

Date: \_\_\_\_\_

Your Name: \_\_\_\_\_

Partner's Name(s): \_\_\_\_\_



# NEW ENGLAND COMMON ASSESSMENT PROGRAM

## Practice Test Task Booklet 2008

Grade 8

### Science Inquiry Task

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### Rainy Morning

**GRADE 8  
PRACTICE TEST SCIENCE INQUIRY TASK  
TASK BOOKLET**

**Directions:**

This Inquiry Task will measure your ability to think scientifically. In this task, you will work with your partner(s) to complete a science investigation. You will make predictions, plan and critique investigations, analyze data, and develop explanations.

First you will read a short story, and then you will make predictions based on the information in the story. You will work with a partner to complete a task and collect data. After you have finished the task and recorded your data, you will work individually to answer questions. You will have 90 minutes to complete the task and answer the questions. You may include drawings or labeled diagrams to help explain your answers.

Read the story below.

**Rainy Morning**

Ethan woke up one morning to find the street covered with water from a heavy rain. On the way to school, his mother drove down a steep hill. At the foot of the hill, it happened! Their car would not stop on the slippery road and it slid into another car that was parked in the street. The car that was parked in the street was stationary. Stationary means nonmoving or parked.

Luckily, Ethan and his mother had their seat belts fastened, and both were fine. Ethan was surprised by what happened. While his mother's car stopped close to the foot of the hill, the car they hit moved far down the flat and slippery street—even though both cars were about the same size!

Later on in science class, Ethan thought about force and the motion of moving objects. He wondered what would have happened if the vehicle they hit were a large truck instead of a medium-sized car. He also wondered what would have happened if the hill were not so steep. Ethan discussed the situation with his teacher and classmates and they decided to investigate the following questions:

**How will the mass of a parked car affect the distance it moves when hit?**

**How might the slope of the hill affect the distance the parked car moves?**

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**Making Predictions**

**Prediction A:**

Using Ethan's experience and your understanding of force and the motion of objects, predict **how the mass of a parked car will affect the distance the parked car moves when hit**. Explain your answer.

Write your prediction and explanation in the box below.

**Prediction B:**

Using Ethan's experience and your understanding of force and the motion of objects, predict **how the slope of a hill will affect the distance moved by a car that gets hit**. Explain your answer.

Write your prediction and explanation in the box below.

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**Materials for the Investigation**

On the placemat at your desk or table, you have been given these materials:

- 1 cardboard ramp
- 1 battery
- 3 washers
- 1 plastic cup
- 1 wood block

Look at the materials on your placemat. Raise your hand and tell your teacher if you are missing anything.

**Setting Up and Conducting Your Investigation**

**Directions:**

In this part, you will work with your partner(s) to set up and conduct an investigation and to collect your data. Follow the directions in this Task Booklet. Please remember that in addition to working with the science materials, you must record your data in the tables on page 7 in this Task Booklet.

You will

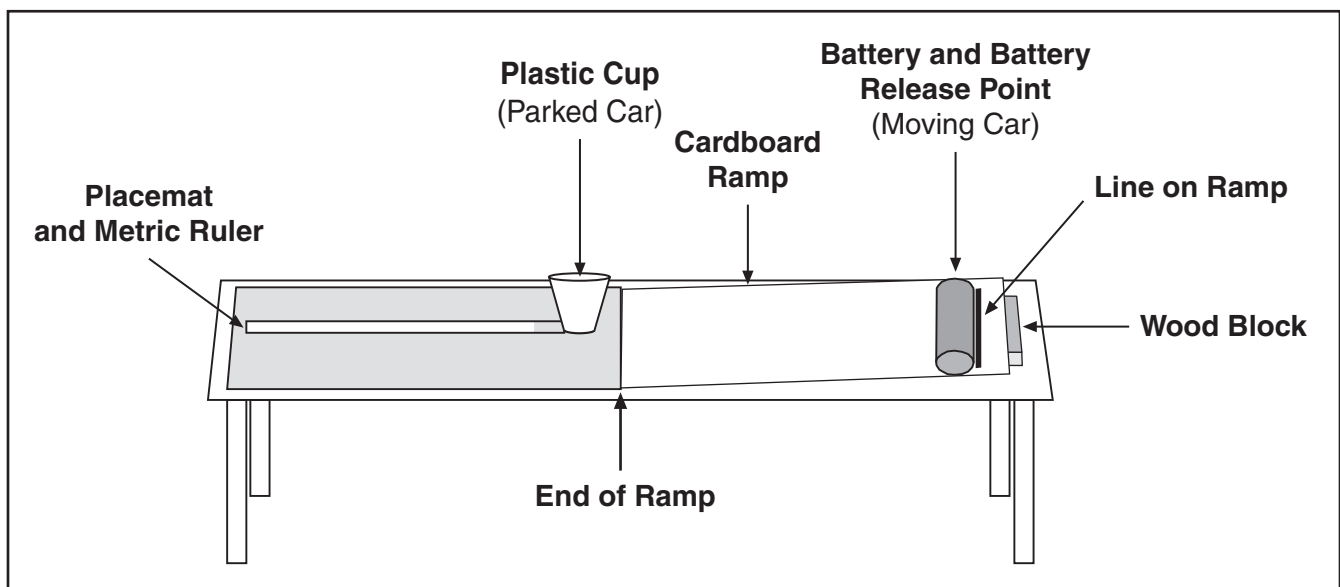
- share one set of materials with your partner(s),
- take turns so that all students in your group may use the materials,
- record your observations and data in this Task Booklet,
- copy your data from this Task Booklet to page 2 in your Student Answer Booklet.

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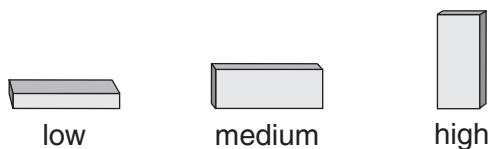
**Setting Up the Model:**

**Directions:**

1. Put the low end of the ramp on the line on your placemat marked **“End of Ramp.”**
2. Place the wood block under the other end of the ramp so that the ramp is in its lowest **position**. The block should be at the end of the cardboard ramp, as shown in the picture below.
3. Note that a line has been drawn on the cardboard ramp. This line should be closer to the **high end** of the ramp.
4. Place the parked car (plastic cup) on the circle on your placemat marked **“Parked Car.”**



**Note:** During the investigation, you will turn the wood block to make the slope of the ramp low, medium, or high, as shown below.



**Set up the materials for your investigation as shown in the picture above.**

Remember you are helping Ethan and his classmates to investigate the following questions:

**How will the mass of a parked car affect the distance it moves when hit?**

**How might the slope of the hill affect the distance the parked car moves?**

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## Conducting Your Investigation and Collecting Data

### Part I: Small-Mass Car (1 Washer)

#### Directions:

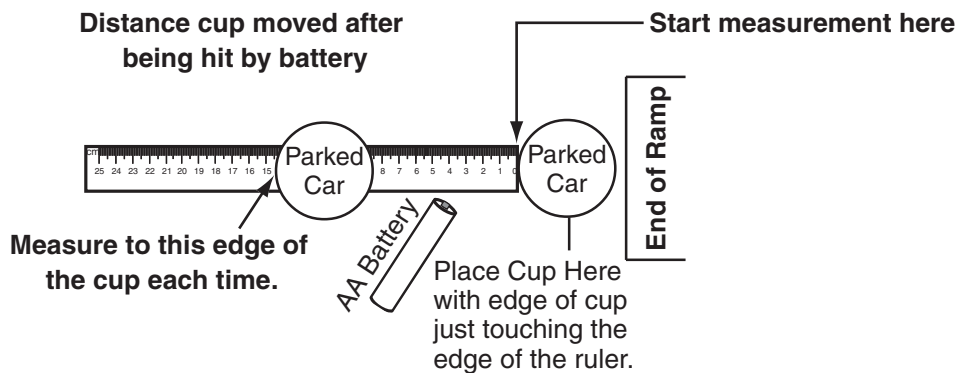
You will investigate what happens when a moving car goes down (1) a low slope, (2) a medium slope, and (3) a high slope and then hits a **small-mass** parked car (one washer in the cup).

Do three trials for each slope height.

#### LOW SLOPE

For each of the three trials:

1. Turn the wood block so that the ramp is in the **low slope position**.
2. Place **one washer** in the cup.
3. Hold the battery on the line on the ramp. Hold the ramp steady with your other hand.
4. **Release the battery** by letting it roll down the ramp. Try to position the battery so that it will hit the cup in the center. **If the battery bounces off to the side or misses the cup, repeat the trial.**
5. Use the ruler on your placemat to **measure the distance that the cup at the bottom of the ramp moves**. (Measure as shown in the picture below.) If the cup moves off the center of the ruler, you can still measure the distance the cup moved along the ruler.
6. Record the measurements in the small-mass car data table on page 7.



#### MEDIUM SLOPE

For each of the three trials:

1. Turn the wood block so that the ramp is in the **medium slope position**.
2. **Repeat steps 2 through 6.**

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## HIGH SLOPE

For each of the three trials:

1. Turn the wood block so that the ramp is in the **high slope position**.
2. Repeat steps 2 through 6.

## Part 2: Large-Mass Car (3 Washers)

**Directions:**

You will investigate what happens when a moving car goes down (1) a low slope, (2) a medium slope, and (3) a high slope and then hits a **large-mass** parked car (three washers in the cup). **Refer to the picture on page 5 when measuring the distance the cup moves.**

## LOW SLOPE

For each of the three trials:

1. Turn the wood block so that the ramp is in the **low slope position**.
2. Place **three washers** in the cup.
3. Hold the battery on the line on the ramp. Hold the ramp steady with your other hand.
4. **Release the battery** by letting it roll down the ramp. Try to position the battery so that it will hit the cup in the center. **If the battery bounces off to the side or misses the cup, repeat the trial.**
5. Use the ruler on your placemat to **measure the distance the cup at the bottom of the ramp moves**. (Measure as shown in the picture on page 5.) If the cup moves off the center of the ruler, you can still measure the distance the cup moved along the ruler.
6. Record the measurements in the large-mass data table on page 7.

## MEDIUM SLOPE

For each of the three trials:

1. Turn the wood block so that the ramp is in the **medium slope position**.
2. Repeat steps 2 through 6.

## HIGH SLOPE

For each of the three trials:

1. Turn the wood block so that the ramp is in the **high slope position**.
2. Repeat steps 2 through 6.

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**Data Tables**

**Effect of Slope on the Movement of the Small-Mass Stationary Car**

<b>Trials</b>	<b>Low Slope</b>	<b>Medium Slope</b>	<b>High Slope</b>
1			
2			
3			
<b>Average Distance</b>			

**Effect of Slope on the Movement of the Large-Mass Stationary Car**

<b>Trials</b>	<b>Low Slope</b>	<b>Medium Slope</b>	<b>High Slope</b>
1			
2			
3			
<b>Average Distance</b>			

Your teacher will give you additional directions for completing your individual responses.

- Remember to copy your data from the data tables above to the data tables on page 2 in your Student Answer Booklet.
- Remember to clean up your materials after you have recorded your data.

