

## 4th Grade Pull Back Cars Lesson Plan

**Teacher**

**Date**

**School**

**SLE # NS.1.4.1: Communicate**

observations orally, in writing, and in graphic organizers: line graphs; NS.1.4.6: Estimate and measure length; NS.1.4.9: Identify variables that affect investigations; PS.6.4.1: Investigate the relationship between force and direction

### **Objectives:**

**Content:** I will be able to investigate the relationship between force and direction.

I will be able to estimate and measure lengths.

I will be able to communicate observations in graphic organizers.

**Language:** I will be able to communicate observations orally and in writing during the activity.

**Assessment:** The teacher will be able to assess student knowledge based on completed charts, graphs, and written summary.

**Technology/Materials:** Pull Back Cars (available at Dollar Tree), graph paper, data table, meter stick or measuring tape, masking tape, carpeted floor, tile floor, thick black garbage bags

**Vocabulary:** line graphs, investigate, measure, length, force, acceleration, direction, relationship, compare, friction, variables

**Bloom's:**  Remembering  Understanding  Applying  Analyzing  Evaluation  Creating

**Questions:** How do cars work? Describe what you would need to do in order to get a pull back car to work. Predict what would happen if you were to pull the car back different lengths. Would the distance it travels be the same? Describe what would happen if you were to change the type of surface you were using. What do you think would happen if you were to test on tile instead of carpet?

**High Yield Strategies:**  Identifying similarities & Differences  Summarizing & Note Taking  Cooperative Learning  Reinforcing Effort & Providing Recognition  Setting Objectives & Providing Feedback  Generating & Testing Hypotheses  Cues, Questions & Advanced Organizers  Homework & Practice  Nonlinguistic Representations

### **Instructional Strategies:**

**Set:** Activate prior knowledge by asking questions listed above. Allow students an opportunity to observe the pull back cars. Allow the students to investigate how to use them before beginning the activity.

**Model:** Demonstrate how to operate the pull back cars. Show the students the materials that they will be using. Explain that they will be conducting tests to determine how the amount of force added and the type of surface they test on will affect the direction and speed of the cars.

**Guided Practice/Strategies:** Allow students to investigate the cars and practice operating them. Help students measure and create  $\frac{1}{2}$  inch, 1 inch, and  $1\frac{1}{2}$  inch marks on the floor using masking tape. These marks will be how far the students will pull the cars back. They will test distance of travel from  $\frac{1}{2}$  inch, 1 inch, and  $1\frac{1}{2}$  inches. The students will test on the carpet and on tile. If no tile is available, lay out thick black garbage bags or tarps for the students to test on.

**Intervention Strategies:** Remodel as necessary, provide picture cards of cars, and walk around throughout the activity to help facilitate learning.

**Accommodations & Modifications (IEPs)** See individual IEPs for assistance. Modify lesson by allowing students to draw instead of write and/or shorten activity.

**Independent Practice/Activities:** Students will test the distance of travel at each mark. Students will measure distance from starting line to front bumper of car. The students will then write data in their data table. Students will complete 3 tests at each mark. After students are

done collecting data, they should then create a graph that best fits.

**Enrichment Activities:** Allow students to design their own test.

**Closure:** Have students write/draw about the following questions.

1. Did the car travel further on carpet or on the tile? Explain what may have caused this.
2. Did pulling the car back further affect how far the car traveled?
3. If you were going to do this again, what would you do differently? Why?

**Homework:** Allow students to complete the graphs and/or the closure writing.