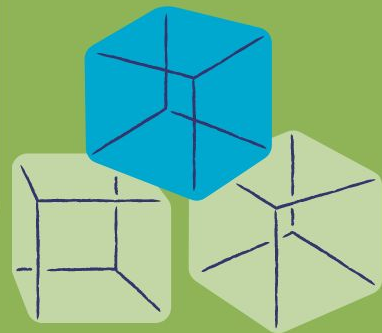


Making Connections



Matter



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 creativity support design?		
Learning Outcome	Students apply creativity when designing instructions to achieve a desired outcome.		
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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Knowledge	Understanding	Skills & Procedures	
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.	

al Thinking



al Thinking

al Thinking

al Thinking



Design Thinking Process



*Learn About
Your Audience*



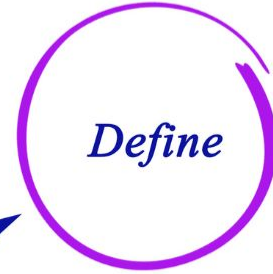
*Brainstorm and
Come up with
Creative Solutions*



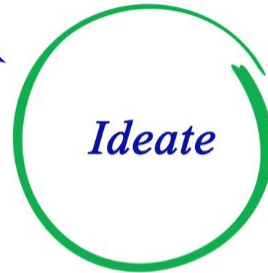
Test Your Ideas



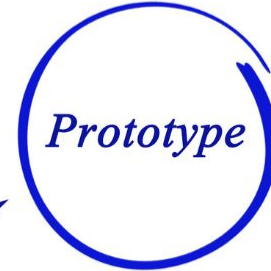
Empathize



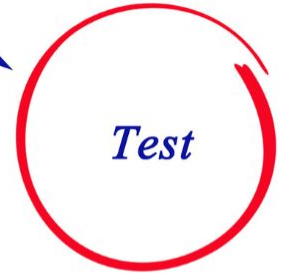
*Construct Point
of View Based
on User Needs*



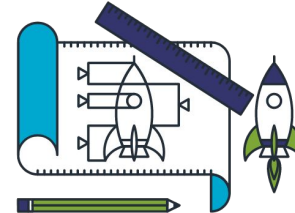
Ideate



*Build
Representation
of Your Ideas*



Test



Creativity

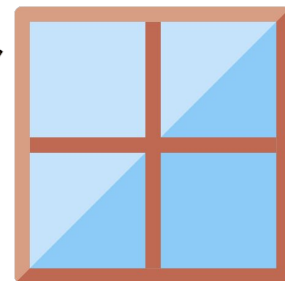
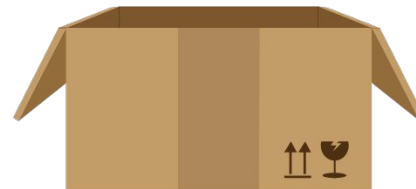
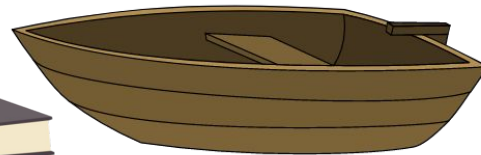
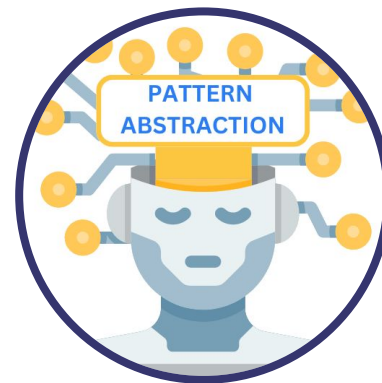
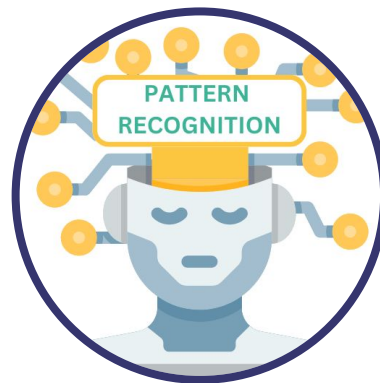
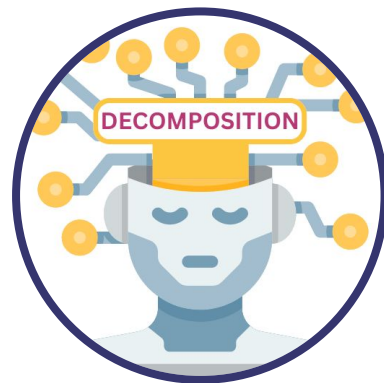
Finding different ways to reach the same outcome.

Problem solving to overcome obstacles to achieve a desired outcome.

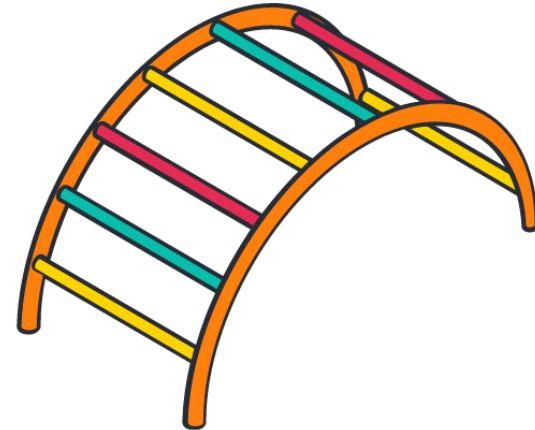
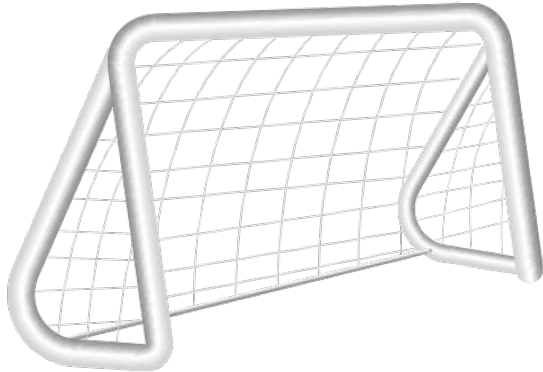
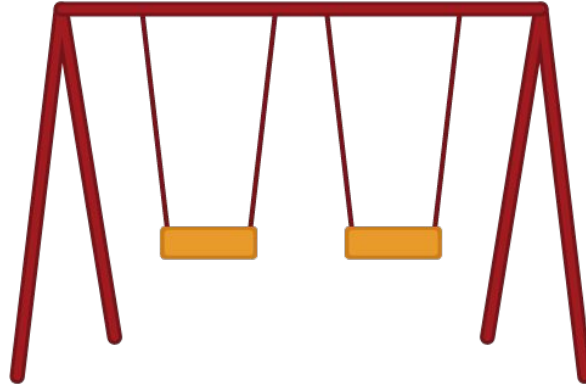
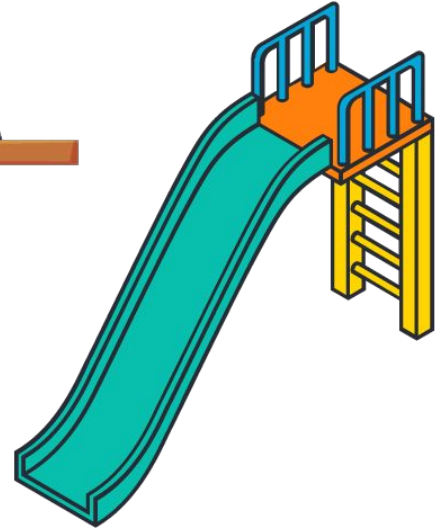
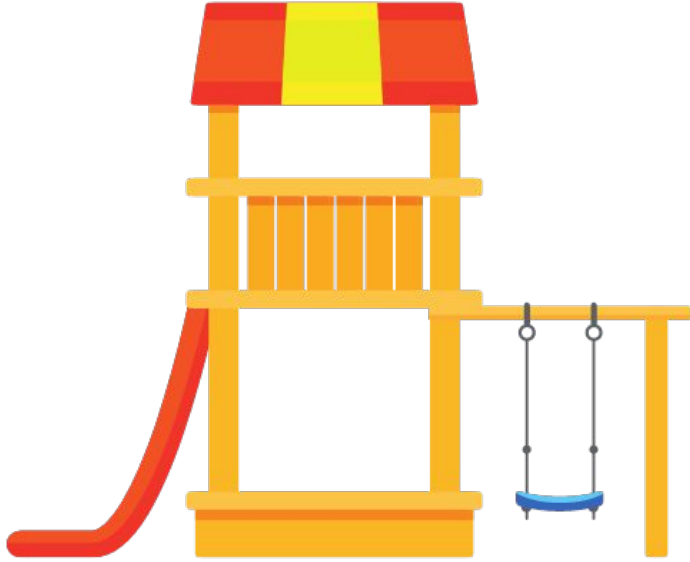


Organizing Idea	Matter: Understandings of the physical world are deepened by investigating matter and energy.
Guiding Question	How can the suitability of materials be determined for specific purposes?
Learning Outcome	Students investigate properties of materials and relate them to a purpose.

Skills & Procedures
Identify the materials used to make various objects. Combine materials to create an object for a specific purpose.

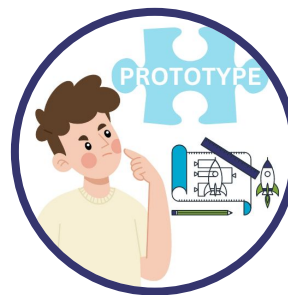


What is our playground made of?

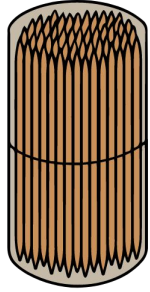


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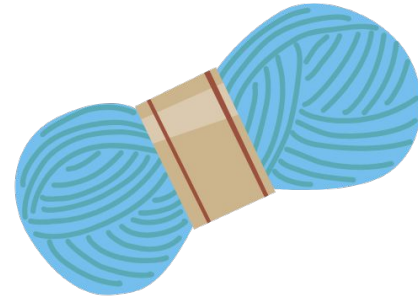
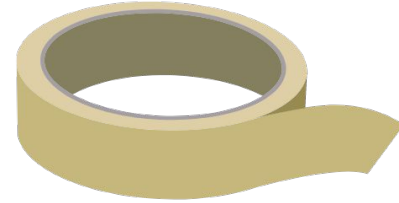


GROUP PROJECT: Build a tiny playground!



I love to hang
upside down and
soar in the air.

I do not like to
have sand on my
hands or clothes.



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Skills & Procedures

Test properties of various materials.

- Transparency
- Absorbency
- Malleability
- Reflection

Measure various materials using non-standard measurements.

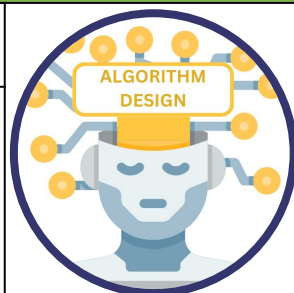
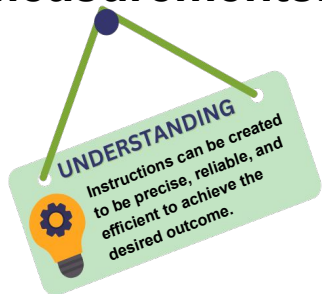


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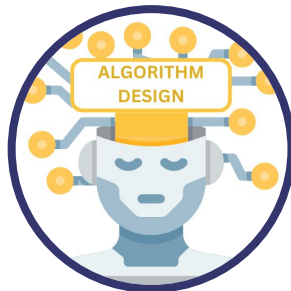
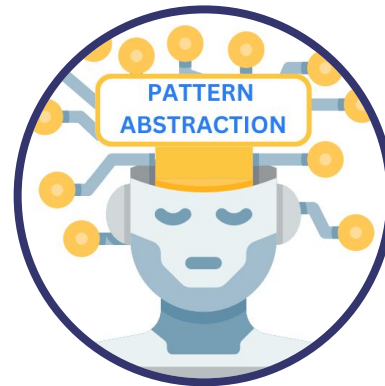
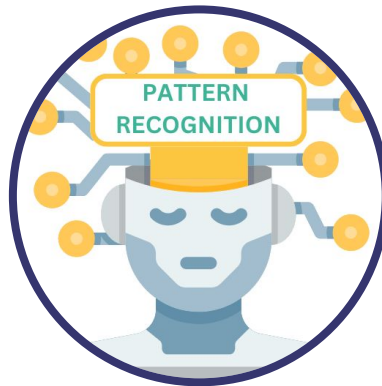
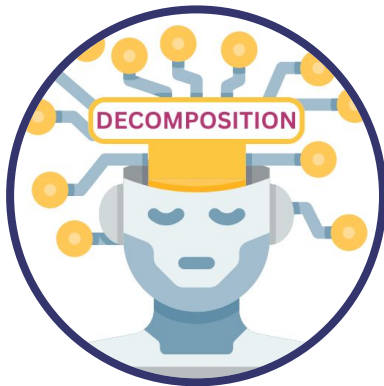


What are the steps for measuring?



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Skills & Procedures
Sort various materials as being natural or processed.

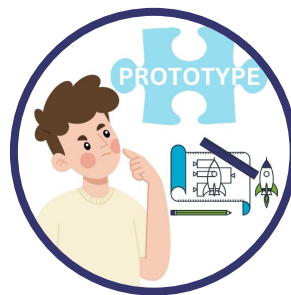


IF it is made by humans THEN it is PROCESSED

IF it comes from plants, animals, the land or the sky THEN it is NATURAL.

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Learning Outcome	Students investigate properties of materials and relate them to a purpose.

Skills & Procedures
Identify natural and processed materials that could be used for a specific purpose. Identify an object that can be made from different materials. Identify natural materials used by local First Nations, Métis, or Inuit and relate the materials' uses to specific purposes.



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Skills & Procedures
Compare the properties of materials to determine what material is best suited for a specific purpose. Explain the relationship between suitability of materials and purpose. Select a material and use it to create an item for a specific purpose. Discuss the choice of material based on availability and purpose.

