One of the best ways to deepen mathematical understanding is by *writing*. When you try to articulate the process, your mind connects the concepts at a higher level.

For many of the projects or assignments in this class, you will submit a write-up based on discussion questions and your mathematical thinking process. Because this write-up includes writing and math, it is called a WAM. Your WAM can be fun and creative, and must be in complete sentences.

What To Do:

1. Draw the shape of your choice on an x-y coordinate plane (graph paper is best, if you don't have any, print off an image of a grid). Be sure to clearly label your axis. Your shape must have at least 5 different points, but it may have more. Assign each point a letter and label your figure accordingly. Write each coordinate point on the back of this paper.
    a. What are each of the points and coordinates?

    b. Include a picture of your shape on its coordinate plane below:

2. **Translate** your figure to the left 5 and up 6, and label each new point using prime notation. Your translated shape should be labeled.
    a. Write the general rule for a translation that moves a coordinate to the left 5 and up six:

    b. What are the coordinates of the new figure?

    c. Include a picture of your translated shape on its coordinate plane below:

3. **Reflect** your figure over the x-axis. Your new figure should be labeled properly on the graph.
    a. Write the general rule for a reflection over the x-axis:

    b. What are the coordinates of your third transformation?

    c. Include a picture of your rotated shape on its coordinate plane below:

4. Rotate your figure 90 degrees clockwise. The new shape should be labeled properly on the graph.

4. **Rotate** your figure 90 degrees clockwise. The newly rotated shape should be clearly labeled.
    a. Write the rule for a rotation of 90 degrees clockwise.

    b. What are the coordinates of your third transformation?

    c. Include a picture of your rotated shape on its coordinate plane below:

5. **Dilate** your shape by a factor of ½. Clearly label the dilation on the graph.
    a. Write the rule for a dilation with a scale factor of ½.

    b. What are the new coordinates of your figure?

    c. Include a picture of your dilated shape on its coordinate plane below:

6. WAM Write-up: Write a paragraph describing your mathematical thinking. You can use any of the following questions as prompts to guide your answer:
    - What is the purpose of the assignment?
    - What strategies did you use in your mathematical thought process?
    - What new knowledge did you gain?
    - What caused you to think about mathematics at a deeper level?
    - How was your curiosity sparked by this assignment?
    - How does this connect to what we've learned in class/before
    - How did you determine the answer?
    - What mathematical questions are you still curious about?

Q2:
Rule is (x, y) to (x - 5, y + 6)
Coordinates: A' = (3, -7), B' = (-1, 7), C' = (-1, 9), D' = (-2, 10), E' = (-3, 9)

Q3: (x, y) to (x, -y)
Coordinates: A" = (-3, -7), B" = (-1,-7), C" = (-1, -9), D" = (-2, -10), E" = (-3, -9)

Q4: (x, y) to (y, -x)
Coordinates: A(Rotated) = (1, -2), B(Rotated) = (1, -4), C(Rotated) = (3, -4), D(Rotated) = (4, -3), E(Rotated) = (3, -2)

Q5: (x, y) to (1/2 x, 1/2 y)
Coordinates: A(Dilated) = (1, 0.5), B(Dilated) = (2, 0.5), C(Dilated) = (2, 1.5), D(Dilated) = (1.5, 2), E(Dilated) = (1, 1.5)

E(Dilated) = (1, 1.5)

From how I see it, the purpose of this assignment is to show us how shapes change as you move and change the coordinates. Also to test our knowledge of transformations.

I picked a simple shape, wrote its coordinates, and did everything carefully step by step.

I can clearly understand how translation, rotation, reflection, and dilation each change coordinates (and shapes) in different ways.

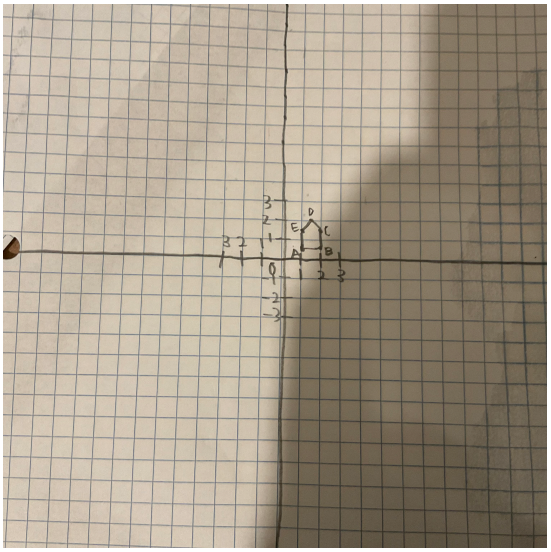
Seeing how one rule or small change significantly change all points of a shape made me realize how powerful algebra is in geometry.

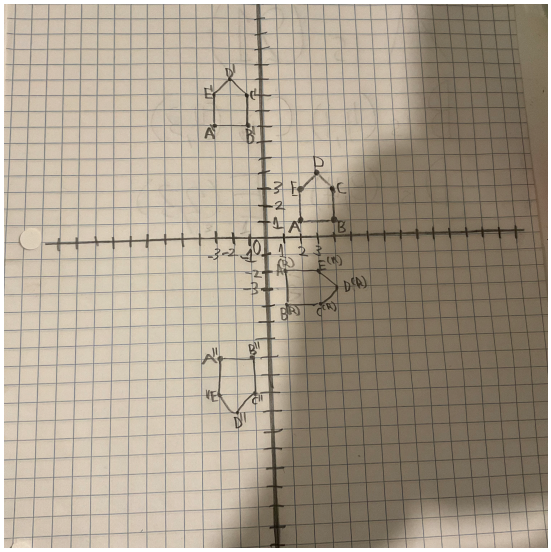
I wonder what would happen if you mixed a ton of transformations, how crazy would it get, and what would the end result look like?

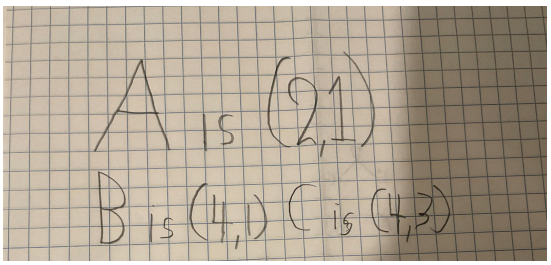
It tests our knowledge of what we previously learnt and did in class and expanded on it.

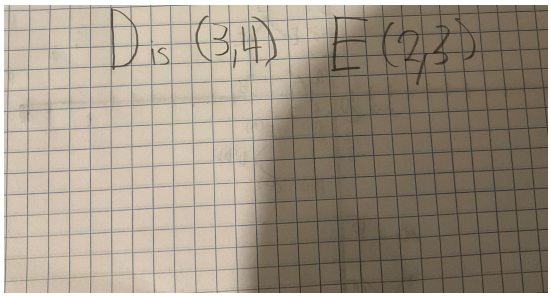
I followed the rules carefully and double checked everything to make sure I was right.

I'm curious about transforming with decimals and fractions, and how it would work doing transformations in 3d.









B I U Insert

This question was graded by your instructor:

UPDATE ANSWER NEXT

Great job! I don't see the dilation, though. Could you post it? I'll regrade as soon as you do!

[redacted]

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