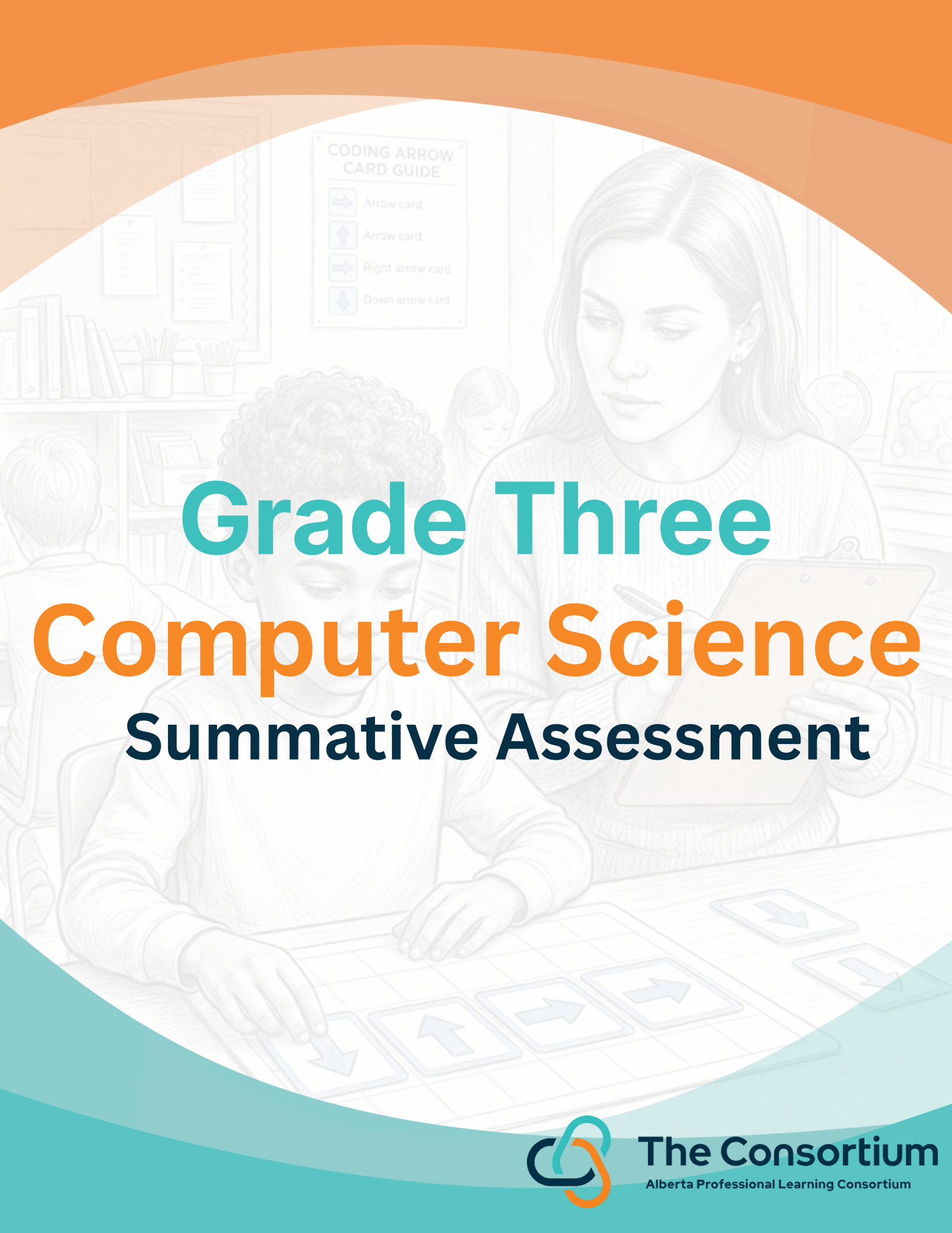


The background is a detailed illustration of a classroom. A female teacher with long dark hair is standing and looking down at a clipboard. In the foreground, a young boy with curly hair is sitting at a desk, moving small cards with arrows on a grid. Other students are visible in the background, also working. A sign on the wall reads 'CODING ARROW CARD GUIDE' with four types of arrows: a right arrow, an up arrow, a right arrow, and a down arrow. The title text is overlaid on this scene.

Grade Three Computer Science Summative Assessment



The Consortium
Alberta Professional Learning Consortium

Grade 3 Science: Computer Science Observation Checklist

Student Name:

Date:

Skills	Met?	Teacher Notes / Evidence
Instructional Design		
Creates a set of instructions that can be followed by a human or a machine to complete a task.	☐	
Collaborates with others to write two different sets of instructions that achieve the same outcome.	☐	
Computational Thinking Application		
Identifies computational thinking used to solve problems or achieve desired outcomes.	☐	
Breaks a task into smaller chunks.	☐	
Finds patterns and similarities in tasks.	☐	
Identifies important details when reading or solving a problem.	☐	
Works backwards if a mistake is made to resolve the issue.	☐	

Skills	Met?	Teacher Notes / Evidence
Creativity & Divergent Thinking		
Uses divergent thinking to develop different ways to achieve the same outcome.	☐	
Relates creativity to engineering, computing, and the development of new technologies.	☐	
Creates something new by combining, changing, or reapplying existing ideas.	☐	
Innovation & Context		
Identifies examples of creativity in computer science, technology, or engineering.	☐	
Examines and discusses a Canadian invention, such as the Canadarm.	☐	

Teacher Guide: Grade 3 Science Summative Assessment

Assessment Overview

The assessment evaluates student proficiency in three core domains:

Computational Thinking: Breaking down tasks (decomposition), recognizing patterns, and troubleshooting errors (debugging).

Creativity & Divergent Thinking: Generating multiple solutions to a single problem and innovating through the combination of existing ideas.

Technology & Context: Understanding the practical application of robotics and Canada's contributions to space exploration.

Part 1: Computational Thinking Breakdown

Question 1: Decomposition

Objective: Evaluate the student's ability to break a complex task into logical, sequential "chunks".

Acceptable Answers: Any logical sequence for brushing teeth.

Example: 1. Put toothpaste on the brush; 2. Brush teeth in circles; 3. Rinse mouth with water.

Look For: Clear, actionable steps that a "robot" (someone following instructions literally) could execute.

Question 2: Finding Patterns

Objective: Identify tasks characterized by repetitive sequences or structures.

Correct Answers:

Writing your name 10 times.

Building a tower using the same 5 blocks over and over.

Distractor Analysis: Folding a laundry basket involves different shapes (socks vs. shirts), and a maze requires unique decisions at every turn, making them less "pattern-based" than the correct options.

Question 3: Debugging

Objective: Identify the correct procedure for fixing an instructional error.

Correct Answer: "Work backwards to find where the mistake happened and fix it".

Part 2: Creativity and Divergent Thinking

Question 4: Divergent Thinking

Objective: Demonstrate that multiple sets of instructions can lead to the same goal.

Expectation: Students must provide two *distinct* methods for getting to school.

Method 1: Riding the bus (Walking to stop, waiting, boarding).

Method 2: Walking with a parent (Leaving front door, turning left at the park, crossing the street).

Question 5: Innovation

Objective: Apply creativity by combining or changing existing ideas to create something new.

Grading Criteria:

Innovation: Does the invention clearly combine a backpack and a scooter?

Utility: Does the student describe or draw a functional purpose (e.g., "A scooter where the deck is a storage box" or "A backpack with wheels and a handle")?

Part 3: Technology and Canadian Inventions

Question 6: The Canadarm

Objective: Understand the role of imagination and engineering in solving complex problems.

Correct Answer: "Because it used imagination and connections to solve a problem in space".

Question 7: Computers and Humans

Objective: Recognize the purpose of computational thinking in human-computer interaction.

Correct Answer: "It allows humans to talk to computers more efficiently for things like robotics and apps".

Scoring Rubric

Level	Performance Description
Exceeding	Consistently provides highly detailed decomposition steps; identifies complex patterns; develops highly original innovations; demonstrates deep understanding of technology's role.
Meeting	Correctly identifies patterns and debugging steps; provides logical chunks for decomposition; offers two distinct ways to reach a goal.
Approaching	Can identify a mistake but may struggle to work backwards; provides steps for decomposition that are out of order; innovation is a simple drawing without a description.
Beginning	Requires significant support to identify patterns or break down tasks; struggles to differentiate between "Way #1" and "Way #2" in divergent thinking.

Name: _____

Grade 3 Science: Computer Science & Creativity

Part 1: Computational Thinking

1. **Decomposition:** Computational thinking involves breaking a big task into smaller "chunks". Imagine you are teaching a robot how to brush its teeth. List three small steps (chunks) the robot must take:

Step 1: _____

Step 2: _____

Step 3: _____

2. **Finding Patterns:** Look at the tasks below. Circle the two tasks that have the most **similar** patterns.

Folding a laundry basket of t-shirts.

Writing your name 10 times.

Walking through a maze.

Building a tower using the same 5 blocks over and over.

3. **Debugging (Working Backwards):** If a machine makes a mistake while following your instructions, what should you do?
 - ☐ Throw the machine away.
 - ☐ Start over from the very beginning without looking.
 - ☐ Work backwards to find where the mistake happened and fix it.

Name: _____

Part 2: Creativity and Divergent Thinking

4. **Divergent Thinking:** Creativity means coming up with different ways to reach the same goal. Your goal is to **get to school**. List two different "sets of instructions" (methods) you could use to get there.

Way #1	Way #2
1.	1.
2.	2.
3.	3.

5. **Innovation:** Creativity involves combining, changing, or reapplying existing ideas to make something new.
If you combined a **backpack** with a **scooter**, what new invention would you create?
Draw it or describe what it would do below:

Part 3: Technology and Canadian Inventions

6. **The Canadarm:** Canada is famous for a specific invention used in space called the Canadarm. Why is this invention considered an example of creativity in engineering?
- ☐ Because it was painted a pretty color.
 - ☐ Because it used imagination and connections to solve a problem in space.
 - ☐ Because it was the first robot to ever exist.
7. **Computers and Humans:** How does computational thinking help humans communicate with computers?
- ☐ It allows humans to talk to computers more efficiently for things like robotics and apps.
 - ☐ It teaches computers how to have feelings like humans.
 - ☐ It means humans never have to do work again.

Teacher Evaluation Reference

Based on the Grade 3 Science Observation Checklist

Skill Area	Evidence Found in Assessment
Instructional Design	Question 1 & 4 (Steps/Methods)
Computational Thinking	Question 1, 2 & 3 (Decomposition/Patterns/Debugging)
Creativity/Divergent Thinking	Question 4 & 5 (Unique solutions/Combining ideas)
Innovation & Context	Question 6 & 7 (Canadarm/Human-Computer communication)