

Life
Physical
Earth and Space

LESSON 38

Investigating how the steepness of an inclined plane affects the distance a toy car travels

Lesson Preparation

Program Materials

- Experiment 38
- Lesson Review 38

Tool Kit Materials

- Meter stick
- Plastic toy car

Collected Materials

- 3 copies of hardback books of the same thickness (approximately 1")
- Gameboard
- Optional: File folders

The Lesson

“In your last science lesson, you learned how friction affects movement on an inclined plane.”

“How did friction affect the distance the car traveled?” *The salt caused more friction, and the car didn’t go as far.*

“Today you will conduct an experiment to test how the steepness of an inclined plane affects how far a car will roll across the floor.”

- Hand Experiment 38 to your child.

“The title of this experiment is ‘Inclined Plane Experiment.’”

“What is the first word under the title?” *Purpose*

“The purpose is the reason you are doing the experiment.”

“Point to the words as I read the purpose.”

- Read the purpose **“To observe if changing the steepness of an inclined plane changes the distance a toy car will travel.”**

“What is the next boldfaced word?” *Materials*

“The materials are what you will use to do the experiment.”

“Point to the words as I read the list of materials.”

“The materials you will use are: toy car, board to make inclined plane, three identical books, meter stick.”

- Show your child the materials he/she will use.

“What is the next boldfaced word?” *Directions*

“The directions tell you what to do in the experiment.”

“Point to the words as I read the directions.”

- Read the directions to your child.

“Point to the words ‘Collect Data.’”

“Collecting data means writing down what happens during the experiment.”

“You will do trials on inclined planes at three different heights.”

- Point to and read “1 book high,” “2 books high,” and “3 books high.”

“There will be three trials for each inclined plane.”

- Point to the three columns for each trial.

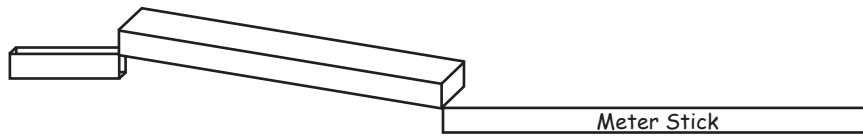
“You will record your data for each trial on the chart below the heading ‘Distance Traveled.’”

“When you finish collecting data, you will write your conclusion.”

- Point to the word “Conclusion.”
- Read the question “What did you learn from this experiment?”

“You will begin this experiment with an inclined plane that is one book high.”

- **Note:** This experiment is best conducted on the floor.
- Make an inclined plane by using a hardback book and a gameboard. Place one edge of the gameboard on the edge of the book. Place the zero end of the meter stick on the floor next to the end of the inclined plane. The meter stick should be to one side so the car will not hit it when the car rolls across the floor. If this activity is being done on a carpeted floor, place file folders at the end of the inclined planes so the car will roll more easily.



“Let’s measure how far the toy car will travel down the inclined plane with the steepness of one book.”

“You will use the meter stick to find the number of centimeters the car traveled beyond the end of the inclined plane.”

- Hand the car to your child.

“Place the back tires of the car at the top of the inclined plane.”

- Assist your child as he/she places the car in the center of the inclined plane.

“Now let the car go without pushing it.”

“Measure from the end of the inclined plane to the front tire of the car.”

- Assist your child as he/she measures the distance in centimeters from the end of the inclined plane to the front tire of the car.

“How far did the car travel?”

“Write the distance the car traveled next to ‘1 book high’ and below ‘Trial 1’ on your paper.”

- Assist your child as he/she does this.

“That was the first trial.”

“Now try that again.”

- Repeat, for Trials 2 and 3.

“Which of these distances is the greatest?”

“Which of these distances is the least?”

“Which distance is between the other two?”

“Circle the number that is between the other two.”

“Which number did you circle?”

“This is the average distance the car rolled on an inclined plane one book high.”

- **Teacher Note:** This is an example of one type of average in mathematics. This average is called the median.

“This inclined plane was one book high.”

“Adding more books will make a steeper inclined plane.”

“What do you predict will happen to the distance the car rolls if the inclined plane is steeper?”

“Let’s check your prediction.”

- Repeat the trials with inclined planes that are two books high and three books high.

“What do you notice happened to the distance the car traveled when the inclined plane became steeper?” *The car traveled farther.*

“An inclined plane that is steeper will make a car travel farther.”

- **Teacher Note:** If the steepness of the inclined plane becomes too great, the car will not travel as far when it hits the flat surface.

“At the bottom of the page, you will write a conclusion that summarizes what you learned from this experiment.”

“What could you write?” *An inclined plane that is steeper will cause a toy car to travel farther.*

- Allow time for your child to explain in writing what happened in the experiment.

“What is something you learned in today’s science lesson?”

“In your next science lesson, you will learn what happens when objects of different masses travel down an inclined plane.”

- **Note:** The gameboard will also be used in Lessons 39 and 42.

Lesson Review

- **Note:** Lesson reviews may be completed on the same day the lesson is taught or on the following day.
- Hand Lesson Review 38 to your child.
- Read the directions and questions one at a time to your child. Allow time for your child to answer each question before continuing. Allow your child to use his/her booklet to answer the questions.
- Correct your child’s paper. Review incorrect answers with your child.

Name _____ Date _____

Experiment 38
Science 2 Lesson 38

Inclined Plane Experiment

Purpose: To observe if changing the steepness of an inclined plane changes the distance a toy car will travel.

Materials: Toy car, board to make inclined plane, three identical books, meter stick

Directions:

1. Use a book and the board to make an inclined plane.
2. Place the zero on the meter stick at the end of the inclined plane.
3. Let your car roll down the inclined plane. Do not push the car.
4. Write the distance your car travels from the end of the inclined plane.
5. Repeat this two more times.
6. Repeat by using two books and then three books.

Collect Data: Write the distance your toy car travels down an inclined plane.

Inclined Plane	Distance Traveled		
	Trial 1	Trial 2	Trial 3
1 book high			
2 books high			
3 books high			

Conclusion: What did you learn from this experiment?

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Name _____ Date _____

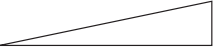
Answer Key
Lesson Review 38
Science 2 Lesson 38

Steepness of Inclined Plane

Fill in the circle next to the correct answer.

1. Which inclined plane will cause a toy car to travel the farthest distance across the floor?

(A) 

(B) 

Look Back

Fill in the blanks with a word from the Word Box.

work force friction
gravity lubricant wheel

2. A lubricant is used to reduce the amount of friction between two objects. (p. 5)
3. A round object that can roll and makes it easier to move an object is called a wheel. (p. 7)
4. Any push or pull is called force. (p. 3)
5. An invisible force that can slow or stop a moving object is called friction. (p. 5)
6. Scientists say work has been done when an object is moved by a force pushing or pulling it. (p. 6)
7. An invisible force that pulls objects is gravity. (p. 4)

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