

Math in Art

Submitted By:
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Introduction

Our club of 60 students learned to solve the Rubik's Cube. The cube could be solved using a set of eight algorithms, and uses combinatorics, group theory, and sequences in order to arrive at a solution.

After completing a unit on solving the Rubik's cube, students focused on specific arrangements and configurations of the cube in order to recreate a painting of Dr. Martin Luther King, Jr.

Concept and Inspiration

The idea for the project came to our club after we completed our Rubik's Cube unit in January, just before Martin Luther King Jr. Day. Inspired by the timing and Dr. King's legacy, we created a mosaic of him using the cubes and proudly displayed it during our Black History Month assembly.

Materials and Techniques

The Gold Level project used a 15 x 15 design of cubes that was made up of 225 total cubes. The cubes were able to be purchased through the help of the Gold Level Honor Roll prize received last year. It is worth noting that each cube has nine outward facing pieces, for a total of 2025 total pieces, coincidentally the current year as well.

The wooden case we built to house the mosaic involved math such as measuring, cutting, creating right angles to make sure the case was a perfect square, drilling holes equidistant apart, and fitting a piece of plexiglass over the case to preserve the art.

Original Artwork

The famous painting we used was titled:

**Martin Luther King Jr. -
Spontaneous Realism Painting
by Alexandra Andreica.**



The Recreation

This is the recreation of the painting using:

- 225 total Rubik's Cubes
- Wood
- Spray Paint
- Wall Anchors
- T-Squares
- Level
- Plexiglass



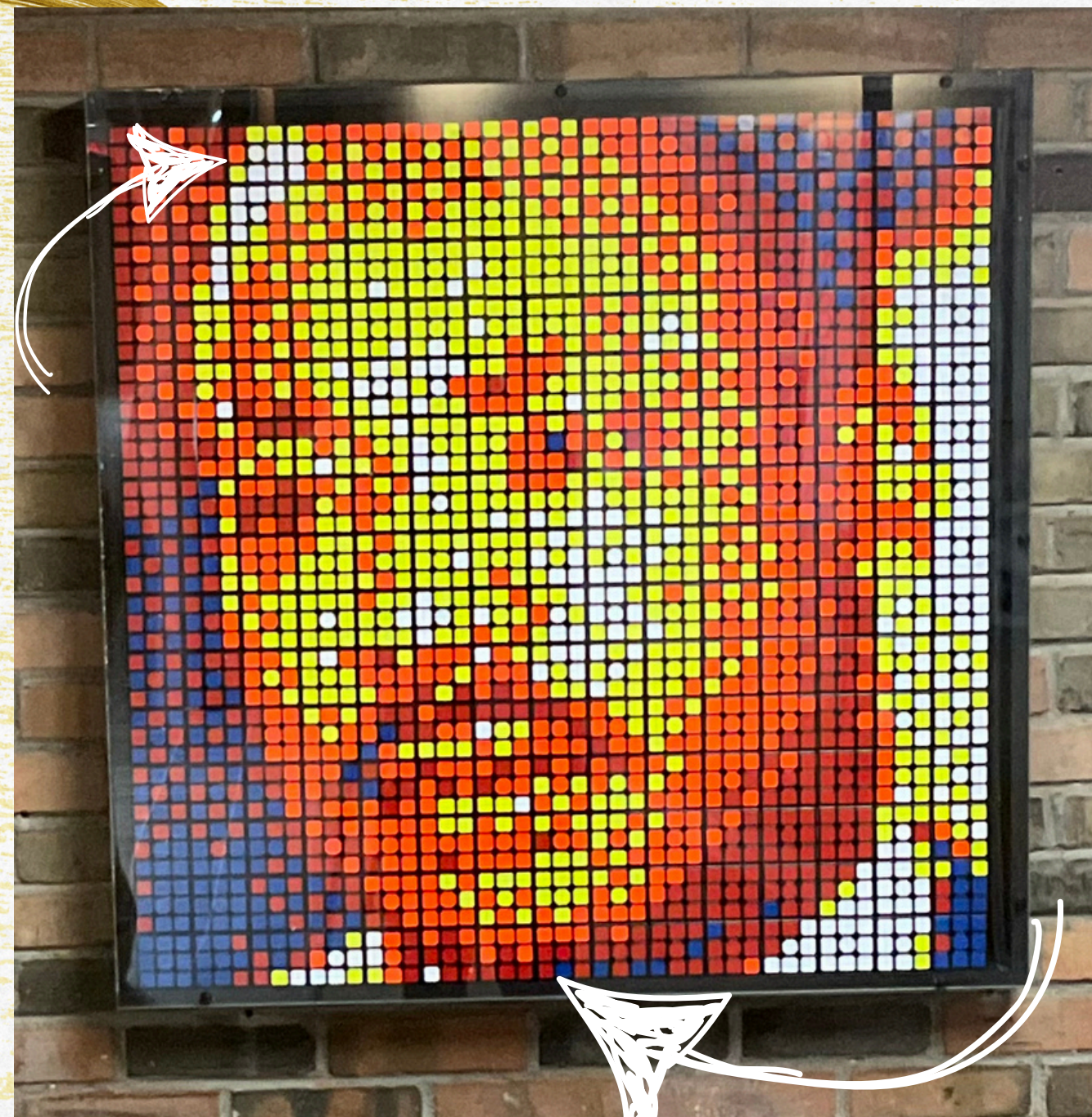
The Math of the Cube

In order to solve the Rubik's Cube, eight steps were used:

1. The Daisy
2. The White Cross
3. The 1-2-3 (R-U-R' or L'-U'-L) Move
4. The Middle Layer
5. F-U-R-U'-R'-F'
6. R-U-R'-U-R-U-U-R'
7. R'-F-R'-B-B-R-F'-R'-B-B-R-R
8. F-F-U-R'-L-F-F-R-L'-U-F-F

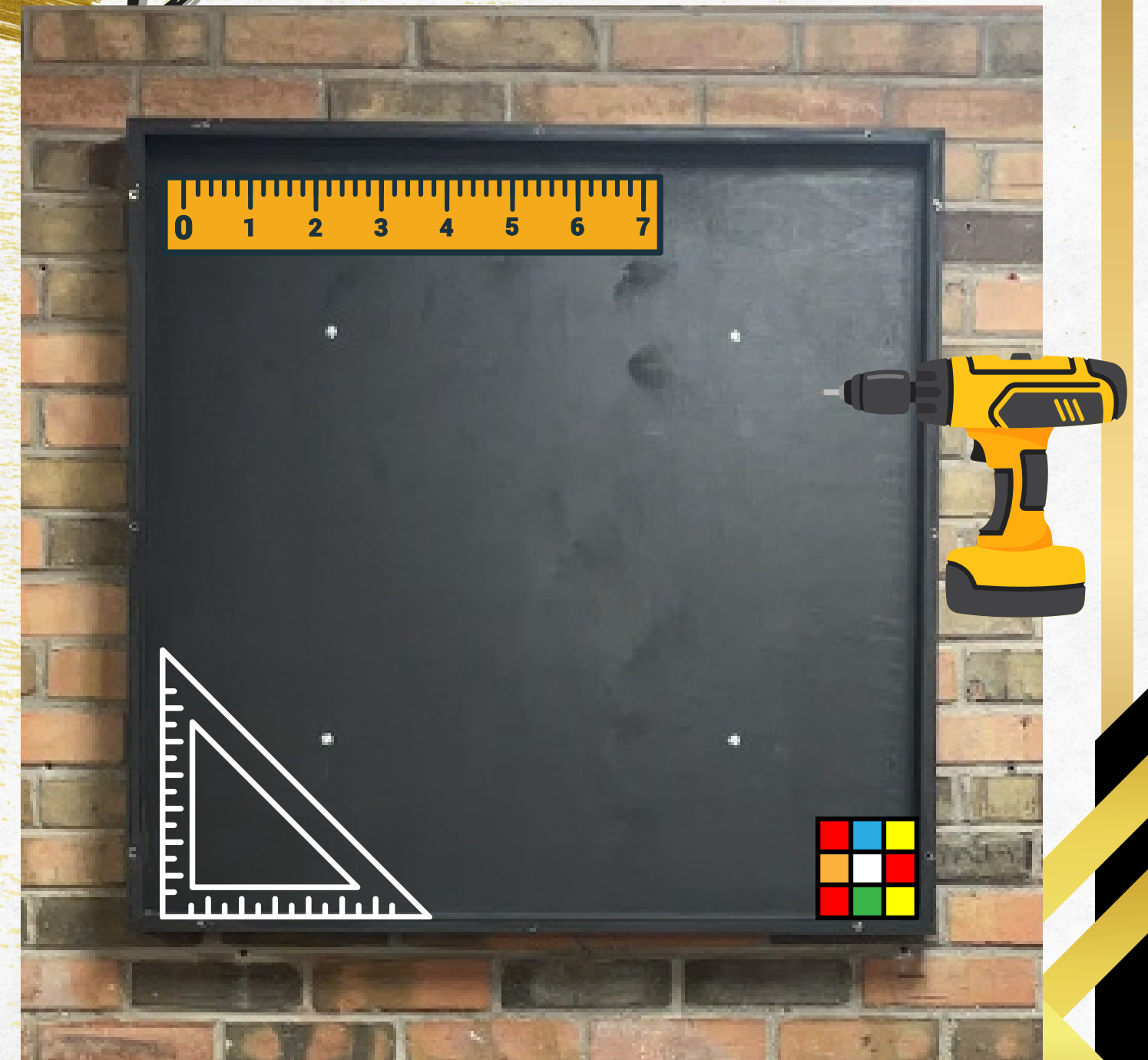
Key:

F-Front R-Right L-Left B-Back U-Up



The Math of Building

The case itself involved a great deal of math. First, we measured one of the cubes and then multiplied that by 15 to get the side length of the square showcase. Then, we used a T-square to make sure the case was assembled with perfect 90 degree angles so the cubes sat evenly. Finally, we drilled holes that hold the plexiglass cover in place equidistant apart.





Video

CLICK HERE FOR THE
ASSEMBLY VIDEO

Thank You