Our Acidifying Ocean (Virtual Urchin Lab)

*Found online at* [*http://virtualurchin.stanford.edu/AcidOcean/AcidOcean.htm*](http://virtualurchin.stanford.edu/AcidOcean/AcidOcean.htm)

Directions: Using the Ocean Acidification Model, complete the lab and answer the questions below.

**Part I:**

1. What is the rate of increase in CO2 since 1960? (calculate the slope ppm/yr)

2. What are two concerns with rising CO2 levels?

3. List the pH values for these common items:

* Drain cleaner -
* Coke -
* Water -
* Ocean water -
* Battery Acid -
* Bleach -
* Ammonia -
* Orange Juice -

4. Since the Industrial Revolution, is the ocean pH becoming more acidic or more alkaline?

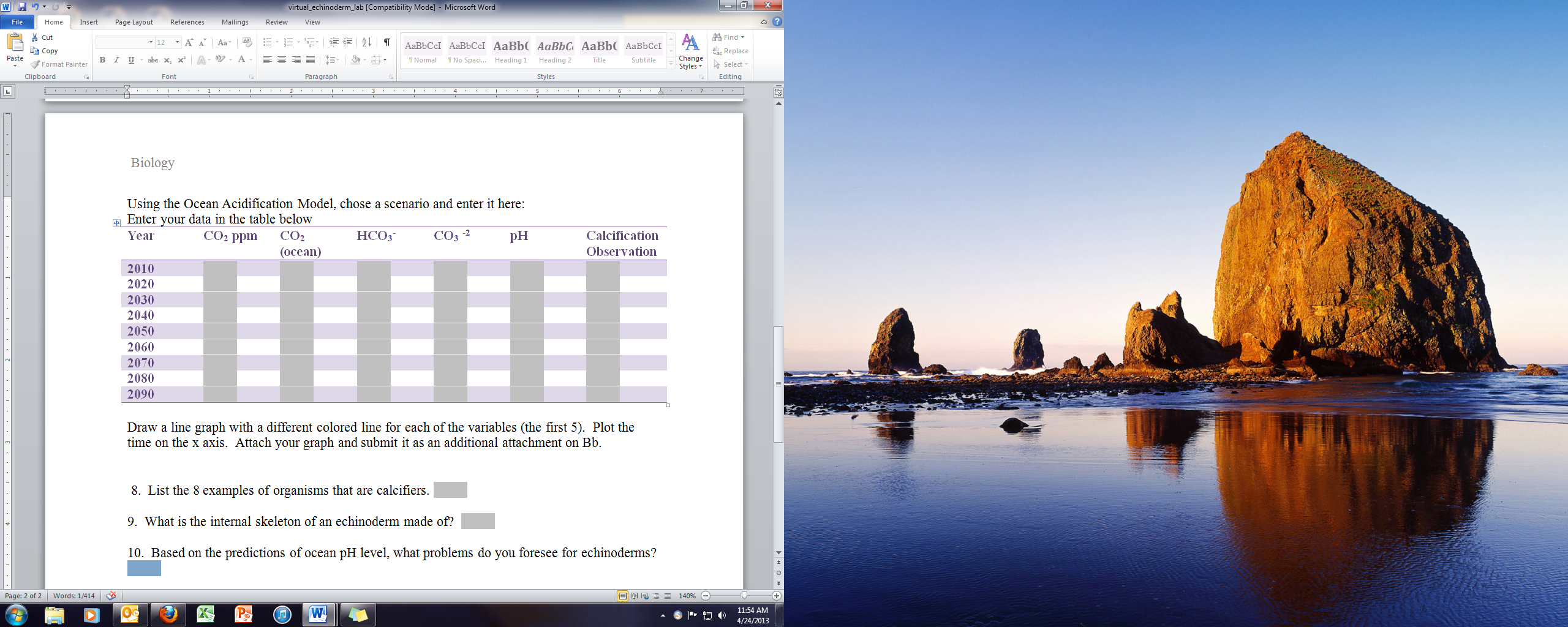
5. What is the estimated pH level for the ocean in the year 2100?

6. When CO2 enters the ocean, what acid does it form?

7. What effect does a lower carbonate level in the ocean have on specific organisms in the ocean?

Using the Ocean Acidification Model, chose a scenario and enter it here: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Enter your data in the table below



Draw a line graph with a different colored line for each of the variables (the first 5). Plot the time on the x axis.

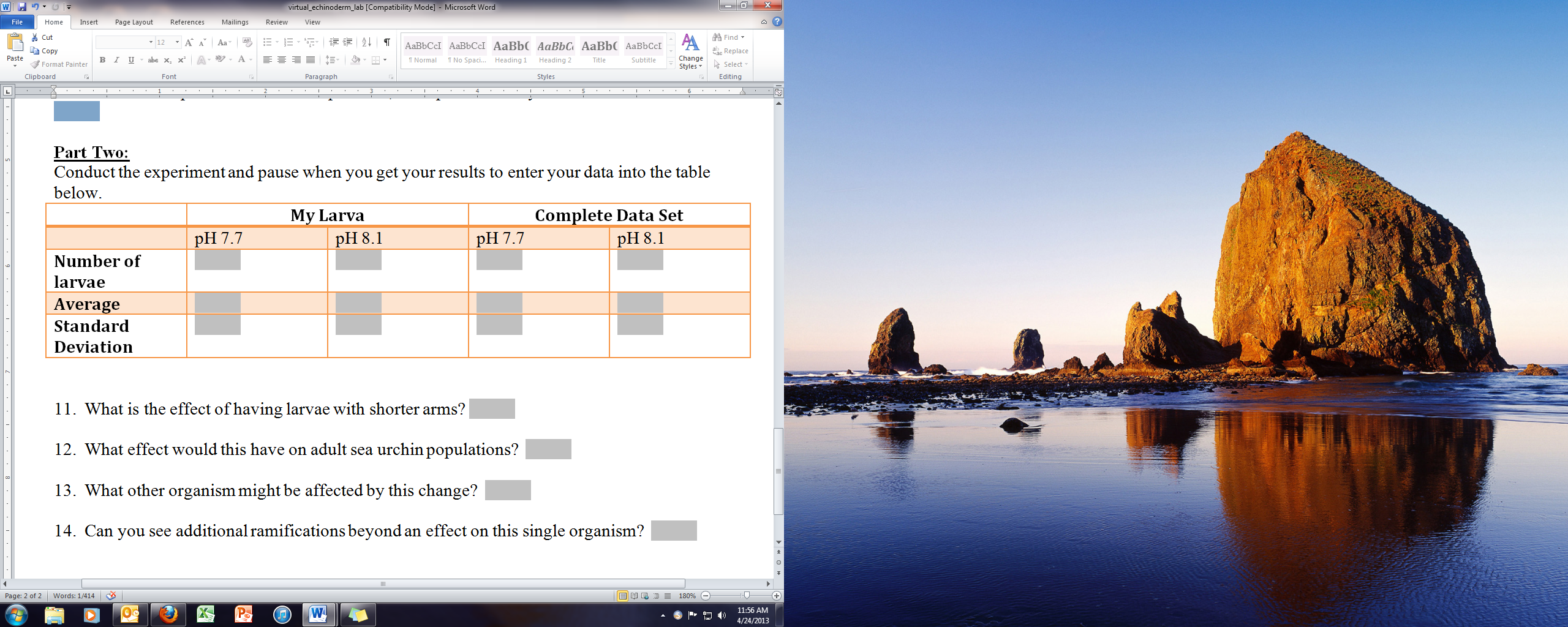
8. List the 8 examples of organisms that are calcifiers.

9. What is the internal skeleton of an echinoderm made of?

10. Based on the predictions of ocean pH level, what problems do you foresee for echinoderms?

**Part Two:**

Conduct the experiment and pause when you get your results to enter your data into the table below.



11. What is the effect of having larvae with shorter arms?

12. What effect would this have on adult sea urchin populations?

13. What other organism might be affected by this change?

14. Can you see additional ramifications beyond an effect on this single organism?