LESSON 7

Donut Rush

60 minutes | Advanced Game Development

WHAT THIS LESSON DOES

Get ready to create an exciting game where you collect donuts against the clock! In this step-by-step lesson, you'll learn to build your own interactive game using MakeCode Arcade, mastering sprites, events, and game logic.

WHAT STUDENTS SHOULD BE ABLE TO DO

- Develop an understanding of game creation using MakeCode Arcade.
- Learn to create and manage variables in a gaming context.
- Understand the concept and application of functions in game development.
- Gain skills in handling events such as sprite overlaps and controlling game logic.
- Apply knowledge to create an interactive game with multiple levels and scoring system.

BEFORE THE LESSON

- Open the MakeCode Arcade website on your own device first and confirm the school filter is not blocking it, and that New Project loads.
- One charged device per pupil, with sound on or headphones available so pupils hear the jump-up and baDing effects.
- Save or bookmark a finished Donut Rush yourself so you can show the target and check pupils' code against a working version.
- Decide in advance whether pupils work in Blocks or JavaScript view, as the step code is given for both.

Donut Rush

HOW THE LESSON RUNS

- Introduction to Donut Rush
- Creating a new project
- Setting up the Game
- Creating the Start Level Function
- Set up the level
- Create the Donuts
- Starting the Game
- Collect the Donuts
- Complete the level
- Wrap up and Play

TEACHING MOVES

- 1. Introduction to Donut Rush. Show your finished game playing for thirty seconds before any coding. Name the goal aloud: collect donuts before the countdown ends. Pupils build faster when they know what they are building toward.
- 3. Setting up the Game. Explain each variable as a labelled box: level, target, collected. Point at your working game and show what each one is counting. Do this before any code goes in.
- 4. Creating the Start Level Function. Introduce a function as a job you can call again and again. Ask why we would not want to rewrite the level setup every single level. Let them answer before you name the reason.
- 5. Set up the level. Walk through the five lines slowly, one purpose each. Stress that target is 5 plus level, so every level asks for more. Have pupils read their own block back to you.
- 6. Create the Donuts. Focus on the loop: it repeats once per target donut. Say the count out loud as it runs. Check the loop count matches target, not a fixed number typed in by hand.
- 7. Starting the Game. Have everyone run it now. Press A to clear the splash, confirm level one appears. This is the first moment the game visibly works, so give it space and let them see it.
- 8. Collect the Donuts. Check the overlap block has Player and Food selected in the right slots, and that destroy uses otherSprite, not sprite. Wrong sprite here is the commonest break.
- 9. Complete the level. Ask pupils to predict what should happen at the target before they test. Then have them collect enough donuts and watch the level advance. Prediction first, test second.
- 10. Wrap up and Play. Give real playtime and ask pupils to note their high score. Prompt one change each: harder countdown, more donuts. Have them describe the change before making it.

WHAT TO WATCH FOR

- Pupils swap sprite and otherSprite in the overlap handler, so the player disappears instead of the donut, or nothing scores. Show that otherSprite is the thing the player ran into. Point to the destroy line together and read which name is inside it.
- Pupils think target is a fixed number and type 5, so levels never get harder. Show the line is 5 plus level. Have them collect enough to reach the next level and watch the target grow, so the pattern is visible not just told.
- Pupils expect the game to run without calling startLevel, and are stuck on a splash screen. Check the call to startLevel is at the end of on start. Without it the setup code is never triggered.

DIFFERENTIATION

- Emerging: Pair them with a partner who has the project open, and get the on start and startLevel skeleton in place with you before they add detail. Have them work in Blocks view and match block shape and colour to your screen rather than typing code.
- Developing: Ask them to run the game after each step and say what changed, so they connect each block to a visible effect. Have them explain their loop back to you: how many donuts and why.
- Proficient: Once the game works, challenge them to change the countdown length or the donuts-per-level formula and predict the effect first. Ask them to add a second sprite kind or a losing condition using only blocks they already know.