

Name: _____
Class: _____ Date: _____

Student Sheet 00.1 What is a milliliter?

Getting Started!

In this class, we are going to hear about milliliters all the time. So we need to know what exactly we are talking about. Let's face it: somebody didn't wake up some day and just start using the word. Today we are going to investigate what a scientist means when she uses the word Milliliter.

But first, we have to start with our preconceptions.



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| I believe that a milliliter is... BECAUSE... |
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Collecting Evidence

You will work with one partner today. And that person is the one sitting next to you at your assigned seat.

Obtain one snapping cube from your instructor. Take a moment to examine the cube using your eyes and a ruler. Draw and describe the cube in your lab notebook as completely as you can.



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| Description of our cube: |
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Now examine a graduated cylinder. Take a moment to examine it closely. Look for numbers, lines, and letters; you can use a ruler, too. Draw and describe the graduated cylinder in your lab notebook as completely as you can.



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| Description of our graduated cylinder: |
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Fill your graduated cylinder to the 50-ml mark with water that you can obtain from your instructor. Try to get as perfectly to 50-ml as you can. If your water level has a little bit of a downward curve to it, this is called the *meniscus*. If you see a meniscus, you should read the numbers at the lowest part of it.

Make a T-chart in your notebook that has the number of cubes on one side and the number of milliliters on the other side.



| <u>Number of added cubes</u> | <u>Milliliters</u> |
|------------------------------|--------------------|
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You will now begin adding cubes one at a time to the water. Try to avoid air bubbles and splashing in the water as much as possible by holding the graduated cylinder at an angle as you add the cubes. Each time you add a cube, record the new number of milliliters in the graduated cylinder. Do this for five cubes.

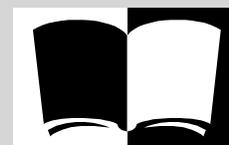
Explain the Data

After you have added 5 cubes, examine your data. Explain any patterns you notice in your lab notebook:



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| Every time you add a cube, describe how the water level |
| in your graduated cylinder changes. |
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When the water level rises as things are placed in it, scientists call it *displacement*. Displacement means that the object pushes water out of its *place* in the cylinder. And because the cylinder is narrow, there's only one place to go: up!



Write a Definition

Now use your observations to write a definition of what a milliliter is. You can do this! Just base your definition on the things you have observed and seen today in lab! Hint: your definition should be *operational*. That means that if a person in another country were to read your definition, they could repeat what you have done and get a similar result. That's a challenge, but you have all the pieces you need in your lab journal to do it!



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| Based on my observations today in lab, I would define a |
| milliliter as... |
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Class Discussion

Your instructor will lead a class discussion to talk about some of the different *working operational* definitions that the class came up with.



Meet with your instructor to check over your understanding. If you have to wait for your instructor, continue on until they come to find you.