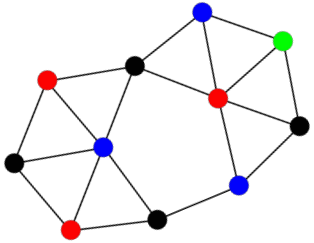
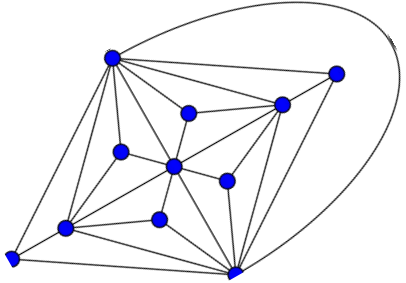
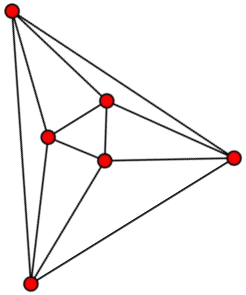
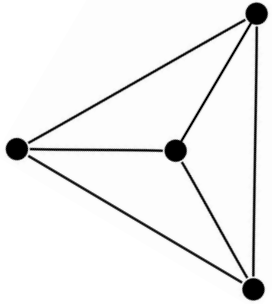


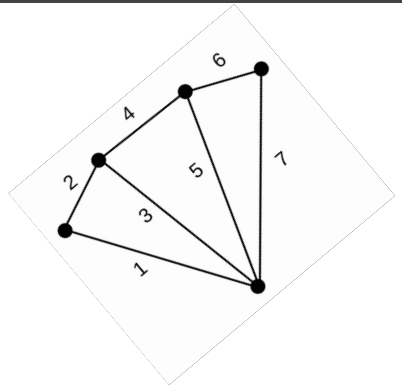


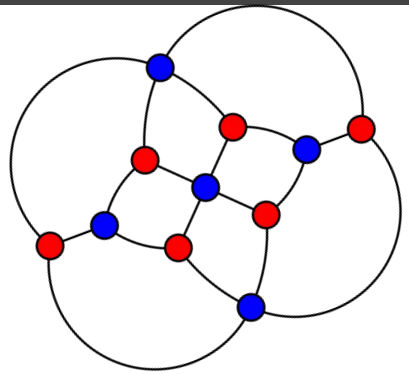


One Planar Graph Formula?

Maxine Scott, 2019

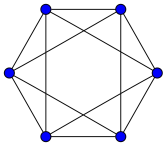




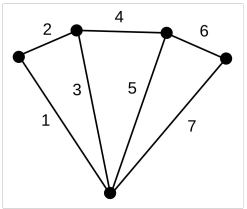


Introduction

- What is a Planar Graph ?
  - In graph theory, a planar graph is a graph that can be embedded in the plane, i.e., it can be drawn on the plane in such a way that its edges intersect only at their endpoints.
  - A graph is a dot configuration.



  - A planar graph is a dot configuration, but the connections don't overlap.



Problem Statement

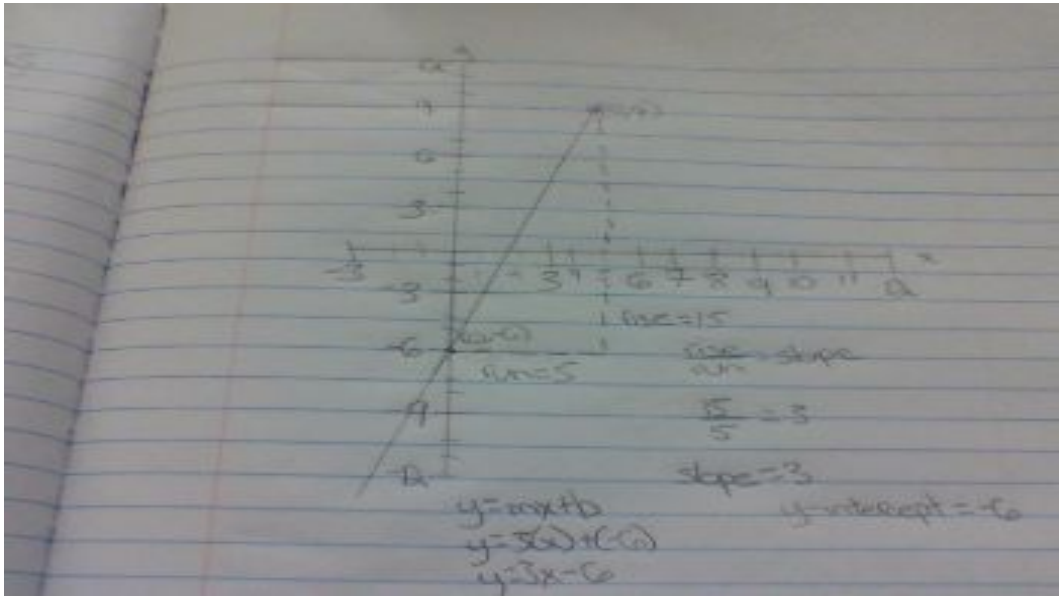
- Is there a function which gives the maximum number of connections in a planar graph with N nodes? Can I use the same function that has been made for a planar graph when the dots are multiples of 5 and when the dots are multiples of 15 and 8?

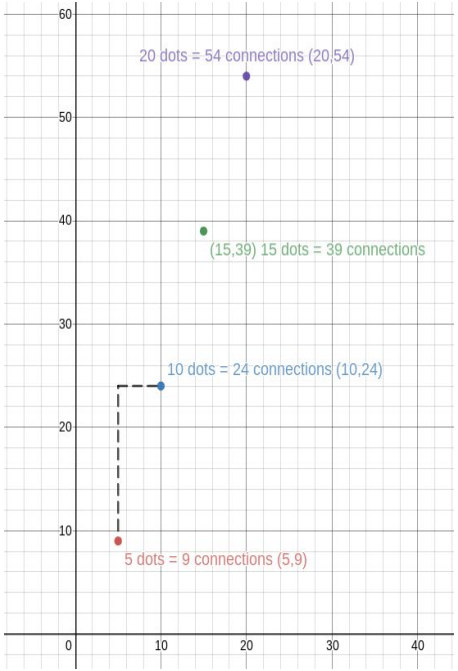
What is a function?

- A function is a relationship or expression involving one or more variables. For example (bx + c) is a function.
- I used slope-intercept form(y=mx+b) to find the function I used for my problem.

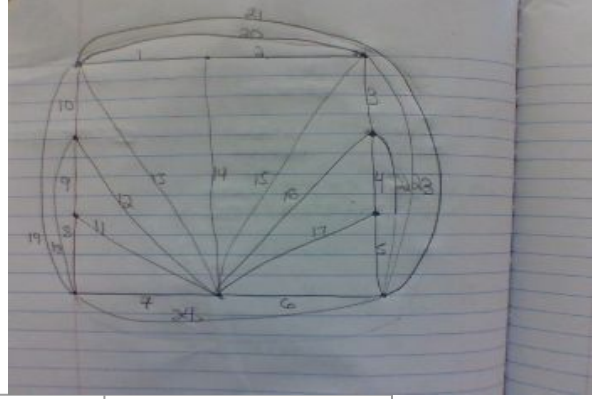
Results (Mathematical Reasoning/Prove)

- The slope is 3 because the rise is 15 and the run is 5 which means 15/5 equals 3. And b=-6 because for (0,-6) to reach (5,9) we have to rise by 15 and shift to the right 5 times. Thus states my function is 3(x)-6.





10 dots, 24 connections



Results (Tables)

- My planar graph formula is useable in any situation.

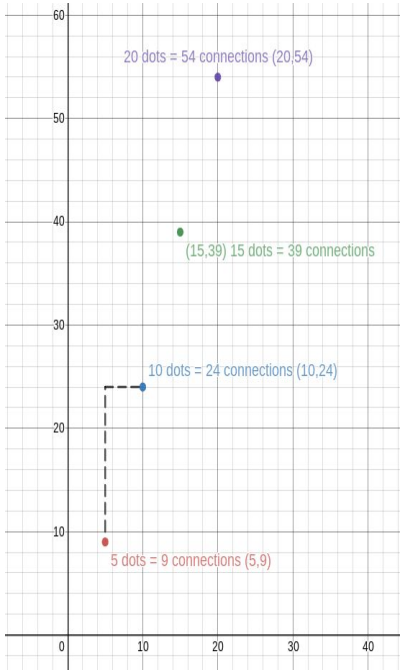
Dots (x)	Connections (y)
5	9
10	24
15	39
20	64

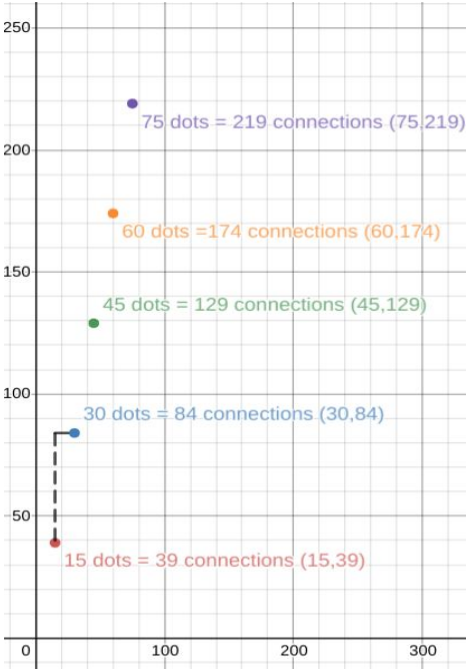
Dots (x)	Connections (y)
8	18
16	42
24	66
32	90

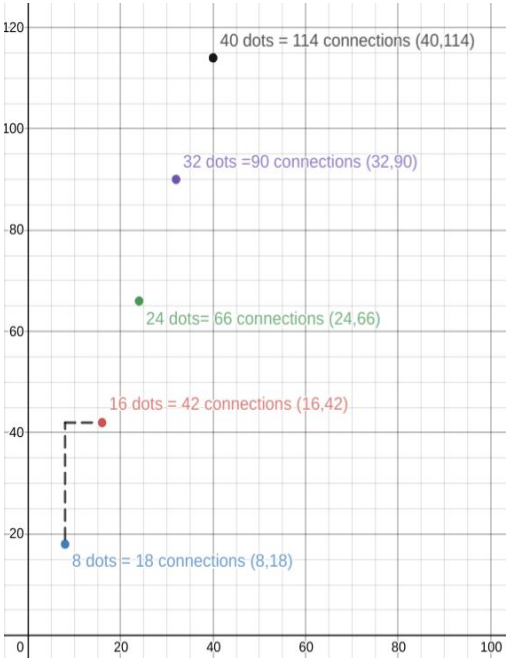
Dots (x)	Connections (y)
15	39
30	84
45	129
60	174

Results(Graphs)

- I know that my function is reasonable because of the graphs below they're all lined together. And because the function correlates with the graphs.







Conclusion

- When investigating my question I learned that the function 3(x)-6 is a way check and justify my work. This states, that when you make a planar graph that you can use the planar graph function to justify or check you work. If I could continue working on this project, I would find other planar graph formulas to check and justify my work.