

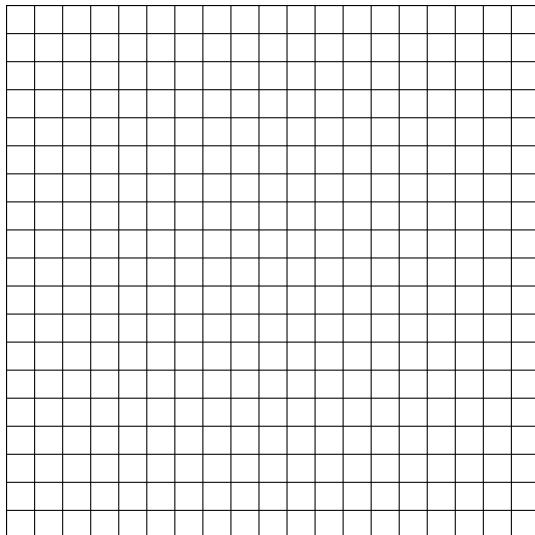
## Tying Knots

Take a length of rope and measure its initial length. Record the length in the table in the first row. Tie one knot in the rope and measure the length again. Keep tying knots in the rope and measure the length each time recording the length after each knot.

x	y

1. What should your x-variable represent?
2. What should your y-variable represent?
3. Do you think this will be a linear relationship? Why?
4. Do you think it will be a positive correlation or a negative correlation? Why?

Make a scatter plot of your data and draw the line of best fit. Label your axes appropriately.



5. Find the regression equation using the TI calculator?

6. What meaning does the slope have in this situation?

7. What meaning does the y-intercept have in this situation?

8. Use this equation to predict the length of the rope if you tie 10 knots in it.

9. What is the correlation coefficient,  $r$ ? Is the correlation significant? Why or why not?

10. Do you think this is a reasonable prediction? What problems do you see in using the regression equation for this prediction? Test your prediction by actually tying 10 knots and measuring the length.