA.W.4.2)

NOTES:

Tricks Galore!

As a trainer, you are responsible for teaching a variety of tricks. Teach Dash two different tricks.

1. Dash needs to learn more tricks! Create **2** new **functions**.

Function FSpeak   Function FGuard

2. Use **sound** blocks to make a function that teaches Dash to **speak**.

Say ☐ ☐

3. Use **sound**, **light**, and **drive** blocks to make a function that teaches Dash to **protect** you with loud noises, flashing lights, and brave moves.

Animal ☐ ☐   All Lights ▬

Forward ☐ ☐

4. To train Dash to do the tricks, **call** each **function** at least **3 times**. Practice makes perfect!
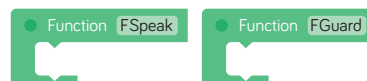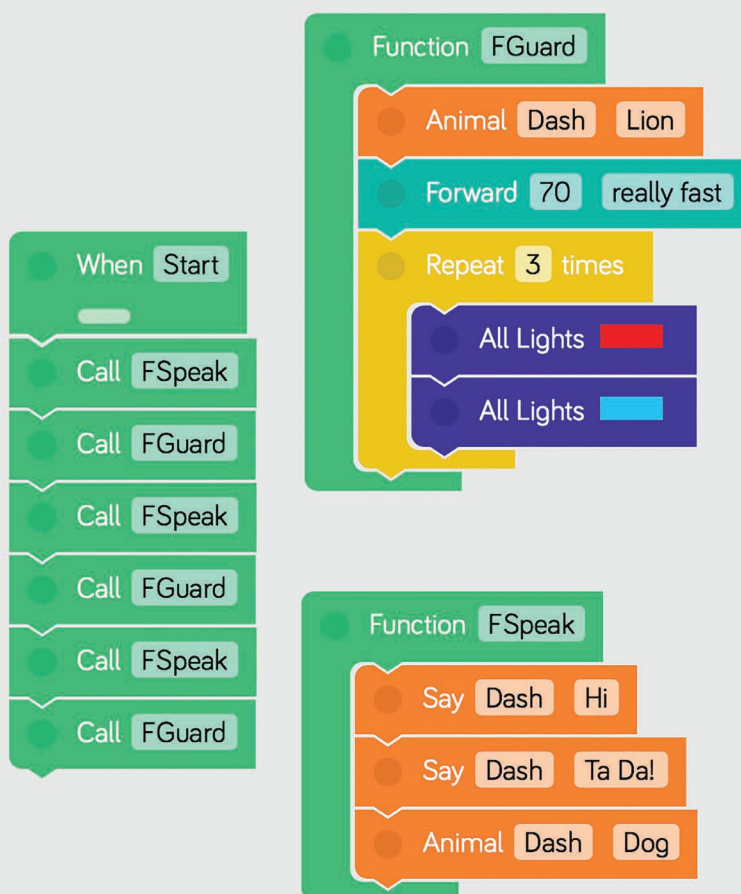
Tricks Galore

Time: 20-25 minutes

Hints

- Sometimes Dash likes to be funny and do the unexpected. When you program the **Speak Function**, have Dash speak words in addition to barking.

- To make Dash's lights flash, add a **Repeat** block inside the **Function** block.

Suggested Solution:

Discussion Questions

1. What would this program look like if you did not use functions?

2. How could you teach Dash a third or fourth trick? Would this be difficult or easy to do?

Cross-Curricular Connections

MATH

- Have students calculate the number of centimeters Dash travels during this challenge. Then have them change the number of centimeters Dash drives in the **Function Guard** block and solve the equation again. (CCSS.MATH.4.NBT.A.1)

ELA

- Have students record sentences using sound blocks and include them in a function to train Dash about the differences between to, too, and two. (E.g., He went <u>to</u> the pet store. I went there <u>too</u>. We got <u>two</u> treats for Dash.) Have them write another function to help Dash learn about the differences between there, their, and they're. (CCSS.ELA.L.4.1.G)
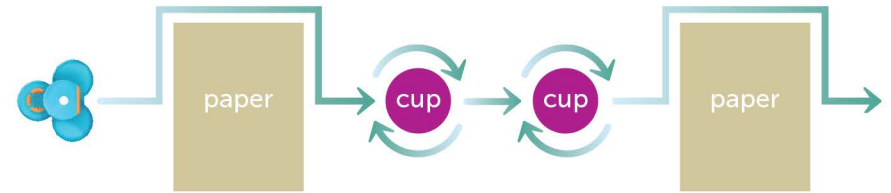
NOTES:

Obstacle Course!

Many animal trainers challenge their pets by having them go through obstacle courses. Now it's Dash's turn!

wonder workshop

Materials: 2 sheets of paper, 2 cups, tape, ruler

1. Use **cups** and **paper** to set up **4 obstacles**. Place the obstacles **30 cm apart** and set Dash **in front of** them. Use **tape** to mark each obstacle's location and Dash's starting spot.

2. Program Dash to go through the obstacle course using **2 functions**—one for each obstacle type.

   Hint: You will need to **call** each function **multiple times**.

   BONUS Add more obstacles to the course or change the order of the obstacles.
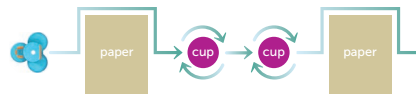
Obstacle Course!

Time: 50-60 minutes

Hints

- Have Dash move slowly and in small increments to get around each circle.

- You might need to add **Drive** and **Turn** blocks between functions to get Dash to the proper starting point for each obstacle.

- Since the functions are already written, it's easy to add more of the same obstacles to your course in any order you choose.

E | 3.6 | Functions

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Suggested Solution: