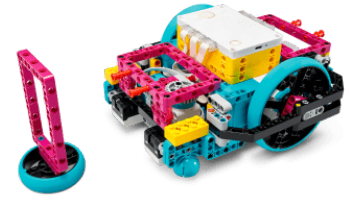


My Code, Our Program

Use My Blocks to write organized programs that'll help the Advanced Driving Base perform quickly and reliably.



🕒 90–120 min. 📦 Advanced 🎒 Grades 6–8

Teacher Support

Key objectives

Students will:

- Use of My Blocks to help organize their programs
- Give a presentation to their coach in which they clearly describe how their program works

Things you will need

[LEGO® Education SPIKE™ Prime Set](#)

[LEGO® Education SPIKE Prime Expansion Set](#)

Additional resources

[Building instructions](#)

[Python Programs](#)

Educational standards

Common Core

CCSS.MATH.CONTENT.7.G.B.4

Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.

CCSS.ELA-LITERACY.W.6.1

Write arguments to support claims with clear reasons and relevant evidence.

Lesson plan

1. Prepare

- Read through the student material in the LEGO® Education SPIKE™ App.
- To complete this lesson, students will need to have built the Advanced Driving Base model

2. Engage (10 Min.)

- Use the ideas in the *Ignite a Discussion* section below to engage your students in a discussion related to this lesson.
- Use the video to explain the lesson.

3. Explore (30 Min.)

- Have your students work in pairs to build the two markers.
- Ask them to try out the My Block example program.
- Have them create their own My Block to make their Driving Base drive in a square.

4. Explain (10 Min.)

- Facilitate a discussion about how to use My Blocks in a program.
- Discuss why it's important for all team members to understand how the program works.

5. Expand (40 Min.)

- Ask your students to create another My Block, this time making their Driving Base drive in a circle.
- Ask them to write a My Block that'll make their Driving Base move in a triangle. Encourage them to place the markers and to try and navigate around them using the different shapes.
- Don't forget to leave some time for cleanup.

6. Evaluate

- Give feedback on each student's performance.
 - You can use the assessment rubrics provided to simplify the process.
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Ignite a Discussion

Spend some time watching videos of competition robots in action and try to identify best practices. Use these questions to engage your students in a discussion about successful teams and effective programming methods in robotics competitions:

- Why do competition robots complete tasks in a specific order?
- Why do the robots return to the start position area in between clusters of two or more missions?
- What makes an effective program in a robotics competition?

Have your students watch this video to see what they're about to do.

Building Tips

Using the Markers

Use the Advanced Driving Base model and two markers to practice moving in various shapes. Let your students decide how big or small each shape should be.

Coding Tips

Main Program

Possible Solution

Differentiation

Simplify this lesson by:

- Explaining how to create and use My Blocks

Take this lesson to the next level by:

- Asking your students to program their Driving Base to use the Gyro Sensor to drive in a triangle
 - Creating a complicated path and challenging the teams to see how fast they can create a program to cross it
 - Practicing on an official competition table with various paths, taking into consideration that the Driving Base must stay within the limits of the field area
-

Assessment Opportunities

Teacher Observation Checklist

Create a scale that matches your needs, for example:

1. Partially accomplished
2. Fully accomplished

3. Overachieved

Use the following success criteria to evaluate your students' progress:

- Students can construct a My Blocks program.
- Students understand how My Blocks can be used to tidy up their programs and make them easier to manage.
- Students understand that My Blocks can be quickly and effectively reordered and repurposed during competitions.

Self-Assessment

Have each student choose the brick that they feel best represents their performance.

- Blue: I've created a My Block.
- Yellow: I've created two or more My Blocks.
- Violet: I've created a range of programs using My Blocks and was able to quickly reorder them to change the actions of our Driving Base.

Peer-Assessment

Encourage your students to provide feedback to others by:

- Having one student score the performance of another using the colored brick scale above.
 - Asking them to present constructive feedback to each other so that they can improve their group's performance during the next lesson.
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Language Arts Extension

To incorporate language arts skills development:

- Have your students prepare and deliver a presentation about how they programmed their Advanced Driving Base and how they've used My Blocks to help manage and simplify their programs.

Note: This will make for a longer lesson.

Math Extension

To incorporate math skills development:

When calculating the distances with the Driving Base:

- Drive forward for one second, one rotation, or number of degrees. Use this as the basis for estimating the total distance based on the distance traveled.

basis for estimating the total distance based on the distance traveled.

- Calculate the circumference of the wheel and use this to measure distance (circumference = $\pi \times \text{diameter}$, or circumference = $\pi \times 2 \times \text{radius}$)

Note: This will make for a longer lesson.

Career Links

Students who enjoyed this lesson might be interested in exploring these careers pathways:

- Information Technology (Computer Programming)
- Information Technology (Game Programming)
- Information Technology (IT Applications)