wonder workshop

dash challenge cards

Spaceship Spinout! (C2.1-2.3) : Teacher Packet

In this packet, we've included resources that will help you and your students as they independently complete the **Spaceship Spinout card** set:

- **Challenge Cards**: a set of 3 **Challenge Cards** for students to practice coding concepts
- **Solution Guides**: hints, suggestions, discussion questions, and cross curricular extension activities for each card
- **Worksheets and Resources**: implementation strategies, planning/reflection worksheets for students, and an evaluation worksheet

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Spaceship Spinout!

Dash's spaceship is spinning out of control!

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1. First, have Dash's spaceship **spin left 3 times**.

2. Dash knows something isn't right!

3. Now have Dash's spaceship **spin right 3 times**.

What can Dash do to get control of the spaceship?

Spaceship Spinout!

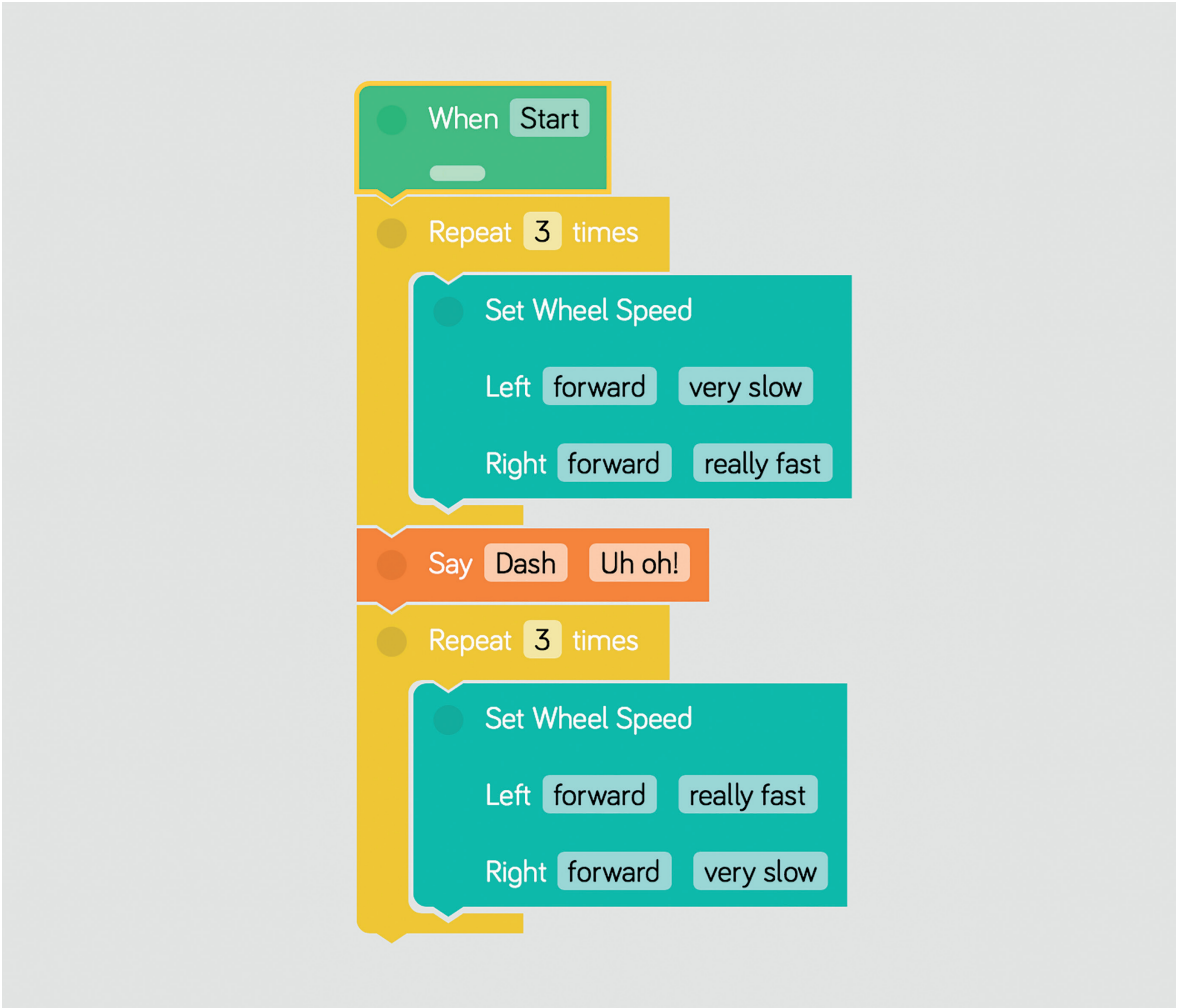
Time: 10 minutes

Hints

- To get Dash to turn in a circle, the **left** and **right wheel speeds** must be different. Tap on the **Set Wheel Speed** block and use the dials on the bottom to set the speed of the left and right wheels.
- To turn left, the right wheel needs to be faster than the left wheel in the **Set Wheel Speed** block. To turn right, the left wheel needs to be faster than the right wheel.

Suggested Solution:

Project Key: MJ2D



Discussion Questions

1. What would happen if the left and right wheels were going at the same speed? What would happen if one wheel were moving forward and one wheel were moving backward?

2. How could you change the program so that Dash spins without using the **Set Wheel Speed** block? How many blocks would you need to use so that Dash spins in a full circle in each loop?

Cross-Curricular Connections

MATH

- Have students run the program and count the number of circles that Dash makes to the left and right. Then have them represent the results as fractions (e.g., 3 and a half circles). (CCSS.MATH.2.G.A.3)

- Have students change the number of repeats in the program (e.g., Repeat 2 times). Then have them record the number of circles that Dash makes with the new settings. Have students repeat this process several times. Finally, have students represent their results with a picture graph or bar graph. (CCSS.MATH.2.MD.D.10)

ELA

- Have students write an opinion piece about whether they think Dash should try to stop the spaceship from spinning, call for help, or jump out of the spaceship. Encourage them to provide reasons for their arguments. (E.g., "Dash should call for help because it's safer than jumping out of the spaceship and other people might know what to do to stop the spaceship.") (CCSS.ELA.W.2.1)

- Have students write dialogue for Dash to say during the beginning, middle, and end of the program. (E.g., "Whoa! What's going on?" or "Help! This is crazy!") Then have them use **My Sounds** blocks to record the dialogue and add it to the program. (CCSS.ELA.W.2.3)

NOTES:

Help, help, help!

Dash's spaceship is STILL spinning out of control! It's time to call for help!

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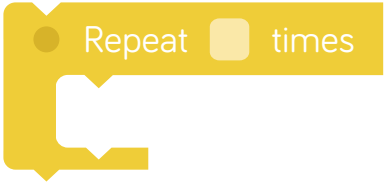
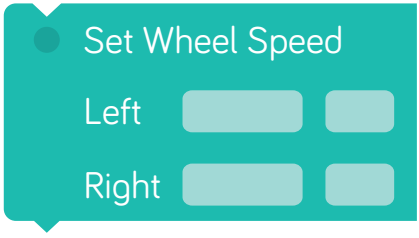
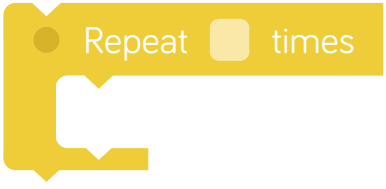
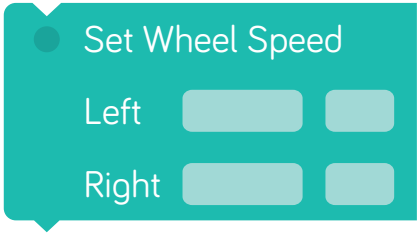
1. Dash's spaceship is getting worse! First, have the spaceship **spin left 5 times**.





2. Then have the spaceship **spin right 5 times**.





3. After **each spin**, have Dash **call out** for help!

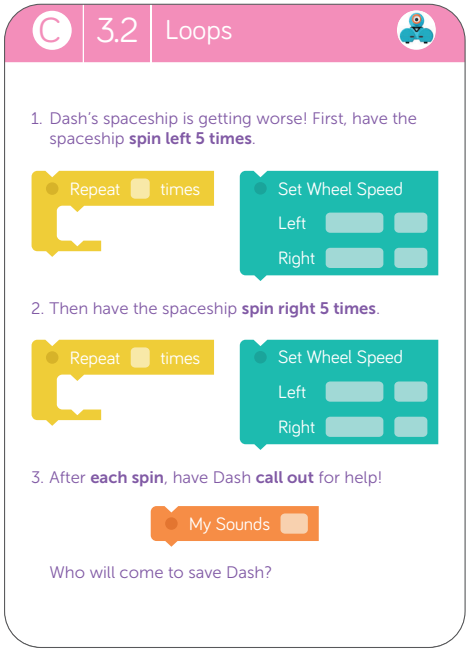
Who will come to save Dash?

Help, help, help!

Time: 10 minutes

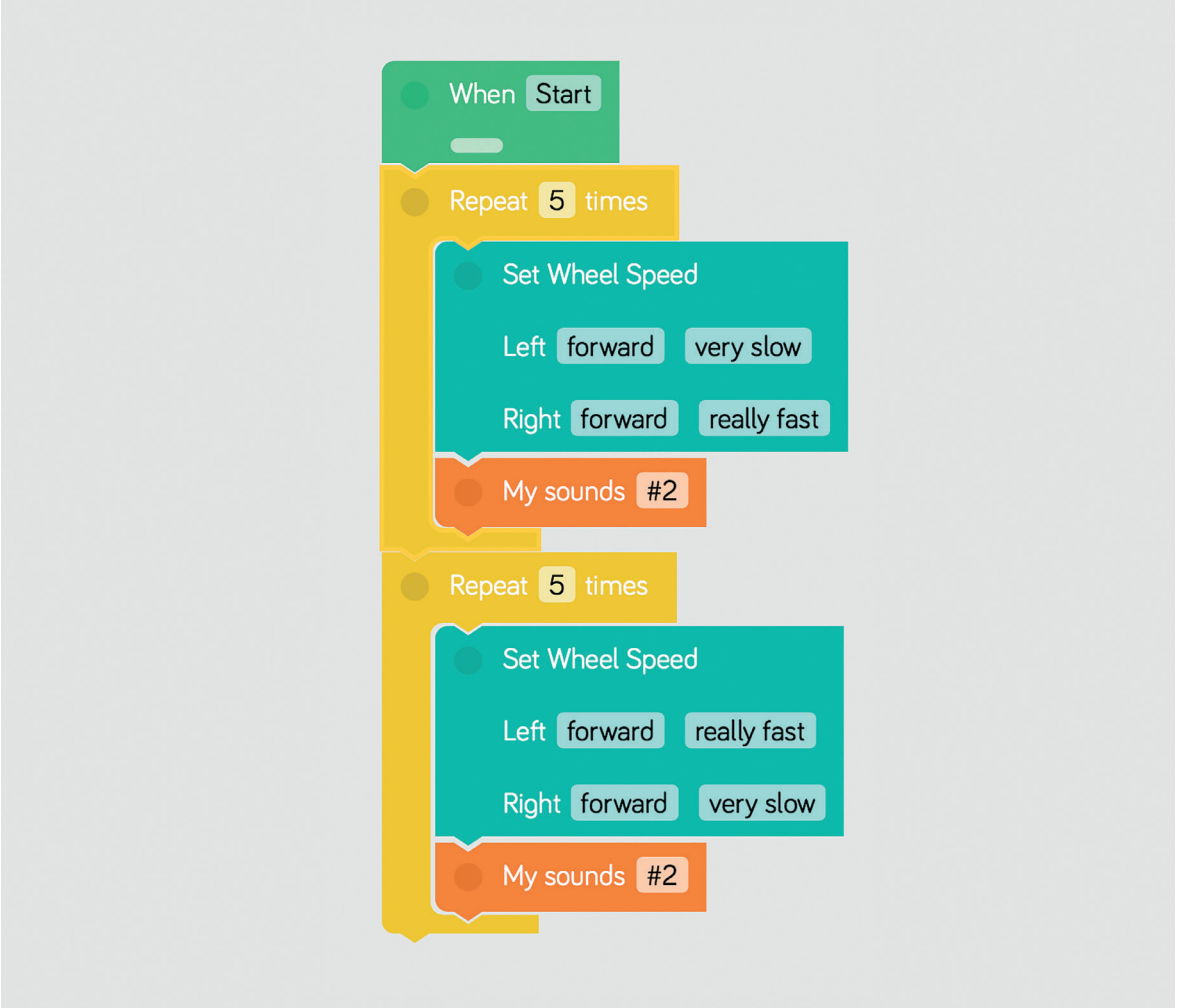
Hints

- To get Dash to turn in a circle, the **left** and **right wheel speeds** must be different. Tap on the **Set Wheel Speed** block and use the dials on the bottom to set the speed of the left and right wheels.
- To turn left, the right wheel needs to be faster than the left wheel in the **Set Wheel Speed** block. To turn right, the left wheel needs to be faster than the right wheel.
- Put a **sound** block inside each **Repeat** block to make Dash call out for help after each spin.



Suggested Solution:

Project Key: F6N2



Discussion Questions

1. What would happen if the left and right wheels were going at the same speed? What would happen if one wheel were moving forward and one wheel were moving backward?

2. How could Dash use lights to get help? How would you change the program to add the lights?

Cross-Curricular Connections

MATH

- Have students run the program and count the number of circles that Dash makes to the left and right. Then have them represent the results as fractions (e.g., 3 and a half circles). (CCSS.MATH.2.G.A.3)

- Have students change the number of repeats in the program (e.g., Repeat 2 times). Then have them record the number of circles that Dash makes with the new settings. Have students repeat this process several times. Finally, have students represent their results with a picture graph or bar graph. (CCSS.MATH.2.MD.D.10)

ELA

- Have students devise a way to save Dash from the spinning spaceship (e.g., a robotic arm). Have them write a paragraph describing their idea and explaining the reasoning behind it, using supporting facts and details. (CCSS.ELA.W.2.2)

- Have students write a narrative about how Dash ended up on a broken spaceship. Encourage students to include descriptive details, such as how Dash found the spaceship and/or what made the spaceship spin out of control. (CCSS.ELA.W.2.3)

NOTES:

Robot Rescue!

It's time to save the day!
Let's help stop Dash's
spinning spaceship!

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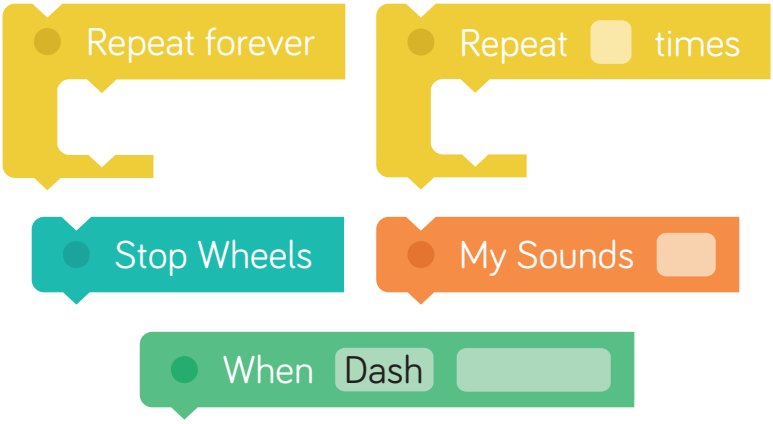
1. First, program Dash to **spin forever**.
2. Then have Dash **call out** for help after **each spin**.
3. **When** Dash is **picked up**, 

   have Dash **stop the wheels** and **sigh 3 times**.

Hint: You may need some of these blocks:



Hurray! Dash is saved!

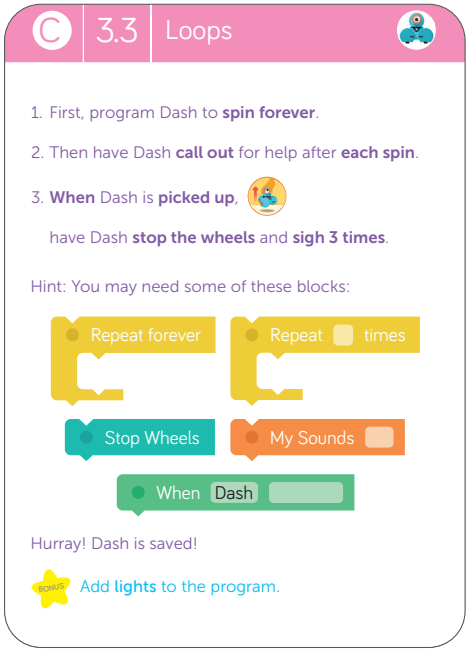
BONUS Add **lights** to the program.

Robot Rescue!

Time: 15 minutes

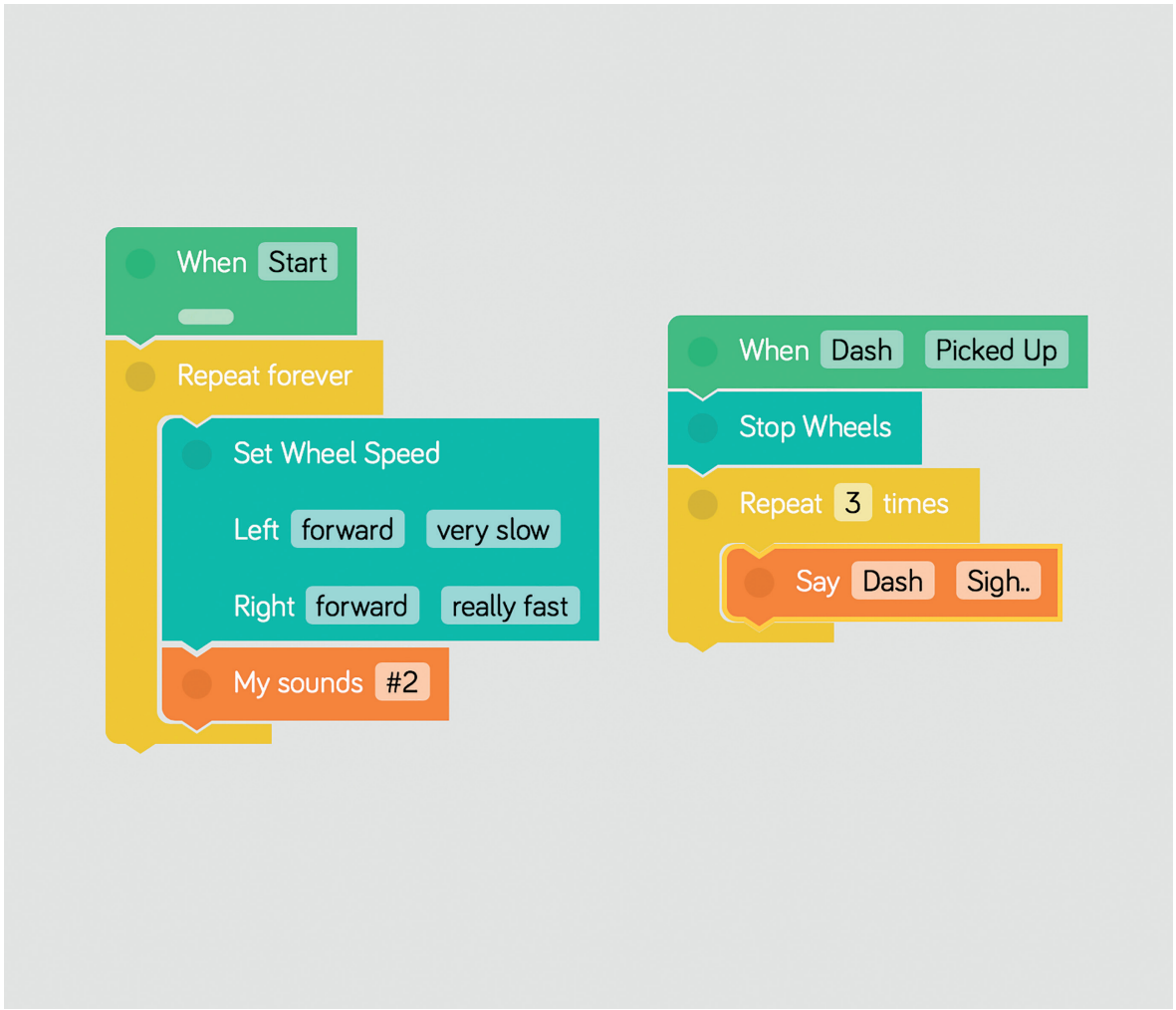
Hints

- For this program, you will need **2 different repeat** blocks. When do you need a **Repeat Forever** block and when do you need a **Repeat 3 Times** block?
- The **When** block helps Dash tell when something happens (e.g., such as being picked up). What should happen after Dash is picked up? What blocks do you need to put under the **When** block?
- To make sure Dash calls out for help after each spin, put a **sound** block inside the **Repeat Forever** block.



Suggested Solution:

Project Key: LUJ4



Discussion Questions

1. Why do you need to use the **Stop Wheels** block after Dash is picked up? How would you use the **Stop Wheels** block in other programs?

2. In this program, you needed **2 different repeat** blocks. Why couldn't you use the same **repeat** block? What would happen if both **repeat** blocks were **Repeat Forever** blocks?

Cross-Curricular Connections

MATH

- Have students create a number line from 0 to 30. Then have student volunteers stand on one side of the room and place Dash on the opposite side. Start the program and have student volunteers take turns racing to pick up Dash as quickly as possible. For each attempt, have the rest of the group/class count the number of times Dash makes full circles before being picked up. Have students record the results on the number line. (CCSS.MATH.2.MD.B.6)

ELA

- Have students write a narrative about what Dash does after being picked up and saved from the spinning spaceship. Does Dash go home? Does Dash fix the spaceship? Encourage students to use descriptive details. (CCSS.ELA.W.2.3)

NOTES:

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Worksheets & Resources

In this section, you will find the following worksheets/resources:

- **Challenge Card Tips & Tricks**
- **Planning Worksheets**
- **Reflection Worksheets**
- **Troubleshooting Strategies**
- **Problem Solving & Debugging Strategies**
- **Evaluation Rubric**
- **Glossary**

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Challenge Card Tips & Tricks

Determine Team Roles

Swap roles with your teammates for each challenge. Team roles include lead programmer, robot wrangler, and documentarian.

Plan Your Path

Draw out the path you want Dash to follow. Then plan out the blocks you'll need. You can also get up and walk the path that you think Dash should take.

Mark Your Spots

Use tape to mark Dash's starting spot and the location of any obstacles/objects.

Go Back to Start

Always put Dash back at the starting spot before playing a program again.

Use the When Start Block

Place your blocks under the **When Start** block. The **When Start** block should always be on your screen.

Think in Centimeters

Dash moves in centimeters. A centimeter is about the width of your finger.

Check Off the Steps

Use a dry erase marker to check off each step as you complete it. Make sure you erase the marks after you're done.

Help Your Robots Hear You

If the classroom is noisy, use the **Hear Clap** cue instead of the **Hear Voice** cue. Ask the teacher if you may try out your program with Dash and/or Dot outside or in the hallway.

Set a Time Limit

Give yourself or your team a set amount of time in which to complete the challenge

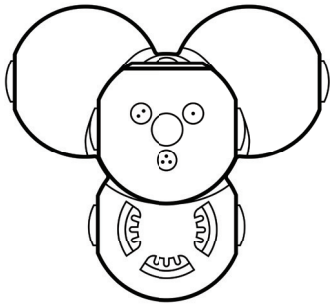
Dash Planning Worksheet

Name(s): _____ Date: _____

Coding Level: _____ Card #: _____

What do you want Dash to do?

Draw out the steps of the challenge or write a few sentences describing your goal.



General Planning Worksheet

Name(s): _____ Date: _____

Coding Level: _____ Card #: _____

1. What do you want Dash to do?

Draw out the steps of the challenge or write a few sentences describing your goal.

2. What will you do to achieve your solution?

What will each team member do? What steps will you need to take? What blocks will you use?

Reflection Worksheet

Name(s): _____ Date: _____

Coding Level: _____ Card #: _____

1. What did Dash do when you ran your program?

2. Did you make any mistakes? If so, how did you fix them?

Advanced Reflection Worksheet

Write a reflection entry in your Wonder Journal. Try to answer these questions as part of your reflection:

Results

- What did Dash do when you ran your program?
- Did you make any mistakes? If so, how did you fix them?

Connections

- What did you like the most about this challenge? Why?
- What was the most difficult part of the challenge? What did you learn from it?

Next Steps

- If you had more time, how would you change or add to your code?
- What are you planning to do next? Will you try another Challenge Card or start a new coding project?

Troubleshooting

If your program is not running correctly . . .

- Check if Dash is turned on.
- Make sure Dash is connected to the app.
- Make sure your blocks are connected to the **When Start** block.
- Try restarting the app.

If Dash is disconnecting . . .

- Turn off the robot and turn it on again. Then reconnect the robot to the app.
- Press play and then press stop to make the robot reset.
- Try charging the robot.

Three, then me!

- Ask or get help from three of your classmates. If you still need help, then ask the teacher.

Problem Solving & Debugging

Break down the challenge

- What do you need for the challenge? Which robots? Which materials and/or accessories?
- What is Dash supposed to do?
- Have you solved similar challenges to this one?
- Focus on one step at a time.

Plan your solution

- Draw a picture or make a list of what you want Dash to do.
- What blocks will you need to complete the challenge?
- Are there any hints on the card that can help?
- Use tape to mark Dash's starting point.
- Use tape to mark each obstacle's location.

Test Your Code

- Does your code complete the challenge?
- If not, play your code again. Watch as the program goes through each block. Do you notice any mistakes?
- Do you need to change, delete, or add more blocks?
- Are your blocks telling Dash to do something when you actually want Dot to do something?

Improve your work

- Ask another student or group to check your program.
- Is there an easier way to complete the challenge? Can you use fewer blocks?
- How can you improve your program? Could you add more lights, sounds, or other customizations?

Evaluation Rubric

	Programming	Reflection & Documentation	Collaboration & Communication	Creativity
1 Novice	Completed part of the activity and needed assistance throughout the process.	Use a journal, worksheets, and/or multimedia tools (such as video and images) to document some of the activity results.	Participated little or not at all in classroom discussions. Demonstrated little to no cooperation with group members during the activity.	Demonstrated limited creativity in developing ways to complete the activity.
2 Developing	Used the targeted coding concept(s) to complete the activity with some assistance.	Incorporated some target vocabulary and some thoughtful reflection on the coding process while documenting activity results using journal entries and multimedia tools.	Occasionally participated in classroom discussions and cooperated somewhat with group members.	Developed a few different ways to complete the activity, but the solution was not particularly creative.
3 Proficient	Used the targeted coding concept(s) to complete the activity without assitance.	Incorporated target vocabulary and reflection on the coding process. Clearly documented activity results using journal entries and multimedia tools.	Actively participated in classroom discussions. Answered questions and cooperated with group members during the activity.	Applied the iterative process to develop creative and unexpected solutions for the activity.
4 Exemplary	Used the targeted coding concept(s) to complete the activity without assistance. Enhanced the solution with more efficient (e.g., fewer blocks) and/or advanced features (e.g., lights, sounds) in the code.	Incorporated advanced target vocabulary and in-depth reflection on the coding process. Thoroughly and clearly documented and presented activity results.	Actively participated in classroom discussions and cooperated with group members. Gave constructive feedback to others and effectively incorporated feedback from others.	Went above and beyond to develop, revise, and execute imaginative solutions for the activity.