

LESSON 4

Platform Place

60 minutes

Advanced Game Development

WHAT THIS LESSON DOES

In this lesson, you'll learn the basics of platform games and create your own using MakeCode Arcade. Follow step-by-step instructions to design a sprite, build a map, add movement and gravity, and navigate challenges to reach the goal.

WHAT STUDENTS SHOULD BE ABLE TO DO

- Understand the basic concept and mechanics of platform games.
- Create and design a sprite character in a game environment.
- Implement movement controls for the sprite character.
- Apply the concept of gravity in a game setting.
- Design and create a game map with different elements such as ground, danger and goal tiles.

BEFORE THE LESSON

- Open arcade.makecode.com yourself first and check it loads through the school filter. It can be blocked, and it needs a modern browser.
- One device per pupil, or per pair if devices are short. Projector or large screen for the intro and for demonstrating the sprite editor.
- Have a finished version of the game ready to show, so pupils can see the goal before they start building.

Platform Place

HOW THE LESSON RUNS	
	Introduction
	Create a new Arcade project
	Create your sprite
	Move left and right
	Add gravity
	Draw the map
	Jump
	Move through the map
	Only jump when touching ground
	Danger tiles
	Goal
	Game Time

TEACHING MOVES

1. Introduction. Ask who has played a jumping game like Mario or Sonic. Draw out that you move a character across platforms to reach a goal. Keep it to two minutes before pupils open the site.
2. Create a new Arcade project. Walk everyone to arcade.makecode.com and creating a new project together on the screen. Wait until every pupil has a blank project open before moving on.
3. Create your sprite. Model opening the sprite editor and colouring a few pixels. Let them design their own character rather than copying yours exactly, but cap the time so it does not swallow the lesson.
4. Move left and right. Show that the left and right buttons now move the sprite. Have pupils test straight away, so a broken control is caught here and not five steps later.
5. Add gravity. Explain vy in plain terms: positive numbers push down, negative push up. Warn them the sprite will now fall off the screen, and reassure them the map in the next step stops that.
6. Draw the map. Demonstrate the Draw Walls tool, and stress that ground tiles must be set as walls or the sprite falls through. Point out where danger and goal tiles go before they draw.
7. Jump. Explain the jump works by setting vy to minus 50 briefly so the sprite rises before gravity pulls it back. Show how to create the jump variable.
8. Move through the map. Give them a few minutes to playtest and fix their map: gaps too wide, no floor, goal unreachable. Circulate and try each pupil's level yourself.
9. Only jump when touching ground. Ask why endless mid-air jumping is a problem, then show the fix that only allows jumping when the sprite's bottom touches a wall tile. This is the key logic step.
10. Danger tiles. Have pupils deliberately walk onto a lava tile to confirm Game Over fires. Testing the failure case on purpose is the point.
11. Goal. Get them to run the full level to the goal crystal and check the You Win screen appears. A level with no reachable goal is the most common issue to catch here.
12. Game Time. Let pupils play their own and a partner's game. Encourage them to tweak the map to make it harder, not just replay it.

WHAT TO WATCH FOR

- Pupils draw ground tiles but the sprite falls straight through them. Show that a tile only stops the sprite if it is set as a wall using the Draw Walls tool. Have them re-mark their ground tiles as walls.
- Pupils think the sprite should jump every time the up button is pressed, and are confused by the mid-air jumping fix. Talk through the ground check: the jump only fires when the sprite's bottom is touching a wall tile. Have them explain back when a real player can jump.
- Confusing the vy values, expecting a positive number to make the sprite rise. Recap that positive vy is down and negative vy is up. Let them change 50 to minus 50 and watch the sprite shoot off the top to prove it.

DIFFERENTIATION

- Emerging: Pair them with a partner who has the site open and a sprite made, so they are not stuck at the blank-project stage. Give them a simple flat map with a short walk to the goal, so they finish a playable game even if it is not challenging.
- Developing: Prompt them to test after every code block rather than at the end, so bugs are small and easy to find. Ask them to explain their jump code back to you in their own words before they move on.
- Proficient: Challenge them to redesign the map with multiple platforms at different heights and a tricky gap over lava. Have them add extra danger tiles or a longer route, then hand their game to a partner to test.