Winthrop School

LEARNING MADE RELEVANT

A Closer Look at Today's Learning Experiences

2020

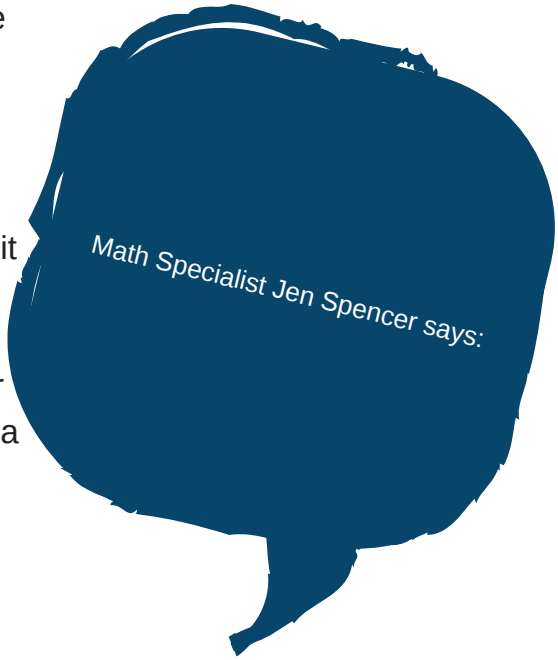
FOCUS ON:

Mathematics

Math class doesn't look the same

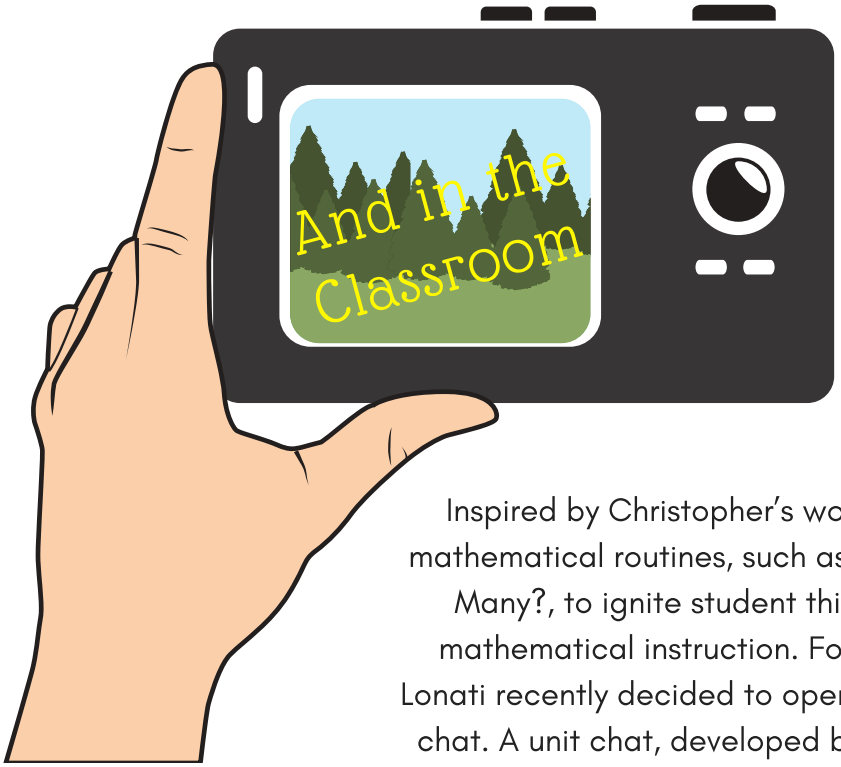
Mathematics instruction often includes critical thinking and problem solving tasks that rarely have a single solution. Sharing one's thinking takes center stage.

Earlier this month, we were fortunate to have mathematician and author, Christopher Danielson, visit our Ipswich learning community. Christopher holds a PhD in Mathematics Education, and has worn many hats - that of middle school teacher, college professor, published author, and curriculum developer, to name a few. But it is his role as parent that was, and continues to be, his source of inspiration for his contributions to math learning communities. Christopher shared with us important ideas that can help frame how we think about nurturing our children when it comes to mathematics. He states that “Math - along with language and play and body movement - is one of the ways children make sense of their world from an early age, even prior to schooling.” Supporting children’s ideas about math provides a foundation similar to that of language support we give them when they’re learning to read. Encouraging our children to notice numbers, shapes, and patterns in our world, and to wonder about them, ask questions, and talk about their own ideas, is crucial to their math development. As parents, one of the best ways we can support our children is by listening and validating the ideas they have as they make sense of math in their world. And what should we not do?



IT'S IMPORTANT THAT WE DON'T PASS ON OUR MATH ANXIETIES TO OUR CHILDREN.

Research has shown that parents’ math anxieties can undermine the math achievement of their children. Christopher states that when parents “are anxious about math, or talk about themselves as not being math people, children come to understand that math is only for some people, and that it is scary and probably best avoided.” Research demonstrates that all people are capable of learning math to high levels, and a positive growth mindset, believing in your own abilities, directly affects pathways in the human brain. Positive, nurturing conversations, focused on wonder, will support students as they talk to learn math.



A SNAPSHOT IN MRS. LOPEZ-RYAN AND MS. LONATI'S MATH CLASSROOM

Inspired by Christopher's work, our teachers have integrated his mathematical routines, such as Which One Doesn't Belong? and How Many?, to ignite student thinking and add a playful element to mathematical instruction. For example, Mrs. Lopez-Ryan and Ms. Lonati recently decided to open a multiplication lesson by using a unit chat. A unit chat, developed by Christopher, is a counting task, that presents an image without specifying what to count. Students are asked to stress what and how they counted.

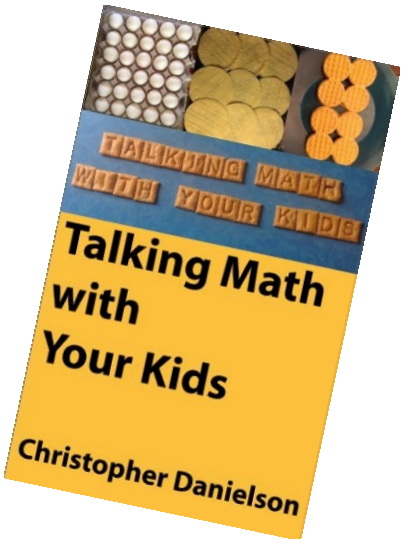
See for yourself in this example. How many?

Third graders noticed the following:
"There are 16 dice! I counted by rows, 4+4+4+4=16."
"I counted the dots and I got 48 dots. I divided the picture into columns and noticed there were 12 dots in each column. Then, 12+12=24. 24+24=48."
"I counted all the dice one by one and got 16. Then I multiplied 16X3 and got 48 dots."
"I divided the picture into four squares. Each square had 12 dots. So 12+12+12+12=48."
"I counted by 3s, and got 51 dots, but now when I count them again, I see that there are 48 dots. I lost track. Next time I'll count by 12s. 12+12+12+12."

Helpful links and resources for parents about natural ways to have math conversations:

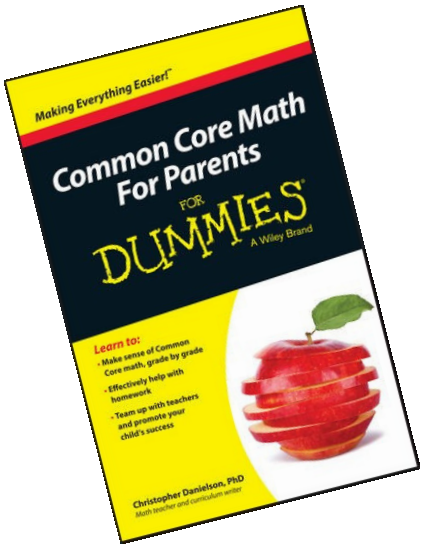
Christopher Danielson's Blog:
https://talkingmathwithkids.com/

What do kids have to say about math class?



Fifth graders, Kirsten, Lindsey, and Lylah, were recently discussing a Which One Doesn't Belong? task. They shared their enthusiasm for ways they learn math in school:

Two kids were having a math disagreement about Which One Doesn't Belong. One kid was saying that the indents on shapes counted as points. The other kid said that the indents didn't. The kids talked back and forth about what they meant and learned that both of their ideas were right, they were just thinking about points in different ways. That's when we learned new words like vertex and vertices, and a fancy word for indents on shapes is concave. We learn math by talking, and writing ideas. One time in third grade we wrote about Circle Patterns. We wrote multiples of a certain number and focused on the ones place and the patterns that it had. The patterns would repeat and we noticed things like the factors of 8, like 4 and 2, will have some of the same multiples as 8. These are called circle patterns because we make a circle and draw lines to connect the numbers in the ones place to make a design. We love math. Math is everywhere.



"I would do it for fun over the summer!"

Etta, a fourth grader, shares:
When I first started math in third grade it was hard and confusing. I thought it was only shapes and numbers. But when it got later into the year, I saw math all around me. When the year was over, I saw math in many different ways. I would do it for fun over the summer. This year, I'm enjoying math--A LOT! It is a fun subject for me!