

WAMC Lab Template

Math Concept(s): Linear Functions

Source / Text: Handout

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Attach the following documents:

Lab Instructions:

1. In the Gym you will start with a 6' long ramp propped up on two math text books, roll a car down the ramp and record the distance the car rolls.
2. Next increase the ramp height by two text books and roll the same car down the ramp, recording the distance the car travels.
3. Repeat this procedure until your height is 10 books tall, make sure and record the distance the car rolls each time you add books.

Student Handout(s)

Student worksheet to organize and record data.

Rubric and/or Assessment Tool:

Classroom discussion about the information that was recorded.

Score the worksheet and data that was recorded.

Indicate "SPECIFIC" relationship to Science, Technology, or Engineering

This model that we have created is a representation of a linear function comparing height and distance traveled. The mass of the car will remain the same but its speed will change as the ramp gets steeper so this lab will relate to scientific thinking as well.

Short Description (Be sure to include where in your instruction this lab takes place):

This is a lab that I will use to introduce linear functions at the beginning of the linear function chapter in our text book.

Lab Plan

Lab Title: Car Ramp Lesson

Prerequisite skills:

1. Students must be able to accurately measure the distance from the end of a ramp to the stopping point of the model car/truck they are using.
2. Students must be able to record data onto a table that compares two pieces of information.
3. Students must be able to graph data from a table of values.

Lab objective:

1. Accurately record the distance a car rolls off the end of a ramp.
2. Compare the distance the car rolls with the height of the ramp.
3. Determine the time of function that this procedure created.

Standards:

Mathematics K–12 Learning Standards:

- FL-E.1.b

Standards for Mathematical Practice:

- MP1, MP2, MP3, MP6 & MP7

K-12 Learning Standards-ELA (Reading, Writing, Speaking & Listening):

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Leadership/21st Century Skills:

<u>21st Century Interdisciplinary themes</u> (Check those that apply to the above activity.)			
<input type="checkbox"/> Global Awareness	<input checked="" type="checkbox"/> Financial/Economic/Business/Entrepreneurial Literacy	<input type="checkbox"/> Civic Literacy	
<input type="checkbox"/> Health/Safety Literacy	<input type="checkbox"/> Environmental Literacy		
<u>21st Century Skills</u> (Check those that students will demonstrate in the above activity.)			
LEARNING AND INNOVATION	INFORMATION, MEDIA & TECHNOLOGY SKILLS	LIFE & CAREER SKILLS	Productivity and Accountability
<u>Creativity and Innovation</u>	<u>Information Literacy</u>	<u>Flexibility and Adaptability</u>	<u>Leadership and Responsibility</u>
<input checked="" type="checkbox"/> Think Creatively	<input checked="" type="checkbox"/> Access and Evaluate Information	<input checked="" type="checkbox"/> Adapt to Change	<input checked="" type="checkbox"/> Manage Projects
<input checked="" type="checkbox"/> Work Creatively with Others	<input checked="" type="checkbox"/> Use and manage Information	<input checked="" type="checkbox"/> Be Flexible	<input checked="" type="checkbox"/> Produce Results
<input type="checkbox"/> Implement Innovations	<u>Media Literacy</u>	<u>Initiative and Self-Direction</u>	<input type="checkbox"/> Guide and Lead Others
<u>Critical Thinking and Problem Solving</u>	<input type="checkbox"/> Analyze Media	<input type="checkbox"/> Manage Goals and Time	<input type="checkbox"/> Be Responsible to Others
<input type="checkbox"/> Reason Effectively	<input type="checkbox"/> Create Media Products	<input type="checkbox"/> Work Independently	
<input checked="" type="checkbox"/> Use Systems Thinking	<u>Information, Communications and Technology (ICT Literacy)</u>	<input checked="" type="checkbox"/> Be Self-Directed Learners	
<input type="checkbox"/> Make Judgments and Decisions	<input type="checkbox"/> Apply Technology Effectively	<u>Social and Cross-Cultural</u>	
<input checked="" type="checkbox"/> Solve Problems		<input type="checkbox"/> Interact Effectively with Others	
<u>Communication and Collaboration</u>		<input type="checkbox"/> Work Effectively in Diverse Teams	
<input type="checkbox"/> Communicate Clearly			
<input type="checkbox"/> Collaborate with Others			

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Teacher Preparation: (What materials and set-up are required for this lab?)

Materials

- 3 – 6' boards
- 3 – model cars
- 3 - Measuring tape
- 3 - rulers

Set-Up Required:

- Reserve the gym

Lab Organization Strategies:

Leadership (Connect to 21st Century Skills selected):

- Assign a group leader – this is the only person allowed to communicate with me
- Assign a person to measure
- Assign a person to record data
- Assign one person to gather materials and assist the person with the measuring tape

Cooperative Learning:

- Class will be divided into groups of four and have individual duties within that group

Expectations:

- Students will be on task and busy working with each other in the gym.

Timeline:

- This is a one period project in the gym and a twenty minute follow up in the classroom.

Post Lab Follow-Up/Conclusions:

Discuss real world application of learning from lab

- Would it be .
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Career Applications

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Optional or Extension Activities

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