

Math & Making

Janice Novakowski, 2023

Projects that involve design, creating, and making often involve the use of mathematics, both curricular content such as measuring and curricular competencies such as visualization. As you engage in maker projects, consider the mathematics you are using during the process as well as the mathematics you can see in the final product.

Janice's YouTube channel from transitional learning, with all sorts of math projects including puzzles, origami, weaving and macrame:

<https://bit.ly/JaniceYOUTUBE>



This blog page is dedicated to making and math:

<https://blogs.sd38.bc.ca/sd38mathandscience/math-making/>

Interdisciplinary projects from 2020-2021:

<https://blogs.sd38.bc.ca/sd38mathandscience/bc-2020-continuity-of-learning/>

<https://blogs.sd38.bc.ca/sd38mathandscience/fall-2020-resources/>

Weaving and Math

Weaving is a tradition from many cultures. Wool weaving and cedar weaving are important cultural practices to local Indigenous cultures.

Jessica Silvey (<https://www.redcedarwoman.com>) is a weaver from the Sechelt Nation. She sells cedar weaving kits, including math mats and provides instructional videos. She is available to come into schools/classes. She has collaborated with the Museum of Anthropology to create videos, such as this one on harvesting cedar:

<https://www.youtube.com/watch?v=A6KS4J8QyNQ>

Some BC K-12 mathematics curricular competencies often involved in making:

- Estimate reasonably
- Develop, demonstrate, and apply mathematical understanding through play, inquiry, and problem solving
- Visualize to explore mathematical concepts
- Engage in problem-solving experiences that are connected to place, story, cultural practices, and perspectives relevant to local First Peoples communities, the local community, and other cultures
- Use mathematical vocabulary and language to contribute to mathematical discussions
- Connect mathematical concepts to each other and to other areas and personal interests

Teacher resources:

- Math for Kids: Fun Math Games and Activities Inspired by Awesome Mathematicians, Past and Present by Rebecca Rapoport and Allanna Chung
- STEAM Lab for Kids by Liz Lee Heinecke
- Math Lab for Kids by Rebecca Rapoport and J.A. Yoder
- Math Games Lab for Kids by Rebecca Rapoport and J.A. Yoder
- Awesome Engineering Activities for Kids by Christina Herkert Schul
- MathArt Projects and Activities by Carolyn Ford Brunetto
- MathArts: Exploring Math Through Art for 3-6 Year Olds by MaryAnn F. Kohl and Cindy Gainer
- Makerspaces: Remaking Your Play and STEAM Early Learning Areas by Robin Chappelle Thompson and Michelle Kay Compton



Children's picture books about making:

To Make by Danielle Davis and Mags DeRoma
Made by Maxine by Ruth Spiro and Holly Hatam
Be a Maker by Kathy Howes and Elizabet Vukovic
Boxitects by Kim Smith
Not a Box by Antoinette Portis
Not a Stick by Antoinette Portis
The Most Magnificent Thing by Ashley Spires
The Most Magnificent Idea by Ashley Spires
Rosie Revere, Engineer by Andrea Beaty and David Roberts

ORIGAMI

Choose an origami project from a book or from Janice's YouTube channel. As you are folding, consider what mathematics you are engaging in? What math do you see in the final project?



CEDAR WEAVING

Information about cedar is provided. A short video about cedar harvesting created by MOA with Jessica Silvey can be viewed here:



Jessica has created a short video on twining your cedar mat here:



Jessica has math mat kits available on her website:

<https://www.redcedarwoman.com>

ISOMETRIC PAPER STAR

Use a piece of paper to create an isometric paper star.
What mathematics vocabulary and language do you use during the
process of making the star?



CIRCLE WEAVING

Use a piece of corrugated cardboard to create a circle loom.

What patterns might you create as you weave?



PAPER TUBE LENS DESIGNS

Cut a paper tube into one centimeter segments.

The resulting shape is called a lens in geometry - a convex lens shape that results from two circular arcs or when two circles intersecting.

A concave shape that looks like a crescent is called a lune.

What designs can you create with a collection of lenses?

What mathematics emerges for you as you are creating?