Math Club Winter Newsletter

It's been a great start to 2024 in Math Club! Thank you for helping your mathematicians arrive at 8:00 on Wednesdays for some extra math fun.

-Erin Duchinsky, Edie Stanton, Charlie Howard and CJ Rosas

POLYOMINOES

Right after the break we jumped into our exploration of polyominoes. A polyomino is a plane figure made up of squares touching at their edges and corners. We group them by the number of squares, so we looked at dominoes (2 squares) trominoes (3 squares), tetrominoes (4 squares), pentominoes (5 squares) and hexominoes (6 squares). Our challenge was to see how many of each polyomino we could create without any rotations or reflections. We worked together to determine that there is only one way to make a domino, two ways to make a tromino, and five ways to make a tetromino. From there students worked together to find all 12 ways to make a pentomino, and if they found those, they tackled hexominoes which have 35 different possibilities!

We wrapped up our work with polyominoes by doing puzzles to cover a given shape. All students found different ways to cover a "stair" shape with 3 polyomoes followed by a 4 x 5 rectangle. Finally we put out a variety of fun polyomino puzzles to solve.

PASCAL'S TRIANGLE

We explored Pascal's triangle, which is named for a European mathematician who wrote about it in the 17th century but was actually discovered earlier in India, China and Persia. In setting up Pascal's triangle, each cell will be the sum of the two cells above it, so we started with putting ones on the outside and finding the increasing sums going down the triangle. We explored numerical patterns and "hockey sticks", in which the sum of the elements in one diagonal is equal to the next cell going diagonally in the opposite direction.

We continued by creating a triangle of odd an even numbers, color-coding to create an elaborate design. Finally, some daring mathematicians explored numbers in mod 3. The "modulo operation" is the remainder when you divide by a certain number, so every multiple of 3 is a "0" in Mod 3, one greater than a multiple of 3 is a 1, etc. If you think about it, we already use modular math for reading a clock, as "7 hours past 7 a.m" is 14:00 but in Mod 12 it would be 2:00.