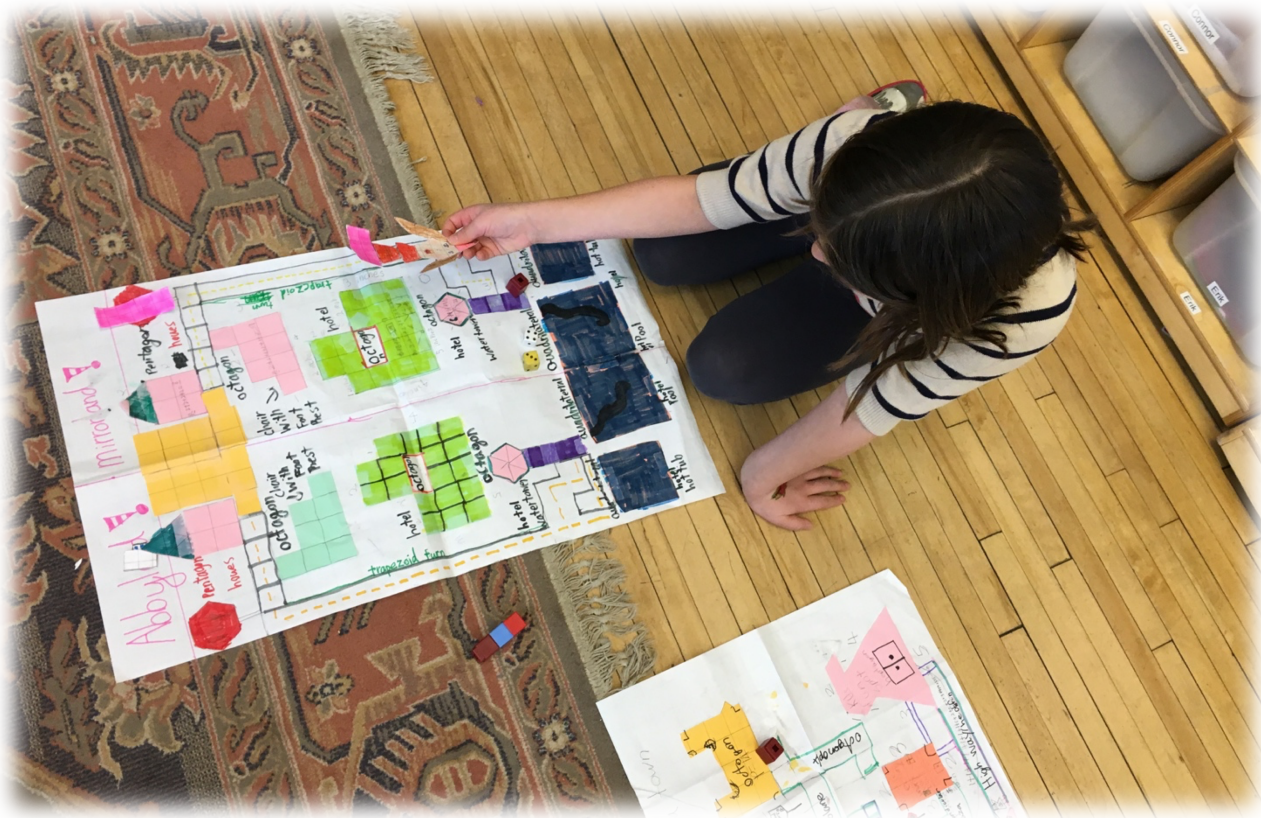


MATHEMATICS

SPOTLIGHT



MATH AT PRAIRIE CREEK

Mathematicians use number to understand their world. They are problem solvers. They are communicators. They are engaged in a creative endeavor.

Mathematicians need powerful tools to make their discoveries. They need to recognize patterns. They need enough experience to have mathematical hunches. They need to feel very comfortable with numbers and how they work.

We balance foundational work with mathematical exploration. Students construct their understanding of numeracy concepts using manipulatives and models. Students discover mathematical truths through carefully designed tasks. The mathematics feels personal because they have uncovered its structures for themselves. They own it.

MATH UNDERSTANDING

Prairie Creek students know that learning something new always involves a period of confusion and struggle. No one is born knowing – we all come to new understanding through work and mistakes. Our math activities are structured to support this belief. Students' errors are not reasons for shame – they are examined and celebrated. Students learn that their brain develops more synapses when they correct mistakes. A "failure" is a chance to collect information and grow into a deeper understanding.



Our faculty knows there is no such thing as a “math kid.” Everyone can learn math at a high level if they are given the time and instruction to develop their understanding. Our classrooms are full of the hubbub and bustle of figuring things out.

MEANINGFUL, MULTI-AGE MATH

To help students build their math understanding, teachers use a rich collection of experiences. The tasks are designed in a way that *all* students can access and explore the mathematics - what’s called a “low threshold”. But the work can also expand and diverge so that learners have new places to go; there’s a “high ceiling.” Everyone can get excited about what they are learning - and everyone is learning.

Students collaborate and compare ideas. They pose questions to each other and build off of each others’ work. Math is something we create together.

THE ROLE OF PROFICIENCY AND FLUENCY

Once students have a deep understanding of a concept, they begin to create more efficient ways of applying that math. We support them by demonstrating algorithms and procedures that lead to accurate, easier work. Students are encouraged to consider which method is best applied in a given situation.

Students are encouraged to become fluent with basic math facts. Not having to laboriously re-discover what $5+7$ is or 7×8 is can free up valuable working memory for more exciting work. Fluency looks different at each age - younger children memorize the patterns of dots on a die...older children memorize fraction and decimal relationships.

MATH COMMUNICATION AND EXPLANATION

Math should make sense. Students are expected to formulate questions to help them make sense of new ideas - not just accept them. Our students ask “what if” and make conjectures about patterns they find.

Students are asked to “leave tracks” when they do work. They work to explain their thinking and support their math decisions. Every child participates in number talks in which a math problem is solved mentally and then students share their pathway to a solution. Other students listen and compare their own thinking to their peers’. Being able to trace and explain how one solved a problem enables one to be able to generalize that method. You can do it again if you know what you did. Students learn new ideas and techniques from each other and, sometimes, they learn how to question the validity of an approach, more finely honing their understanding of number.