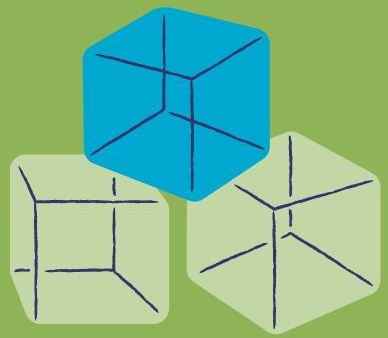
Making Connections



Matter

Computer Science

grade 1

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
Instructions are directions that can be followed and given in various forms, including • verbal • audio • visual • written	The form in which instructions are given may not affect the outcome.	Follow instructions with two or three steps given in different forms.
Many types of instructions need to be in a specific order, such as • directions • recipes • computer programs • safety protocols	Instructions are ordered in a way that will produce a desired outcome.	Determine if instructions with two or three steps given in different orders still produce the desired outcome. Sequence two or three instruction steps to achieve a desired outcome. Exchange ideas for creating three-step instructions that achieve a desired outcome.
Following instructions is a way to demonstrate respect and safety during investigations.	Instructions help to keep people safe.	Follow instructions during investigations.

Design Thinking Process

Learn About Your Audience

Empathize

Define

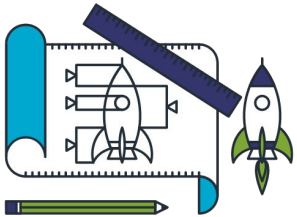
Construct Point of View Based on User Needs

Brainstorm and Come up with Creative Solutions

Ideate

Prototype

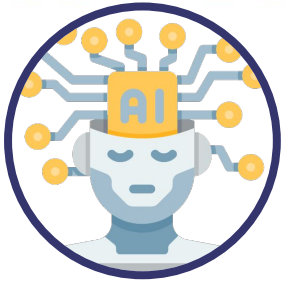
Build Representation of Your Ideas



Test Your Ideas

Test

Computational Thinking

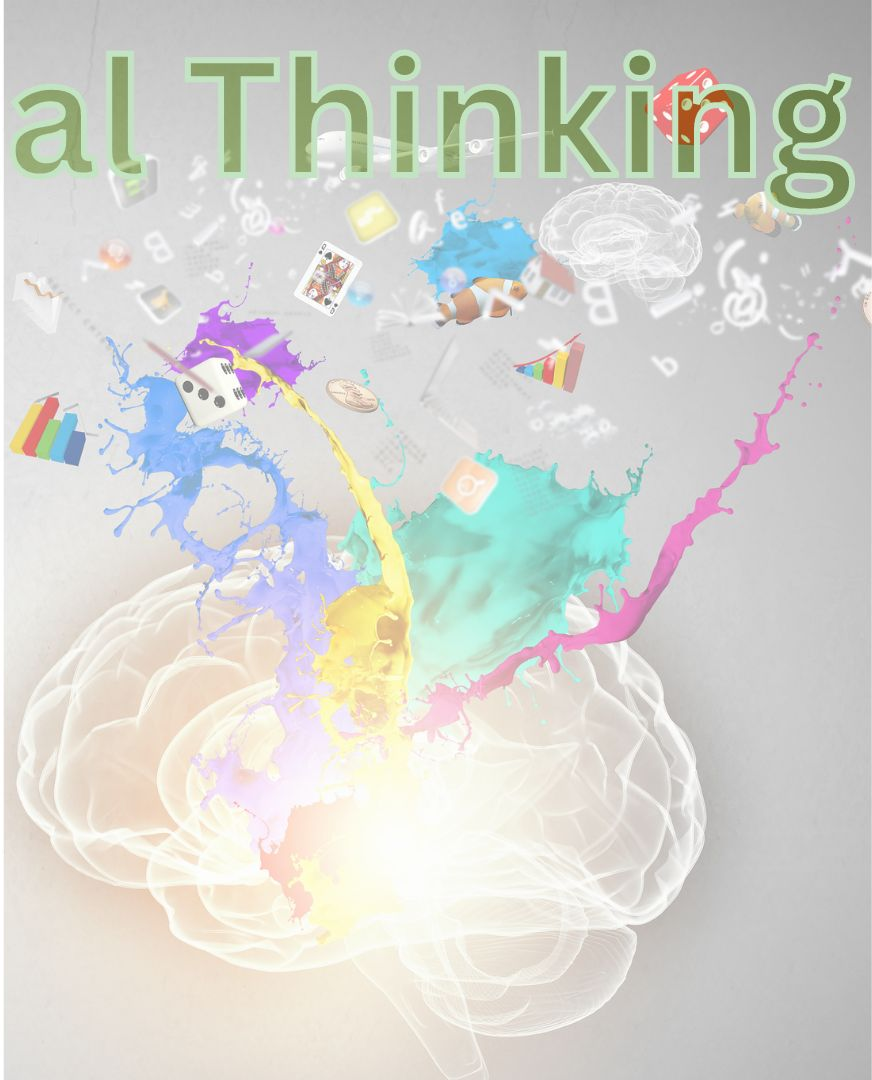


Decomposition

Pattern Recognition

Pattern Abstraction

Algorithm Design



Creativity

Finding different ways to reach the same outcome.

Problem solving to overcome obstacles to achieve a desired outcome.

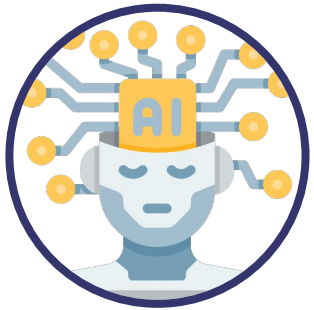
Organizing Idea	Matter: Understandings of the physical world are deepened by investigating matter and energy.
Guiding Question	How can properties of an object be altered?
Learning Outcome	Students analyze properties of objects and investigate how they can be changed.

Skills & Procedures

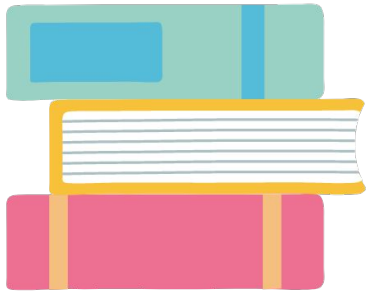
Identify measurable properties of objects.

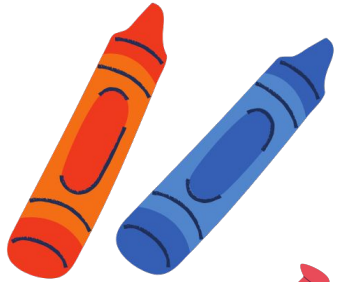
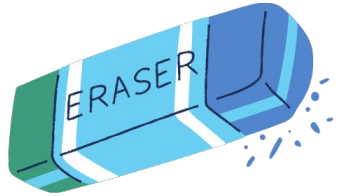
Directly compare the length, area, and weight of various objects.

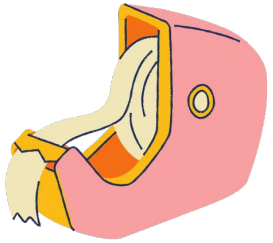
Use various tools safely when examining the properties of objects.



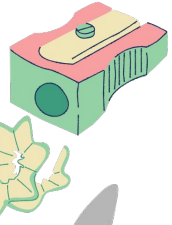
Looking at specific properties involves computational thinking!

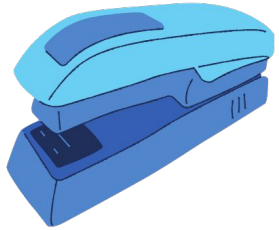
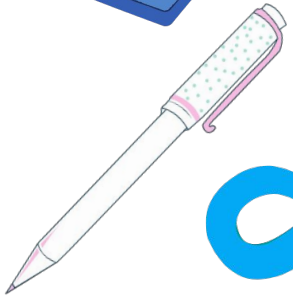


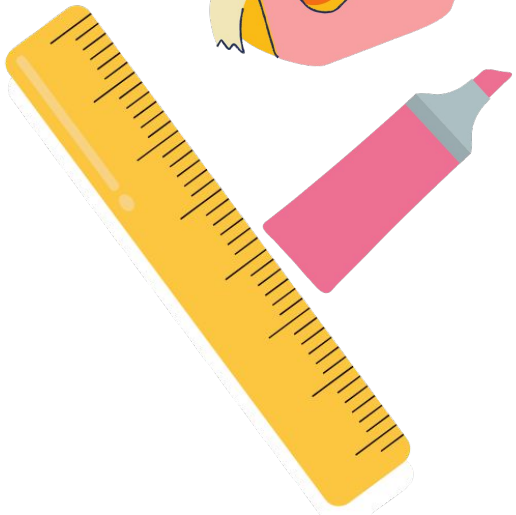



ERASER




glue



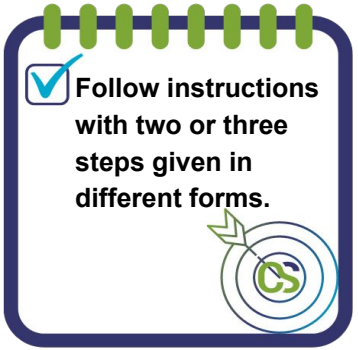



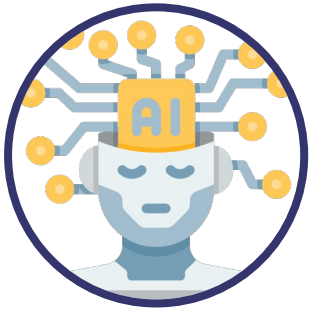



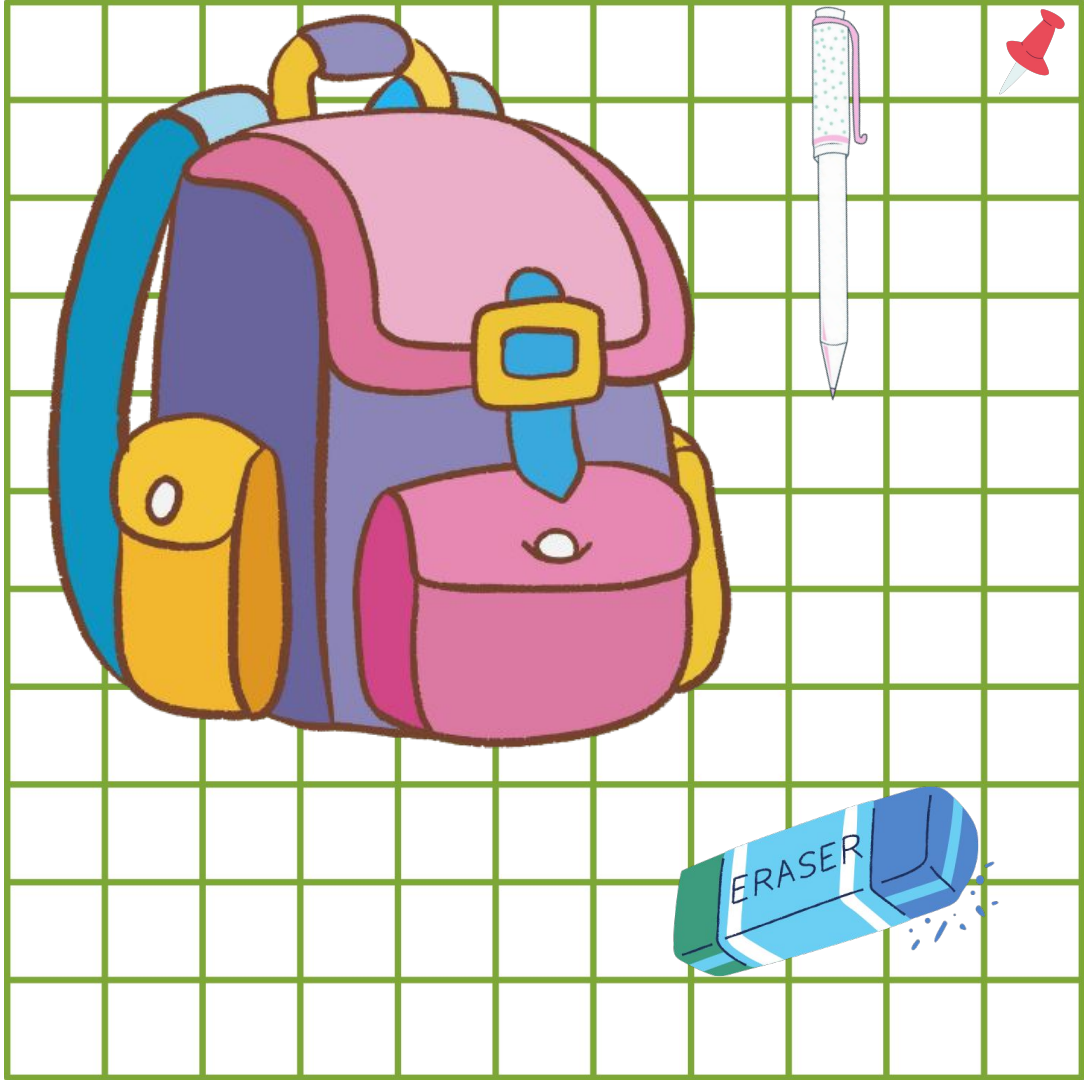
If it covers more than 10 squares THEN it is large.

If it covers less than 10 squares THEN is is small.

If it covers less than 10 squares THEN it is large
Else it is small.







SMALL

LARGE

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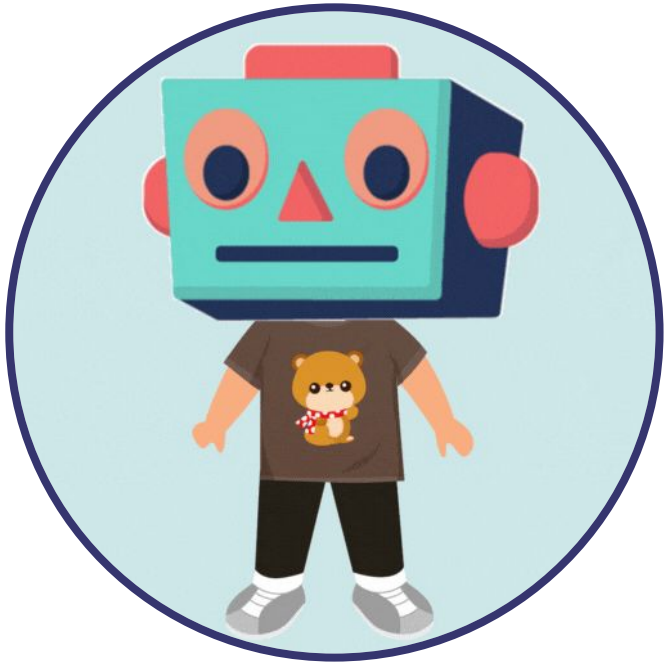


Follow instructions during investigations.

Can you tell me the safety steps for this investigation?

Organizing Idea	**Matter: Understandings of the physical world are deepened by investigating matter and energy.**
Guiding Question	**How can properties of an object be altered?**
Learning Outcome	**Students analyze properties of objects and investigate how they can be changed.**

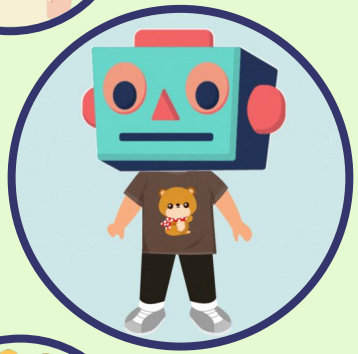
Skills & Procedures

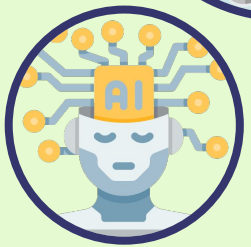
Predict how actions can physically change properties of various objects.

Explore actions that physically change properties of various objects.

Describe physical changes that result from various actions.

Discuss why physical changes do not change what an object is made of.





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