

Race for the Catch



- Grade Level: 4-6
- Duration: 60 minutes
- Subject: Mathematics
- Interdisciplinary Connection: Science and Technology
- Platform: Scratch

In this Scratch project, you will create an exciting Bear Chase game where two hungry bears, a grizzly and a black bear, are on a mission to catch as many salmon as they can! Your task is to control the grizzly bear using your mouse pointer, while the computer takes control of the black bear. Your objective is to code a dynamic game that keeps track of each bear's score as they catch salmon. The game should reset the salmon's position whenever it gets caught and continue indefinitely until you decide to stop playing.

Curricular Connections

Ontario

Grade 4 C3: solve problems and create computational representations of mathematical situations using coding concepts and skills

Grade 4 3.1: solve problems and create computational representations of mathematical situations by writing and executing code, including code that involves conditional statements and other control structures

Quebec

#1: Dimensions of the Digital Competency Framework

#2: Developing And Mobilizing Technological Skills

#3: Harnessing The Potential Of Digital Resources For Learning

#7: Producing Content Via Digital Technology

Objectives

Learning Goals

Students will be able to...

- Become familiar with the user interface, tools, and features
- Develop the ability to read and understand code written in Scratch
- Demonstrate understanding of basic programming concepts such as events, sequences, loops and conditional statements

Success Criteria

I can...

- Identify and navigate the Scratch user interface and its tools.
 - Read, explain, and write Scratch code using events, sequences, loops, and conditional statements.
 - Create and use variables to implement scoring and tracking in a game.
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Material

Required Materials

- Access to the internet
- Changed Chromebooks or Tablets
- Access to [Scratch tool](#)

Optional Materials

- Explore the [Scratch for Educators webpage](#)
 - Create a [Scratch Teacher Account](#)
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Lesson

Activity	Description
Prior Knowledge	Basic understanding of directionality (left, right, up, down)
Minds On	10 minutes <ul style="list-style-type: none">• Let's read about some interesting facts about bears and salmon before we begin• "When bears eat salmon and leave their carcass to decompose, it provides essential nutrients for the healthy growth of trees."• "Those trees in turn provide shade to the water stream, providing the perfect temperature for salmon spawning and maintaining the health of the water."• "Bears, on average, consume about 13 salmon per day during the 45 to 60 days long salmon spawning season."

<p>Model</p>	<p>15 minutes</p> <ul style="list-style-type: none"> • Navigate to scratch.mit.edu and demonstrate the user interface: Explain the main areas (Stage, Sprite List, Backdrop Pane, Code Area, Block Categories such as Events, Control, Variables). • Show how to add and remove sprites and backdrops: Select a bear, salmon, and forest background, and demonstrate resizing and positioning. • Demonstrate basic sprite movement: Show how to use move steps and point towards mouse-pointer blocks to control a sprite, simulating the grizzly bear's movement.
<p>Practice</p>	<p>25 minutes</p> <p>Teacher Guidance: Access the core activity. Guide students through the steps below, encouraging prediction and troubleshooting as they go.</p> <p>Activity 1: Setting up the Game Environment (10 minutes)</p> <ul style="list-style-type: none"> • Instructions: Students will open Scratch, start a new project, and select the necessary sprites (e.g., a grizzly bear, a black bear, and a salmon) and a suitable backdrop (e.g., a forest or river setting). They will resize and position their sprites appropriately for the game. • Teacher Lead: Circulate to assist students with sprite selection and initial setup. Encourage them to explore different options but keep the core elements of the game in mind. Remind them to save their project periodically. <p>Activity 2: Coding Bear Movement and Salmon Catch (15 minutes)</p> <ul style="list-style-type: none"> • Instructions: Students will first code the grizzly bear to follow the mouse pointer continuously. Next, they will program the salmon to appear at random locations on the screen. Finally, they will add a conditional statement to the salmon's code so that when it touches the grizzly bear, its position resets to a new random location. • Teacher Lead: Guide students through creating the scripts, focusing on the use of forever loops for continuous movement and if then conditional blocks for the salmon. Encourage students to test their code frequently and debug any issues by reading their code and predicting outcomes. Provide support in setting up simple variables for scoring at

	<p>this stage if time permits, or explicitly state it as the next step in the activity link.</p>
<p>Consolidation</p>	<p>10 minutes Facilitate a Circle Share where students take turns sharing one aspect of their game, a specific coding concept they used, or a challenge they successfully overcame during the activity. Reflection Questions:</p> <ul style="list-style-type: none"> • What was challenging about coding the bear chase game, particularly implementing the scoring or movement? • How did using variables help keep track of the score in your game? • How is the concept of a "conditional statement" in Scratch similar to making decisions in everyday life? • What other features or animations would you like to add to your game if you had more time?
<p>Modifications & Accommodations</p>	<ul style="list-style-type: none"> • Post key vocabulary with visuals (sprite, backdrop, loop, conditional, variable) and keep it visible throughout the lesson. • Provide short how-to videos for each major coding step so students can replay instructions independently. • Offer a simplified starter project (grizzly already moves; students only code salmon + scoring) for learners who need extra support.

Assessment

Formative

Teacher Observation: Observe students during the "Practice" phase as they work with Scratch. Note their ability to navigate the interface, interpret code, implement events, sequences, loops, conditional statements, and variables.

Extension

Cross Curricular Connections

Language Arts: Have students write a procedural text explaining how to create a specific part of their "Race for the Catch" game, using transition words (first, then, finally). Alternatively, they could write a short story from the perspective of one of the bears or salmon, incorporating facts about their ecosystem.

Science/Environmental Education: Research additional facts about the symbiotic relationship between bears, salmon, and trees. Students can create an infographic or a short presentation to share their findings.

Extend Your Thinking

Advanced Game Features: For early finishers or as a follow-up, students can:

- Add a timer to the game or implement a high-score system that stores the top scores.
- Introduce obstacles or different types of fish with varying point values, using more complex conditional statements.
- Code the black bear's movement to be more challenging, perhaps by having it react to the grizzly bear's position.
- Explore creating their own custom sprites and backdrops using the Paint Editor, or importing their own images.