Clover String Art

String Art

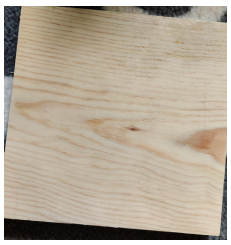
String art involves wrapping colorful string around nails or pins to form a design. String art can also be used to teach math! It's a great way to learn about shapes if you're younger and to learn a little about geometry if you're older. String art can be simple, or more complex. For example, the clover you are about to make might look hard, but if you separate it into more simple shapes, you will see that you can do it (each leaf is like a heart). Look inside for some basic instructions on string art, or jump in and get started!

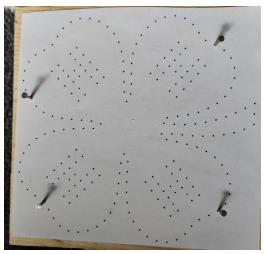
Supplies:
Clover Template
Board
Frame boards
nails
string/yarn
Hammer
Pencil
tape
Ruler

Other:
Paint
Sandpaper

Instructions:

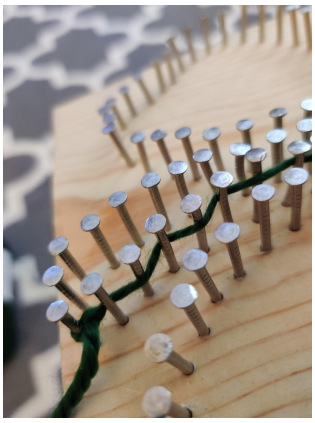
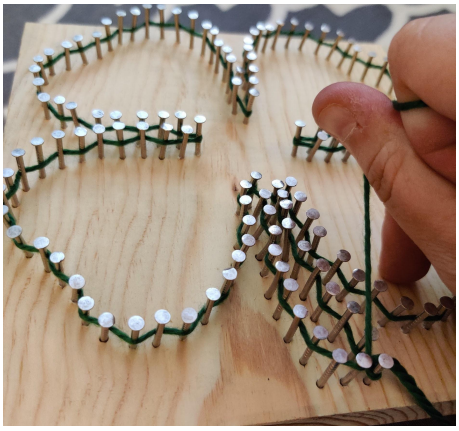
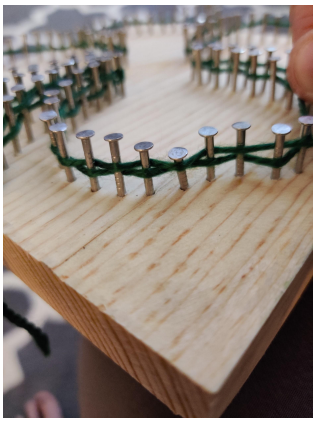
Step 1: Gather Supplies and locate the provided clover template. Tape the template in place. It is a good idea to anchor it down by placing a nail in each corner.



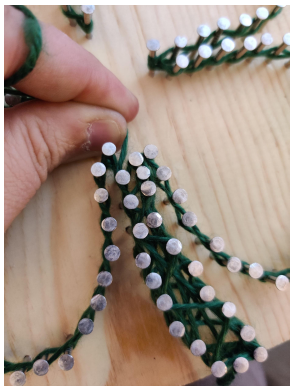


Step 2: With a hammer, pound the nails all the way around; each dot is a spot for the nail. Instead of nailing the H, poke holes with a pencil and draw in where the nails will go. You will want to hammer these in AFTER using the green string. (Be careful not to hammer your fingers!) Remove the paper. Tweezers may be helpful.

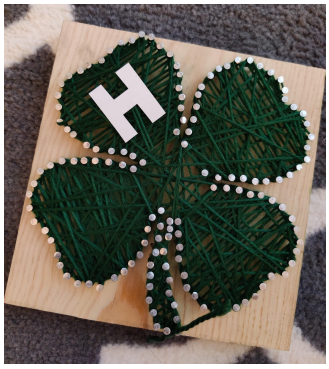
Step 3: Tie the string around the nail at your start. Leave enough of a tail to use to tie on more string. Wrap the string to create a border with the nails. You will wind the string in and out until you complete the shape. Then you will wrap it around the border a second time the opposite way than did the first time. You will need to wrap the string around the nail at each corner.

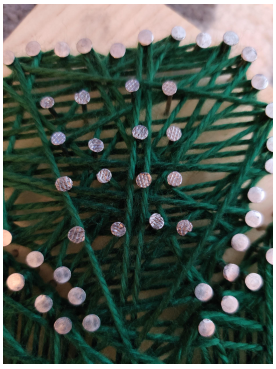




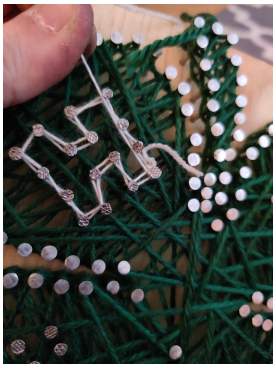

Step 4: Fill the shape with string. Once you have outlined the cover, begin filling in the shape. There is no right way to do this. You will want to make sure that each portion of the shape is equally filled in. Repeat until you like it, then tie off the end string with the beginning string, making a knot and clipping the tails.



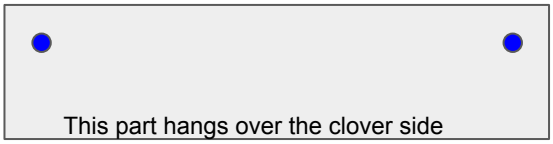

Step 5: Use the “H” pattern and the markings from your template to hammer in your nails. Then complete each H like you did the clover. 1) tie the string, 2) make the border, 3) fill it in, 4) finish by tying the start and finish strings.







Step 6: Locate the frame/Assemble the frame.. If you would like to sand, distress, paint, or otherwise finish the frame, do this first. Then locate the 1.5 inch nails. Next, determine the best fit (short pieces on the top/bottom or the sides? Then mark your frame with a pencil, the short pieces should have one nail on each side and be approximately ¼ inch from the side and the bottom. Hammer the nails into the short pieces, when they poke through, then hammer each piece into your clover board. Next, Mark your longer pieces. You will want to use 4 nails, one nail needs to go into the short piece, and another into the board. Don't forget to account for the nail from the short piece.



Step 8: Finishing Touches. This part is completely up to you. Maybe you want to add some artwork to the sides. Or maybe you want to put some projects that you are involved in on the sides. If you don't want it to be standing art, you might add hooks to hang it.

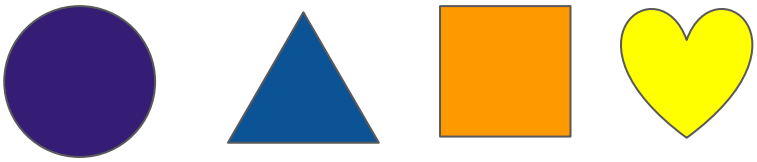
Have Fun.
Be Creative!
Make It Your Own.

String Art: *the math and history behind it.*

String art involves wrapping colorful string around nails or pins to form a design. String art can also be used to teach math! String art is thought to have originated in the 19th century when Mary Everest Boole wanted to make math fun, specifically geometry. A modern geometric concept string art explains is the bezier curve because string art demonstrates that it is possible to make curved geometric figures using straight lines. The use of shapes, is a much more simple way to explain math in String Art.

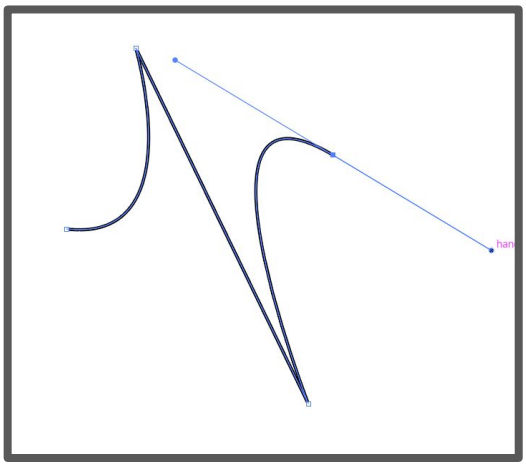
Learning with String Art.

Shapes are everywhere. Look around. What shapes do you see? Shapes are a big part of string art design.



Two-Dimensional/Three-Dimensional Shapes.

Two dimensional (2-D) shapes are flat shapes we see everyday. Examples include circles, triangles, squares, etc. String art is based on 3 dimensional (3-D) geometric designs. These shapes are not flat like the shapes on a piece of paper, they are 3 dimensional, like a can of soup. Examples of 3-D shapes include: cylinder, cube, sphere, and pyramid. Look around the room and identify 2-D and 3-D shapes.



Computer Programs such as Adobe Illustrator use bezier curves to create shapes. These shapes use lines to create a curve.

Bezier Curve.

In simple terms, bezier curves are curved shapes made using straight lines. Bezier curves are used today to create shapes in computer related design. Vector shapes use a series of paths to make up a shape (the same as it works in string art.)

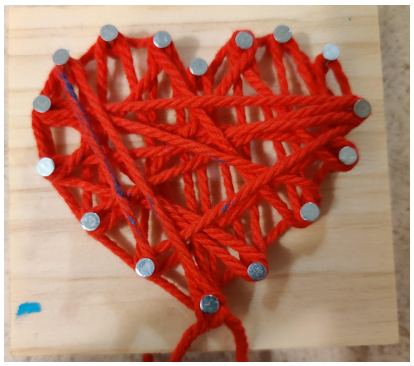
Bezier Curve Techniques.

Bezier curves are important in geometric modeling and can be very difficult to explain. The Bezier Technique takes math concepts into a highly geometric, creative form. If you break it down, it puts the creativity in computer graphic design. Bezier curves are also used in practical life. Aircraft design is an example of this. This type of mathematics is used to convert design to create safe and efficient aircraft.

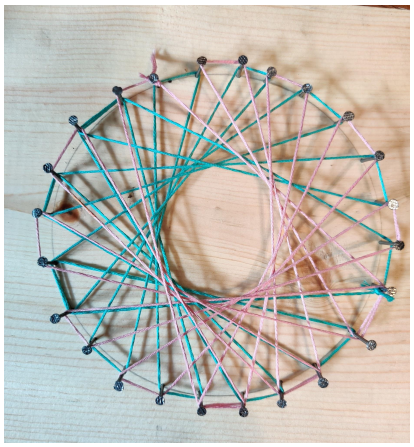
Designing with String Art

Anyone can create beautiful string art. From beginner to advanced there are many styles and techniques that can be used.

Basic: String art can be used to make basic geometric shapes in string. You can make a square, rectangle, circle, heart, etc. Using a template makes this easier. Start with the shape with the least amount of sides and work up.



Radial: Explore radial design (working off one point like the example on the left. The center nail is the starting point. What could you make if you moved the nail? Or added in different designs?



Curve Stitching (using the ideas of bezier curves): Work on more complicated geometric shapes into your string art. Create templates with more complex shapes. The more nails you use, the more complex your design.

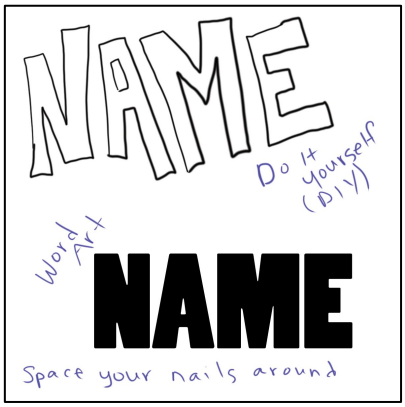
Photo credit: Free Domain

More on Mary Everest Boole

Mary Boole lived from 1832-1916. She was a self-taught mathematician and is known for her work in making math fun. Mary Everest Boole was an outside-of-the-box thinker who inspired kids to learn by doing hands-on activities. She had kids explore math through playful activities, including string art. This was done using straight lines to create curved lines.

The Basics of String Art

There is no right or wrong way to doing string art. Some methods take longer. Some are harder. Some are easier. The best part of string art is that every piece is unique.



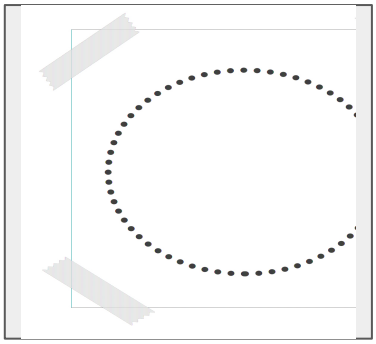
STEP 1: Basic Supplies: template, nails, board, hammer, tape, paper, string, pencil *Tips/Tricks: you'll want wood that is easy to hammer into (you could even use corkboard), think about the type of nails too. If you're not sure about what woods are soft and what nails are easy to hammer in, ask at your local hardware/lumber store. They'll know how to help you.*

- **Templates:** You can find many templates for string art online through a simple search. Most patterns are free. You can also take a picture and tape it down to your board and put your own nails in around it. For example, you could use word art in a word processing program (MS Word, or Google Slides) to create an outline of your name and then use that as a template for your string art. More resources can be found on the last page.
- **Types of String:** You can use a variety of strings. Embroidery floss makes a nice thin line, and yarn makes a thicker one. There are advantages to both kinds and it depends on what you want it to look like in the end. You can use what you have at home as you learn.

TEMPLATE

template

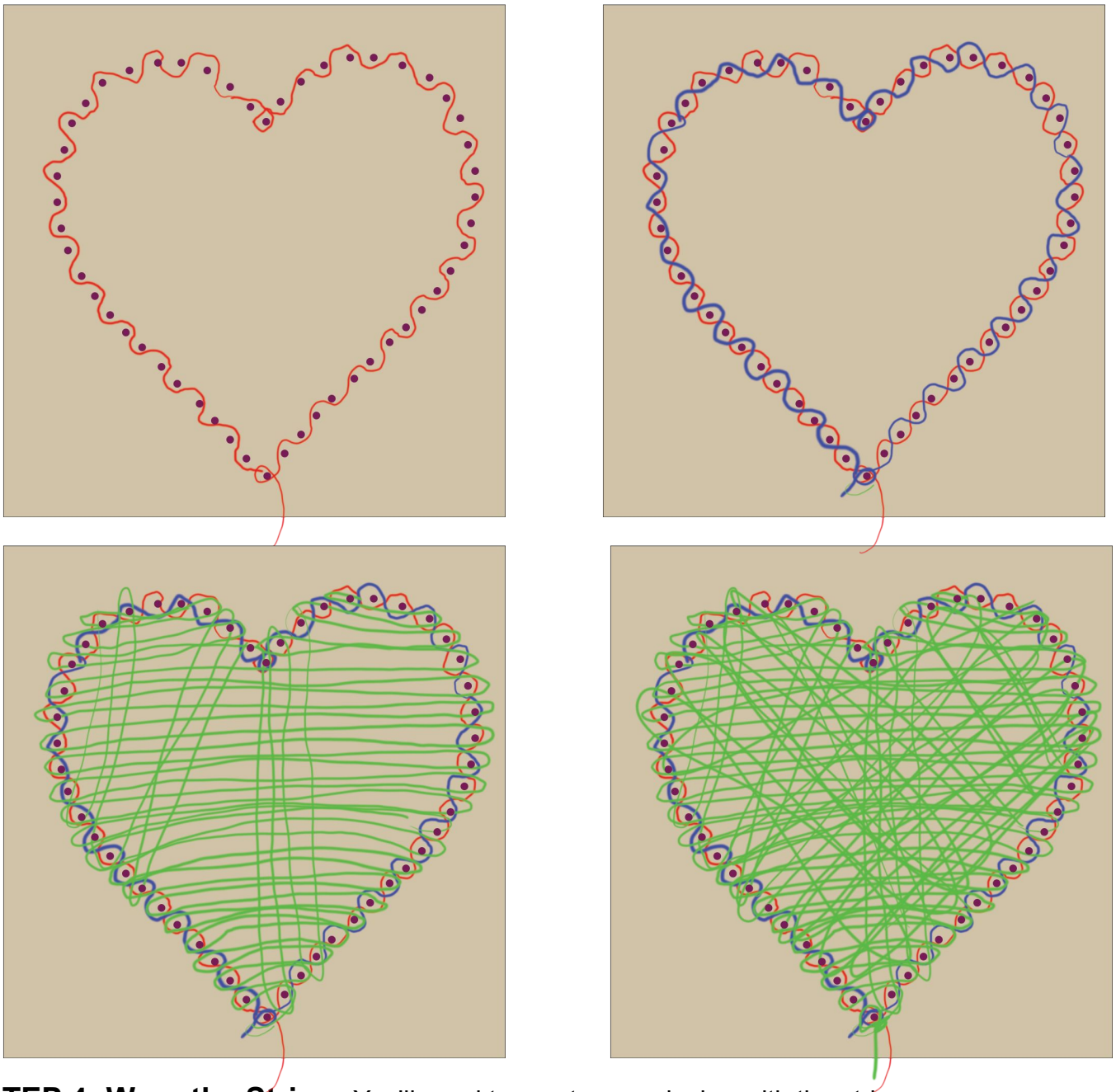
STEP 2: Preparing your Board: If you want to paint, or distress (hammer, add texture, etc) your board. You will need to do this before setting up the template.



STEP 3: Prepare the design: You'll need to decide how to transfer the design. This will depend on what kind of pattern/template you are using.

- One way is to print the design on paper and secure it with tape.
- Next, hammer the nails evenly spaced around the template.
- Remove the paper from the board (a tweezers may be helpful)

The Basics of String Art Cont.



STEP 4: Wrap the String: You'll need to create your design with the string.

1. Unwrap your string and tie one end in a knot around the starting point of your design. Securing the knot with clear glue or nail polish will make it more secure.
2. Weave your string around the border of the nails. Make sure you hold it tight so it doesn't come undone. Begin by weaving in and out on every other nail and then go around again the opposite way.
3. Continue to fill in the insides of your design in random patterns.
4. Secure the end when done.

STEP 5: Finishing Touches: Consider adding more colors, added touches, or you can leave it the way you have it. If you need to start a new string, secure it like before and begin again.

String Art Links/Resources
Do String Art:
https://www.wikihow.com/Do-String-Art

String Art Fun
https://www.stringartfun.com/

Explore Geometry with String Art
https://babbledabbledo.com/math-art-idea-explore-geometry-string-art/

Works Cited

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Farin, G., Hoschek, J., Kim, M. -., & Kim, M. -. (2002). Handbook of computer aided geometric design. ProQuest Ebook Central https://ebookcentral.proquest.com

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