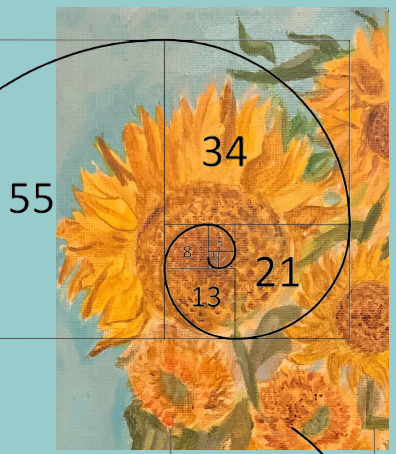
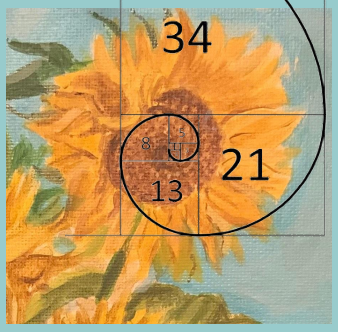
Vincent Van Gogh, 1888

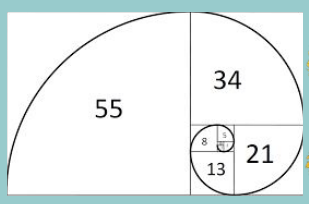
Recreation

In this version of Vincent van Gogh's Sunflowers, I combined art and math to create something unique. Keeping the main look of the original painting, I added math elements to show how numbers and patterns can be part of art. Above, you can see the left is Vincent Van Gogh's painting in 1888, and to the right is my recreation.

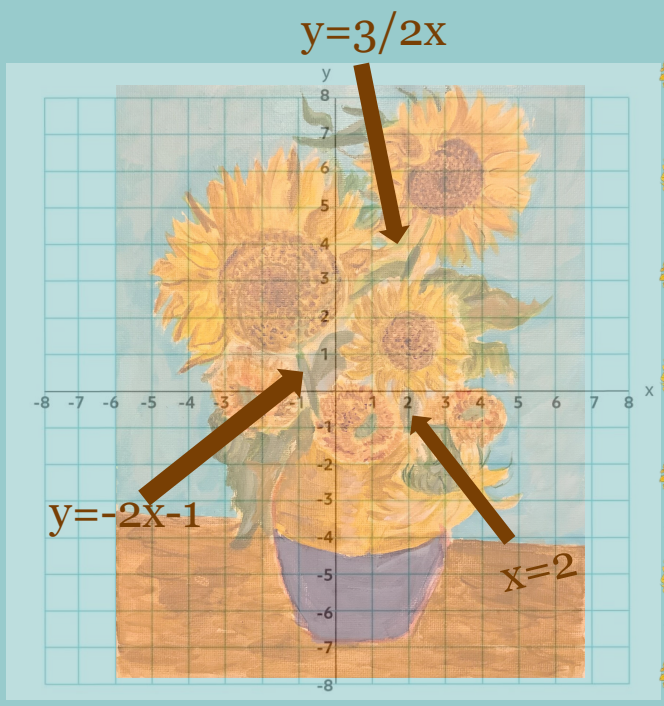
The centers of the sunflowers use the **Fibonacci sequence**, a famous math pattern found in nature. The Fibonacci sequence goes 1, 1, 2, 3, 5, 8, 13... and each number is the sum of the two before it. I used this sequence to make a spiral, also known as the golden spiral, that curves naturally, just like the seeds inside real sunflowers as you can see in the picture to the right. To actually draw the spiral, I drew the squares you see in the picture that the spiral is based on; 1 being 2mm by 2mm, 2 being 4mm by 4mm, 3 being 6mm by 6mm, and so on. After that I drew the spiral and the seeds spiraling like so. I then used tracing paper to reference the other flowers on. This helps show how flowers and many other things like pinecones and seashells, often grow using math patterns.







I used **linear equations** to design the angle and position of the flower stems. These linear equations are in y=mx+b form, m being the slope and b the y-intercept. To plot the lines, I digitally put a transparent graph over a picture of the canvas and determined the equations that way. For the largest sunflower, the linear equation is y=-2x-1. For the topmost sunflower, the equation is y=3/2x. And finally, the smallest sunflower would be x=2. This equation makes a vertical line. All of these equations make straight lines, which is different from the original. Even though Van Gogh's painting looks free and random, this can show that you can use math to guide how things are placed.



Finally, to achieve the different shades of turquoise in the background, I used different **ratios** of cobalt, white, and yellow. The darkest shade consists of 2.5 parts cobalt blue, 2 parts white, and 1 part yellow. For the second to lightest, it was 2:2:1. And the lightest, the ratio was 1:2:0.5. In order to make sure all of these ratios are exact, I measured them in a small container that has labels of measurement. I randomly painted on the different hues from darkest to lightest. In the original, you can see the different strokes and shades in the background, but not as exaggerated in my recreation.