

# CURRICULAR COMPETENCIES

## Reasoning & Analyzing

- Use reasoning to explore and make connections
- **Estimate reasonably**
- Develop **mental math strategies** and abilities to make sense of quantities
- Use **technology** to explore mathematics
- **Model** mathematics in contextualized experiences

- Explain the problem to someone else. What is the question we are trying to solve?
- When and why do you estimate? What strategies did you use to estimate?
- Can you predict an answer that would be just right? Provide a low and high estimate.
- How did you get your solution? How do you know it's correct?
- What is another way to...?
- How can the same quantity be shown in different ways?

- Concrete and pictorial modelling • Think/ pair share/group work • Placemat
- Games
- Concept webbing • Venn diagram • Sorting/matching/predicting • Act it out
- Ask 3 before Me • Where's the math? -picture prompts

- Reason mathematically through visual, auditory and kinesthetic experiences.
- Construct learning through cooperative engagement, active exploration, problem-solving and meaningful discourse; social nature of learning.
- Poses purposeful questions to advance reasoning and makes sense of mathematical concepts.

## Understanding & Solving

- Develop, demonstrate, and apply mathematical understanding through play, inquiry, and problem solving
- Visualize to explore mathematical concepts
- Develop and use **multiple strategies** to engage in problem solving
- 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

- What strategies did you use to solve the problem? Can you see a pattern? How can a pattern help you solve the problem?
- What method are you going to use? Why? What have you discovered?
- Convince a peer your solution is correct. What do you do when you get stuck?
- What story does this math tell?

- Concrete and pictorial modelling • Placemat • Think pair share/group work
- Graffiti Walkabouts • Jigsaw
- Games • Gallery Walk • Number talks • Picture books
- Examples/non-example creation • Three stay, one stray • Sorting/matching/predicting • Mathematical sorting
- Van de Walle Pentagon of Understanding

- Be sensitive to individual differences and the emotional elements of learning.
- Promote deeper understanding and connections through authentic tasks and contextual tasks
- Develop perseverance through the grappling with mathematical ideas.
- Vary strategies and problem-solving opportunities to keep learning central and active.

Learning ultimately supports the well-being of the self, the family and the community.  
 Learning involves recognizing the consequences of one's actions.  
 Learning is holistic, reflective, experiential and relational.  
 Learning involves generational roles and responsibilities.  
 Learning recognizes the role of indigenous knowledge.  
 Learning is embedded in memory, history, and story.  
 Learning requires exploration of one's identity.  
 Learning involves patience and time.

## Indigenous Principles

## OECD & NCTM Principles

## Learning Activities

## Thinking Prompts

## Communicating & Representing

- **Communicate** mathematical thinking in many ways
- Use mathematical vocabulary and language to contribute to mathematical discussions
- **Explain and justify** mathematical ideas and decisions
- Represent mathematical ideas in **concrete, pictorial, and symbolic forms**

- Journaling • Number talks • Inside/outside circle
- First Nations oral traditions; power of story
- Solve one way/Solve two ways • Venn Diagram
- Multiple ways of representing thinking (video, sharing strategies, podcast, peer teaching etc.)
- Debate • Argumentation (I disagree... I noticed... I think it could be... I agree...)

- What are you noticing, thinking or wondering while you solve the problem?
- How can you show your thinking in different ways? How can you model the math concept and explain your thinking to others?
- Why do you organize your results like that? What relationships do you notice between...?
- Highly social learning activities allow for construction of knowledge through active exploration, problem-solving, reasoning, and talking.
- Explain and represent knowledge through visual, auditory and kinesthetic experiences.
- Partner talk and group discussion builds shared understanding of mathematical ideas.

- Learners assess and monitor their own understanding and progress toward the mathematics learning goals.
- Descriptive feedback helps guide next steps in learning; provides clear expectations.
- Learners identify connections among the learning environment, the wider environment, and society.

- Journaling • Knew/New • KWL
- Notice/Think/Wonder
- Self-assessment • Number talks
- Ticket out the door
- What worked? Was difficult? What's next?
- Brain Power • Partner Think/Char/Write

- Have we found all the possibilities? How do we know?
- Does your solution make sense?
- How is this problem like something you solved before?
- What have you learned from your mistakes? Where is this math reflected in our community?
- How did you revise your thinking or strategies?
- How do you do differently next time?

## Connecting & Reflecting

- **Reflect** on mathematical thinking
- **Connect** mathematical concepts to each other and to other areas and personal interests
- **Incorporate** First Peoples worldviews and perspectives to make connections to mathematical concepts

## Numeracy