Name:_____ Class period:_____ Date:_____

Post "Mock AFM" Questions

1) Using Excel to help visualize your data, make an inference about the surface you were probing. Describe any surface features or patterns *(or lack of pattern)* inferred.

Student answers will vary.

2) Describe how the surface was "observed".

The probe stick measured the distance from the top of the box straight down to the contact with the surface. A measurement of 2 cm is an offset from the top of the box arbitrarily assigned as "zero".

3) If the same surface were raised or lowered within the box, what would change about your observations?

4) What would stay the same?

5) Would this change your inferences?

All of the measurements would became larger (surface lowered) or smaller (surface raised) by the same amount since there would be a new arbitrary offset location termed "zero". The relative differences each measurement would be the same, resulting in the same computer imagining and the same inferences about the patterning.

6) What if the surface was tilted within the box?

Both the difference between each point in the box and the "zero" location and the relative differences between points would change. The amount of tilt and how it skewed the patterning would dictate how much the inferences would be altered.

7) From the given choices, determine which surface was most likely in your box. Compare the actual surface to your inferred surface. Sketch actual surface.

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8) A) Were your inferences valid?

B) Did your observations "miss" any features?

C) How can you explain these differences?

The validity of inferences answers will vary. All students should have missed fine detail present on the surfaces due to lack of resolution.

9) Were there any trade-offs for increasing the resolution of your mock AFM?

a) What did you gain?

b) What new issues or limitations did you encounter?

10) Thinking about other instruments you've seen or used, describe at least two other types of proxy variables & how they are utilized to take measurements.

11) If you had another box to measure, what would you do differently?

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