Math Quarter 4 Project

Skinner North Students and Families,

This quarter’s project will require you to explain how to create Pascal’s triangle. Explore Pascal’s triangle on your own before looking to other resources for help. What patterns do you notice? Try to explain why they happen the way they do. Look at the rows and diagonals as well as at primes, composites, multiples and factors.

After exploring in general, you must choose one of the following as your main topic to explore:

1. What are triangular numbers? Where do you see triangular numbers in Pascal’s triangle? Why does it happen in that location? What is the 10th triangular number? What is the 100th? What is the 450th? Create a rule that will help you determine any triangular number. Use your rule to figure out what term in the list of triangular numbers is 26,565.
2. Create an extra copy of Pascal’s triangle (at least 16 rows). Color in all the even numbers in Pascal’s triangle. What do you notice? Why do the even numbers appear in those areas? Why are they not in other areas? If you “zoomed out” from this picture so you could see many more rows how do you expect the picture to look? Create another copy and color in all the multiples of 3. What do you notice? Once you are done exploring different multiples, research online to see if you can find any pictures of Pascal’s triangle with these multiples highlighted. Describe what you see.
3. Add up each row of Pascal’s triangle. What do you notice? Why is this happening? What would happen if the boundary was made of 2s instead of 1s? What if it was made of 3s instead of 1s? What if one side was made of 1s and the other side made of 2s? Explore possible changes like these and describe what you are noticing.

After check in #2 (due 5/2) do some online research about Pascal’s triangle after exploring on your own and after working on your main topic. Find some more patterns that are interesting to you. Make sure you understand them so that you are able to explain them to others.

Other than being an interesting problem to explore, are there any connections that you can make with Pascal’s triangle to the real world? Are there any connections that you can make to other areas of math?

You will use a tri-fold display board to show your learning as well as give an oral presentation. There will be some days that you will be able to work on your project in class, peer conference and receive feedback from me. If you have any questions please email me at [ermarsden@cps.edu](mailto:ermarsden@cps.edu).

Sincerely,

Mr. Marsden

**Important dates:**

**Thursday 4/14 – Check in #1 - choose your main topic from the three above**

**Monday 5/2 – Check in #2: bring work that shows your progress on the project – nothing from online yet**

**Monday 5/16 – Check in #3: bring work that shows your progress on the project – make sure you have all the information you’ve found online**

**Wednesday 6/1 – Project due (display board done and ready for presentation)**