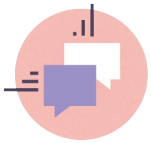
Fire Ice and Squirrels

Plugged



OVERVIEW

Students write JavaScript online in a series of increasingly difficult challenges involving maneuvering a squirrel to gather acorns, and a wizard using magic words.

OBJECTIVES

1. Students will become proficient at assembling JavaScript commands in sequence.
2. Students will become proficient at using arguments
3. Students will be able to define a string
4. Students will be able to pass a string as an argument

AGENDA

Length: 45 minutes

1. Warm-up
2. Help the squirrel
3. Introduce strings
4. Fire and ice

VOCAB

- String - A sequence of characters or words.

MATERIALS

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

UNPLUGGED WARM-UP

Length: 10 minutes

Practice writing function calls with arguments to maneuver the pixel bot.

Prep: Hand out the Lesson 9 | Unplugged Warm-up Worksheet.

Teacher Actions	Student Actions
1 Individual Work: Ask students to write the code to maneuver the squirrel to the nut in the Lesson 9 | Unplugged Warm-up Worksheet. Consider reminding students of the proper JavaScript syntax (see Elements on the worksheet).	1 Students individually fill out the Warm-up worksheet.
2 Draw the example on the whiteboard and code the solution with the students, randomly calling on one student at a time to provide each next line of code.	2 If called on, students provide the next line of code.

HELP THE SQUIRREL

Length: 15 minutes

Students write code in JavaScript on the getCoding.io platform to help the squirrel gather the acorns. Students are practicing simple sequences with arguments.

Prep: Students should have their own computers.

Teacher Actions	Student Actions
1 Ask students to browse to getcoding.io and start moving through the challenges in Passing Arguments: Squirrel Climber. Explain to the students that now the squirrel movements can take one argument - the number of squares to move.	1 Students start solving the challenges in the Space Ranger activities.
2 When students get stuck, we suggest using the Read, Write, and Debug protocols to support students. Ask students to imagine being on the Coder team from the group activities. They should try to play the roles of the writer and navigator. Then, ask students to imagine being a Bot to understand how the computer reads the code.	

INTRODUCING STRINGS

Length: 5 minutes

Gather students and introduce the concept of strings.

Prep:

- Set up projector to show Passing Arguments: Magic Words on getcoding.io
- Write examples of all of the function calls that students have used with arguments on the whiteboard

```
From pixelbots.io:
up(2)
down(3)
left(2)
right(4)

From getcoding.io:
move(4)
```

Teacher Actions	Student Actions
1 Show students the function calls on the whiteboard. Ask students what pattern they notice about the arguments they have been using. Answer: All of the arguments up until this point have been numbers.	1 Students raise their hands to offer an answer.

2 Show students Passing Arguments: Magic Words. Ask students what kind of argument is needed to cast a spell in the game. Answer: A word	2 Students raise their hands to offer an answer.
3 Explain that in programming text is a different type of data called a string. To let the computer know that a value is a string, it needs to be put inside quotation marks. Ex. `cast('fire')`	
4 As a class do the first puzzle of Passing Arguments: Magic Words. Make sure to draw attention to the quotation marks that go around the string.	

MAGIC WORDS

Length: 15 minutes

Students continue writing code in JavaScript on the getCoding.io platform for the Passing Arguments: Magic Words. Remind them that in this version, in addition to opening the gates, whenever there is a fire or ice wall, they need to cast a spell of the opposite element.

Prep: None

Teacher Actions	Student Actions
1 Ask students to resume coding individually.	1 Students resume coding