Bouncing Tennis Balls Lab

How many times can you bounce and catch a tennis ball in two minutes?

Time (Seconds)	Number of Bounces during Interval	Cumulative Number of Bounces
0		
10		
20		
30		
40		
50		
60		
70		
80		
90		
100		
110		
120		

1. What is the independent variable?
(We will graph this on the x-axis.)

2. What is the dependent variable?
(We will graph this on the y-axis.)

3. What is the rate of change between 0 seconds and 10 seconds? Be sure to include units!

4. What is the rate of change between 110 seconds and 120 seconds? Be sure to include units!

5. Would you expect these to be the same? Why or why not?

6. Use your calculator to create a scatter plot.
Does the relationship appear to be linear? Why?

7. Does this relation appear to be a function? Why?

8. Is the relation increasing or decreasing?
How do you know?

9. Whether the relation appears to be linear or not, use your calculator to perform a linear regression of the form $y = a + bx$. Write the regression equation below.

10. The value of a represents the y-intercept of the regression equation. What is your a value? Be sure to include units!

11. What does the y-intercept tell you in this situation?

12. What would you expect the y-intercept of your graph to be? What variables could account for this difference in the expected y-intercept and the actual y-intercept of your regression equation?

13. The value of b represents the slope (or rate of change) of the regression equation. What is your b value? Be sure to include units!

14. Use the regression equation to predict the amount of time it will take you to bounce the ball 500 times.

15. Use the regression equation to determine the number of times you would bounce the ball in 5 minutes.