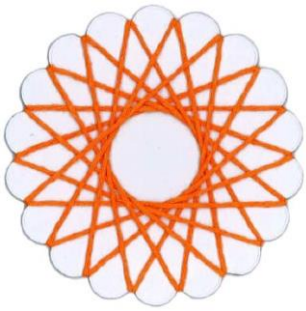
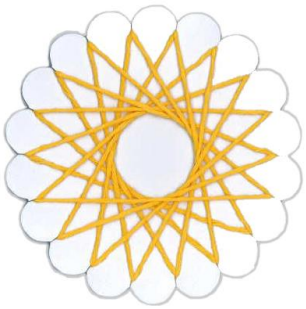
SCALLOP CIRCLE STRING ART

The string's the thing!

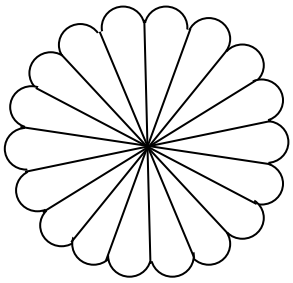
Use colored string and simple cardboard shapes to create artistic designs based on intriguing mathematical patterns. Every pattern has infinite possibilities! String art is fun for all ages - to fix a mistake or try a new approach, just unwind the string!



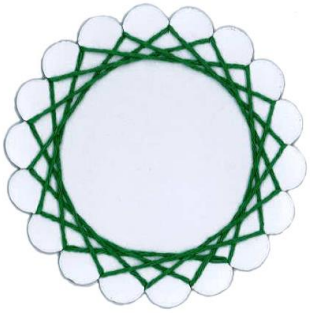
To the 7th scallop



To the 7th scallop with slits



To the 9th



To the 4th scallop

Curriculum topics

- Artistic Expression
- Geometry
- Properties of Shapes
- Symmetry and Patterns

Subjects

- Visual Arts
- Mathematics

Grade range: K – 8

Who we are: Resource Area for Teaching (RAFT) helps transform the learning experience by inspiring joy through hands-on learning.

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Materials

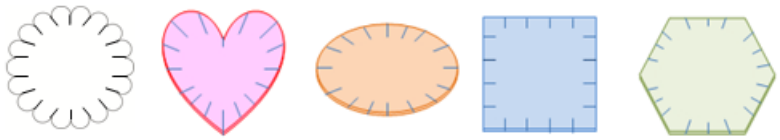
Use the following items to make each project:

- Cardboard/matte board or equal (1)
- Yarn, heavy thread/string

Not included (optional): Tape, scallop circle template (p.4)

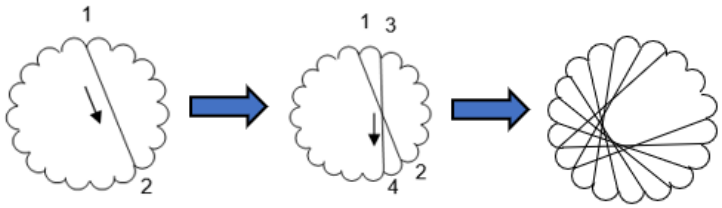
To Do and Notice

1 Cut a scallop circle or other shape using a template (see page 4) or by hand. Smooth or straight edge shapes can be used. Cut evenly spaced notches and small slits into the edges to prevent the string from slipping out of place (see below). Tape one end of a string to the back of the scallop circle/shape.



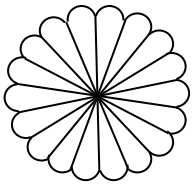
2 Bring the string around to the front of the scallop circle by passing over one of the notches on the edge of the shape (notch 1).

3 Pull the string toward a notch that is a certain number away from notch 1, moving either clockwise or counterclockwise as seen from the front of the shape. For example, if a person chooses a notch 7 spaces away from notch 1, notch 2 would be located as shown below (left).



4 Hook the string in the selected notch and wind the string around the back of the shape and then bring the string back to the front immediately to the right of notch 1 continuing in the same direction (see above right, notch 3). The basic movement is: 1) **come up** (back to front) one notch to the **right**, 2) go **down** (front to back) one notch to the **left**.

5 Stretch the string across the front and toward the notch that is next immediately to the left (notch 4 above). Repeat the pattern until all the notches have been filled twice or fill the notches only once if the string goes past the center of the circle (at right). Skipping more notches makes tighter circles.



6 Cut the string and tape the end to the back of the circle. Alternatively, tie the ends, or glue them. For a layered design secure a second piece of string with a contrasting color to the back as before, bring to the front, and then stretch the string to a notch that is closer than the one used in the earlier pattern. For example, if the first pattern skipped 6 notches, then the second pattern might be made by skipping 4 notches. Add more colors as desired!

7 **Share** student learning with RAFT! Submit photos/video via email at education@raft.net or on social media (Facebook, Twitter, Instagram).

Core Content Skills:

CCSS Mathematics

Understanding and Measuring Angles, Reason with Shapes and their Attributes, Generate and Analyze Patterns, Line Segments and Symmetry, Inscribed Angles, Radii, and Chords

CA Visual Arts

Creative Play, Materials, and Making (Creating); Art, Story, and Culture (Connecting)Generate and Conceptualize Artistic Ideas and Work

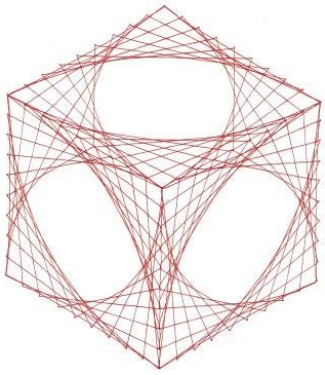
Social Emotional Learning

- Self-awareness
- Self-management
- Responsible decision-making

The Content Behind the Activity

Line designs like those in this activity are great for exploring basic geometric concepts. String art uses straight lines to create curved shapes such as circles, parabolas, ellipses, hyperbolas, and spirals. Each of the line segments is a chord of the circle.

String art originated in the "curve stitching" activities that were invented by a self-taught female mathematician named Mary Everest Boole at the end of the 19th century to make mathematics more accessible to children. In the 1960s and 1970s, string art became very popular as a decorative home craft depicting either abstract geometric patterns or representational designs. Today, string art continues to be a popular activity in both math and art classrooms (see example below).



Reuse

This kit uses 100% reusable materials designed for other uses. To continue making a positive impact in reducing waste, reuse these materials in other projects. Additionally, any unused materials can be collected and delivered back to RAFT.

Feedback

Please comment on this kit by taking this short survey: http://bit.ly/RAFTkitsurvey. Let us know of any material concerns (missing, broken, or poorly fitting parts) as well as any suggestions for improvement.

Visit https://raft.net to view related activities!

I Can Find a Shape like That
Kumihimo
Patterning with Polygons
Scallop Circle String Art
Mathematical Symmetry Models

Resources

- YouTube video (8:41), String Art Cards - https://bit.ly/2JvcwVB
- Teacher's Network, String Art - https://bit.ly/3dRQLNJ
- YouTube video (17:39), Mandala String Art - https://bit.ly/2UVVQeS

Scallop Circle Templates