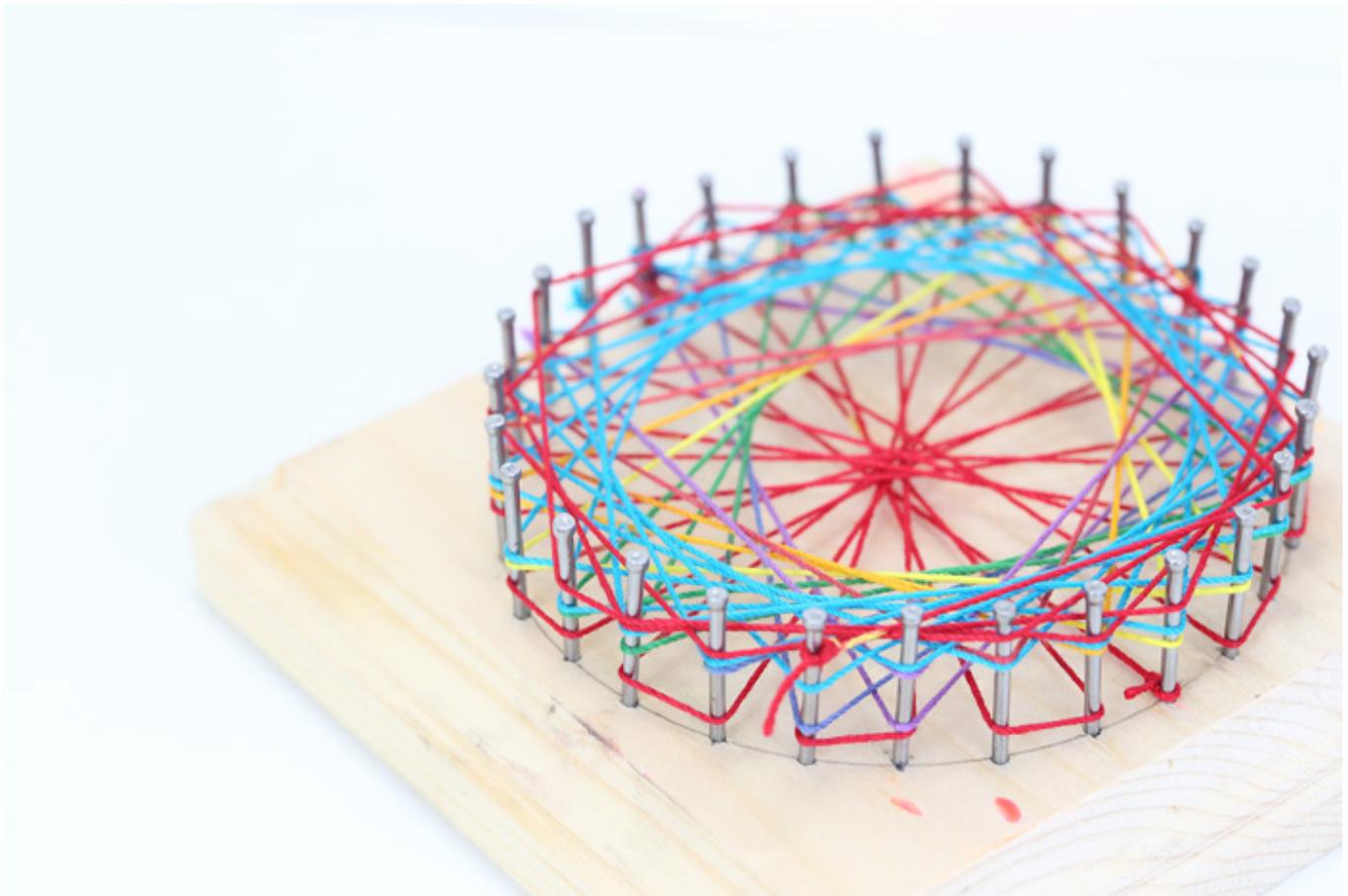
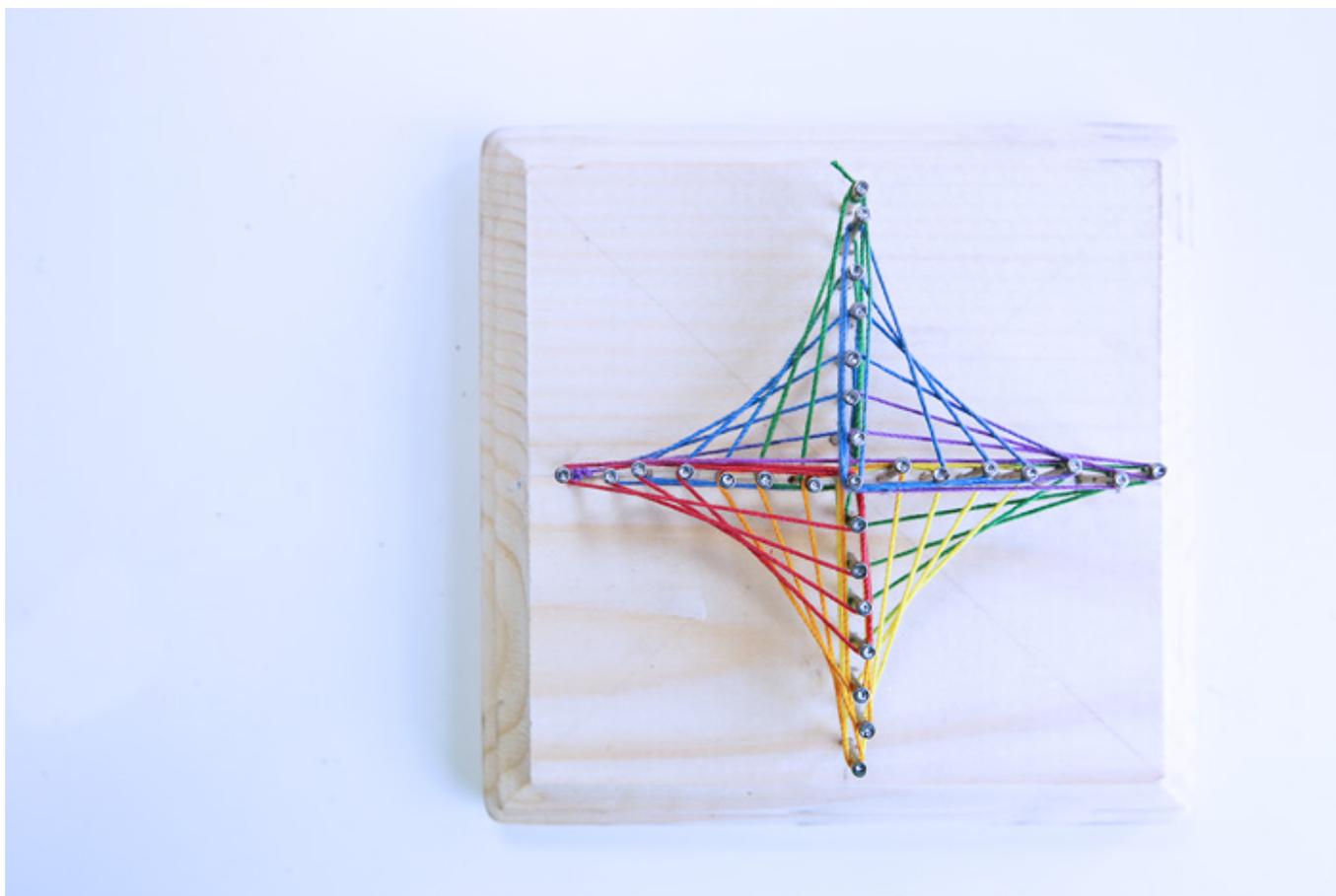


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Today let's put aside the worksheets and try a fun way to help kids learn math: through art and design. A hands-on art project that incorporates mathematical concepts is a great way to introduce kids to ideas like geometry and fractions. In today's project we'll be using string art to explore Geometry.



Today's post is part of a wonderful series called **STEM A-Z** curated by Little Bins for Little Hands. The goal of the series is to give parents and educators the information you need to

basics [HERE](#). Our post covers **G for Geometry**, my second favorite math subject in school (believe it or not I LOVED calculus- I know what a nerd...)

Wanna see some beautiful math?

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For this project you will need to create some simple string art frames using cheap wood craft frames/plaques and nails. For an even more hands-on approach, have your child or students layout the nail holes and do the nailing themselves. In fact my son enjoyed making the frame more than creating the art!

*This post contains affiliate links to products I love and recommend to my readers.*



## Math Art: String Art Geometry

### Materials



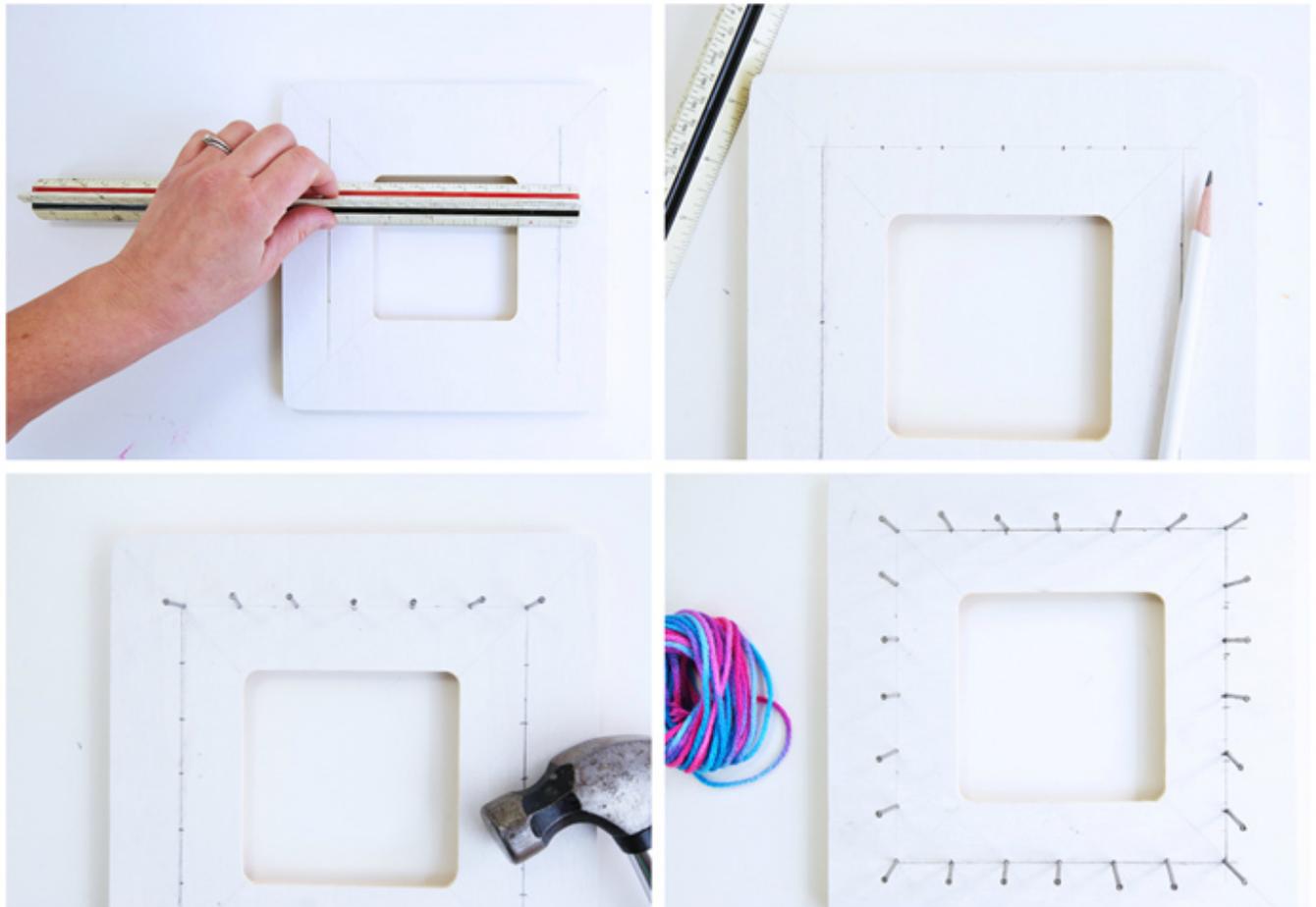
PRINT TEMPLATE HERE

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- **Square wood craft frame** or unfinished wood plaques (available for \$1 at Michaels)
  - **Finishing nails**
  - **Hammer**

- **String** or yarn We love this crochet thread- it's inexpensive and comes in great colors!
- **Template**

**Hint:** Finishing nails do not have a head so you can easily slip off the string after you create different compositions and start again.

## Instructions



- **Step One** Lay out the nail holes. Determine the center of the frame or plaque by drawing a diagonal line from corner to corner.
- **Step Two** If using a frame measure in halfway between the frame edges and opening and draw a square.
- **Step Three** Using your center point mark the center on each side of the square. Divide each half of the square into three equal sections. Repeat until you have equally spaced marks along the entire square. These will be where your nails go.
- **Step Four** Hammer in a nail at each mark.

- **Step Five** Cut a long length of string and tie it around a nail at the corner of your frame. Make some string art!

## Tips

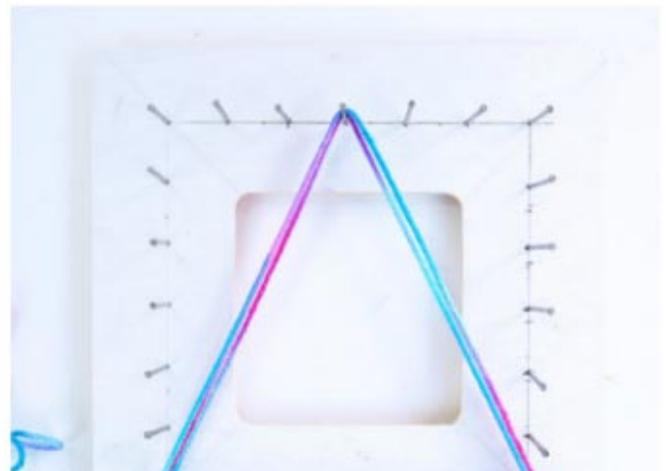
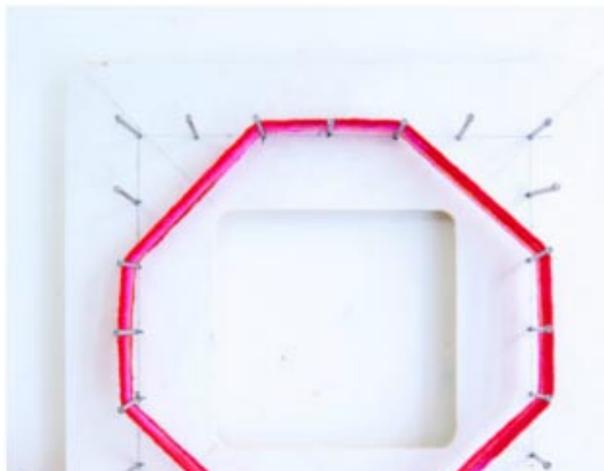
- Show your child how to pull the string taught while wrapping the nails. It takes some practice to be able to pull the string a tightly and wrap the nails at the same time.
- Don't cut too long a piece of string as it may get tangled in the nails and/or you may inadvertently tangle it into a knot.
- If you want to make more permanent string art use nails with a head.
- Be sure to make a frame for yourself- I mean let's be honest what adult can resist the lure of creating string art?

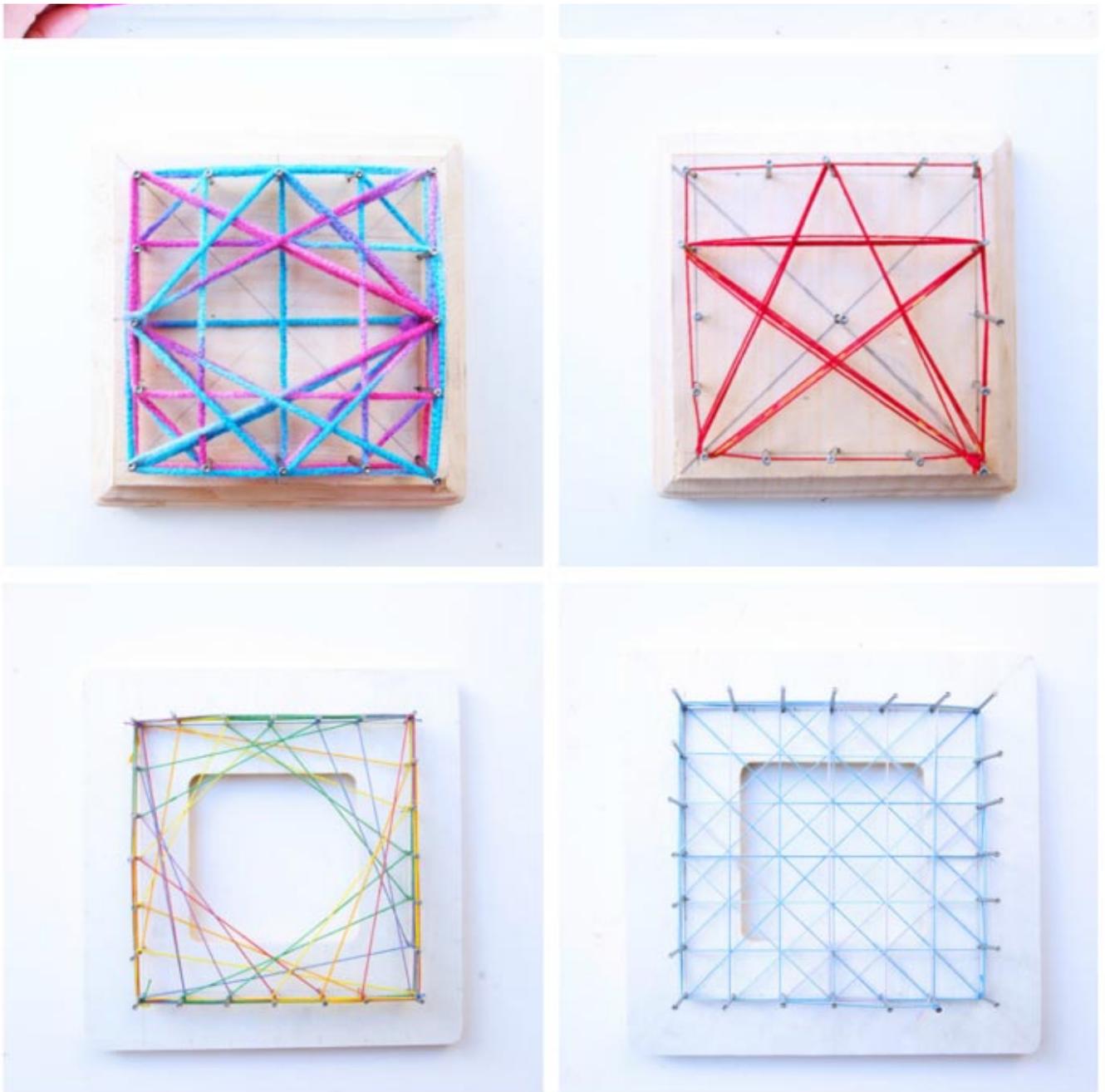


## Ideas for Exploring Geometry Through String Art

### Ages 5-9

- Have your child replicate basic geometric shapes in string, like a square, rectangle hexagon, etc. You may use our template for reference.
- Ask your child to replicate the shapes in order of the number of sides each shape has using the same string. Start with a triangle and move up to an octagon.
- Explore fractions and the division of shapes. Start with a square and ask your child to divide into equal portions using the string. What shapes are created when they divide it? This is also a great opportunity to show them how fractions work. They can visually see  $\frac{1}{2}$  of a square  $\frac{1}{4}$  etc.

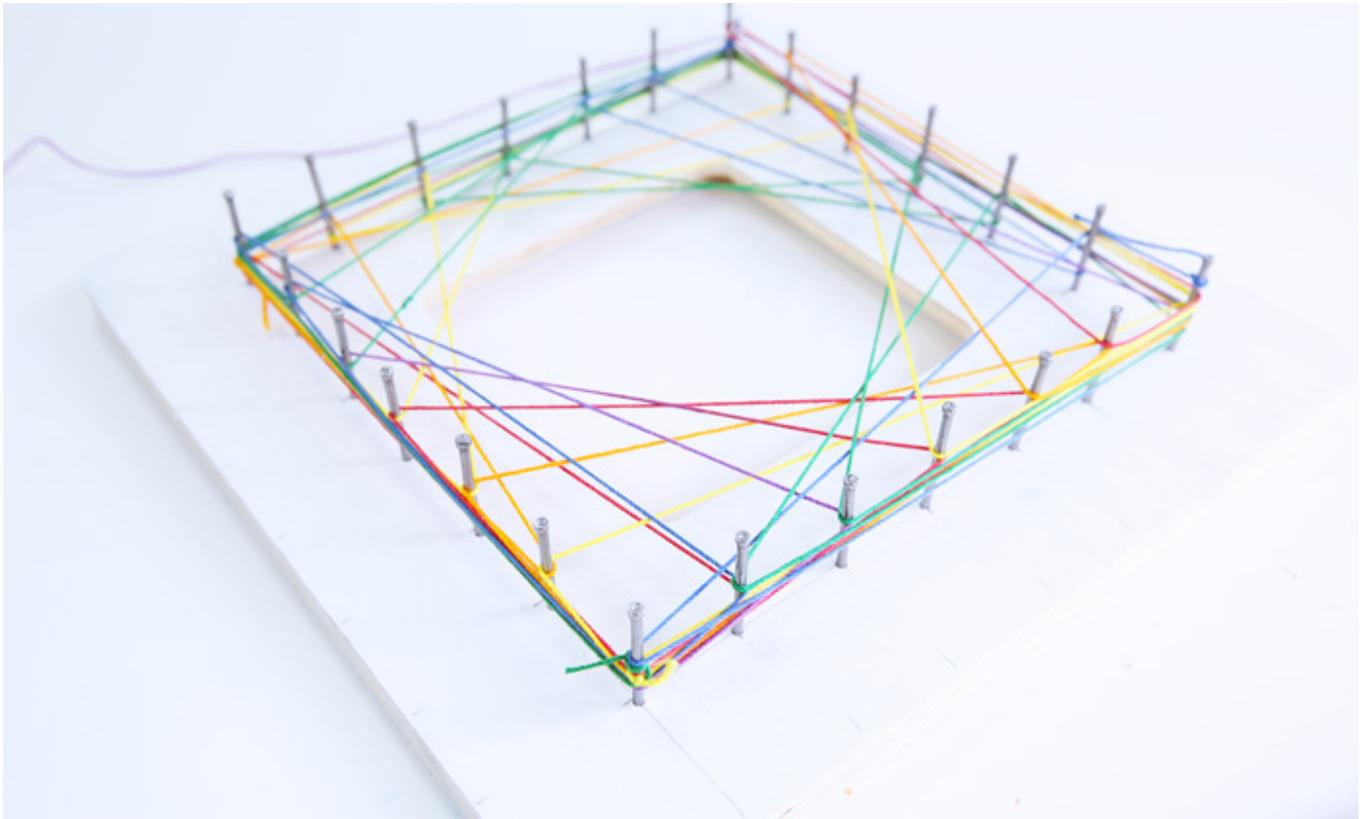




### Ages 10+

- Incorporate more complicated geometric shapes into the string art. Parabolic Curves are a great one to begin with. See our template for curves to replicate.
- Create different boards to create more complicated shapes. The more nails you have the more complex the forms can be. A triangular board and cross board can be used to replicate gorgeous curves.
- Explore grids. Have your child create square and diagonal grids in the frames. Layer the

- Be sure to also let kids make free form designs. In fact it's nearly impossible to resist making some random patterns and designs using string. While you may not be necessarily exploring exact geometry this free form exploration will undoubtedly uncover some amazing linear designs.



## Advanced

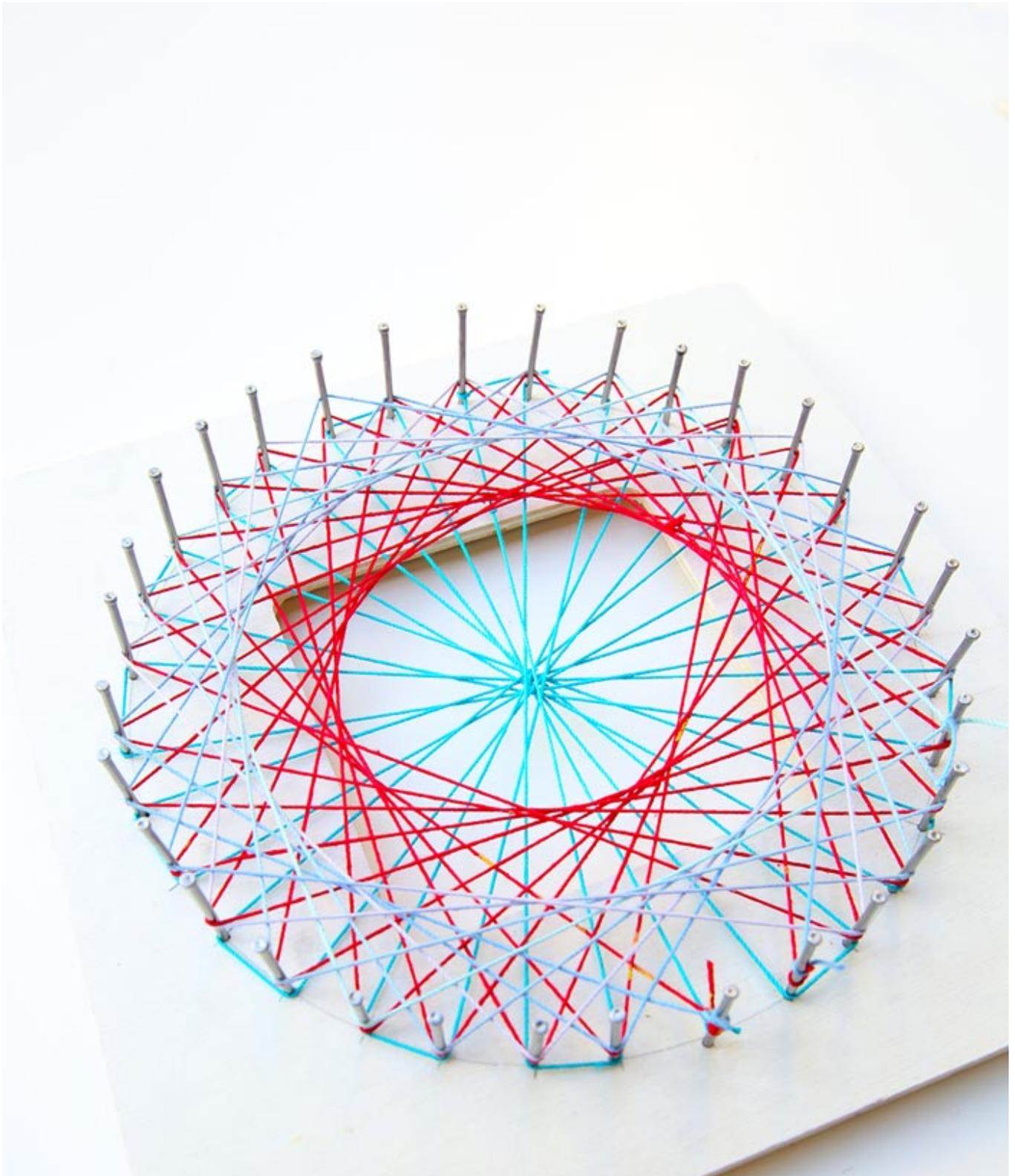
Adults and high school aged kids can explore radial designs. These make the most beautiful designs but get complicated fast so they are not for the faint of heart!

How to make radial frame:

- **Step One** Tracing a bowl or cup on one of your frames.
- **Step Two** Measure the circumference. You can do this visually by laying a piece of string around the circle, trim it, and then measure the length of string with a ruler. You can also use the formula  $C = 2 \pi r$  *Circumference = 2 times pi times the radius*
- **Step Three** Divide the frame into an odd number of sections to get an odd number of nail holes You can divide it evenly but your patterns will not quite be centered (I learned this

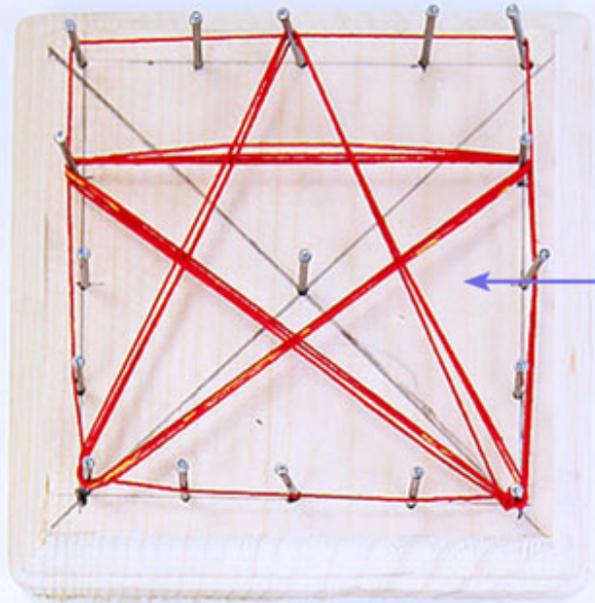
- **Step Five** Add a nail at each mark along the circle.
- **Step Six** Refer to our template for how to create some radial patterns.

*NOTE: The radial frame shown below used an even number of nails.*

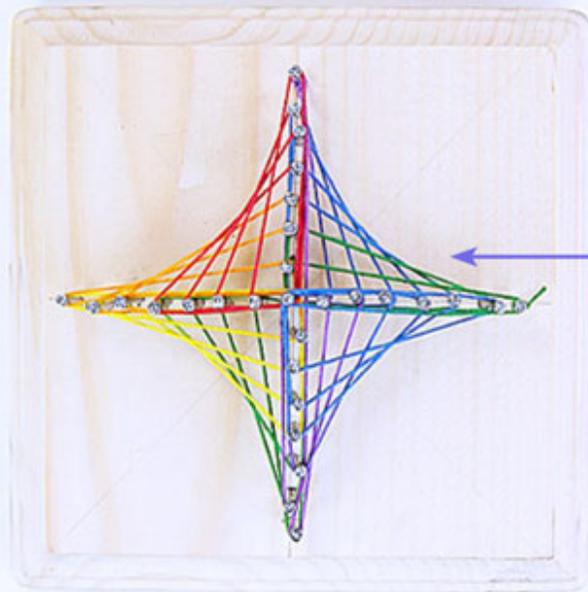




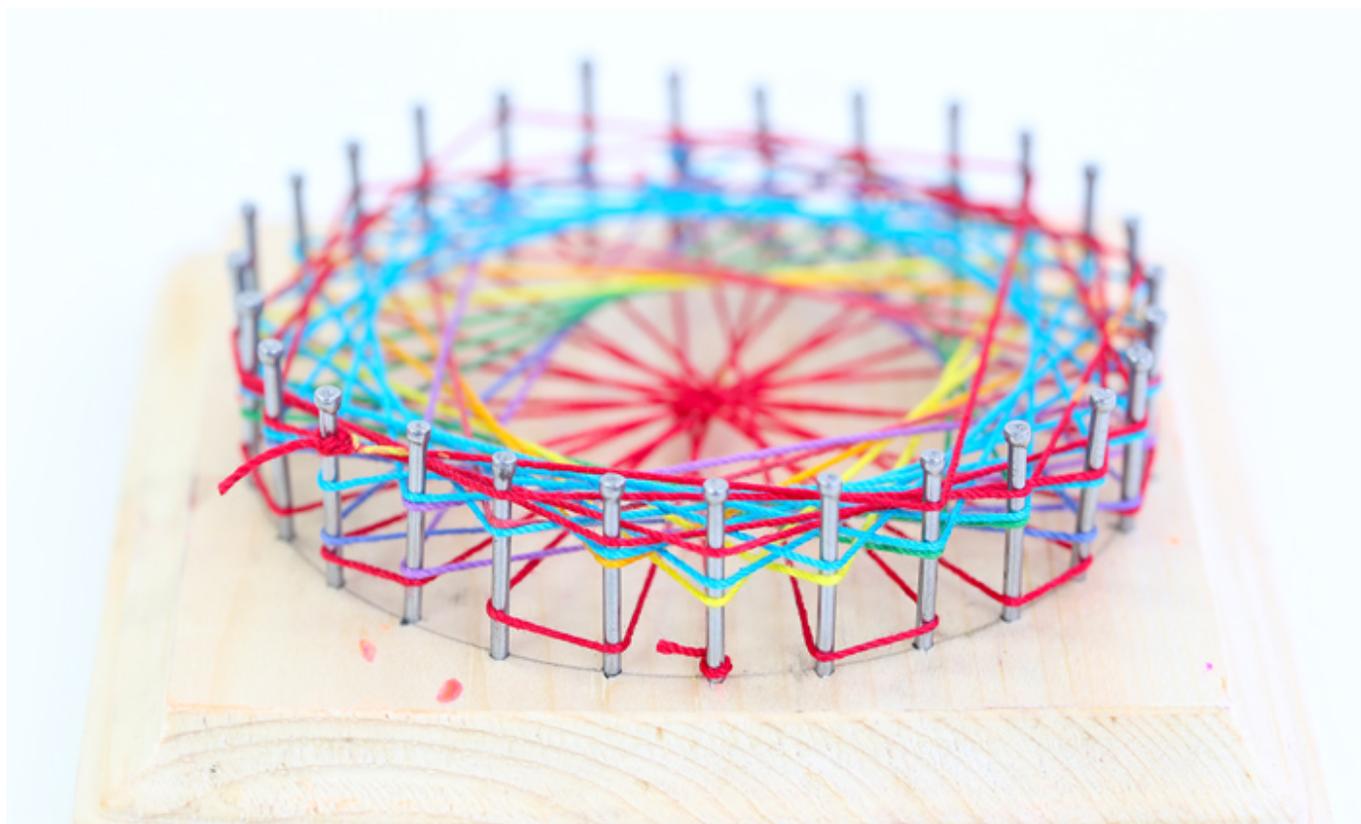
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Basic Shapes:  
Ages 5-9



Complex Shapes:  
Ages 10+

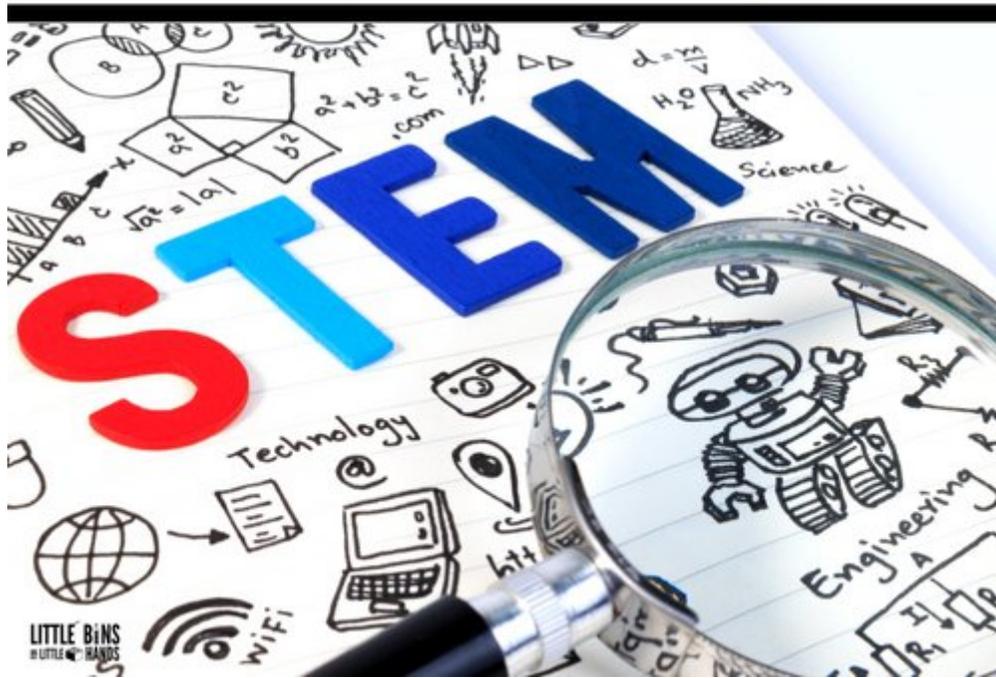


Are you thinking that exploring math with string art can not only be fun but also beautiful? This hands-on lesson is a great way to illustrate the power of STEAM projects. By combining two disciplines Math with Art kids can gain experience creating the basics shapes and even more elaborate geometry in one memorable project

Now it's time to explore more STEAM ideas! [Hop over here](#) and explore additional projects in the STEAM A-Z Series.

# The NEW A-Z Guide To **UNDERSTANDING** **STEM & STEAM**

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