# Pacing guide

This document combines the pacing guides that are in each Unit Overview into one document for quick reference.

# Semester 1

## Unit 0

| Lesson | Objectives | Lab | Days | CSTA Standards |
| --- | --- | --- | --- | --- |
| 0.1: The First Day | Identify the class they are taking. List the high-level goals of the course. Describe classroom procedures, rules, and norms. | Syllabus | 1 | 3A-CS-01 |
| 0.2: Algorithms | Define *algorithm*. Construct algorithms for performing simple tasks. | Write an algorithm. Peanut Butter Jelly *or* Brushing Teeth (examples) | 1 | 3B-AP-11, 3A-AP-13 |
| 0.3: Programming Languages | Complete an Hour of Code activity in MakeCode Arcade. Explain why computer programs are written in specialized languages. | Hour of Code | 1 | 3A-CS-02 |
| 0.4: MakeCode Arcade Exploration | Identify the major areas of the MakeCode Arcade programming environment. | Getting to Know MakeCode Arcade | 1 | 3A-AP-16 |
| 0.5: MakeCode Arcade Coordinate System | Learn about the coordinate system used in MakeCode Arcade. | Getting to Know Coordinates | 1 | 3A-AP-13 |
| 0.6: Getting to Know You | Create a simple program in MakeCode Arcade to describe themselves. | Getting to Know You | 1 | 3A-AP-13, 3B-AP-14 |
| Total days | | | 6 | |

## Unit 1

| Lesson | Objectives | Lab | Days | CSTA Standards |
| --- | --- | --- | --- | --- |
| 1.1: Introduction to sprites | Explain sprites and their roles in MakeCode Arcade. Create sprites in the sprite editor. | MakeCode Arcade scavenger hunt | 1 | 3A-AP-13, 3A-DA-11 |
| 1.2: Sprites, sprites, and more sprites! | Place sprites on the screen. Work with different kinds of sprites. | Sprites in the corners | 1 | 3A-AP-13, 3A-DA-11 |
| 1.3: Sprite movement | Move hero sprite with the d-pad. Explain sprite velocity (vx and vy). Make sprites follow each other. | Moving sprites | 1 | 3A-AP-13 |
| 1.4: Collisions | Use collision event handlers. Use built-in variables for life/health and score. Randomize sprite placement. | Eat it all | 1 | 3A-AP-16 |
| 1.5: Collisions continued | Detect collisions between different kinds of sprites in the game. Destroy a sprite with effects. Set and update player lives. | Eat some more | 1 | 3A-AP-16 |
| 1.6: Unit project | Build your first project! | More sprite stuff | 2 | 3A-AP-13, 3A-AP-16, 3B-AP-14, 3A-CS-03 |
| Culture day lesson A: Video/reading | Connect unit topics with current events |  | 1 | 3A-IC-24 |
| Total days | | | 8 | |

## Unit 2

| Lesson | Objectives | Lab | Days | CSTA Standards |
| --- | --- | --- | --- | --- |
| 2.1: Events | Create event handlers | Shooting gallery | 1 | 3A-AP-16 |
| 2.2: Variables | Create and use variables in programs, accept numeric input from the player | Introduction to variables | 1 | 2-AP-11,  3A-AP-16, 3A-AP-23 |
| 2.3: Variable math | Use arithmetic operators and combine them into complex formulae | Variables and math | 1 | 2-AP-11 |
| 2.4: Text variables | Use variable arithmetic to display sprites in a pattern, accept string input from the player, join multiple text values | Silly story time | 2 | 2-AP-11 |
| 2.5: Conditionals | Use conditional statements | Guess what? | 1 | 3A-AP-16 |
| 2.6: Conditionals continued | Use conditional statements | Changing conditions | 1 | 3A-AP-16 |
| 2.7: Unit project | Build a complex game | Unit project: Arkanoid, Master Mind, or Chase and Collect | 4 | 3A-AP-13, 3A-AP-16, 3A-AP-17, 3A-AP-23, 3A-CS-03 |
| Culture day lesson B: Student research project / presentation | Connect unit topics with current events |  | 2 | 3A-IC-27 |
| Total days | | | 13 | |

## Unit 3

| Lesson | Objectives | Lab | Days | CSTA Standards |
| --- | --- | --- | --- | --- |
| 3.1: Definite loops + debugging | Use definite loops, use debugging strategies | The **repeat** loop, the **for** loop, debugging techniques | 3 | 3A-AP-16,  3A-AP-21 |
| 3.2: Indefinite loops | Use indefinite loops, validate user input | Verifying user input, enhancing *Guess My Number* | 1 | 3A-AP-16 |
| 3.3: Arrays and lists | Use arrays and lists | High scores | 1 | 3A-AP-14 |
| 3.4: Animations | Use animations, describe frame-based animation | Animated sprites | 1 | 3A-AP-18 |
| 3.5: Unit project | Create a complex game that uses loops, arrays, and/or animations | Unit project | 8 | 3A-AP-13, 3A-AP-14, 3A-DA-12, 3B-AP-14, 3B-AP-15, 3A-CS-03 |
| Culture day lesson C: My skills and interests journal | Document learning journey | Journal writing | 1 | 3A-IC-24 |
| Total days | | | 15 | |

## Unit 4

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Lesson | Objectives | Lab | Days | CSTA Standards |
| 4.1: Functions | Define and create functions | Functions | 1 | 3A-CS-01 |
| 4.2: Functions with parameters | Create functions that use parameters; use functions to create game levels | Functions with parameters | 1 | 3A-AP-23 |
| 4.3: Functions with return values | Create functions that return values; create code that represents a deck of cards | A deck of cards | 1 | 3A-AP-16 |
| 4.4: Searching | Write a sequential search algorithm; define *binary search*. | Searching | 1 | 3A-AP-13 |
| 4.5: Unit project | Create a complex game that uses functions | Unit project | 5 | 3B-AP-09, 3A-AP-13, 3A-AP-14, 3A-AP-18, 3A-AP-23, 3A-CS-03 |
| Culture day lesson D: Interview with people in technology | Identify the different types of roles and skills needed both within and outside the technology industry; reflect on how technology could be part of their future careers. | Interview | 2 | 3A-IC-27 |
| Total days | | | 11 | |

## Unit 5

| Lesson | Objectives | Lab | Days | CSTA Standards |
| --- | --- | --- | --- | --- |
| 5.1: Tilemaps | Create tilemaps, custom tiles, walls, and placeholders. | Tilemaps | 2 | 3A-AP-16 |
| 5.2: More tilemaps | Create event handlers related to tilemaps. Install extensions. Switch among multiple tilemaps. | More tilemaps | 2 | 3A-AP-13, 3A-AP-21 |
| 5.3: Platformers | Create tilemaps for platform games. Introduce physics for jumping and falling sprites. | Platformers | 1 | 3A-AP-16 |
| 5.4: Advanced platformers | Implement different jumping and attack mechanisms in platform games. Delay acting upon conditions. | Advanced platformers | 1 | 3A-AP-13, 3A-AP-21 |
| 5.5: Unit project | Create a complex game using tilemaps | Pinball Wizard, Travelling Fashion Show | 7 | 3A-AP-13, 3A-AP-15, 3A-AP-16, 3A-DA-12 |
| Total days | | | 13 | |

## Unit 6

| Lesson | Objectives | Lab | Days | CSTA Standards |
| --- | --- | --- | --- | --- |
| 6.1: Introduction and brainstorming | Work with a team to generate ideas; explore brainstorming tools for future use | Brainstorming | 1 | 3A-AP-22 |
| 6.2: Project planning | Create project specifications and implementation plan | Role selection and project planning | 2 | 3A-AP-13, 3A-AP-22, 3B-AP-15, 3B-AP-17 |
| 6.3: Project implementation | Implement a complex project; review and refine implementation plan | Project implementation | 10 | 3A-AP-13, 3A-AP-22, 3B-AP-15, 3B-AP-08, 3B-AP-09, 3B-AP-14, 3B-AP-17, 3B-AP-20, 3B-AP-21, 3B-AP-23, 3A-CS-03 |
| 6.4: Project sharing | Prepare and present a marketing pitch; critically evaluate the design process | Project sharing | 2 | 3B-AP-23, 3B-IC-25, 3B-IC-26 |
| Total days | | | 15 | |
| Total days: Semester One | | | 81 | |