Alpha-Robotics

A Multi-Disciplinary Approach To Teaching Engineering Concepts to Young Children

Down the Ramp: Using Lego Pieces to Problem Solve
Two 60 minute sessions

Objective: Students will recognize that the variable of the wheel size can change the distance the vehicle will travel.

Materials:

- Lego pieces: 2 axles
- Lego plates, bricks, and beams
- Lego wheels of different sizes
- 2 Tape measures- 40 feet long if possible-
- 2 wooden boards (24 x 24) to be used as ramps
- Down the ramp worksheet
- Down the ramp graph worksheet

Procedure:

1. Teams composed of two students will be making a vehicle, using Lego pieces. The teacher will show the students an axle, how the axles fit into a beam hole, and how a wheel is connected to an axle. Using bags of Lego pieces provided by the teacher, students will create their vehicles without adding the wheels. After they have done this, the teacher will explain how the student teams will pick 4 wheels for the vehicle, any combination of small, medium, or large wheels, and place them on their vehicle. They will write down the number and size of these wheels they will use under Trial One on the Down the Ramp Worksheet.
2. Then the students will release their cars down the ramp and they will record on the Down The Ramp Worksheet the

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distance that their car goes. The teacher will then explain that the students will pick a different combination of wheels for their vehicle than they used in trial 1. The students will try different combinations to determine which wheels allow their vehicle to go the farthest. Any combination of small, medium, or large wheels will do. The students will record the size and number of the wheels on the Down the Ramp Worksheet on trial 2. Then the students will have their cars go down the ramp and record the distance that their car travels. Students will try a different combination of wheels for trials three and four and again record their results. The trials may take two class sessions.

3. The students will graph the results of their trials.
4. Students will discuss which wheel combination went the furthest and why they think so. The teacher may choose to discuss circumference and how the larger wheels have a larger circumference which can affect the distance the vehicle travels.
5. As a supplementary lesson, the students can also measure the circumferences of the different sized wheels.

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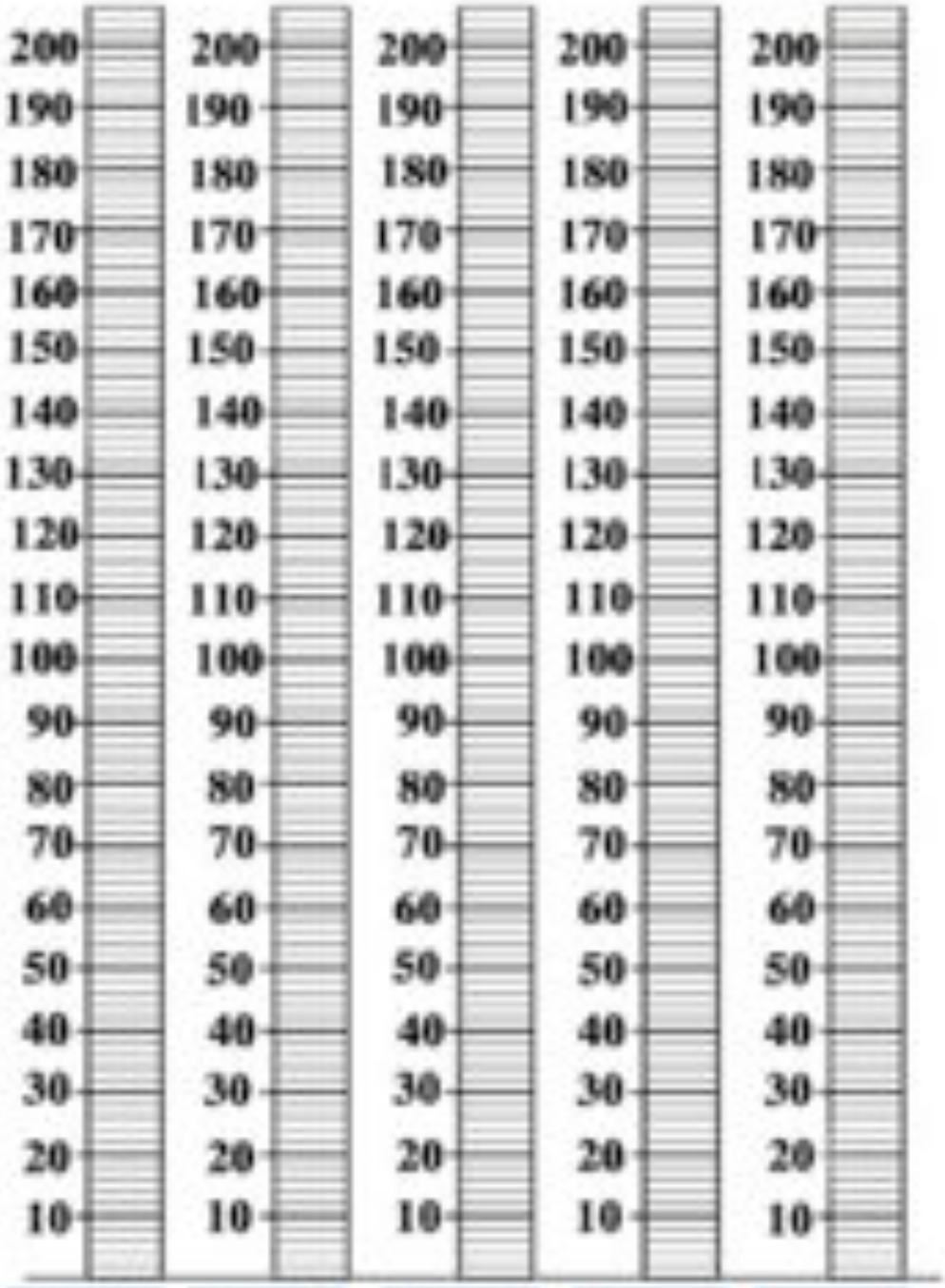
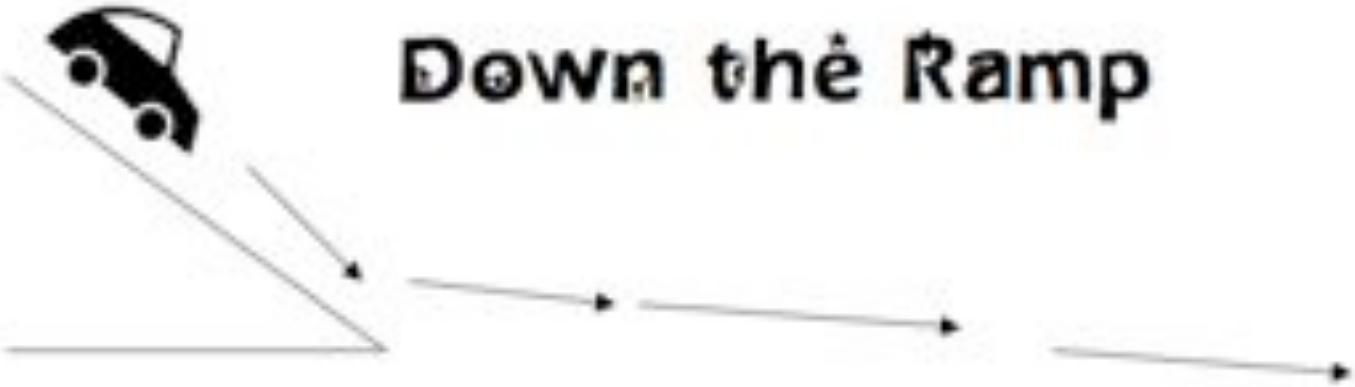
DOWN THE RAMP GRAPH



TRIAL 1 DISTANCE	TRIAL 2 DISTANCE	TRIAL 3 DISTANCE	TRIAL 4 DISTANCE	TRIAL 5 DISTANCE

_____inches _____centimeters

Down the Ramp



TRIALS	# BIG WIDE	# MEDIUM	#SMALL	# SMALLEST	DISTANCE
1					
2					
3					
4					

TEAM MEMBERS _____

Inches		Centimeters	

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