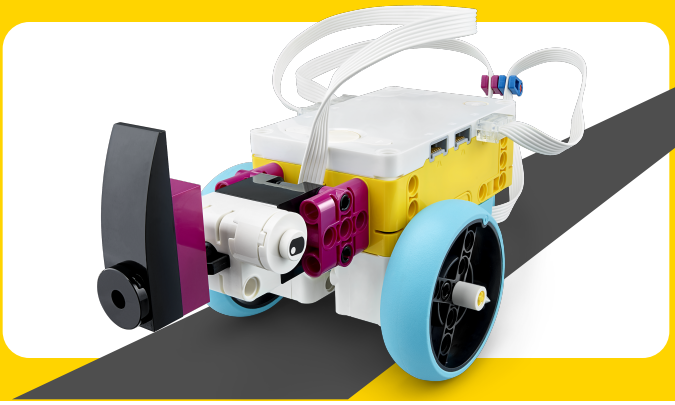
Navigate Maps With LEGO® Education SPIKE™ Prime!

World Play Day

Explorers of the past used stars to guide them on their journeys and created their own maps as they traveled the world. Today we use satellites, GPS (global positioning systems), and other advanced technologies to develop detailed maps of our planet.

HERE'S YOUR CHALLENGE

Create a map to represent a location. Use components from SPIKE Prime to build a base and program it to navigate the map.



01/05 Prepare

Before you start building, consider the following:

- What types of maps are you familiar with and what is the purpose of each type?
- What are different places where you might use a map?
- What are important components of a map that help someone use it correctly?
- How are important locations or areas of interest indicated on maps?
- What would you consider when programming your SPIKE Prime base to navigate the map successfully?

In this lesson, you will use the LEGO® Education SPIKE™ Prime set to construct the Driving Base and program it to navigate the map. Use the Training Camp lessons from the Competition Ready unit. Build your skills by exploring the Driving Around, Playing with Objects, and Reacting to Lines lessons to prepare for this map navigation activity.

02/05 Plan

Before you start creating, determine what materials you have available and how you might use them:

- How will you create your map and what space do you have available? Consider using chart paper, masking tape, or erasable markers depending on the space available.
- What will your map represent? (e.g., your school, your town, a country you would like to visit, etc.)
- What features will you include to help users navigate and understand the map?
- What important locations will you include in your map and how will you represent them?
- Where will your Driving Base start and end on the map? Will you include important locations in the navigation path?

VOCABULARY

Map | Scale | Program | Navigate

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03/05 Create

Start by creating your map. Draw, outline, or mark the map in a place that is convenient. Determine the path you intend for your Driving Base to navigate. Build and code the Driving Base to successfully navigate the map.

04/05 Test

Run the code for your Driving Base. Did your code allow for the Driving Base to successfully navigate your intended path on the map? If not, iterate on the code and make changes to enable the Driving Base to follow the path seamlessly and with precision. If you were successful, consider ways to enhance your program. Can you add to your program to play a sound or move in a specific way when the Driving Base reaches certain important locations on the map? How could you include sensors in your build to enhance the way it navigates through the map?

> **Iterate on the code and make changes to enable the Driving Base to follow the path seamlessly and with precision.**

05/05 Share

When you are confident with your navigation, share your map and program with a teacher, classmate, friend, or family member. Explain to them the choices you made during the development of your program. Point out the features of your map and share any knowledge you have about the map location you chose to create.

Bonus Ideas

Looking to extend your learning?

- Check out Going the Distance and Out of Order lessons for LEGO® brick builds you can program to navigate mazes.
- Dive into math by making a scale map with precision. Code your robot to navigate the map using the scale to determine the relationship between wheel rotations and distance on the map. Develop math skills with ratios, unit conversions, and precise navigation.