Build Your Own Planet
Lesson 7: Big Life or Tiny?

Group: ___________________________

Look around your classroom and count the number of living things that you see. About how many living things do you see in your classroom? ________

Last week you should have collected some puddle water, brought it to school and placed two or three grains of cooked rice in the container. What do you think the purpose of the rice was?* Today we are going to look at the sample you collected under a microscope.

Step 1: Use the eyedropper to get some water from one of your samples. Place 1 drop of water on the microscope slide and place it under the microscope to examine it. If more than one group member brought in water samples, take the time to look at all of the samples under the microscope and decide which has the most interesting objects to look at. Use this sample for the rest of this exercise.

Step 2: The drop of water is probably around 1/8” high. By carefully adjusting the focus of the microscope, you can bring different areas of the drop into sharper focus than other areas. Adjust your focus very slightly so that you can see different levels in the water come in and out of focus.

Step 3: Do you see anything green in the water? Yes / No  Any green things that you see are most likely a type of plant. Are plants living things? Yes / No About how many plants do you see? ________

Step 4: Do you see anything moving? Yes / No  Any moving things you see are most likely living. About how many moving things can you see? ________ Altogether, about how many living things can you see, (including plants)? ________

If you are not seeing any living things in your water then either you have a problem with your microscope or your water has been sterilized, meaning that all living things in it have been killed. Ask your teacher for help if you do not see any living things.

* The rice was to provide food for anything living in the water.
Step 5: While looking through the microscope, slowly move the slide around until you can see the edge of the drop of water. Then try moving the slide in the other direction until you see the edge of the other side of the drop. About how many times bigger is the drop of water than the amount of water that you see in the microscope? ________________

Step 6: How many living things do you think there are in the whole drop of water? _____________

Step 7: Using the eyedropper, place 100 drops of water on the plate or Petri dish. How many living things do you think there are in the water on the plate or Petri dish? ________________ (Hint: think about how many living things you said were in 1 drop of water in Step 6. You now have 100 times as much water in the Petri dish.)

Step 8: Compare the amount of water in the plate or Petri dish to the total amount of puddle or pond water that the members of the group brought in. About how many times more water was brought in than is on the plate or Petri dish? ______

About how many living things do you think there are in all the water samples that the members of your group brought in? ________________

Step 9: Think about all the water samples in your classroom. About how many living things do you think there are in your classroom?

___________________________

Are most of the living things in your classroom large enough to see? ______

Explain: ________________________________________________________________

______________________________________________________________

“Microscopic life” is life that is too small to see without a microscope. Extremely small living things, like bacteria, are often called “microbes.” “Macroscopic life” is life that is large enough to see without a microscope. Think about what you have just learned about the life in your classroom. If you were
looking for life on another planet, do you think there would be more microscopic or macroscopic life? Macroscopic

The word “biomass” means the total mass of all living things. Most of the biomass on Earth is microscopic. That means that if you were to add up all the mass of all macroscopic living things—people, animals, insects, trees, plants and every other living thing that you can see without a microscope—it would still be less than the total mass that all of the microscopic living things on our planet.

You should probably plan to bring a powerful microscope with you when you look for life on your planet!