Title: Using a Ramp Class: Elementary Science

Topic: Motion – incline & mass

Big Idea(s)/ Concept(s) Addressed: What affects the speed of an object? Through discussing the relationship between mass, incline, and distance traveled

Specific Objective(s): To find what factors affect the distance and speed of an object down the ramp; ability to compare different ramps, and different masses of the car; ability to make a hypothesis; define relationship between incline and distance (mass constant) & mass and distance (incline constant)

Required Materials:

* 2 pieces of wood of the same length (labeled A and B)
* 4 blocks of different heights (labeled 1, 2, 3, and 4)
* 2 match box cars
* Tape measure

Activities

* Engagement – students are to answer the question individually, “What makes an object travel a further distance down a ramp?”
* Explore – Students get into groups of 2-3; given the materials above - build different ramps and record the distance the car traveled; write down what factors caused the car to travel the different distances that occurred through the use of different ramps
* Explain – Have students present & explain their results; introduce and define terms such as gravity, speed, distance, incline, mass, hypothesis
* Elaborate – give the students three cars- the original car, one with 20 extra grams, one with 40 extra grams; have students create a hypothesis on how far each of the cars of different masses are going to travel; have them test their hypothesis and record results; discuss results
* Evaluate / formative assessment –   
   - Multiple choice & fill in the blank: to define terms  
   - Multiple choice: questions that present different displays with differing factors (ramp incline and mass of car) and which will travel further  
   - Essay - Explain the relationship between mass, incline and distanced traveled of an object
* Go Further/ next class period – purpose questions about what will happen when the incline and mass are changed together