**Course: Computer Science Explorations 2 | Module: Exploring Code with Karel**

# Lesson 1.1: Introduction to Karel

| | |
|---|---|
| **Description** | In this lesson, students will be introduced to Karel the dog and commands Karel uses to navigate and interact with Karel's world. This introductory lesson can be used as a review of concepts introduced in Karel Adventures modules. |
| **Objective** | Students will be able to:<br><br>• Identify basic syntax used in JavaScript and Karel programs<br>• Use basic commands to train or program Karel the dog<br>• Debug basic code by identifying common syntax errors |
| **Activities** | 1.1.1 Video: Introduction to Programming With Karel<br>1.1.2 Check for Understanding: Karel Commands Quiz<br>1.1.3 Example: Our First Karel Program<br>1.1.4 Video: Parentheses and Semicolons Intro<br>1.1.5 Exercise: Debug Karel's Code<br>1.1.6 Video: Debug Karel's Code<br>1.1.7 Exercise: Debug More of Karel's Code<br>1.1.8 Video: Debug More of Karel's Code<br>1.1.9 Exercise: Your First Karel Program |
| **Prior Knowledge** | • Students should be familiar with CodeHS page navigation, icons, and how it is integrated into classroom. |
| **Planning Notes** | • Provide time before lesson to have students set up student accounts and become familiar with CodeHS web navigation.<br>• Review the slides for the lesson before the start of class<br>• Decide if students will take notes in a notebook or through the "Take Notes" function on CodeHS.<br>• If students have completed the Karel Adventures modules, you may choose to proceed to the next lesson or use this lesson as a review for students.<br>• There are multiple handouts that accompanies this lesson. They can be used as in-class activities or a homework assignment. Determine how and if these handouts will be used and make the appropriate number of printouts prior to the class period. |

| | |
|---|---|
| **Standards Addressed** | |
| **Teaching and Learning Strategies** | **Lesson Opener:** <br><br> • Ask students to answer the question of "What is a computer? What is computing?" Pair share what the difference is between a computer and computing. Have them look around the room and write down all the computers that they see. Discuss with class if a dog is a computer and what would make it one based on their definition of what a computer is. [5-10 min] <br> • Feel free to have students complete the Pretest handout before the start of the class to measure student progress. [5-10 min] <br><br> **Activities:** <br><br> • Have students log into CodeHS with their usernames and passwords. It is suggested that a printed copy of student login info be handy in case some students forget their credentials. [5 min] <br> • Demonstrate to students an e-tour of the class page that will be used throughout the course. [5-10 min] <br>     ○ Consider having students complete the [Scavenger Hunt](#) activity that can be found at codehs.com/weekzero to get them familiar with the site and how to navigate around it effectively. <br> • Allow class to watch the introductory video *Introduction to Programming with Karel*. If needed students can take notes for later reference. Students should then complete the corresponding quiz. [5-10 min] <br> • Direct students to view the example *Our First Karel Program*. Tell students to note how each command is written. [5 min] <br> • Watch the *Parentheses and Semicolons Intro* video to review syntax. [5 min] <br> • As instructed in the video, have students complete *Debug Karel's Code* and watch the follow-up video or present the slides for *Debug Karel's Code*. [5 min] <br> • Complete the *Debug More of Karel's Code* exercise and watch the follow-up video *Debug More of Karel's Code* or present the slides. [5 min] <br> • Complete *Your First Karel Program*. Encourage students to experiment with the results of writing the instructions in various order with *Your First Karel Program*. In addition, encourage students to experiment with what happens if commands are capitalized, parenthesis are left off, or semi-colons not present. If there are students that are experiencing trouble with the program, allow them to examine a working program from a fellow student and discover their error. [5-10 min] <br><br> **Lesson Closer:** <br><br> • Have students respond to the discussion questions as a class. [5 min] <br> • Give students the *Karel Commands* handout and have them hand it in as an exit ticket, or for homework. |

| | |
|---|---|
| **Discussion Questions** | **Beginning of Class:**<br><br>• What is a computer? What is computing?<br>   ○ *A computer is a device that performs operations based on instructions provided to it. Computing is the process of using a computer to complete goal oriented tasks.*<br>• How are instructions used to execute simple tasks?<br>   ○ *Students will likely provide examples. Direct them to think about how teachers provide instructions daily to students in order to get them to do simple things (pick up a pen, enter the classroom quietly, etc).*<br><br>**End of Class:**<br><br>• What can Karel teach us about computing?<br>   ○ *Answers will vary. Karel is a computer, thus, anything that Karel does will give us insights into how computers follow directions, and how humans are responsible for making computing possible.*<br>• What are some of the different commands that Karl knows how to do?<br>   ○ `move();, takeBall();, putBall();, turnLeft();` |
| **Resources/Handouts** | Karel Commands (Student)<br><br>Karel Commands (Teacher)<br><br>Meet Karel the Dog<br><br>Pretest: Student Mindsets<br><br>Interpreting Pretest Results: JavaScript |

## Vocabulary

| Term | Definition |
|---|---|
| Karel | Karel is a dog who listens to your commands. |
| Command | A command is an instruction you can give to Karel. |
| Debugging | Debugging is fixing a problem in your code. |

| Programming Language | A programming language is any set of rules that converts strings, or graphical program elements in the case of visual programming languages, to various kinds of machine code output. |
| --- | --- |

| Modification: Advanced | Modification: Special Education | Modification: English Language Learners |
| --- | --- | --- |
| • Encourage students to discover what else Karel can do by directing them to the DOCS tab. | • Instruct students to identify the objective of the exercises by looking at the left hand side of the screen<br>• Provide the exercise solutions. Have students type the solution and describe step by step descriptions of what Karel does.<br>• Printed out list of Karel's commands. Have student circle or mark which commands Karel will perform before it is typed.<br>• Review the concept of north, east, west, and south. | • Provide a predefined list of vocabulary<br>• KWL Chart - Computers/Computing/Karel the Dog. Pair similar students and have them share out their charts. Homework can be modified so that the students fill out the What I Learned section for homework. |