

Math & Machining: Curricular Connections for the Classroom

<https://tinyurl.com/Math-Machine>

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Objective: To discover how CNC machines also known as Computer Numerical Machines can be used to connect math concepts and problem solving to other curriculum associated with computer programming, technology, science, and global issues.

1. Work through a math and CNC classroom lesson involving x-y coordinates

Examples:

a. *Flag of Somalia, What word is created?, FUN, W

b. References

- i. Remijan, K.W. (September 2018). "Cultivating the Machining Field by Planting Seeds in the Math Classroom". The Record. 24-27. Retrieved from <https://ntma.org/wp-content/uploads/2019/02/Sept18-Record-web-compressed.pdf>
- ii.. Video of FUN found at: https://youtu.be/M-cwslh9_oE
- iii. *Remijan, Kelly W. (2022). Flags of Africa: Promoting Cultures & Connecting Math Concepts. Retrieved from Flags of Africa: Promoting Cultures & Connecting Math Concepts. Retrieved from https://digitalcommons.imsa.edu/pfs_pr/49/

2. Transfer a handwritten program into G-code that can be read by a machine

3. Test a program using an online simulator like NCviewer.com

- ✓ Free CNC Simulator Technology
 - <https://www.cimco.com/download/public/> OR <https://ncviewer.com/>
 - How to use ncviewer.com - https://youtu.be/Z4V_qKuoMMk

4. DESIGN your OWN nameplate/design, write a program, & machine your design out of wood

- ✓ Examples found at: <https://twitter.com/teachers4steam/status/1539252032720314371>

5. How does the type of material impact a computer program, machine, etc? Why?

6. Re-write a program so that your design can be machined in aluminum.

7. Machine your design out of aluminum in the SWIC lab

- ✓ Example Video found at: <https://youtube.com/shorts/khAfrHsnnsM>

8. Recognize that there are different CNC machines which can cause different problems.

9. Find an image, insert into Desmos, & use Desmos to find points.

- ✓ **Example: Flag of Chile**
- ✓ **Reference:** Remijan, K.W. (To be Published Fall 2022). Flag Designs of Latin America: Culturally Relevant Learning Experiences with Technology to Enhance Geometry and Algebra Concepts. Teaching for Excellence and Equity in Mathematics Journal.

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<https://www.swic.edu/academics/career-degrees/precision-machining-technology/>.