

# Beadwork + Math



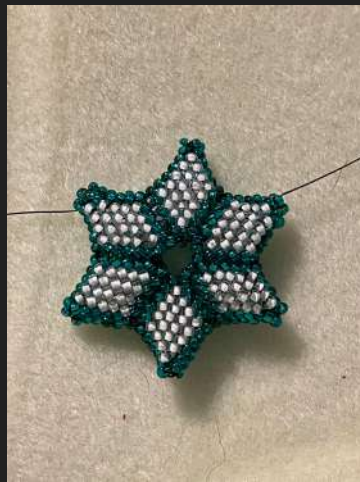
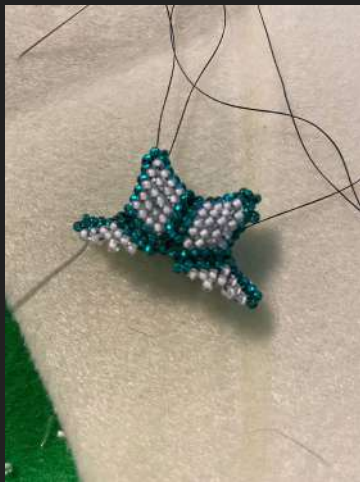


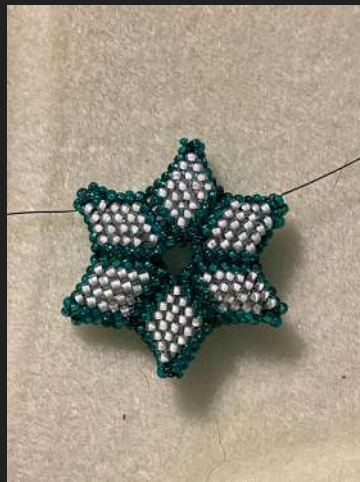








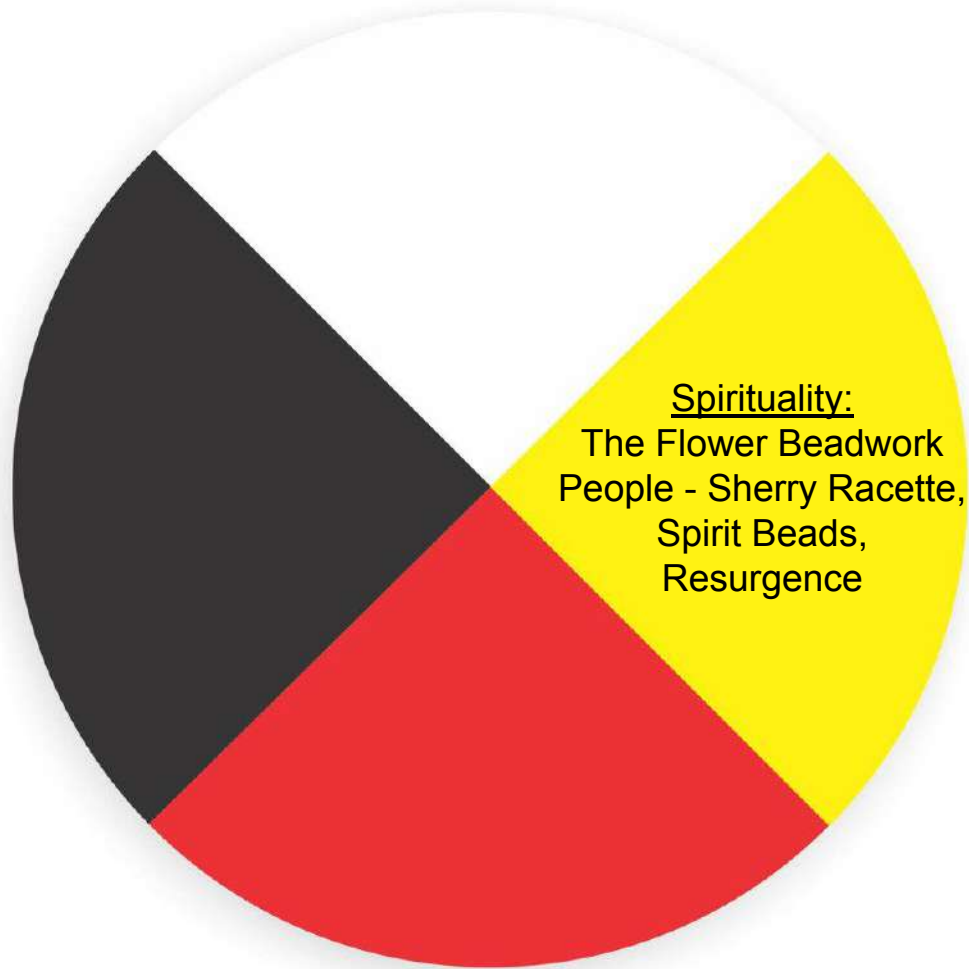








**spirit**



**spirit**

**body**



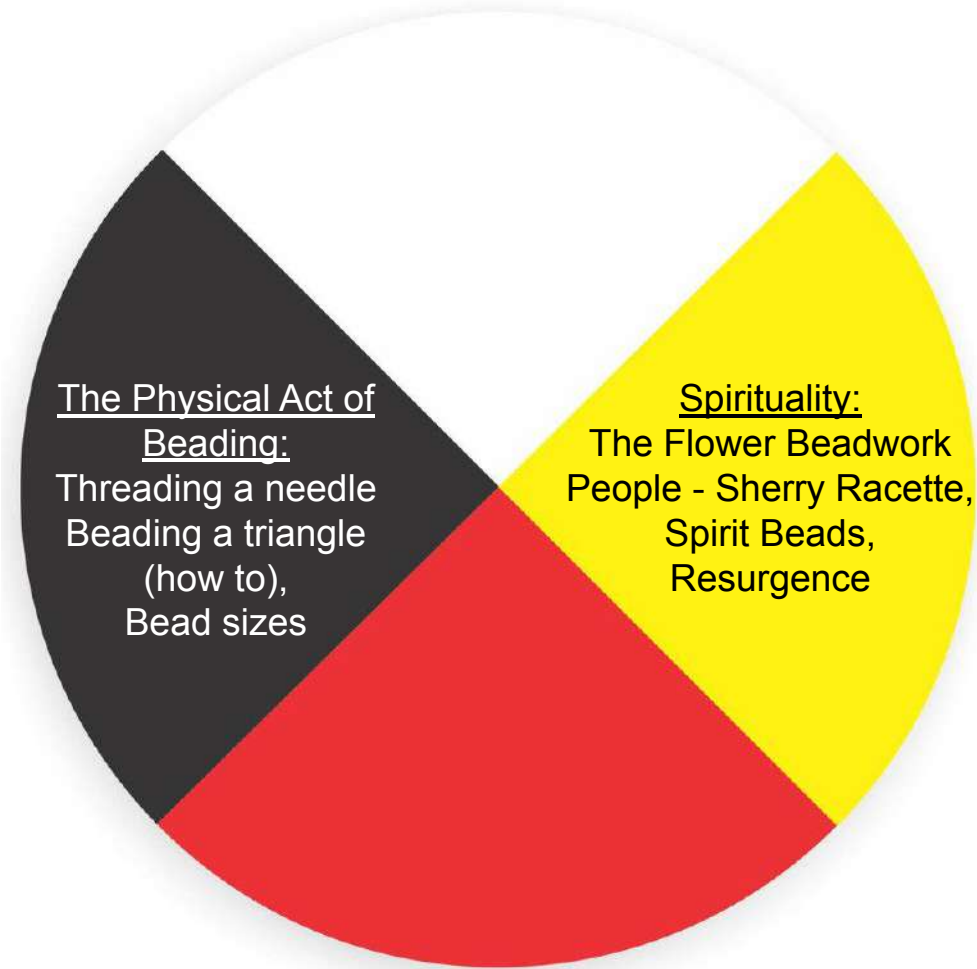
**spirit**

**body**

The Physical Act of  
Beading:  
Threading a needle  
Beading a triangle  
(how to),  
Bead sizes

Spirituality:  
The Flower Beadwork  
People - Sherry Racette,  
Spirit Beads,  
Resurgence

**spirit**



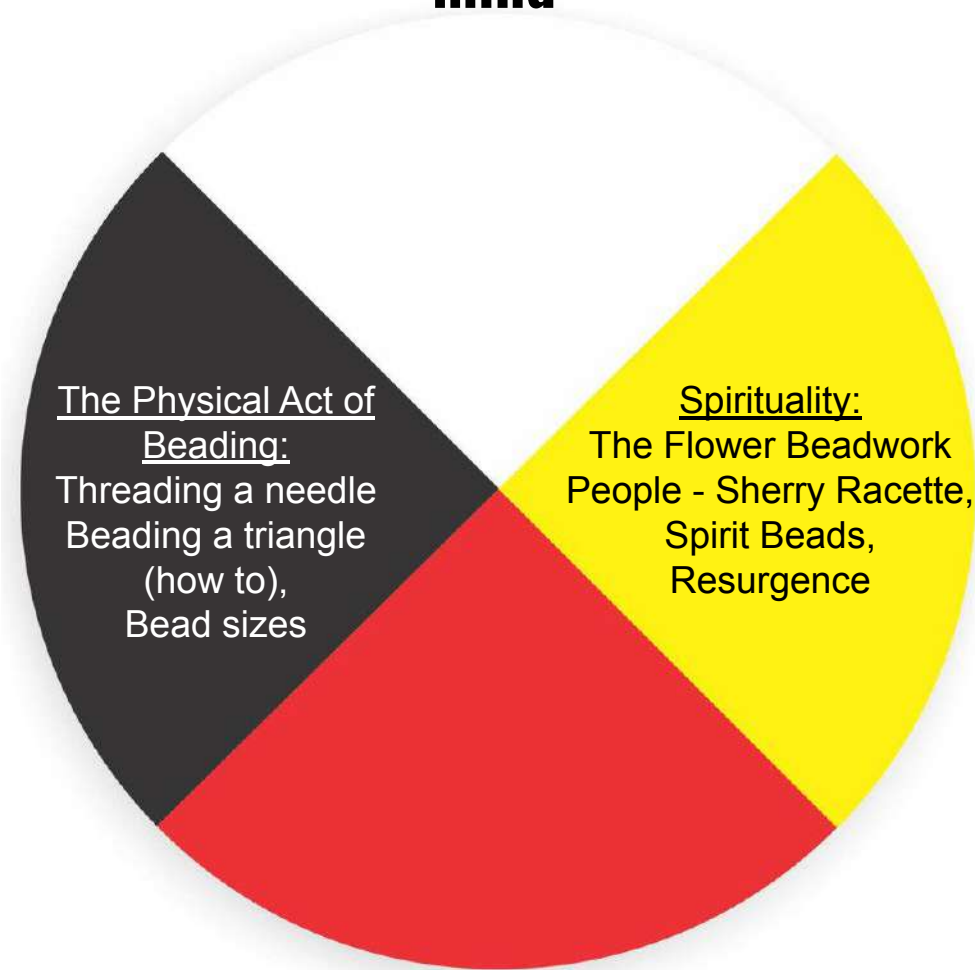
**mind**

**body**

**spirit**

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**mind**

Connections to Curriculum:

Mathematical Inquiry,  
Patterns,  
Algebraic equations,  
Relationships to  
numbers

The Physical Act of Beading:

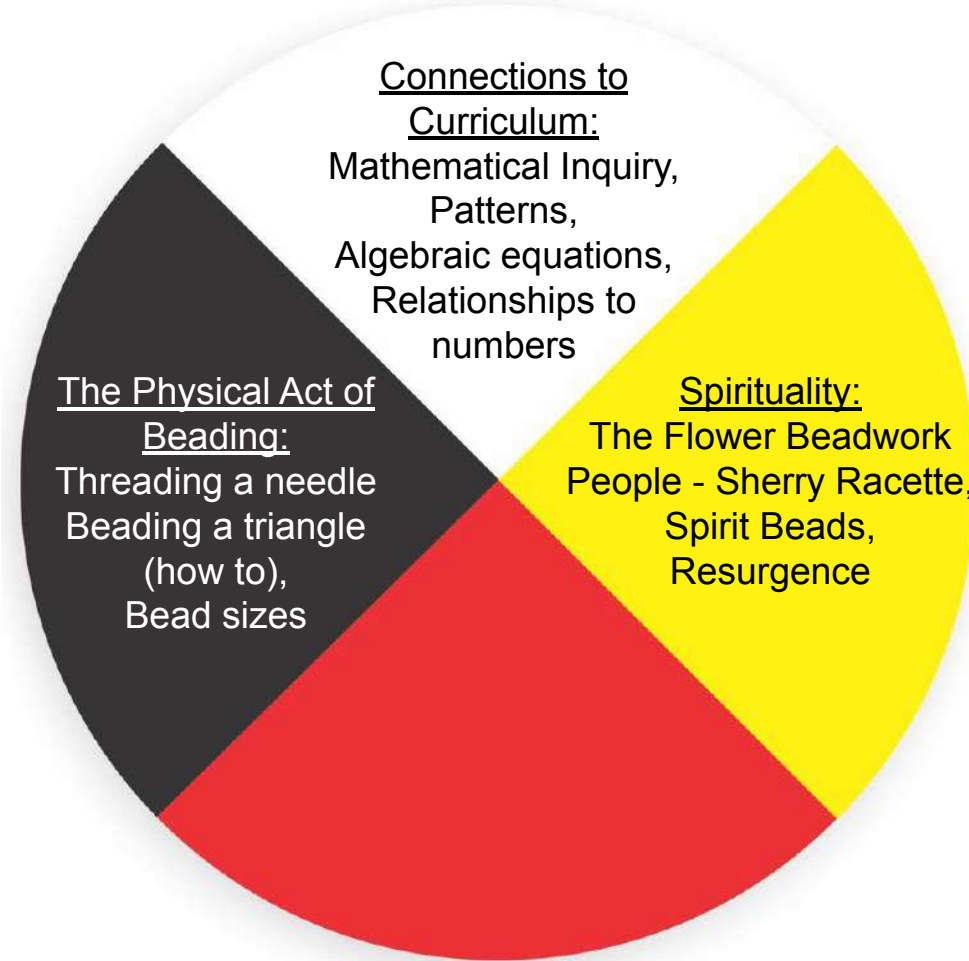
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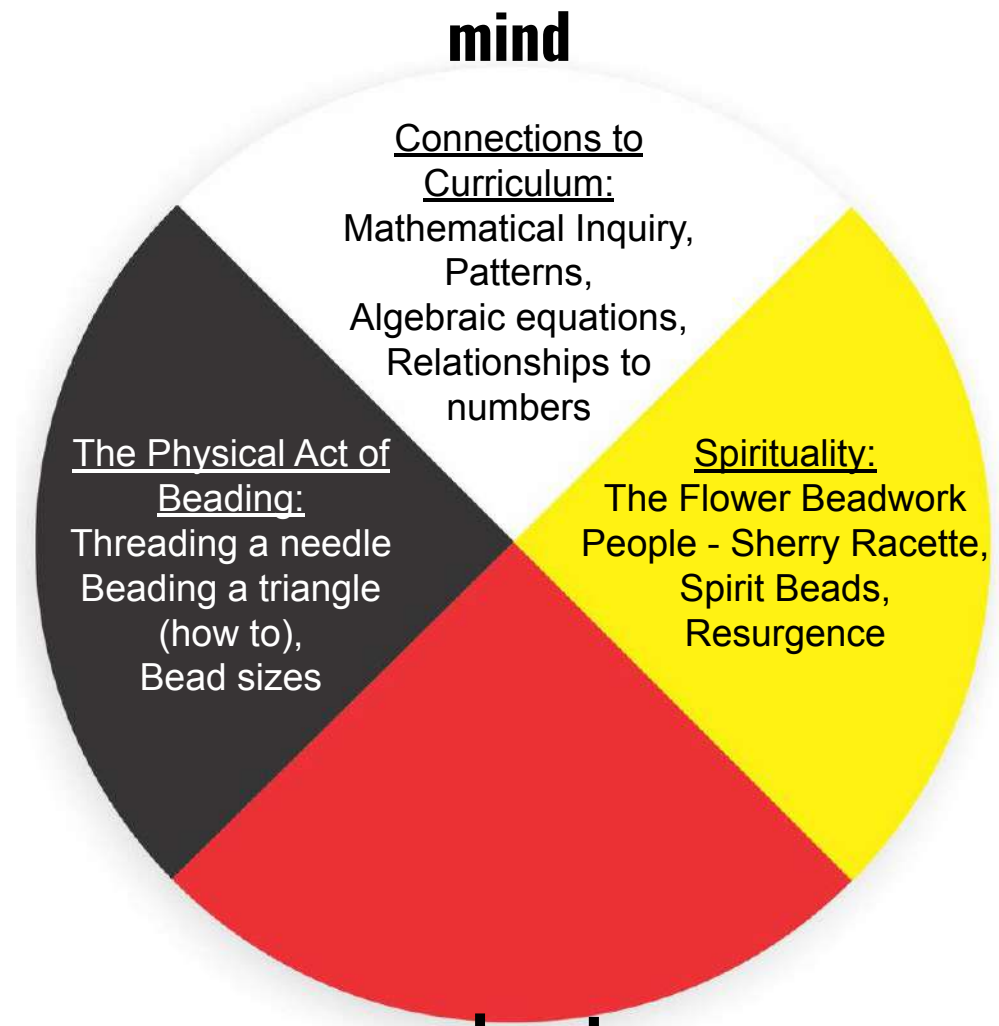
Spirituality:

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**body**

**spirit**

**heart**



**mind**

Connections to Curriculum:  
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**spirit**

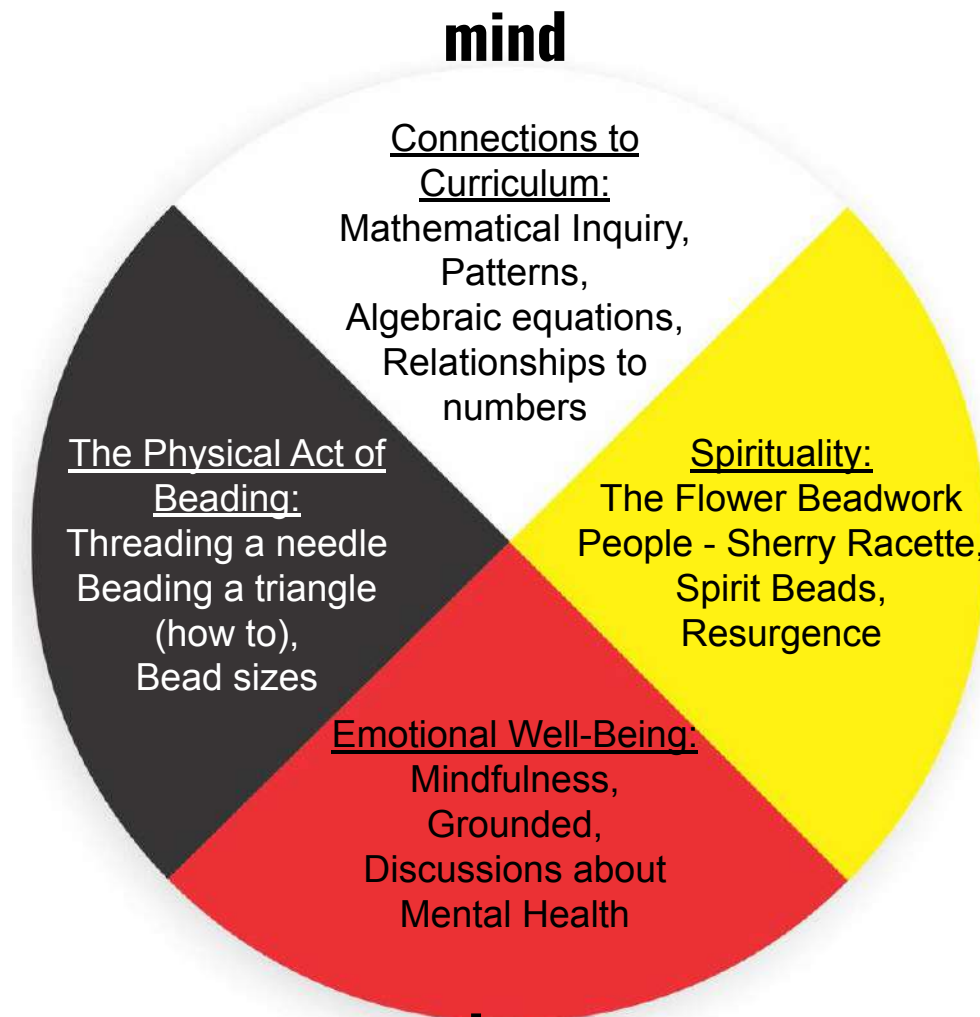
Emotional Well-Being:  
Mindfulness,  
Grounded,  
Discussions about  
Mental Health

**heart**

The Physical Act of Beading:

Threading a needle  
Beading a triangle  
(how to),  
Bead sizes

**body**





# Math in Beadwork

## Math in Beadwork - Grades 4 through 8

- **Learning through experiences and inquiry in a holistic mathematical approach**

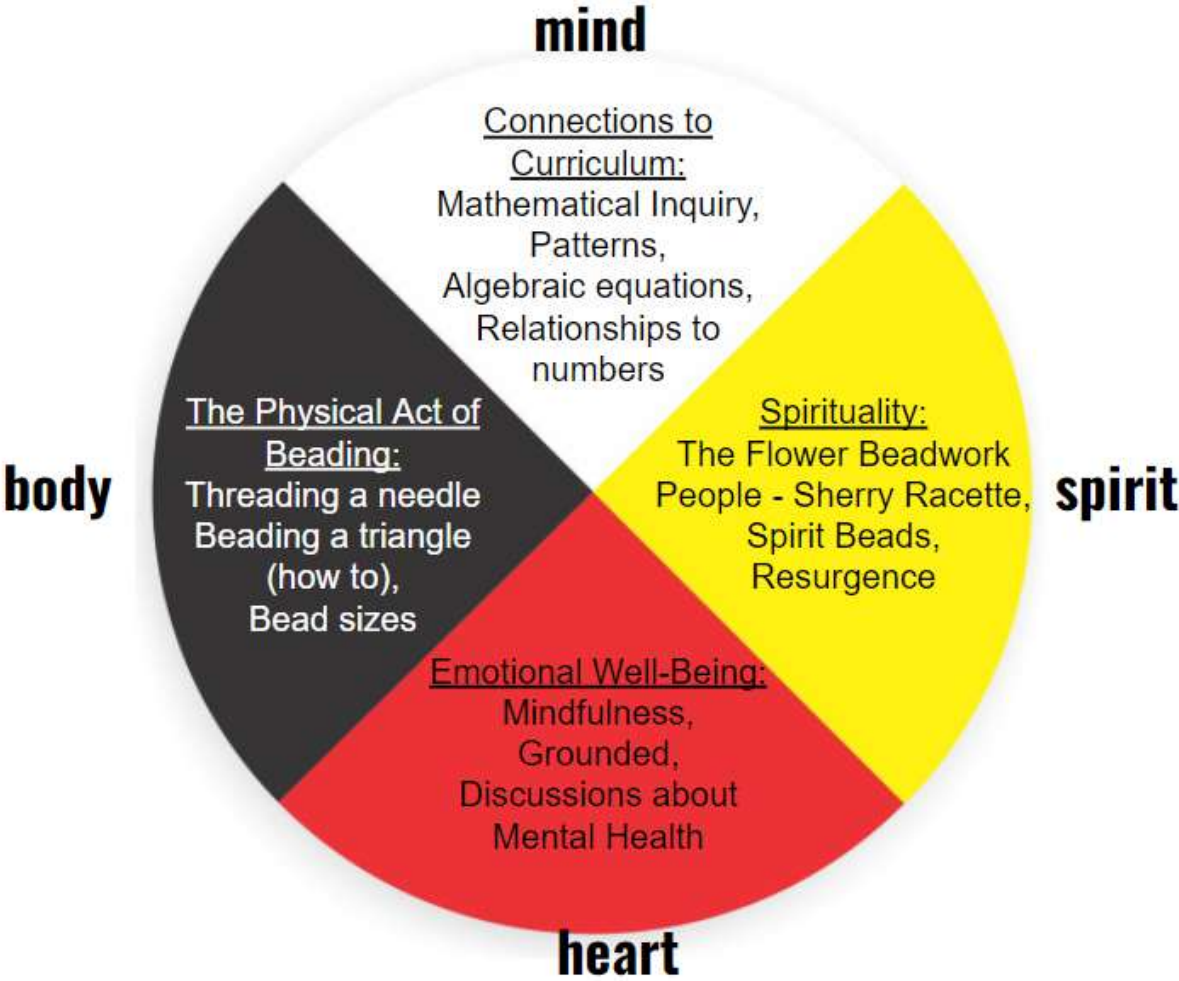
Beadwork is a natural, tangible connection to mathematical thinking. It involves patterns, problem-solving, and relationships with numbers. Learning through beadwork in a Math classroom opens the door for holistic learning through experiences and inquiry. Below is only a suggestion of connections I thought might support holistic learning.



Learning is holistic, reflexive, reflective, experiential, and relational (focused on connectedness, on reciprocal relationships, and a sense of place).

The learning plans below are opportunities created around the First Peoples Principles of Learning above. Learning from and highlighting the teachings from the Medicine Wheel lead into an explicitly holistic approach. Having students tangibly create pieces and inquire about the journey leads the math class to be more experiential-based, reflective and reflexive. Encouraging the students to notice and connect with all aspects of themselves while beading helps students to connect with one another and to healthy ways to be mindful and take care of their emotional well-being.

The learning opportunities listed below can be visualized below. Connecting students first to the teachings of the Medicine Wheel is an important step for students to see the holistic approach in action.



**Mathematical Curricular Connections:**

<b>Mathematics 4</b>	<b>Mathematics 5</b>	<b>Mathematics 6</b>
<p>Repeating elements in patterns can be identified (BI)            Model mathematics in contextualized experiences (CC)            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 (CC)            Use mathematical vocabulary and language to contribute to mathematical discussions (CC)            Represent mathematical ideas in concrete, pictorial, and symbolic forms (CC)            Incorporate First Peoples worldviews and perspectives to make connections to mathematical concepts (CC)            Repeating patterns with two or three elements ©            Single attributes of 2D shapes and 3D objects ©</p>	<p>Identified regularities in number patterns can be expressed in tables (BI)            Model mathematics in contextualized experiences (CC)            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 (CC)            Use mathematical vocabulary and language to contribute to mathematical discussions (CC)            Represent mathematical ideas in concrete, pictorial, and symbolic forms (CC)            Incorporate First Peoples worldviews and perspectives to make connections to mathematical concepts (CC)            Rules for increasing and decreasing patterns with words, numbers, symbols, and variables ©            One-step equations with variables©</p>	<p>Model mathematics in contextualized experiences (CC)            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 (CC)            Use mathematical vocabulary and language to contribute to mathematical discussions (CC)            Represent mathematical ideas in concrete, pictorial, and symbolic forms (CC)            Incorporate First Peoples worldviews and perspectives to make connections to mathematical concepts (CC)            Increasing and decreasing patterns, using expressions, tables, and graphs as functional relationships ©            Triangles ©</p>
<b>Mathematics 7</b>	<b>Mathematics 8</b>	<b>Grade 8 continued</b>
<p>Model mathematics in contextualized experiences (CC)            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 (CC)            Use mathematical vocabulary and language to contribute to mathematical discussions (CC)            Represent mathematical ideas in concrete, pictorial, and symbolic forms (CC)            Incorporate First Peoples worldviews and perspectives to make connections to mathematical concepts (CC)            Increasing and decreasing patterns using expressions, tables, and graphs as functional relationships ©</p>	<p>The relationship between surface area and volume of <b>3D objects</b> can be used to describe, measure, and compare spatial relationships (BI)            Model mathematics in contextualized experiences (CC)            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 (CC)            Use mathematical vocabulary and language to contribute to mathematical discussions (CC)            Represent mathematical ideas in concrete, pictorial, and symbolic forms (CC)            Incorporate First Peoples worldviews and perspectives to make connections to mathematical concepts (CC)</p>	<p>Construction, views, and nets of <b>3D objects</b> ©</p>

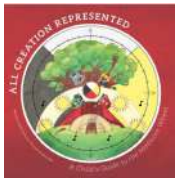
(BI) - Big Idea

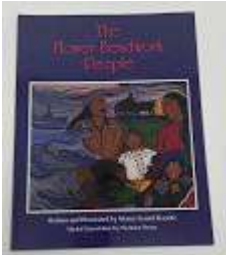
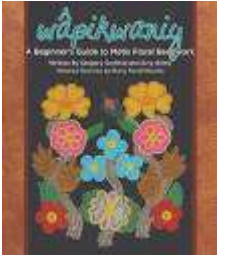
(CC) - Curriculum Competency

© - Content

**Learning Opportunities:**

The table below provides some ways for students to engage in the learning journey. These are not lesson plans and will not necessarily be progressional. Just like a Medicine Wheel, layers are happening simultaneously.

	Learning Opportunity Progression	Materials Needed
Starting in a good way	<p>When learning from beadwork and the teachings of the Medicine Wheel with your classroom, it's our responsibility to demonstrate respect, relevance and reciprocity.</p> <p>For yourself:</p> <ul style="list-style-type: none"> <li>● Situate yourself to Stó:lō territory and to Coast Salish territory- What's your story?</li> <li>● Acknowledge your personal intention for incorporating beadwork with your students, and how you were first introduced to beadwork. Keep these connections in your heart and mind.</li> </ul> <p>For the learning journey:</p> <ul style="list-style-type: none"> <li>● Look for meaningful connections with the curriculum you are teaching (not just a single lesson) and look at ways that you can integrate Community and First Peoples Principles of Learning meaningfully.</li> <li>● Celebrate the beadwork journey with the students through a positive framework - let the students positively experience mindfulness - don't rush this, remember that learning takes patience and time. Build them up for positive experiences.</li> <li>● Decide how your students would best feel success during the beadwork stage. Invite students to assist in making a positive space for creating (music, good lighting, snacks).</li> </ul>	
Medicine Wheel	<p><b>Learning Target: I can collaborate with my peers to learn about the Medicine Wheel.</b></p> <ol style="list-style-type: none"> <li>1. Share the title of the book, who created it, where they are from, how you were introduced to the book. Read two pages to the class: What is a Medicine Wheel and The Sacred Number of Four.</li> <li>2. Break students into small groups (number depends on how many layers of the medicine wheel you would like to focus on). Each group gets one laminated "page spread" of the book to look at. Have the students draw out the medicine wheel on blank paper and write the teachings in their own words in the corresponding part of the blank medicine wheel. Let students know that they will be responsible for sharing their learning with other students in the class.</li> <li>3. Groups share out to the class as the teacher writes the ideas up on the board (or chart paper where you</li> </ol>	<p><b>All Creation Represented: A Childrens Guide to the Medicine Wheel</b>  <a href="#">Curriculum Kit</a></p> <p>Kit includes:</p> 

	<p>already have the medicine wheel drawn out and create a poster out of it). Encourage students to be curious and discuss connections that they see.</p> <p>4. Read the page We Are One together to close the lesson. Go around the room discussing what students have learned about and connected with.</p>	<p><u>All Creation Represented: A Childrens Guide to the Medicine Wheel</u> by Joyce Perreault          -Purchased 3 books. 1 book remains in book form. 2 books are cut up and laminated into spreads for student stations. Permission was granted by Joyce Perreault to use the books in this way for learning.</p>
<p>Spirit</p>	<p><b>Learning Target: I can recognize how people connect with culture and spirit.</b></p> <ol style="list-style-type: none"> <li>1. Remind students about the Medicine Wheel when they learned about the 4 sacred aspects of a human being. One was Spirit. Spirituality is individual to everyone. Spirit can also be said to be the heart and the soul of someone. Sometimes people can be disconnected from their spirit or spiritual beliefs, especially in a busy world. One way to reconnect is through learning about traditions and bringing them back to life. This is called Resurgence. Today we are going to learn a little bit about Métis culture and beadwork.</li> <li>2. Share the title of the book (The Flower Beadwork People), who created it, where they are from, and how you were introduced to the book. Read the book with the class.</li> <li>3. Share page 9/10 from Wâpikwaniy: A Beginner's Guide to Métis Floral Beadwork. Talk about the Spirit Bead.</li> <li>4. Group discussion: In what ways do these books share about Métis traditions, resurgence, culture, and spirituality? What connections do you have? Share with a partner or small group about how you connect to your culture, family traditions, or spirituality.</li> </ol>	 <p>The Flower Beadwork People - Sherry Farrel Racette</p>  <p>Wâpikwaniy: A Beginner's Guide to Métis Floral Beadwork - Gregory Scofield and Amy Briley</p>
<p>Body</p>	<p><b>Learning Target: I can create beadwork.</b></p> <ol style="list-style-type: none"> <li>1. Create a positive space for students to bead in. Have</li> </ol>	<p>Beading a Triangle Video:</p>

	<p>students be comfortable, have access to materials, and connect with their environment.</p> <ol style="list-style-type: none"> <li>Share the Beading a Triangle Video (once throughout, then have students follow along with pausing when needed).</li> <li>Students work on beading projects. Encourage them to learn with the triangle and then have them continue how they feel.</li> <li>After students complete their art, have them write an artist bio (sharing their identity) and an art statement (explaining both the process and the symbolism of how their design expresses their identity).</li> </ol>	<p><a href="https://youtu.be/oJ57ua2objY">https://youtu.be/oJ57ua2objY</a></p> <ul style="list-style-type: none"> <li>-Perler beads</li> <li>-Waxed</li> <li>-Darning Yarn</li> <li>Needles</li> </ul> <p><u>Progressing</u> <u>beaders:</u></p> <ul style="list-style-type: none"> <li>-Artkal C - 2.6mm mini beads</li> <li>-Fireline</li> <li>-Beading needles</li> </ul> <p><u>Passionate</u> <u>beaders:</u></p> <ul style="list-style-type: none"> <li>-Miyuki Size 11/10</li> <li>-Beading Thread</li> <li>-Beading needles</li> </ul>
Mind	<p><b>Learning Target: I can use an inquiry mathematical mindset to explore mathematical concepts through beadwork.</b></p> <ol style="list-style-type: none"> <li>As students are beading, encourage them to have an inquiry mindset. If they are wondering what would happen when you start with 4 beads or 5 beads in the middle - allow them to explore that. Maybe they are wondering how they may join pieces together - allow the time for that.</li> <li>As a teacher, focus on your curriculum. Highlight an aspect for the students and ask them if they can demonstrate that through beading (for example: How can your beading be used to show repeating patterns? How can you document your learning with beading concretely, pictorially, and symbolically? Can you create that pattern with an equation to find out how many beads it would take to make a certain-sized piece? What would that look like if you graphed it? Can you create a 3D net with beaded pieces?)</li> <li>Create success criteria as a class about how they can demonstrate their exploration of beadwork and math (What is the overall goal? What aspects must be included? What are some ways they demonstrate their learning?). Record this on the board to refer back to later.</li> </ol>	<p>Beading materials listed in the "Body" section.</p>
Heart	<p><b>Learning Target: I can communicate the impacts mindfulness has on personal well-being.</b></p> <ol style="list-style-type: none"> <li>As students are beading, ask them to reflect on how they are feeling emotionally. Focus on once they have</li> </ol>	

	<p>gotten the pattern figured out.</p> <ol style="list-style-type: none"> <li>2. Facilitate a class discussion about what students do to connect to the moment and be mindful (one of my favourite ways to do this is through a “<u>Snowball Activity</u>.” <ol style="list-style-type: none"> <li>a. Each student gets a piece of paper.</li> <li>b. Each student writes down what activity makes them feel grounded or mindful on the piece of paper.</li> <li>c. Then they all stand in a circle and scrunch up their piece of paper into a ball.</li> <li>d. Everyone throws their ball into the center of the room.</li> <li>e. When the teacher says go, all students find a snowball and read it. They then go around trying to find out who wrote it.</li> <li>f. When they find the person who wrote theirs, they stand behind them.</li> <li>g. It eventually creates a big circle.</li> </ol> </li> <li>3. As students are beading, ask them to reflect on how their body, mind, heart, and spirit are feeling. How does working with your hands in a repeated process help us feel calm? How can finding types of activities like this improve mental health?</li> </ol>	
Celebrate	<p><b>Learning Target: I can communicate about my beadwork and math learning journey. I can celebrate the work of my peers.</b></p> <ol style="list-style-type: none"> <li>1. Set up the classroom like an art gallery. Students have their pieces out and their evidence of curricular learning next to it (like an artist statement).</li> <li>2. Encourage the students to go around and celebrate one another’s art pieces.</li> <li>3. Ask them to look for connections to: <ol style="list-style-type: none"> <li>a. Shape and repetition in art</li> <li>b. Patterns</li> <li>c. Colour choices</li> </ol> </li> <li>4. Come back as a group and have students share out: <ol style="list-style-type: none"> <li>a. One thing they are proud of about their own journey</li> <li>b. One thing they noticed from their peer’s learning journey</li> <li>c. One connection from their beadwork to another student’s beadwork</li> <li>d. One thing they learned through this unit</li> </ol> </li> <li>5. Build the students up and close in a good way (suggestions could look like: a fun class game, popcorn celebration, 15-minute “break from work” to just talk with one another, fun music).</li> </ol>	

Resources:

Perreault, Joyce. ***All Creation Represented : a Child's Guide to the Medicine Wheel.*** New Westminster, BC : Peppermint Toast Publishing, 2018.

Racette, Sherry Farrell. ***The Flower Beadwork People.*** Regina : Gabriel Dumont Institute, 1991.

Scofield, Gregory A., 1966-. ***Wâpikwaniy : a beginner's guide to Métis Floral Beadwork.*** Saskatoon : Gabriel Dumont Institute, 2011.

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