Pre-lab **Name: _____ Section:_____**

Read over the theory and procedure for this lab before completing this pre-lab.

1. What is the purpose of this lab?

2. Imagine if there was a part 3 of this lab procedure, where you draw a set of squares, with side lengths of your choosing, and then measure their areas by counting squares on graph paper. Let the side length of the square be the variable x and the area be A.

a) Is A or x the independent variable in this hypothetical situation?

b) If you wanted to construct a graph of your data, would A or x be on the vertical axis?

c) What would be the title of your graph, Area vs Side Length or Side Length vs Area?

d) Thinking about the (well-established) theoretical equation for the area of a square $A=x^2$, which function type would you choose for a regression curve? Choices are: linear, exponential, polynomials of order 2, polynomial of order 3, power series, etc.

e) Still considering the equation $A=x^2$, what is the theoretical prediction for the leading coefficient of the regression curve?

f) Use the data shown in the table.

Side length x (cm)	Area A (cm^2)
0	0
3.00 ± 0.05	9.0 ± 0.5
4.15 ± 0.05	17.0 ± 0.5
5.85 ± 0.05	34.5 ± 0.5
7.20 ± 0.05	51.5 ± 0.5

Refer to Step 3 of the procedure for instructions on how to create a graph in Google Sheets. Create a graph of A vs. x with a title “Area vs Side Length”, axis labels “Area (cm^2)” and “Side Length (cm),” vertical error bars, a “trendline” aka regression curve, and the “trendline” labeled with its equation. Staple a printout of your computer-generated graph to this worksheet.