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Grade Span			ICLE Application Model			
K-4 X	5-8	9-12	A	B	C X	D

Instructional Focus:

Writing

Students write for a variety of purposes and audiences with sophistication and complexity appropriate to the grade level.

Unifying Concepts and Processes

Students recognize patterns and processes, making connections in terms of systems and subsystems that explain the interrelationships of the natural and designed world.

Science as Inquiry

Students demonstrate knowledge and skills necessary to perform scientific inquiry.

Habits of Mind

Students develop habits of mind including curiosity, open-mindedness and persistence.

Performance Task

Your task is to make a come back can and explain why it behaves the way it does when you roll it on the floor forward. You will need a cylindrical can such as a Pringles potato chip can with 2 lids alike or a peanut can with 2 lids alike. Cut the bottoms of the can out with a can opener.

Consult the accompanying diagram and follow the directions below.

1. Drill or poke 2 small holes in the two can lids about 2 centimeters apart from the center along a diameter.
2. Take 2 or 3 thin rubber bands, cut them, tie them together, and thread them through the two holes in each of the lids on opposite sides of the can.
3. Before tying the rubber bands together on the inside of the can, thread the rubber band through a heavy weight such as a large nut or several large washers. Be sure the rubber band is taunt and the weight pulls downward slightly before tying the bands together. Do not let the weight drag the bottom of the can. Take your time. This is a stretchy procedure.
4. Place the lid back on the can and you are ready for a demonstration. Roll the can on the floor of a tabletop. Record your results in a journal.
5. Roll your can on a board that is held up on one side by a book to form a slight incline plane. Record what happens. Put a second book under the ramp and repeat. How many books can you put under the ramp before the can is not able to come back?
6. Take your come back can home and share it with your parents or friends without telling them how you made it. Roll it on the floor and let them tell you why they think it behaves that way. Record their thoughts in your journal so you will not forget them.

You are to write a summary of how you built your come back can and your observations when you rolled in on different surfaces. Include your answers to the following questions in your summary. Why did your can roll back to you? What is the purpose of the rubber band? What is the purpose of the weight on the rubber band? You are to include the reactions from your parents or friends in this summary.

ICLE Essential Skills

Apply in writing the rules and conventions of grammar, usage, punctuation, paragraphing and spelling. (ela1)
Use writing as a tool for learning in formats such as learning logs, laboratory reports, note-taking, journals and portfolios. (ela40)
Know and apply the principles of scientific inquiry. <i>(Implicit in this statement are the processes of prediction, estimation, developing hypotheses, drawing conclusions, evaluation, and following ethical principles and professional procedures.) (Not Ranked s114)</i>
Plan and apply real or hypothetical models and constructions to facilitate investigation and learning and the solution to practical problems. <i>(Not Ranked s115)</i>
Make observations using senses and instruments. Inferences and interpretations are arrived at based on observations. Classify observable properties and organize observations in a meaningful and logical way. (s5)

Scoring Guide:

<p>4. The student was able to follow directions and carefully and construct a model capable of rolling out and back. If the can did not work smoothly, the student modified the model independently. The student answered all questions in the summary. The summary was complete, clear, and demonstrated an understanding of energy being transferred from the rolling action to the rubber band. The student shared his creation with others and included their thoughts in the summary.</p> <p>3. The student followed directions and carefully constructed a model capable of rolling out and back. The student required help to make the can work smoothly. The student answered all questions in the summary. The summary was complete, but somewhat unclear. The student still demonstrated an understanding of energy transfer. The student shared his can with others and included their thoughts in the summary.</p> <p>2. The student needed help to follow directions. The student did successfully construct a model capable of rolling out and back. If the can did not work smoothly, the student required help. The student attempted to answer all questions in the summary. However, the summary was unclear and only demonstrated a partial understanding of how the can worked. The student shared his can with others and included their thoughts in the summary.</p> <p>1. The student required help in each step to successfully construct a model that would work. The student required help to make it work smoothly. The summary was incomplete and did not demonstrate an understanding for the behavior of his can. The student did not share his can with others.</p>
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Keywords

English Language Arts	Mathematics	Science
Reading	Algebra	Earth Science
Writing Organizing Journal Laboratory Report	Geometry	Life Science
Communications	Statistics	Chemistry
Literature	Calculus	Physics Scientific Inquiry Model Energy Cause and Effect
Other	Trigonometry	Other
	Other	

Picture, Chart, or Graph file name(s):

Come Back Can

