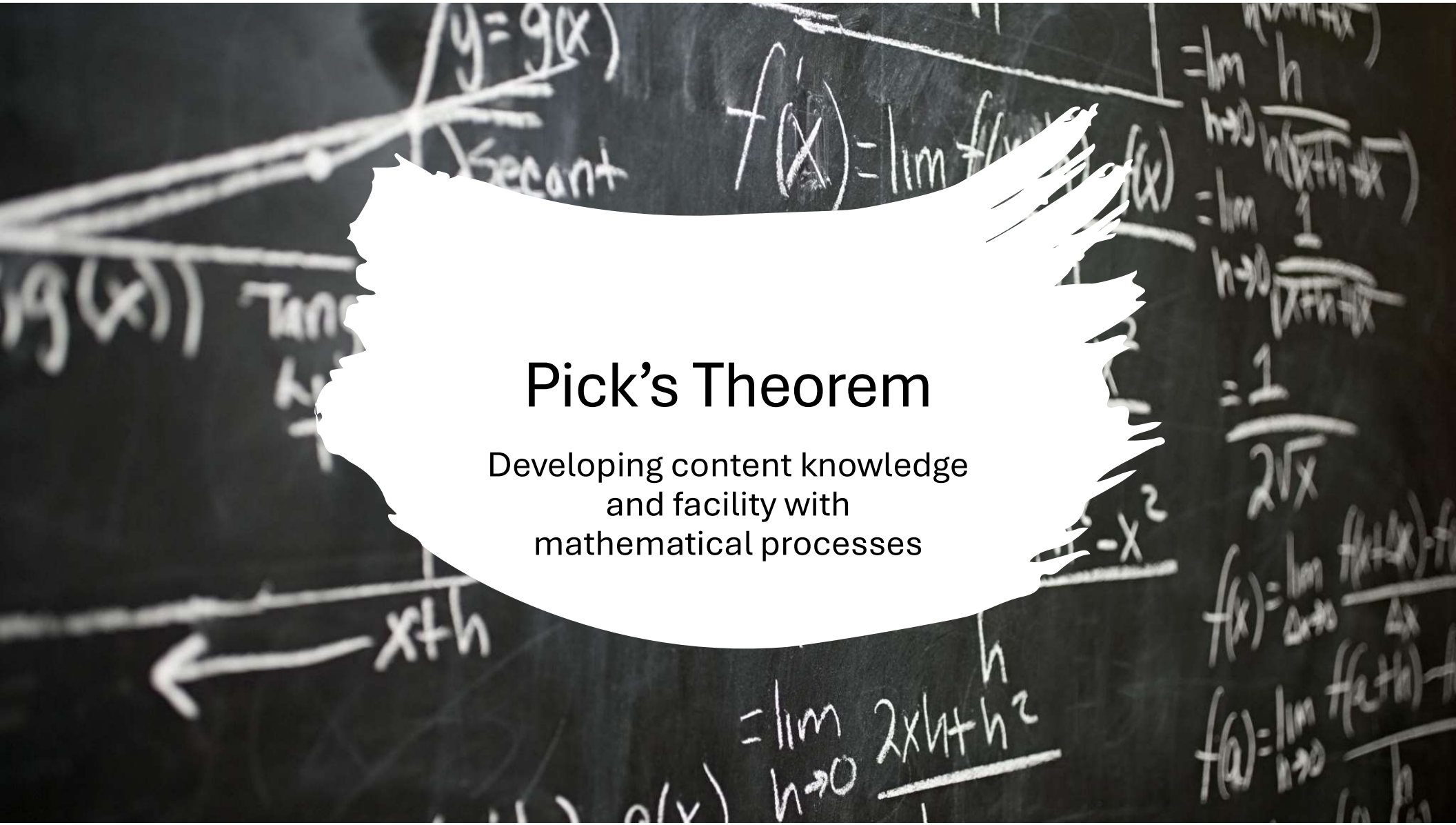


Pick's Theorem

Developing content knowledge
and facility with
mathematical processes

NCTM Standards

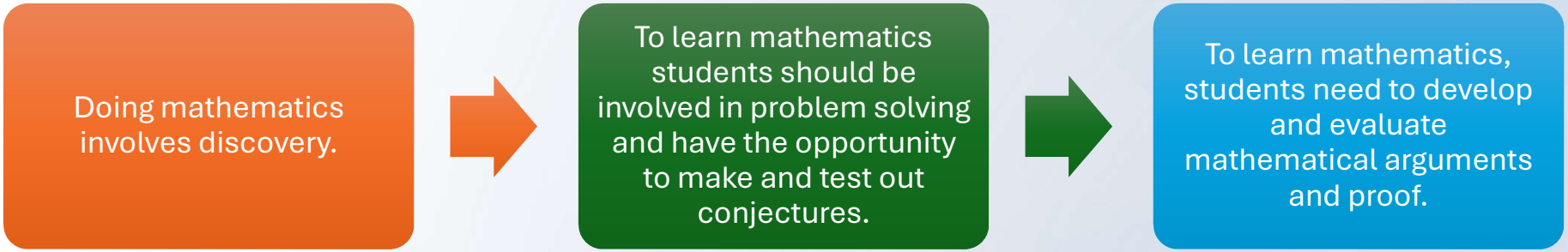
- Content
  - Number & Operations
  - Algebra
  - Geometry
  - Measurement
  - Data Analysis & Probability
- Process
  - Problem Solving
  - Reasoning & Proof
  - Communication
  - Connections
  - Representation

Problem Solving

Build mathematical knowledge through problem solving.

Problem solving is not the end, but the means to learn mathematics.

Reasoning and Proof



Communication

Language is a way of clarifying and sharing mathematical ideas.

Language helps students organize and consolidate their mathematical thinking.

When students can explain the mathematical idea in words, then they are ready to record ideas symbolically.

Connections

When students can connect mathematical ideas, their understanding is deeper and more lasting.

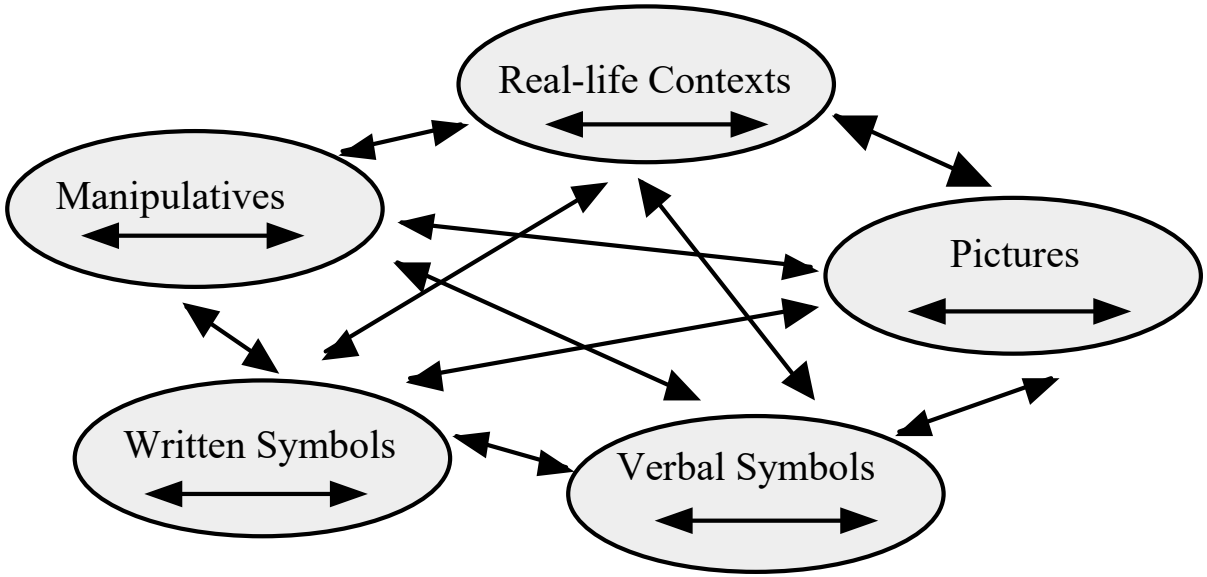
Students should see how mathematical ideas are related, how they build on each other to produce a coherent whole.

Students should be able to use mathematics as a tool to learn new mathematics and to solve problems in other content areas.

Representation

To learn mathematics, students need to interact with ideas in multiple ways: pictures, context, concrete models, language, and written symbols.

When students translate among different representations, learning takes place.



Lesh Translation Model

- Learning takes place when students experience new ideas in multiple ways and can make translations [connections] within and between different representations

Pick's Theorem

Create a shape on your geoboard that has 4 pegs on the boundary.

- What is the boundary?
- How can you tell your peg is on the boundary?
- What is the interior?
- How can you tell a peg is on the interior?
- What is the area of that shape? How do you know?

Create a shape that has 5 pegs on the boundary and 1 on the interior.

- What is the area of that shape? How do you know?