



**Student Worksheet Taking a Closer Look at Objects Learning Center**

Name \_\_\_\_\_

Directions: Use the materials provided to complete the following. When finished put all materials back into container.

**Question: Can you learn things about an object if you could see it better?**

Exploration 1:

- Find the box *OBJECTS FOR EXPLORATIONS 1 and 4*. Take out one of the objects and lay it on your desk. Look at the object. Make a sketch of your object in the box below. Then take out a hand lens (magnifying glass) and again look at the object. Again sketch your object below.

Object without hand lens

Object with hand lens

When using the hand lens did you see anything new about your object? \_\_\_\_\_ If yes what?

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Exploration 2:

- From the container take out plastic cups #1 and #2 and a sheet of newspaper.
- Place an inch of water inside each of the cups. Set cup #1 on the newspaper. Look down through the water in the cup at the words on the paper. Do the words on the newspaper look different when looked at through the cup? \_\_\_\_\_ If yes, how do they look different?

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- Place cup #2 on the paper. Look down through the water in the cup at the words on the paper. Do the words look different though the water in the cup? \_\_\_\_\_ If yes, how do they look different?

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- Do you see any difference in the cups? \_\_\_\_\_ If yes, what is different?

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- Read the article *How Does a Magnifying Lens Work*. After reading the article, did that change what you thought about the cups and how they work? \_\_\_\_\_ If yes, how

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### Exploration 3:

- Get out the bottles that have Exploration 3 written on them and a sheet of notebook paper. Place the larger of the jars on its side in the center of the notebook paper with its lid pointing toward the side of the paper. Slowly roll the jar toward you. Try to make the lines viewed through the bottle of water line up with the lines on the sheet of paper. Write how many spaces on the paper fit into one space between the lines as viewed through the jar.
- Number of line \_\_\_\_\_
- Repeat step 6 with the smaller bottle. Did you count the same number of spaces as you did for the larger bottle? \_\_\_\_\_ If not, why do you think you did not?

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### Exploration 4:

- Find the oatmeal box microscope. Take an object out of the box *OBJECTS FOR EXPLORATIONS 1 and 4* and place through the sample opening on the box. Make sure the object is laying in the middle of the bottom. Hold the handle of the top magnifying glass and move the bottom magnifying glass up and down with the handle. How does the image change when you are moving the lens up and down?

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- Read the article *What is a Microscope*
- Fill out the Parts of a Microscope Worksheet.

Exploration 5:

- Got to where the microscope is set up. Follow the instructions for looking at slides under microscope. Do you see things through the microscope on the slides that you cannot see on slides without microscope?

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- Optional: Get the same object that you used in Exploration 1 and look at it using the digital microscope attached to the computer. So you see new details on this object that you did not see in exploration 1?

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- Get bag with objects and pictures. Look at objects using a magnifying glass.
- Read article *Science is Fun – All about Scanning Electron Microscopes*. The pictures that are included in the bag are scanning electron microscope pictures of the objects that you looked at in Step 12. List the objects and then match the picture with the object. Write the picture number next to the object.

Object	Picture Number	Object	Picture Number
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____