

Date: _____

Your Name: _____



**NEW ENGLAND
COMMON ASSESSMENT PROGRAM**

Released Science Inquiry Task

Conductors and Insulators

2012

Grade 4

Student Answer Booklet

SCIENCE

Directions: You will work **on your own** for this part of the inquiry task. You will use the results of the investigation to answer the questions.

You may use the Word Bank below to help you answer the questions.

Word Bank

| | |
|--------------------|--|
| Circuit | a closed loop that electricity flows through |
| Conductor | a material that allows electricity to easily flow through it |
| Insulator | a material that prevents electricity from flowing through it |
| Material | what an object is made of |
| Metallic | an object that has properties of a metal |
| Nonmetallic | an object that has properties of a nonmetal |
| Prediction | what you think will happen in an investigation |
| Procedure | directions or steps in an investigation |
| Properties | characteristics of materials |

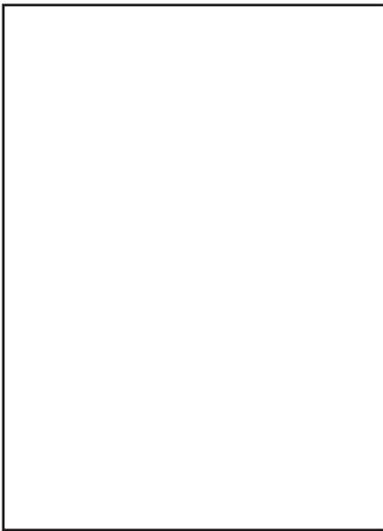
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Understanding and Organizing Your Data

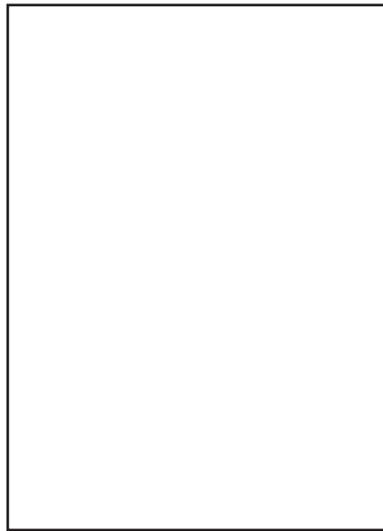
1. During your investigation, you observed eight different objects. First you recorded the material you thought each object was made of and then you described the properties of the material in Data Table 1 of your Inquiry Booklet.

Look at **Data Table 1** on page 5 in your Inquiry Booklet. Sort the objects into two groups based on the properties of the materials they are made of. Write the objects in each group in the boxes below.

**Group A
Objects**



**Group B
Objects**



Describe the properties you used to sort the objects into Group A and Group B.

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Copy the data from **Data Table 2** on page 6 in your Inquiry Booklet into the table below.

**Data Table 2:
Results of Lightbulb Test**

| Object | The bulb lights? (Yes/No) |
|---------------|--------------------------------------|
| Penny | |
| Foil | |
| Paper | |
| Paper clip | |
| Yellow chip | |
| Toothpick | |
| Straw | |
| Washer | |

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Conductors are materials that allow electricity to easily flow through them. Insulators are materials that prevent electricity from flowing through them.

2. Use the results from Data Table 2 to organize your data into objects that are conductors and objects that are insulators.

Create a chart to organize your results. Be sure to include labels.

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- 3.** In question 2, you grouped together the types of materials that make good conductors of electricity.

Identify **two** different objects you might find in your classroom that could also be tested.

Explain how the properties of the objects you chose would support the way you grouped the materials.

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Analyzing and Using Your Results

Copy your prediction from page 3 in your Inquiry Booklet into the box below.

| |
|-----------|
| I predict |
| _____ |
| _____ |
| _____ |
| because |
| _____ |
| _____ |
| _____ |
| _____ |

| |
|--|
| <p>4. Check the box next to the statement that best describes the data you collected during the investigation. Be sure to include evidence from your investigation to support your answer.</p> <p><input type="checkbox"/> The data support my prediction.</p> <p><input type="checkbox"/> The data do not support my prediction.</p> <p>I know this because</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> |
|--|

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- 5.** Students from another school performed the same investigation with a circuit test box as you and your partner. Their results were different from yours. Identify one way the students could have gotten different results.

Explain why this way could have affected the results.

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Applying What You Have Learned

- 6.** Look at the results of your investigation and the chart you created for question 2. Identify the types of materials that make good conductors of electricity. Provide evidence and examples to support your answer.

- 7.** A student at a different school completely covers a nail with several layers of plastic wrap. Predict whether the nail covered in plastic wrap would be a conductor or an insulator. Use data from your investigation to support your prediction.

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- 8.** The students wondered whether types of energy other than electricity can be conducted. One student remembered that a spoon becomes hot when placed in hot soup. Describe one way the students could investigate which materials conduct heat energy.

