

Code Using Floor Robots

Teacher Workbook



Your students will:

Learn how algorithms work using floor robots and hands on materials

Equipment you will need:

- Floor robots
- Printouts of the map for the floor robots
- Ji Tap accounts

Time needed:

1 - 2 lessons

Your students will learn:

In this lesson, your students will learn about basic **algorithms** by moving the floor robots across maps of Israel. They will use **logical reasoning** and **decomposition** to look for patterns within the code. Older students will move from using arrows for direction to using letters to represent the **direction** they want the car to move.

Coding concepts and computational thinking:

Algorithm: A list of steps to follow in order to complete a task

Debug: Finding and fixing problems in the algorithm

Logical reasoning: Being able to explain how certain parts of algorithms work

Decomposition: Breaking down the algorithm into parts so that it is easier to understand and explain

Mathematic links:

Direction: In this activity, students will look at the direction the car is facing and be able to predict movement using their knowledge of direction

Geography links:

Reading maps: Students will begin to read maps and understand where cities are placed on a map of Israel

Israel: Learn about the cities of Israel and where they are on a map

Lesson:

Introduction:

Start by showing the students Slide 1 in the **Teacher PPT**. Can they predict (for Kindergarten, with help) where the car is travelling to?

Make sure that children are looking at the direction the car is facing as this is the direction that the car will move.

NOTE: When the car turns it doesn't move spaces. It turns in a direction and stays in the same box.

Students work through page one of the **Students Workbook** to find out where the car has moved to and to see if they are right.

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On the next slide, students can see where the car has moved to and will be able to see that it has moved to Ein Gedi/Jerusalem.

The next slide asks the students to work out a way to get to Mt Hermon. They can do this in their workbooks. Once they are done, show slide 5. Which way did most of the students choose? Which way is faster? Which way would they rather take?

Part One:

Students work together in groups/with a partner to follow the **Student Workbook** puzzles 3 - 6. These can be tested using floor robots if you have available.

Extension: Before they work through puzzle 7, show slide 6 on the **Teacher PPT**. Can they use letters to simplify their code instead of using arrows?

Extension: Can the students plot their own course from point A to point B?

Part Two:

In this lesson, as the students are now familiar with the map of Israel, students can spend time exploring the cities that their car has 'travelled to'.

These games can be played on [Ji Tap](#) to show children different places in Israel.

[Dead Sea Israel](#)

[Mechane Yehudah Israel](#)

[Israel in Hebrew](#)