

## Dribble and Dunk: Basketball Fun with Scratch Jr.

30 minutes

Adventures in Digital Creation

### WHAT THIS LESSON DOES

In this lesson, you'll guide your students through the process of programming a basketball game using Scratch Jr. They'll learn about the physics of ball movement, choose appropriate backgrounds and characters, and use coding blocks to simulate dribbling and shooting a basketball. The lesson concludes with a sharing session, where students demonstrate their projects.

### WHAT STUDENTS SHOULD BE ABLE TO DO

- Understand and articulate the concept of how a ball moves, particularly in the context of basketball.
- Select and utilise appropriate sprites and backgrounds in Scratch Jr. to create a basketball court scene.
- Apply coding principles to program a basketball sprite to bounce and move across the court.
- Develop parallel coding skills to synchronise the movement of two sprites, simulating the action of dribbling a basketball.
- Extend coding skills to create a sequence that simulates shooting a basketball into a hoop, demonstrating problem-solving and creativity.

### BEFORE THE LESSON

- Open ScratchJr on each pupil device or pair of devices and check it loads and runs a saved test project.
- Confirm the basketball court background and the basketball sprite are available in your ScratchJr library before class.
- Have a finished dribble example ready to demonstrate the up-down bounce and the two parallel sequences.

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### HOW THE LESSON RUNS

Introduction

Discussion: How Does a Ball Move?

Setting the Court Scene

Creating the Bounce Algorithm

Moving Across the Court (Parallel Coding)

Syncing the Dribble (Debugging)

Extension Challenge: Programming the Shot

Conclusion: Share and Reflect

### TEACHING MOVES

- 2. Discussion: How Does a Ball Move? Keep this spoken and quick. Push them past 'it bounces' to name the two parts: the ball goes up, then it comes down. That split is the sequence they will code next.
- 3. Setting the Court Scene. Walk the room while they pick the background and add both sprites. Check everyone has the basketball and Scratch on the same stage before you demonstrate any code.
- 4. Creating the Bounce Algorithm. Model the bounce as move-up then move-down snapped under the green flag. Say aloud that up alone is not a bounce; the down block is what brings it back.
- 5. Moving Across the Court (Parallel Coding). Show that attaching move-forward after the bounce makes the ball bounce once then slide. Then build a second separate stack so both run at once. That contrast is the whole lesson.
- 6. Syncing the Dribble (Debugging). Have pupils give Scratch the Cat its own green flag and matching forward blocks. Press the flag together and ask them to spot whether cat and ball stay side by side.
- 7. Extension Challenge: Programming the Shot. Offer only to pupils whose dribble already works. Have them stop the dribble with a red block, then add a fresh sequence sending the ball to the hoop.
- 8. Conclusion: Share and Reflect. Gather pupils to show their dribbles running. Ask one or two to point to the two separate stacks and say aloud what each one does.

### WHAT TO WATCH FOR

- Pupils attach every block in one long stack, so the ball bounces then moves rather than doing both together. Show that parallel means two separate stacks, each with its own green flag. Have them physically pull the forward blocks off the bounce stack and start a new one.
- Pupils code only move-up and expect the ball to fall back down on its own. Remind them the computer only does exactly what is written. If there is no move-down block, the ball stays up. A bounce needs both instructions.
- Pupils think their program is broken when the cat and ball drift apart during the dribble. Treat it as debugging, not failure. Have them compare the number of forward steps on each sprite and match them so both travel the same distance.

**DIFFERENTIATION**

- Emerging: Set up the court and both sprites for them so they start straight at the bounce. Give just the two-block bounce as the whole goal today and leave forward movement for another go.
- Developing: Have them press the green flag and describe out loud what each stack is doing before they change anything. Pair them with a partner to compare their two sequences side by side.
- Proficient: Offer the shot-at-the-hoop challenge with its own stop block and new sequence. Ask them to adjust the step numbers so the dribble looks faster or slower and explain what changed.