



Python with Robotics AP CSP Curriculum

More Lessons Overview

Time Required: 1 ½ weeks (does not need to be consecutive days)

Additional supplementary lessons are available to prepare students for the AP Exam. These lessons can be given any time, either before or after students complete the Create Performance Task.

Unit Outline

Algorithms (3 lessons)

The lessons use robot code to help students determine the results of an algorithm. The first lesson uses basic sequential algorithms. The second lesson uses selection with if statements and conditions. The third lesson has code segments with iteration, selection and sequencing. The lessons are curated problems from Unit 5 2018 Code.org and “Warehouse Challenge” from Amazon Future Engineers + edhesive.

The lessons are an opportunity for collaborative learning in small groups or with a partner. They are unplugged; no computer or device is required.

Lesson: Binary Numbers Applications

This lesson reviews binary numbers from Unit 1 and could follow the “Binary Numbers” lesson. Students can use their flippy-dos to convert binary and decimal numbers. The assignment has real-world applications in the form of word problems that use binary numbers. The 10 word problems all come from AP Classroom as examples of questions students could encounter during the exam. The lessons are an opportunity for collaborative learning in small groups or with a partner. Most of the lesson is unplugged and does not require a device. A link to an online binary game is given for extra practice (optional).

Lesson: Types of Division

Students need to be familiar with different types of division for the AP Exam, particularly modulo division. This lesson introduces the forms of division used by a computer and gives students practice. No programming is required. The lesson is designed for collaborative learning in small groups, with places for discovery and discussion.

Assessment

A formal assessment is not planned for this unit. A question bank of test questions is available if you want to create a review or test. Other assessments opportunities for this unit include:

- Activity Guide for each lesson

Materials / Preparation

- The assignments each have an activity guide that should be distributed and completed digitally. Prepare the assignments in the digital format that works best for your classroom.
- Students can use the Flippy Do from the “Binary Numbers” lesson for the “Binary Numbers Applications” lesson. If you want students to use them, make sure they are available.
- You may want to print some of the materials for the “Types of Division” lesson so collaborative groups have the problems to work at their individual stations.
- The slides for the lessons are downloadable as PowerPoint slides. Reformat into the digital format that works best for your classroom.
- Go through the lessons in advance so you are prepared to guide and help your students as needed.