

## CHAPTER 5: Mathematicians Are Precise

In Chapter 4, we began looking at mistakes that reveal deep conceptual understanding. In this chapter, we'll look at strategies to teach students how to hold themselves to high standards of clean and clear mathematics within a safe, positive climate.

### Discussion Questions

**Pages 80–81** Consider this list of related but distinct ideas around precision. Which aspects do your students currently have? Which ones do your students need to work on most?

**Pages 81–84** Does your curriculum reduce the cognitive demand on students by over-scaffolding worksheets? What ideas does Shawn's chart give you for quick fixes?

**Pages 85–87** Discuss Shawn's instruction around vocabulary. How might reading these examples influence your teaching?

**Pages 101–104** What do you make of the idea of authorship in math? Discuss or journal about it.

**Pages 104–109** Discuss the section on math facts, delving into the suggested resources if possible. What caught your ear? This is a controversial topic. What are you thinking?

### Calls to Action

#### **Page 85** Improving Games

Cindy's revised pattern game delayed answer-getting (Daro), increased discourse, and ramped up the rigor. Is there a game you play that would benefit from this treatment? If so, take the time to plan it now. Teach it and then discuss or write. Please tell me about your revisions and results at [tjzager.com](http://tjzager.com) (Chapter 5).

#### **Pages 90–91** "I think \_\_\_\_\_ is unreasonable because \_\_\_\_\_."

Plan and teach this powerful warm-up. You'll need to do it a few times for students to internalize the routine. After a few sessions, come back together and discuss how it went, and let me know at [tjzager.com](http://tjzager.com) (Chapter 5).

#### **Pages 91–93** "Wowzers!"

Jen Muhammad regularly externalizes the internal voice she wants students to use. How might you try this strategy in your style? Think about it, try it, and write your reflections or link your blog post at [tjzager.com](http://tjzager.com) (Chapter 5).

#### **Pages 94–95** Buddy Checks

Try implementing *Buddy Checks*. Remember, they take a lot of explicit teaching about caching. Write about your experiences at [tjzager.com](http://tjzager.com) (Chapter 5).



**CHAPTER 5: Mathematicians Are Precise (continued)****Pages 96–101** *My Favorite No* Adaptations

Experiment with Jen's *My Favorite No* variations, and maybe think of some new ones. I find it challenging to choose a *My Favorite No* thoughtfully while the kids are watching, as Leah does in the video, especially because I'm aware the kids are just sitting and waiting. Jen's adaptations keep what's great about the idea while giving us some think time so we can choose a productive error. I'd love to hear what variation you chose and why, and how it went at [tjzager.com](http://tjzager.com) (Chapter 5).

**Additional Resources**

At [stenhouse.com/becomingmathteacher](http://stenhouse.com/becomingmathteacher) and at [tjzager.com](http://tjzager.com), you'll find a collection of supplemental resources that may come in handy for further thinking and discussion. I keep the links fresh, so the contents will change, but you will certainly find:

- Videos from Justin Solonynka's and Chris Luzniak's classrooms
- The original *My Favorite No* from the Teaching Channel
- Resources for fact fluency

