

# Indigenous Algebra

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<http://www.nwic.edu>

# About us

- **Matteo:** I was born and raised near Florence, Italy. My father was Italian, my mother is a descendant of Irish settlers to the Dakotas. I live in the traditional homeland of the Lhaq'temish and other Coast Salish people, in the city of Bellingham, Washington, and have been teaching Mathematics at Xwlemi Elh>Tal> Nexw Squl for over a decade.

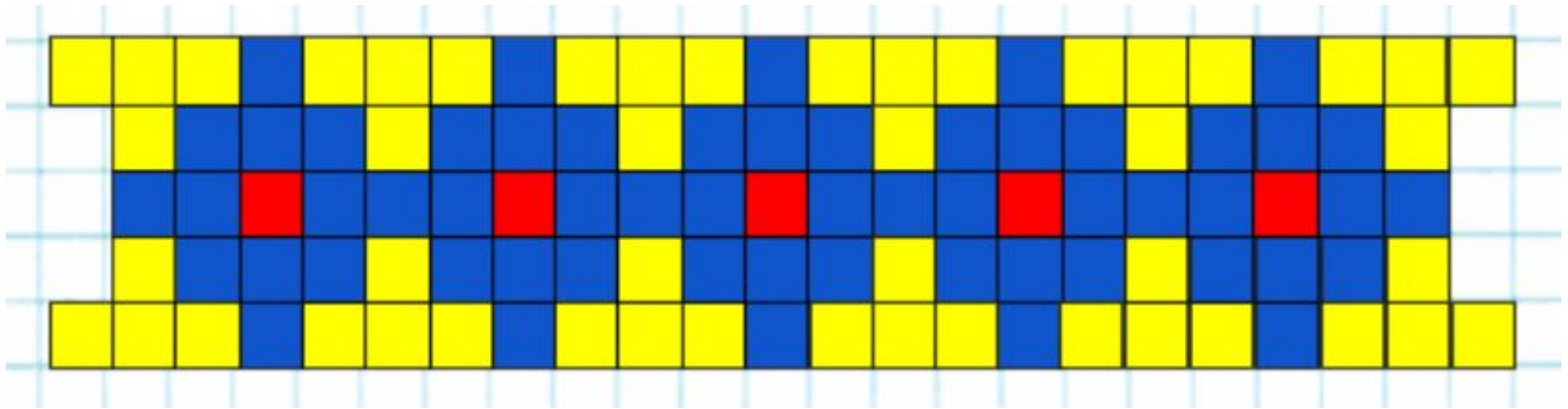
<https://tinyurl.com/22me6dxn>

- **Kayshish:** I am from the Nooksack Tribe and Lummi Nation. I am currently enrolled at Western Washington University (located in Bellingham, Washington) in the mathematics program. I am also Xwlemi Elh>Tal> Nexw Squl Alumni, I have been a math tutor at NWIC for 3 years, I have also taught elementary algebra a couple times.

# Some of our patterns, and some of the patterns shared by students

The Math faculty Xwlemi Elh>Tal> Nexw Squi have been collecting a variety of algebraic patterns from students, based on cultural practices like beading and weaving. They are used extensively in our algebra classes.

# Alanna's pattern



The picture above has 5 diamonds in it.

How many beads does it take to make this pattern if there are 2 diamonds?

What about any number of diamonds?

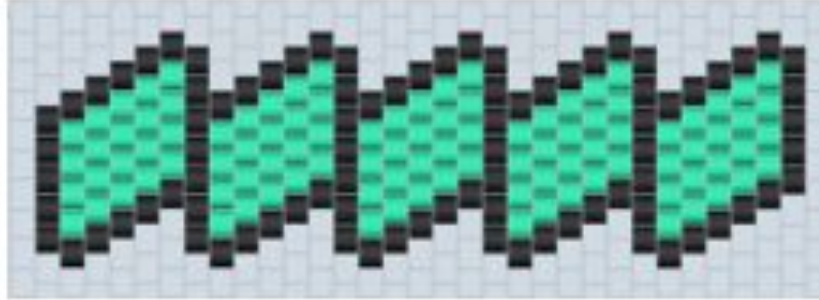
© Alanna Jones (Navajo, Zuni, Comanche, Kiowa, and Sac & Fox), 2021

*I looked at a couple of my grandma's old beading patterns that she had gave me and that's how I came up with this, and 'cause I'm part Comanche I used the Comanche colors which are blue, red and yellow. Alanna Jones, 2021*

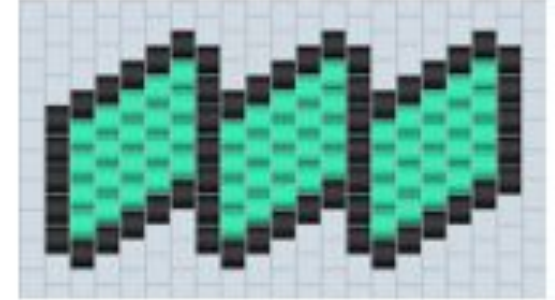
# George's prayer fan



One diamond



Five diamonds



Three diamonds

How many black beads would it take to make this pattern if there were 13 diamonds?

What about any number of diamonds?

© Ashley Bell (Northern Arapaho), 2020



In my math course, I was given examples of how algebraic thinking was used by many Indigenous people, and how I can utilize those same aspects in thinking. One of the most profound examples of this was in one of my final assignments. I was able to articulate and understand the peyote stitch on my late father's prayer fan that was passed onto me.

Ashley Bell, 2022

Photo © Ashley Bell, 2022

Downloaded from  
<https://indigenous.mathnetwork.educ.ubc.ca>



# Mehoy'



**The side of the central square (the bottom of the basket) has a width of 4 strips. After securing the square, each strip gets cut in half, and two cross-pieces are added.**

**How many total 'fingers' in the picture above?**

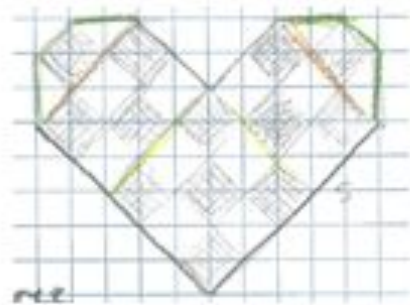
**What if the basket was made with a side of 3 strips? Or 7 strips? Or  $n$  strips?**

© NWIC, 2019

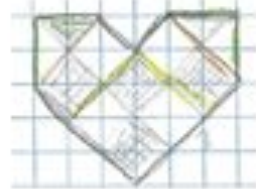
Disclaimer: the author does not claim copyright to the practice of weaving with cedar, any of the individual words, or to this particular design.

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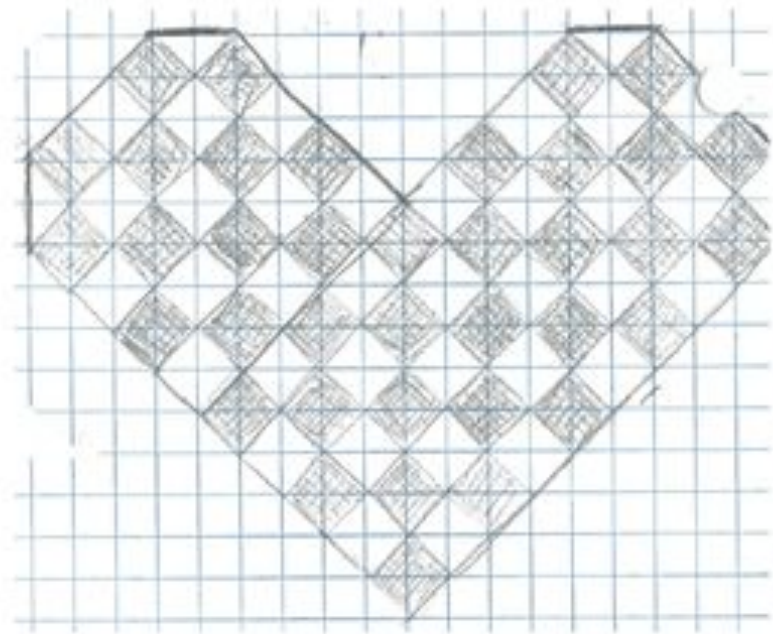
# Cedar hearts



Size 2



Size 1



Size 4

What would the total area of a Size 10 heart?

What about a heart of any size?