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Evolution of the Earth Lab
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Lab Assignment: Sedimentary Environments

Introduction

Today we will work on trying to examine sediments and sedimentary rocks and interpreting the environments that they came from. This lab requires a lot of steps and you should be careful of how you use your time. Use the guides that I provide to help with the different steps in this lab.

Part 1: Characteristics of Sediments.

Each group will be given one sediment sample to work with. Before doing anything, lay out newspaper on your table. Try to do most of your work over the center of the newspaper, so that you can limit how much of the sample is lost. Open up your sample and poor a small amount into a Petri dish. Examine your sample under a microscope and answer the following questions

1) How would you describe the grain sorting for your sample?

2) How would you describe the shape of the grains for your sample?

3) What color(s) of the grains are present in your sample? These colors help give a quick guide to what minerals are present. Can you identify any minerals present in the sediments?

4) Based on the description of the environments that I provided, what is your initial guess of the environment that this specimen came from? [This is only a guess and it doesn't have to be 100% correct at this point.]

Part 2: Grain Size Analysis

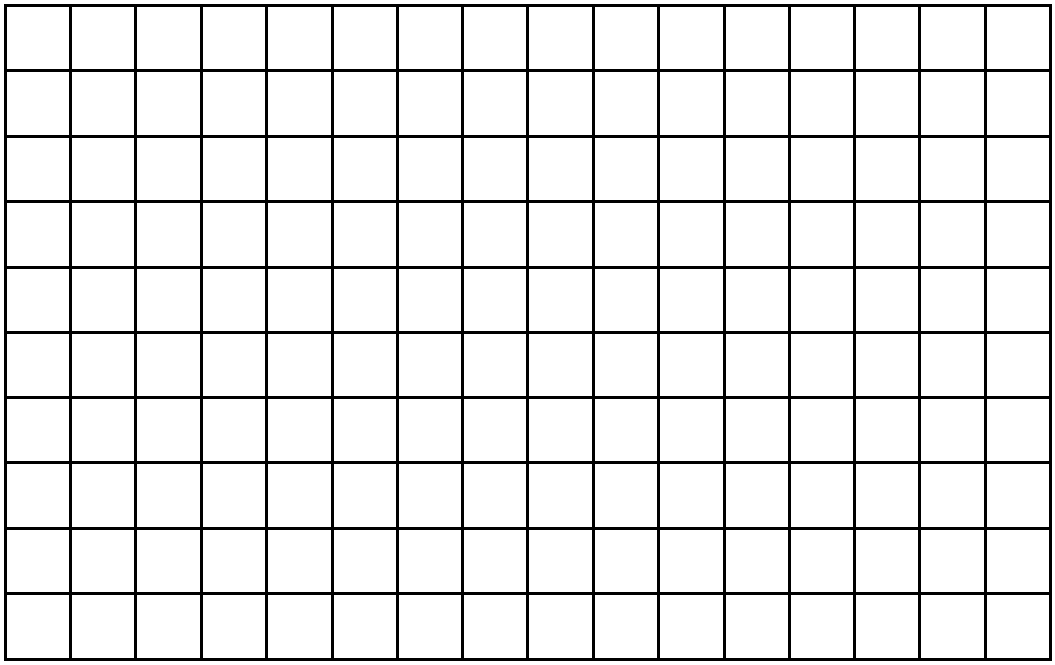
For this part, you will use sieves to divide your sample into various grain sizes. Take a larger part of your sample for this activity – DON'T USE THE WHOLE SAMPLE.

Please your sample in the top sieve. Close the cover and move the sieve side to side while over the newspaper for 2-3 minutes. Don't shake the sieves up and down.

Next, for one sieve at a time, dump out the material onto a coffee filter and bring over to the scale to weigh. Record the eight in the table below.

Mesh #	Size in mm	Size in ν	Description	Weight	% of Total
5	4	- 2	pebble size or >		
10	2	- 1	granule size or >		
60	.25	2	med. to coarse sand		
230	0.0625	4	fine sand		
< 230	< 0.0625	> 4	clay and silt		
			Total		

**** Please graph your % weight on the y-axis and the phi (ν) number on the x-axis using the graph below. Make sure you pay attention to what your instructor tells you to do.**



5) What grain size is the majority of your sample composed of? Is your sample poorly sorted or well sampled (think about what the graph should look like)?

6) Do you want to update your answer to question number 4 above? Explain your answer.

Part 3: Comparisons of Samples

Please take a moment and exchange your sample with a group that has a **different** sample than you. Note that some groups will have parts of the same exact sample, so make sure you compare yours with someone that has a different sample than you.

Discuss with the other group how their sample differs from yours in terms of grain shape, grain sorting, grain size, and grain color. Write a few sentences about the differences.

Part 4: Sedimentary Structures

There are three specimens labeled A, B, and C in the front of the room. Please take each specimen one at a time and fill out the table below. You don't have to do these specimens in order. Use your lab reading for help.

Specimen	Grain Sizes	Bedding?	Structure is:
A			
B			
C			

Part 5: Depositional Environments
In the classroom there are a few scenarios set up. Examine the fossils and the rocks to come up with a potential depositional environment from the list that is provided to you by your instructor.

Scenario # 1
a) What fossils are present if any? What environmental information do these fossils provide?

b) What rocks/sediments are provided if any? What can you tell from the rocks/sediments that are provided?

c) Based on all the information provided, what environment was this material most likely deposited in?

Scenario # 2
a) What fossils are present if any? What environmental information do these fossils provide?

b) What rocks/sediments are provided if any? What can you tell from the rocks/sediments that are provided?

c) Based on all the information provided, what environment was this material most likely deposited in?