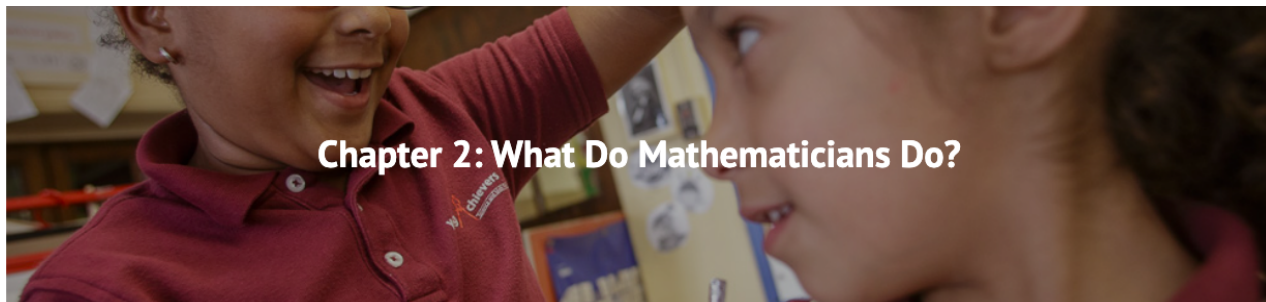


CHAPTER LINKS



Chapter 2: What Do Mathematicians Do?

Bringing Math into the Present Day

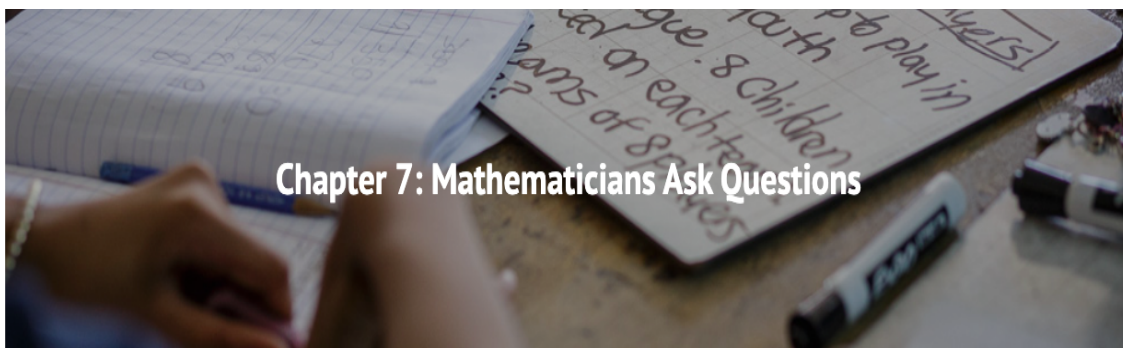
- [Vi Hart videos](#)
- [Numberphile](#)
- [Neil deGrasse Tyson](#)
- [The Mathematics of Juggling](#) from *Quanta Magazine* (later reprinted in *Scientific American*). Click through to the link for video.
- TED Talk: [Math Dance](#)
- TED Talk: [The Beautiful Math of Coral](#)
- [Beauty of Mathematics](#) is a quick look at mathematics in the world around us.
- This video is absolutely delightful, and *funny*. Mathematicians can be funny.
- [Math Munch](#): [interview](#) with [Nalini Joshi](#)

Finding Math in Our World

- [Found math with Maya and Daphne](#)
- The annual Math Photo challenge is delightful, and could inspire some math hunts, math walks, and math photo challenges of your own. The [2015 website](#), [2016 website](#), and [2018 website](#) are great places to get started.

Babies and Math (in case you're interested!)

- *New York Times* article summarizing breakthrough research: [Study Finds Babies at 5 Months Grasp Simple Mathematics](#)
- More recent [Science article](#) about babies' approximate number sense



Chapter 7: Mathematicians Ask Questions

101questions

- [101questions](#)
- Fawn Nguyen's blog [Four Square and Other Questions](#)

Notice and Wonder™

- Annie Fetter's [ignite talk](#) about Notice and Wonder is a great starting point

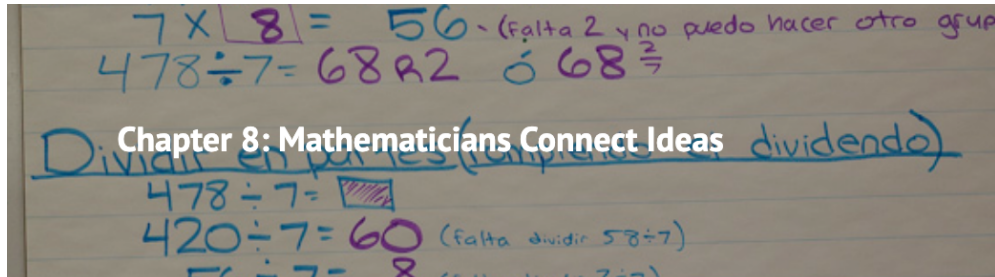
Problem Posing

- Christopher Danielson's [What did you learn?](#)
- [Making Sense](#) a blogpost of mine about students' thinking about word problems
- [Springboarding](#) a blogpost of mine about students posing problems after counting

When Students' Questions Drive Teaching and Learning: "Are Shapes Math?"

- [Van Hiele's Theory of Geometric Thought](#)
- An [article](#) from *Teaching Children Mathematics* about teaching geometry with Van Hiele's model.
- [Which One Doesn't Belong?](#) is an outstanding website from Christopher Danielson that will help you teach geometry in a meaningful, question-driven way. Highly recommended.

A beautiful blogpost from [@TAnnalet](#) about 3rd-grade students' questions about infinity: "[Like Someone Walking Through Time Without Noticing He Is.](#)"



Chapter 8: Mathematicians Connect Ideas

Margaret Wertheim's TED talk: [The Beautiful Math of Coral](#). The [Institute for Figuring's Crochet Coral Reef](#) page.

Connecting Math and the World

- [Get the Math](#) PBS thirteen, featuring well structured, CCSS-aligned math challenges issued from professionals in fashion, sports, music, video game design, etc.
- [We Use Math](#) from BYU and [Maths Careers](#) from the Institute of Mathematics and its Applications profile math in different careers.
- [Rethinking Schools](#), [Radical Math](#), [CitizenMath](#), and [Mathalicious](#) (\$) are outstanding resources for integrating social justice issues with mathematics.

Connecting Math to Math

Multiple Representations:

- [Principles to Actions](#), from [NCTM](#), has a strong section on representations.

Relational Thinking:

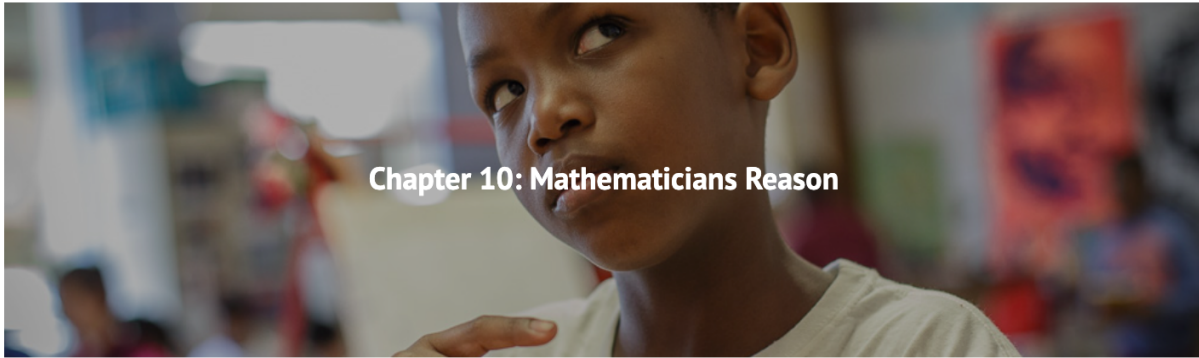
- Richard Skemp's powerhouse article from 1976, [Instrumental Understanding and Relational Understanding](#)
- A [webinar](#) I gave at the [Global Math Department](#), in which I discussed some of these ideas.

Connecting Math to Self

- [CGI](#)
- [Street Math and School Math](#)

New Connections

- [Liping Ma](#)



About Proof

- Ben Orlin's hilarious [Two-Column Proof that Two-Column Proofs are Terrible](#)
- Avery Pickford's thoughtful series starts with [Proof Doesn't Begin with Geometry: Redefining Proof](#)
- Ben Blum-Smith's strong series starts with [Nuggets II: Proof](#)
- [Dan Meyer's If Proof is Aspirin, Then How Do You Create the Headache?](#)
- [NRICH](#) has many useful articles about proof.
- [Lockhart's Lament](#) is essential reading.

Choral Counting

- [Kristin Gray's](#) blogs about Choral Counting with Decimals: [Article 1](#), [Article 2](#), [Article 3](#)
- A [Choral Counting Planning Tool](#) that Kassia Omohundro Wedekind and I developed

Visual Patterns

- Peter Liljedahl's article: [Repeating Pattern or Number Pattern: the Distinction is Blurred](#)
- Fawn's [blog 1](#) and [blog 2](#) about Visual Patterns
- Example [Pattern Talks](#) from Fawn
- [Lots of excellent blogs](#) about Visual Patterns
- [Beatty article](#) summarizing research on growing patterns and kids' thinking
- [Paying Attention to Algebraic Reasoning](#) from the Ontario Ministry of Education

True/False

- [TEDD.ORG True/False](#)
- Video: [True/False Equation, 4th grade](#) with Lynn Simpson.

Number Talks

- Kathy Richardson and Ruth Parker's [Number Talks Toolkit](#)
- Cathy Humphreys and Ruth Parker's [Making Number Talks Matter](#)

Games

- Mike Lawler's blogs about Nim, Drips, and Train, in response to my questions on Twitter:
 - [First exploration of Drips](#)
 - [Does the choice of objects matter?](#)
- [Games that Lead to Generalizations and Proof-Like Reasoning](#) (Brainstormed by the #MTBoS).
- A stellar [compilation](#) from [Daniel Finkel](#)
- NRIC is a great website with many games. For example:
 - [Odds and Evens](#)
 - [Strike it Out](#)
- Marilyn Burns's article [4 Win-Win Math Games](#) hints at some of the games she's created and taught during her career. Four Strikes and You're Out is particularly fantastic.
- Avery Pickford's [Using Mastermind to Model the Life Cycle of a Problem](#)
- [Numberphile](#) has many videos featuring practicing mathematicians exploring the math of games. Get started with [How to Always Win at Dots and Boxes](#) with Elwyn Berlekamp.

Crafting Claims

- Kristin Gray: [Articulating Claims in Math](#)
- Chris Luzniak video of students conjecturing: [Give Students Ownership](#)
- When thinking about "leaving the door open," read this terrific article from Karen Karp, Sarah Bush, and Barb Dougherty: [13 Rules That Expire](#). Build Math Minds Podcast Episode 45: [13 Rules That Expire](#)

Always, Sometimes, Never

- Malcolm Swan and Jim Ridgway on [Always, Sometimes, Never](#)
- [Elementary Always, Sometimes, Never google doc](#)
- Andrew Stadel's [whiteboarding](#) blog about placemat
- Always, Sometimes, Never blogs:
 - [Fawn Nguyen](#)
 - Kristin Gray
 - [Part 1](#)
 - [Part 2](#)
 - [Fractions](#)
 -
 - [Chris Hunter](#)
 - [Lisa Bejerano](#)

We should not teach "keyword" or "clue word" strategies in math.



Marcus du Sautoy's full essay: [How Mathematicians Are Storytellers and Numbers Are the Characters](#)

Cultivating Skepticism: Convince Yourself, Convince a Friend, Convince a Skeptic

- Veritasium's [short film](#) about confirmation bias
- Wendy Petti's [Convince Me](#)

What Counts as Proof?

- Harel and Sowder's paper at [MathWeb](#)
- The Math Forum's Ask Dr. Math on [inductive vs. deductive reasoning](#)
- Plus Magazine has a nice introduction to [optical illusions](#) that might help you push students past "it looks like..." as a justification
- Stylianides's excellent article [Breaking the Equation 'Empirical Argument = Proof'](#) at NRICH
- Dan Meyer's discussion of the relationship between [doubt and proof](#)

Knocking on Proof's Door: Justifications with Younger Students

- [Even and Odd Numbers: A Journey into the Algebraic Thinking Practice of Justification](#) A two-part series on justification at the [Teaching Children Mathematics blog](#) (no membership needed). [Part 1](#), [Part 2](#)
- Kristin Gray's students work with claims about [area and perimeter](#)

Math as a Verb

- Dan Meyer's [Ignore the Adjectives. Watch the Verbs](#)
- Mark Pettyjohn's [blogpost about Math Celebration](#)