

Making Connections



Living
Systems



Computer
Science



Alberta Regional Consortia

grade 2

Organizing Idea	Computer Science: Problem solving and scientific inquiry are developed through the knowledgeable application of creativity, design, and computational thinking.		
Guiding Question	How can instructions affect outcomes?		
Learning Outcome	Students follow instructions and relate them to outcomes.		
Knowledge	Understanding	Skills & Procedures	
Creativity is the ability to generate something original, such as • ideas • technology • tools • products Creativity can be used to design instructions for • games • sports • investigations • recipes • computer programs Collaboration can result in improved ideas, which may enhance creativity and problem solving.	Instructions are designed using creativity and problem solving, which can be enhanced through collaboration.	Identify ways creativity is used to design instructions.	

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Precise instructions have a variety of components, including • verbs • simple language • clear steps • a starting and stopping point Reliability of instructions means they consistently lead to the same desired outcome. Efficiency of instructions refers to designing in a way that yields desired outcomes with the least amount of energy, time, or steps. The reliability and efficiency of instructions can be affected by how they are communicated, including • form; e.g., verbal, visual, written • order • clarity	Instructions can be created to be precise, reliable, and efficient to achieve the desired outcome.	Work individually or in groups to create instructions using precise words, pictures, or diagrams. Create three-step to four-step instructions that achieve a desired outcome. Predict the outcome of instructions that have three to four steps. Refine instructions to more efficiently achieve a desired outcome. Test instructions with three to four steps to verify that a desired outcome is achieved. Debug any errors in a set of instructions to achieve a desired outcome.	

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Many people, individually or in groups, can create instructions, such as • teachers • parents • students • computer programmers Many activities at school and in the workplace require creativity and collaboration to improve ideas. Debugging is the process of identifying and removing errors in a set of instructions to achieve a desired outcome. Debugging can increase the reliability of instructions.	Instructions can be created to be precise, reliable, and efficient to achieve the desired outcome.	Work individually or in groups to create instructions using precise words, pictures, or diagrams. Create three-step to four-step instructions that achieve a desired outcome. Predict the outcome of instructions that have three to four steps. Refine instructions to more efficiently achieve a desired outcome. Test instructions with three to four steps to verify that a desired outcome is achieved. Debug any errors in a set of instructions to achieve a desired outcome.	

Creativity

Finding different ways to reach the same outcome.

Problem solving to overcome obstacles to achieve a desired outcome.





Design Thinking Process



*Learn About
Your Audience*



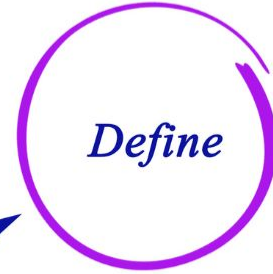
*Brainstorm and
Come up with
Creative Solutions*



Test Your Ideas

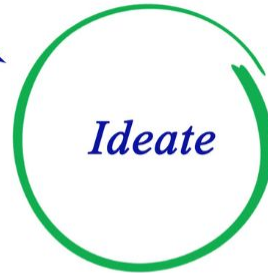


Empathize

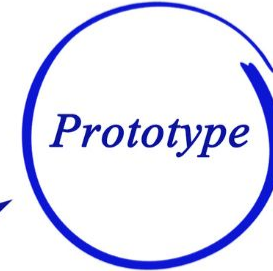


Define

*Construct Point
of View Based
on User Needs*

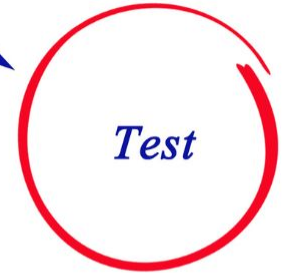


Ideate

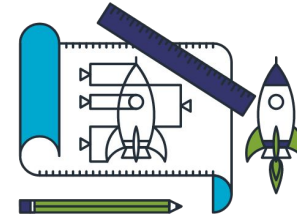


Prototype

*Build
Representation
of Your Ideas*

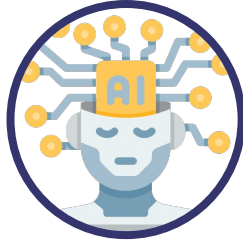


Test



Computational Thinking

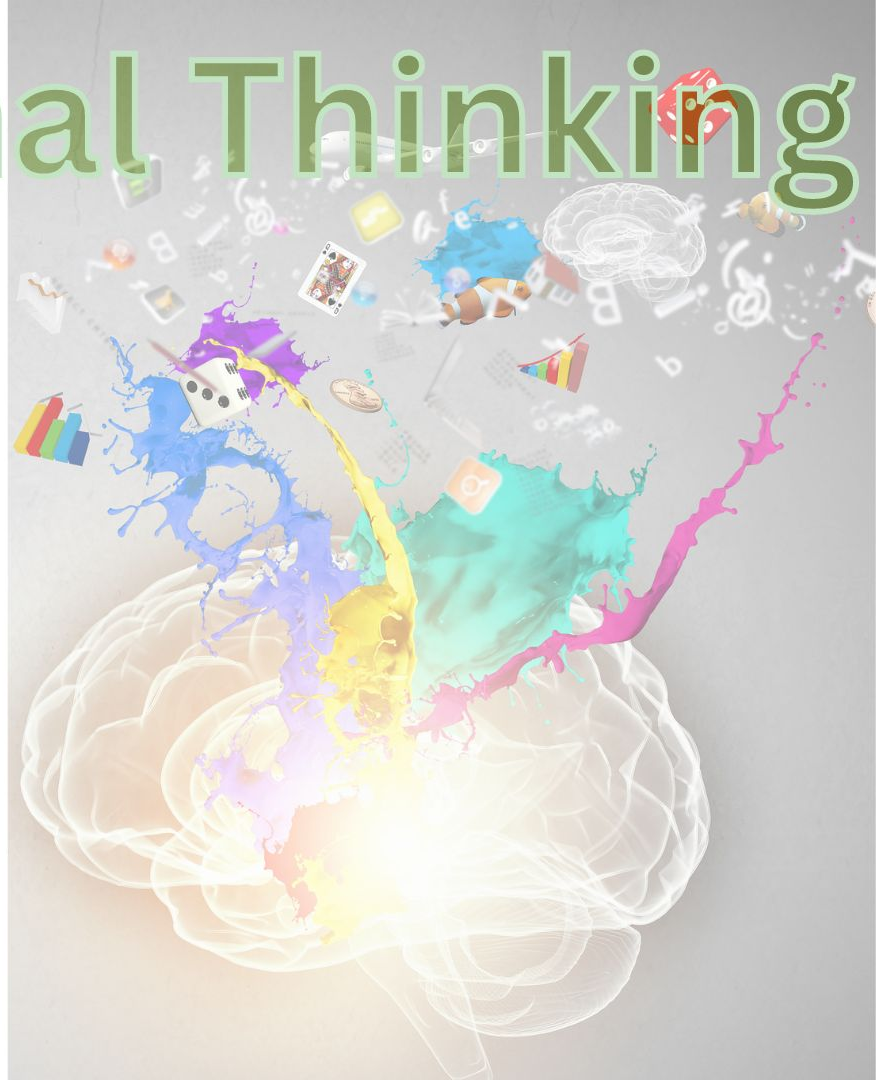
Decomposition



Pattern Recognition

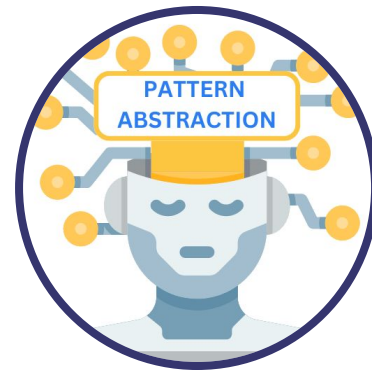
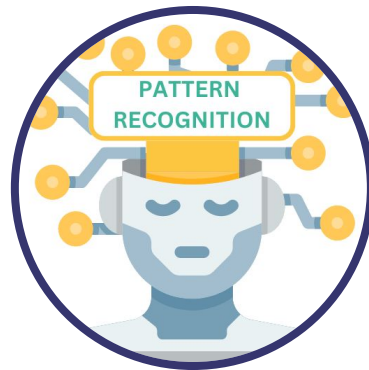
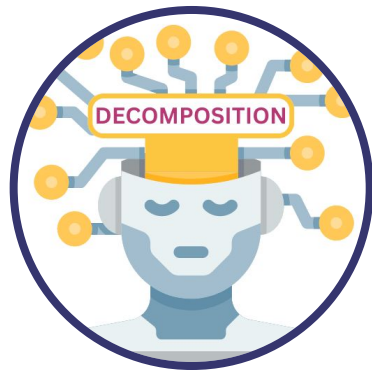
Pattern Abstraction

Algorithm Design

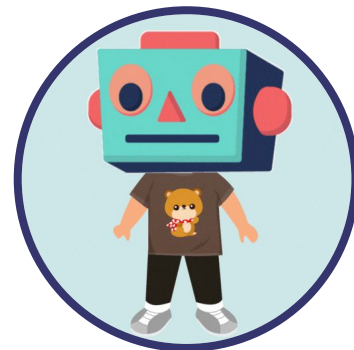
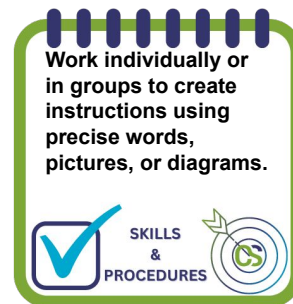


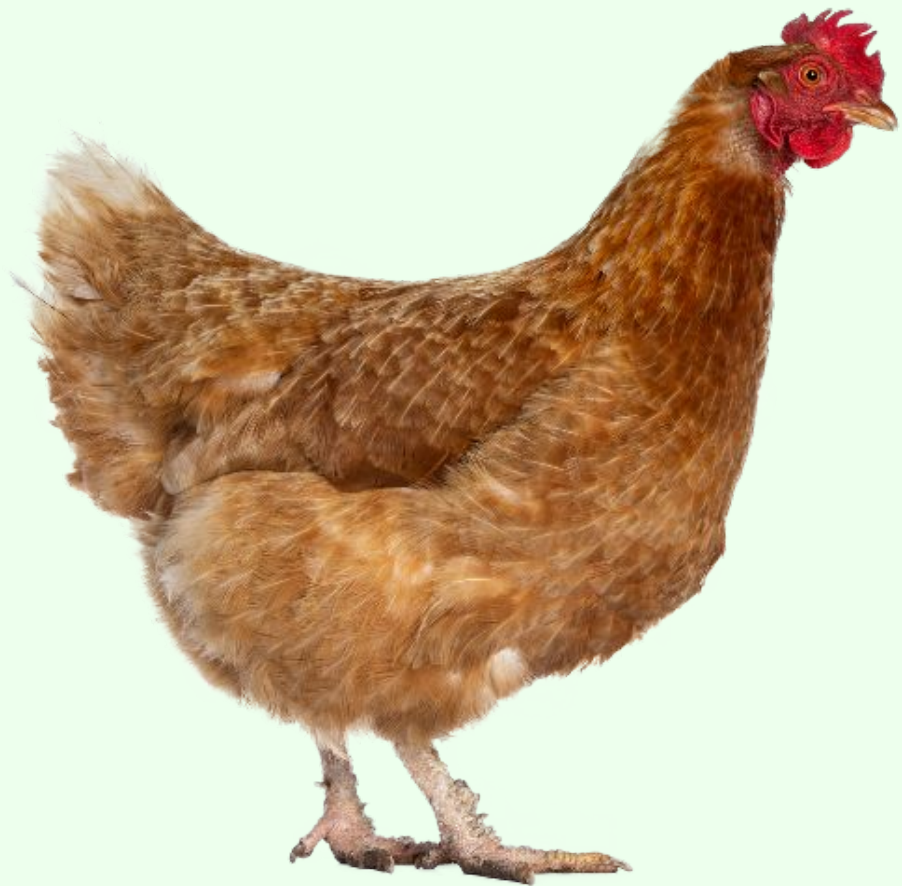
Organizing Idea	Living Systems: Understandings of the living world, Earth, and space are deepened by investigating natural systems and their interactions.
Guiding Question	How do plants and animals survive?
Learning Outcome	Students investigate and examine needs of plants and animals.

Skills & Procedures
Identify similarities between offspring and their parents.



Activities and routines we do in the classroom can be connected creating instructions!





How are they the same?

How are they different?



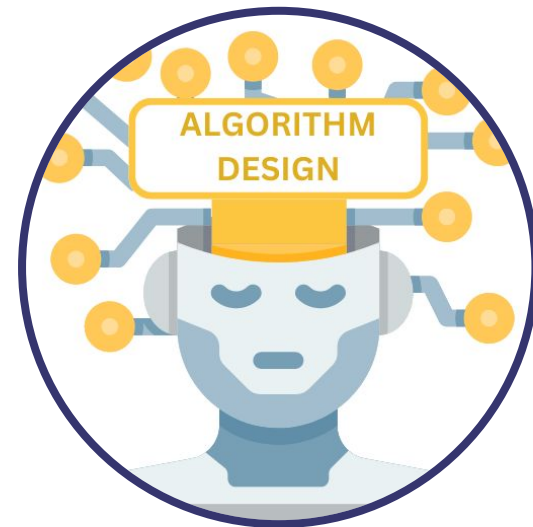
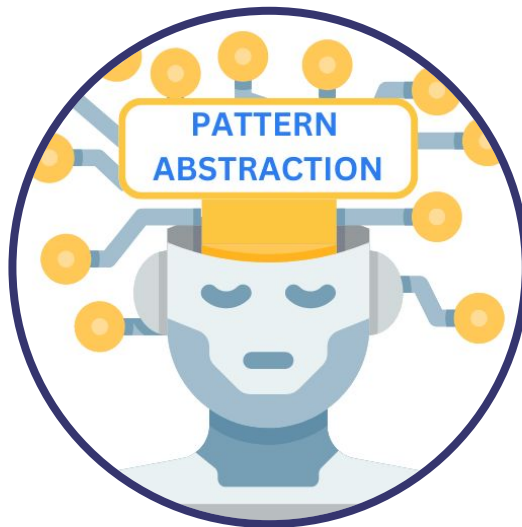


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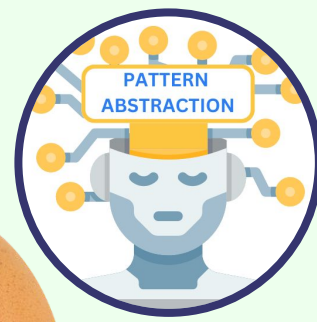
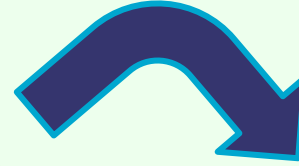
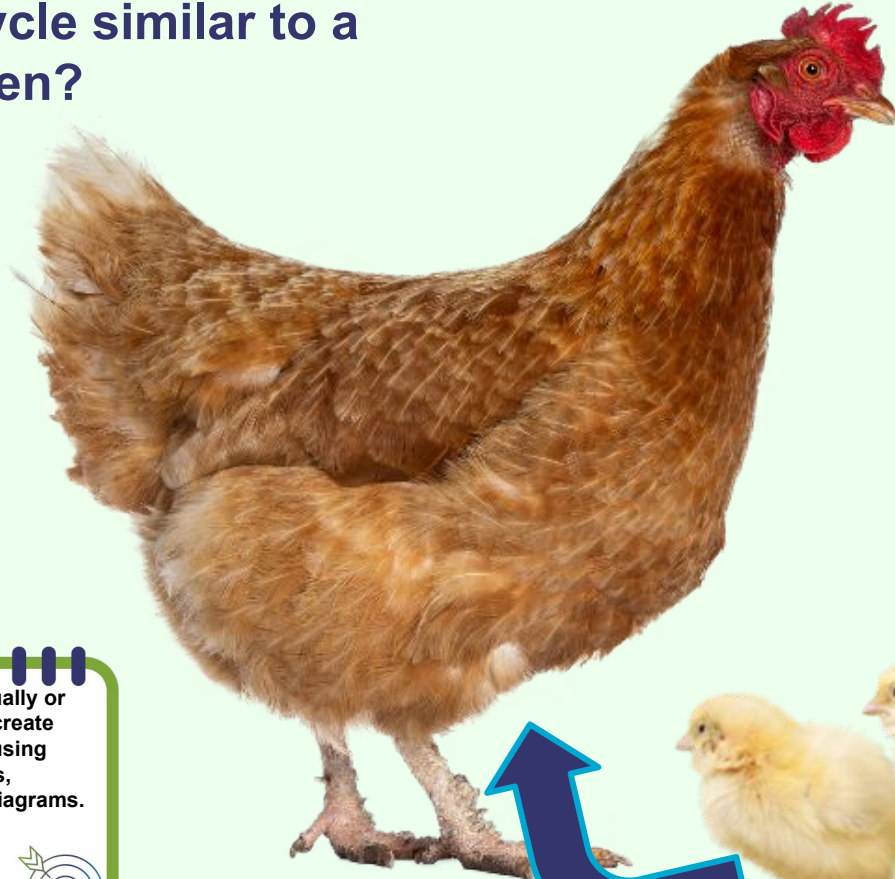
Skills & Procedures

Represent the life cycles of various plants and animals.

Discuss and compare life cycles of various plants and animals.



What other animals have a life cycle similar to a chicken?



Work individually or in groups to create instructions using precise words, pictures, or diagrams.

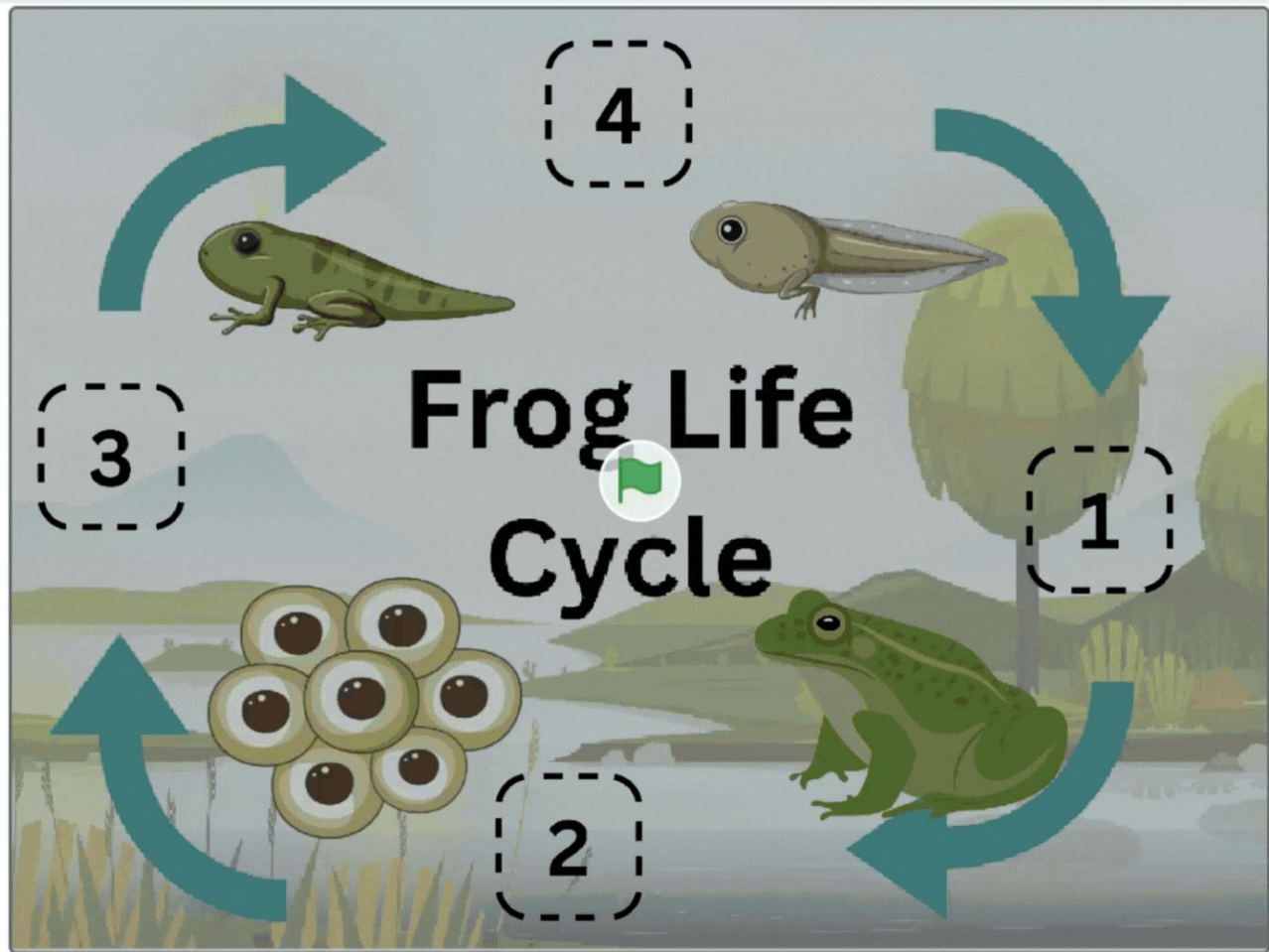


SKILLS
&
PROCEDURES



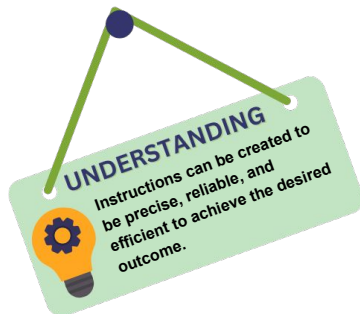
Frog Life Cycle Game

bit.ly/MrsDFrogExample



Scratch Cards

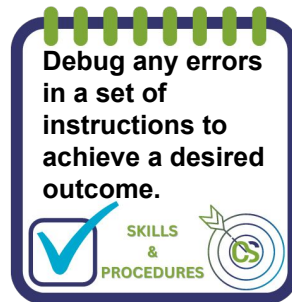
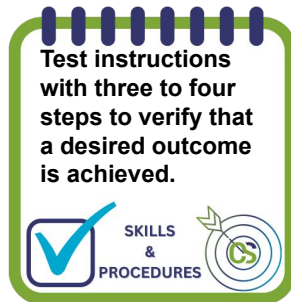
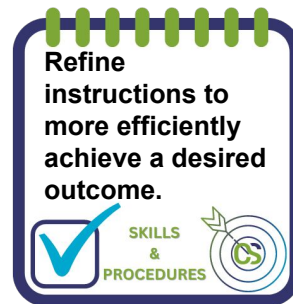
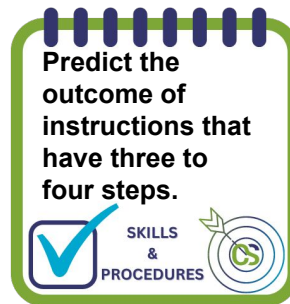
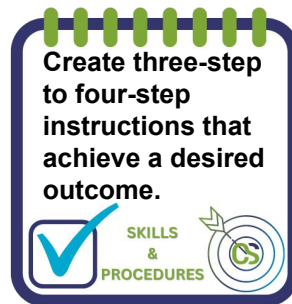
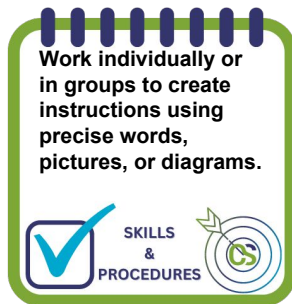
bit.ly/MrsDFrogCards



EXTENSION: This template can be shared with students or done together as a class to learn about Computer Science and Living Systems at the same time!

Scratch Template

bit.ly/MrsDFrog



TIP!

Get a class of older students to come and work with your class on Scratch if they have never used it before.