

Date: _____

Your Name: _____

Name(s) of Partner(s): _____



**NEW ENGLAND
COMMON ASSESSMENT PROGRAM**

Released Science Inquiry Task

Sled Pull

2009

Grade 4

Student Answer Booklet

SCIENCE

Organizing and Presenting Your Data

Directions: You will work on your own to

- copy your data.
- use your results.

You may use the Word Bank below during this session.

Word Bank

Affect	to change something
Change in position	a move from one place to another
Fair test	an investigation in which scientists change one thing at a time
Force	a push or pull on an object
Median	the middle number in a set of numbers ordered from lowest to highest or from highest to lowest Example: Trial 1 has 12 pennies, Trial 2 has 10 pennies, and Trial 3 has 15 pennies. The order of these numbers from lowest to highest is 10, 12, 15. The <i>median</i> (or the middle number) in this set is 12.
Model	a smaller version of something that happens in the world
Prediction	what you think will happen based on <i>what you already know</i>
Trend	a pattern in a set of data
Trial	each time you do the steps of an investigation

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Make sure that you copy your data from the Data Table on page 7 in your Inquiry Booklet to the Data Table below.

When you are finished, record the median for each row of trials in the Data Table below. Remember, the median is the middle number in a set of numbers ordered from lowest to highest or from highest to lowest.

Data Table: Measuring Amounts of Force

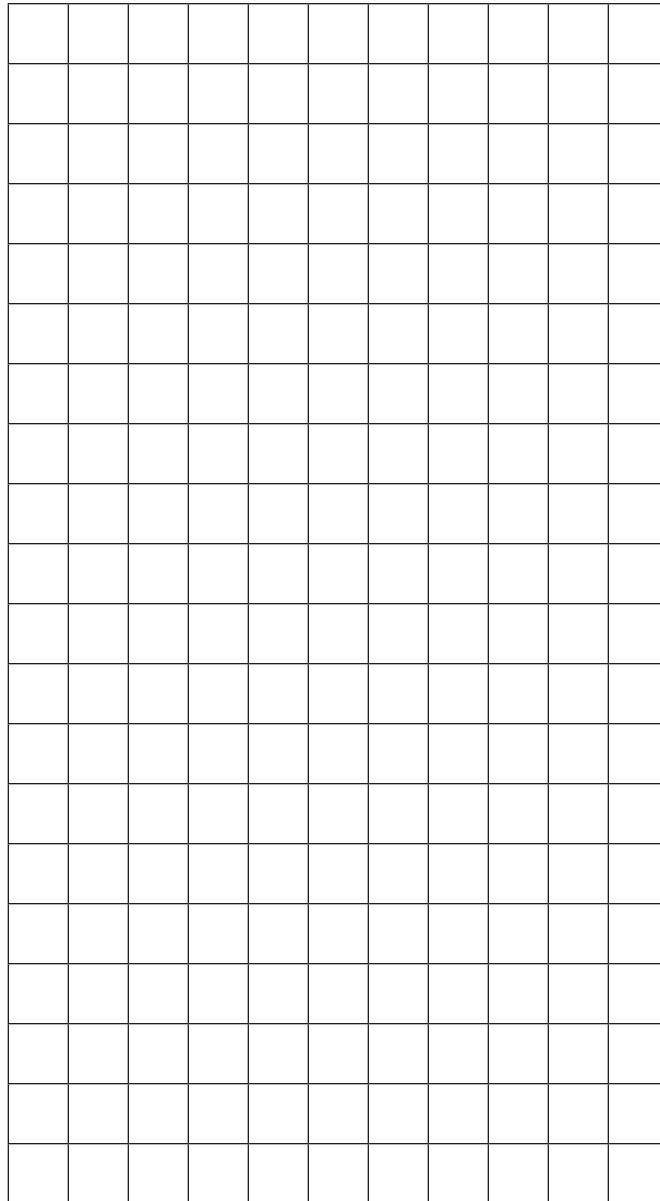
	Number of Pennies			
	Trial 1	Trial 2	Trial 3	Median
Box with No Added Weight				
Box with Small Weight				
Box with Large Weight				

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1. Make a bar graph that shows the data you collected. Graph the median numbers of pennies it took to move the **box with no added weight**, the **box with the small weight**, and the **box with the large weight**.

Title: _____

Median Number of Pennies



Weight in Boxes

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Analyzing and Using Your Results

Directions: Use data from your investigation to answer questions 2 through 5.

- 2.** What is the median number of pennies (force) it took to move the box with no added weight to the straw at the end of the placemat?

_____ pennies

What is the median number of pennies (force) it took to move the box with the small weight to the straw at the end of the placemat?

_____ pennies

What is the median number of pennies (force) it took to move the box with the large weight to the straw at the end of the placemat?

_____ pennies

- 3.** Explain how the amount of force (pennies) needed to move the box changed as the weight in the box became heavier. Use **two** examples from your data to support your answer.

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4. Copy your prediction from page 5 in your Inquiry Booklet to the lines below.

I predict

Circle one of the following statements:

- The data **supported** my prediction.
- The data **did not support** my prediction.

My evidence is

5. Read the definition below from the Word Bank on page 1.

Fair test: an investigation in which scientists change one thing at a time

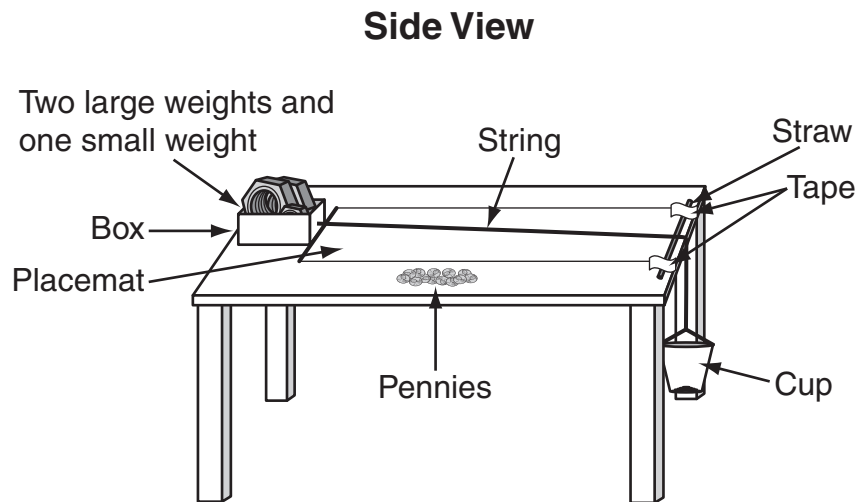
Do you think this investigation was a fair test? Use one example to explain your thinking.

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Applying What You've Learned

Directions: Use data from your investigation to answer questions 6 through 8.

6. The students in Mrs. Smith's class decide to investigate the amount of force (pennies) needed to move the box with **one** small weight and **two** large weights to the straw at the end of the placemat. The diagram below shows how the students set up their investigation.



Predict how much force (pennies) will be needed to move the box with **one** small weight and **two** large weights to the straw at the end of the placemat. Explain why you made this prediction. Include evidence from your investigation to support your prediction.

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7. Two students in Mrs. Smith's class used pennies to measure the amount of force needed to move the **box with one large weight** across different flat surfaces. The table below shows the results.

**Number of Pennies Needed to Move Box with Large Weight
Across Different Flat Surfaces**

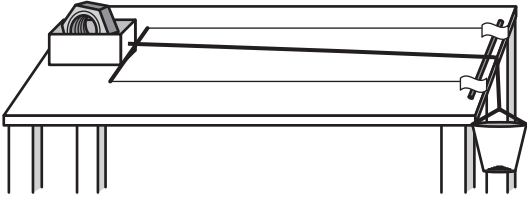
Surface Type	Median Number of Pennies
Sticky	30
Rough	25
Bumpy	20
Smooth	15
Icy	7

Look at the data in the table. Identify and explain the trend (pattern) in the amount of force (pennies) needed to move the **box with one large weight** across different flat surfaces.

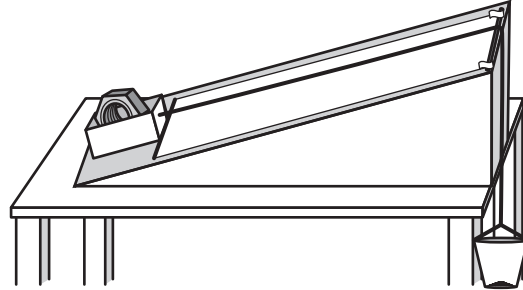
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8. The students in Mrs. Smith's class decide to investigate the amount of force needed to move the **box with one large weight** up a slanted surface. The diagrams below show both a flat and a slanted surface.

Flat Surface



Slanted Surface



Will it take more force (pennies) to move the **box with one large weight** across a flat surface **or** up a slanted surface? Use observations and data from your investigation to explain your answer.

