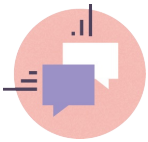
Coding arguments
Unplugged



OVERVIEW

Introduce arguments by having kids do a very repetitive task.

OBJECTIVES

1. Students will be able to explain the advantage of using arguments
2. Students will be able to call functions with an argument

AGENDA

Length: 45 minutes

1. Warm-up - Large pixel bot grid
2. Arguments Analogies - Explore arguments using golf swing and drill bit analogies.
3. Pixel bot challenge - Solve pixel bot challenges with arguments

VOCAB

Argument - Specific value supplied to a function call

MATERIALS

1. Lesson 10 | Warm-up worksheet
2. Lesson 10 | Worksheet 1

3. Lesson 10 | Worksheet 2
4. Laptops/Computers
5. Scratch paper grids
6. Small turtle cutout for each student
7. Magnetic turtle
8. Scratch paper grids
9. Pencils
10. Whiteboard

WARM-UP

Length: 10 minutes

Students solve a puzzle in a large pixelbot grid.

Prep:

- Draw the Pixel Bot image from Lesson 10 | Warm-up worksheet on the whiteboard
- Distribute Lesson 10 | Warm-up worksheet

Teacher Actions	Student Actions
1 Individual work: Ask students to write code to create the image from Lesson 10 | Warm-up worksheet. Remind students that this exercise is using the icon language that they learned in Lesson 1.	1 Students individually fill out the Lesson 10 | Warm-up worksheet
2 Randomly call on one student at a time to provide each next line of code.	2 If called on, students provide the next line of code.
3 Discuss what made this particular picture difficult or frustrating to code? `Possible answer: It required a lot of code because of the size of the grid.`	3 Students raise their hands to provide an answer.

GOLF SWING AND DRILL BITS

Length: 20 minutes

Explore golf swing and drill bit analogies that help students arrive at concept of parameters/arguments.

Prep: Distribute Lesson 10 | Worksheet 1

Teacher Actions	Student Actions
1 Model a golf swing for students. Show how the same golf swing is used for different clubs. Show the Lesson 10 | Worksheet 1 golf diagram on the board and walk students through it.	
2 Model using a drill for students. Show how the same drill motion is used for different drill bits. Show the Lesson 10 | Worksheet 1 drill bit diagram on the board and walk students through it.	

3 Point students' attention to Lesson 10 | Worksheet 1. Ask students to find what is similar about the two situations depicted.	3 Students look at Lesson 10 | Worksheet 1
4 Individual work: Ask students to write down an answer.	4 Students individually write down their answers on the worksheet.
5 With a partner, students discuss their findings.	5 Students get with a partner and discuss their answers.
6 As a whole class, discuss the similarities between the two situations. Answer: The process is exactly the same (the golf swing never changes; the drill and the drill motion never change), but we can customize the output by changing the inputs (golf club, drill bit).	6 Students raise their hands to offer answers.

ARGUMENTS

Length: 5 minutes

Explain how to use arguments through observation.

Prep: None

Teacher Actions	Student Actions
1 Point students back to the problem on the whiteboard from Lesson 1 | Warm-up worksheet.	
2 Tell students that the elements can use an argument. An argument is extra information to customize the output of a function. The argument goes into the space to the right of the element `Example: → 5`	
3 Ask students what they think the argument will do in	3 Students raise their hand to provide an answer.

	the case of the arrows? Answer: The number controls how many spaces to move in that direction.	
6	Ask students how adding a number next to the arrow icon relates to changing clubs in the golf swing? Answer: In both examples, the action is the same (swing the golf club, paint the square) but the input can be changed to customize the output.	6 Students raise their hand to provide an answer.
7	Solve the warm up problem while narrating the steps out loud.	7 Students observe as the teacher demonstrates how to solve the problem using arguments.

CODING WITH ARGUMENTS

Length: 10 minutes

Students use arguments to solve coding challenges.

Prep:

- Distribute Lesson 10 | Worksheet 2

Teacher Actions	Student Actions
1 Individual work: Students work on the problems on Lesson 10 | Worksheet 2. Remind students to use arguments to solve the problems more efficiently.	1 Students individually fill in their worksheet.