

## Course: World of Computing I Module: Introduction to Programming with Karel the Dog



### Lesson 1.2: More Basic Karel

<https://codehs.com/course/2343/lesson/1.2>

<b>Description</b>	<p>In this lesson, students build on their understanding of how Karel the Dog can be given a set of instructions to perform a simple task.</p>
<b>Objective</b>	<p>Students will be able to:</p> <ul style="list-style-type: none"> <li>• Recognize, explain, and use the commands that Karel can be given</li> <li>• Debug and rework their code as well as someone else's code</li> </ul>
<b>Activities</b>	<p> <a href="#">1.2.1 Video: More Basic Karel</a>  <a href="#">1.2.2 Quiz: More Basic Karel Quiz</a>  <a href="#">1.2.3 Example: Tennis Ball Square</a>  <a href="#">1.2.4 Exercise: Make a Tower</a>  <a href="#">1.2.5 Exercise: Pyramid of Karel</a> </p>
<b>Prior Knowledge</b>	<ul style="list-style-type: none"> <li>• Karel's four basic commands</li> <li>• Basic understanding of the sequential order of commands</li> <li>• Proper syntax for typing commands</li> </ul>
<b>Planning Notes</b>	<ul style="list-style-type: none"> <li>• Review the slides and the exercises in the lesson.</li> <li>• Have a "prize" ready for the lesson opener activity.</li> <li>• You may start to notice a separation of achievement levels in this lesson. An optional activity is included and can be used for advanced students that may finish early.</li> </ul>
<b>Standards Addressed</b>	<p>4.1.1 [P2] (B) 5.2.1 [P3] (A, B, D)</p>
<b>Teaching and Learning Strategies</b>	<p><b>Lesson Opener:</b></p> <ul style="list-style-type: none"> <li>• Place a "prize" in one corner of the room. Have a student volunteer to be Karel and another student volunteer to be the programmer. The programmer can only use Karel's commands. Challenge the programmer to direct the computer (by talking or by writing</li> </ul>

commands on the board) to the prize in the other corner, pick up the prize and bring it back. [5-10 mins]

- Have students brainstorm and write down answers to the discussion questions listed below. Students can work individually or in groups/pairs. Have them share their responses. [5 mins]

### Activities:

- Watch the lesson video and complete the corresponding quiz. [5-10 mins]
- Let students play around with the *Tennis Ball Square* example. Encourage students to experiment with the results of writing the instructions in various order. Have students view their code in Code View to see the correct indentation and syntax. [10-15 mins]
- Complete the *Make a Tower* exercise. [5 mins]
- Complete the *Pyramid of Karel* exercise. [10-15 mins]
- (Optional) Create a poster that lists rules for programming Karel. An example could be:
  1. Always end a command with parentheses ().
  2. After the parenthesis, type a semi-colon.
  3. No spaces in a typed command
  4. Put commands in the order that you want Karel to execute them.

### Lesson Closer:

- Have students reflect and discuss their responses to the end of class discussion questions. [5 mins]

## Discussion Questions

### Beginning of Class:

- What is programming?
  - *Programming is the act of writing a series of instructions.*
- How are humans like a computer?
  - *Humans use their brain as the program that tells their body what to do. The brain is similar to a programmer and the body could be the computer.*

### End of Class:

- *Reflection:* What challenges did you face in today's exercises?
- *Reflection:* How did you overcome those challenges?
- What is it called when you fix broken code?
  - *Debugging. Challenge students to look up **why** it is called debugging.*

## Resources/Handouts

## Vocabulary

Term	Definition
<a href="#">lowerCamelCase</a>	lowerCamelCase is a naming convention where the first letter is lower case, and each subsequent start of a word is upper case.
<a href="#">World</a>	A “world” or “Karel World” is a grid that karel lives in.
<a href="#">Karel</a>	Karel is a dog who listens to your commands.
<a href="#">Command</a>	A command is an instruction you can give to Karel.

Modification: Advanced	Modification: Special Education	Modification: English Language Learners
<ul style="list-style-type: none"> <li>Encourage students to discover what else Karel can do by directing them to the DOCS tab.</li> </ul>	<ul style="list-style-type: none"> <li>Instruct students to identify the objective of the exercises by looking at the left hand side of the screen</li> <li>Provide the exercise solutions. Have students type the solution and describe step by step descriptions of what Karel does.</li> <li>Supply a printed out list of Karel’s commands. Have students circle or mark which commands Karel will perform before it is typed.</li> <li>Review the concept of north, east, west, and south.</li> <li>For the <i>Pyramid of Karel</i> exercise, shorten the assignment so that students only have to get Karel to build two towers</li> </ul>	<ul style="list-style-type: none"> <li>Provide a predefined list of vocabulary</li> <li>KWL (Know, Want to know, Learn) Chart - Computers/Computing/Karel the Dog. Pair similar students and have them share out their charts.</li> <li>Print out the concept of avenues from the <i>More Basic Karel</i> video</li> </ul>