

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

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



**NEW ENGLAND  
COMMON ASSESSMENT PROGRAM**

**Released Science Inquiry Task**

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**Mass and Matter**

**2010**

**Grade 8**

**Student Answer Booklet**

# SCIENCE

## Organizing and Presenting Your Data

### Directions:

- You will work on your own to organize your data, use your results to draw conclusions, and explore other data that is presented. You may use the Word Bank below during this session.
- Answer questions 1 through 8 as completely as you can.

### Word Bank

<b>Average (mean)</b>	to get the <i>average</i> , add all of the numbers together and divide the total by the number of figures in the set
<b>Carbon dioxide (CO<sub>2</sub>)</b>	a gas that is given off during combustion and breathing
<b>Ingredient</b>	a substance that is part of a mixture; in cooking, recipes identify which ingredients are needed to prepare something
<b>Multiple trials</b>	when an experiment is repeated several times
<b>Oxygen</b>	a gas in the air that is used by living things

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Copy the average difference in mass from the data table on page 9 of your Inquiry Booklet into Data Table 1 below.

**Data Table 1: Mass Differences and Observations**

<b>Investigation</b>	<b>Average Difference in Mass (Number of Washers)</b>
Powder X and water	

In the box below, copy your observations from “After Mixing with Water” from page 9 in your Inquiry Booklet.

### After Mixing with Water

<b>Trial 1</b>	
<b>Trial 2</b>	
<b>Trial 3</b>	

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## Analyzing and Using Your Results

**Directions:** Use data from your investigation to answer questions 1 through 3.

1. Explain why it was important in this investigation to measure the mass of the substances and bags before **and** after you mixed the substances. Use specific evidence to support your answer.

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- 2.** Look at your prediction on page 4 of your Inquiry Booklet. Do the results of your investigation support your prediction? Use specific information from the investigation to explain your answer.

- 3.** Do you think the investigation was a controlled investigation? Use specific data and examples to support your answer.

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### Extending the Investigation

Two students in Elaine's class forgot to close their bags when they conducted their investigation. They measured the mass of Powder X and water before mixing, mixed Powder X and water together, left the bag open, and measured the mass after mixing. They conducted three trials and recorded the average difference in mass in the data table below.

Data Table 2 shows the average difference in mass for the combination of Powder X and water for the students who left their bags open.

**Data Table 2: Open Bags**

	<b>Average Difference in Mass (Number of Washers)</b>
Powder X and water	0.5

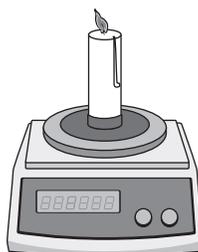
4. Compare your results with those of the students who left their bags open. Explain why your results are the same or different. Use evidence to support your answer.

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The next day, Elaine's teacher placed a candle on a balance and lit the candle. As the candle burned, the class watched the values on the balance to see if the mass of the candle changed. They recorded the mass of the candle every 5 minutes for 30 minutes. Data Table 3 shows the students' data.

**Data Table 3:  
Time vs. Mass of  
Burning Candle**

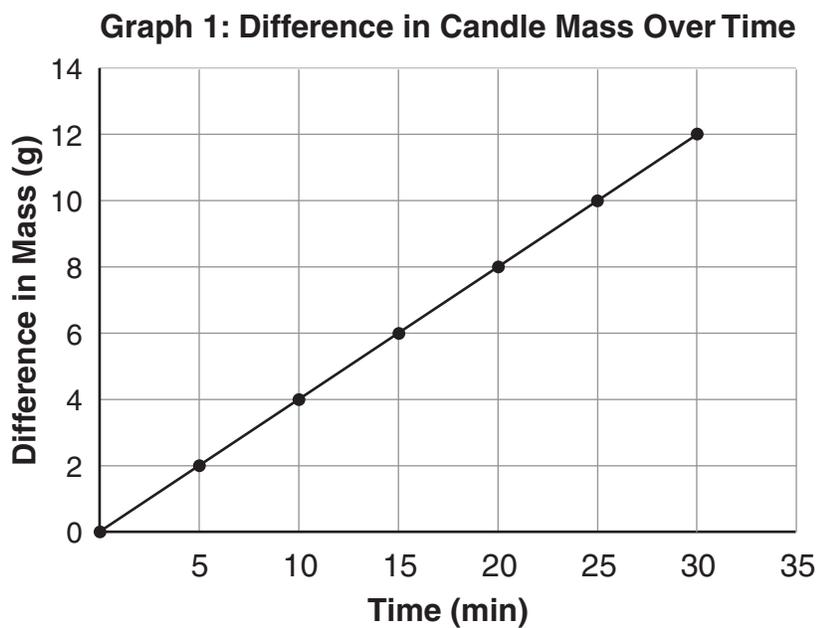
Time (min)	Mass (g)
0	55.2
5	52.9
10	51.0
15	49.2
20	46.8
25	45.1
30	43.2





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Elaine graphed the difference in the mass of the candle every five minutes. Graph 1 below shows her results.



6. Describe the pattern (trend) in the mass of the candle over time shown in your graph. Compare your graph to Graph 1. Use specific data in your comparison.

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7. Explain why the mass of the candle changed over time. Use specific information from the investigation to support your answer.

After the students conducted their investigation, Elaine's teacher explained that Powder X was a mixture of two different substances. When the two substances are mixed with water, they make a gas called carbon dioxide ( $\text{CO}_2$ ). Carbon dioxide is what bubbles up from the mixture.

8. Use what you learned from the burning candle experiment to explain why your results from the Powder X investigation were similar to or different from the results of the two students who left their bags open. Use evidence to support your explanation.

**STOP**