



# We ALL speak math

## Encouraging In-progress Thinking

### What is it?

Encouraging students to share their thinking about a math problem at any state in their work (i.e., encouraging “rough draft talk” (Jansen et al., 2016).

### Why do we use it?

Encouraging in-progress thinking fosters intellectual safety in that it demonstrates to students that all ideas are worth exploring and have the potential to be developed. This move promotes a classroom culture in which mistakes and errors are viewed as important reasoning opportunities, and in doing so encourages a wider range of students to engage in mathematical discussion with their peers and the teacher.

## When Encouraging In-progress Thinking...

### Teachers are...

- inviting students to share their unfinished work (i.e, share their rough drafts)
- inviting students to revise their thinking
- gathering student ideas without opinion

### Students are...

- learning that all ideas add value
- learning to revise their mathematical thinking
- sharing ideas that are not finished yet, saying here is what I think so far
- listening to others with empathy
- not fixing mistakes, but revising to learn from them

**Tell us about why you are stuck. What is not making sense for you?**

**Let’s start with Cyndi’s idea and work together to further develop it.**

**I know we are still thinking, would anyone like to share their rough draft ideas?**

**Drew, I know you are still thinking, but would you please share what your ideas are so far?**



## Discourse Move: Encouraging In-progress Thinking



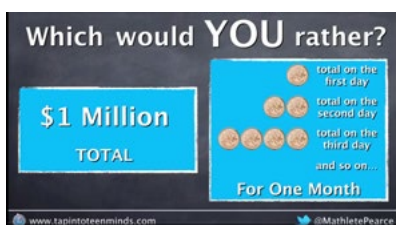
The classroom is a community of mathematics learners where knowledge is not held only by the teacher. Students and teachers are constructing meaning together.



### How do we use it?

**If you are new to encouraging in-progress thinking, try this:** This move, also known as “rough draft thinking”, encourages students to share ideas that may not be complete or may be incorrect. It supports the notion that all ideas are valuable and revising our thinking is an important mathematical skill. Asking “**I know you’re still thinking, but would anyone like to share their rough draft ideas?**” can encourage students to share without the pressure of “knowing the right answer.” If you notice students are stuck or at an impasse, say “**Tell us why you are stuck. What is making sense to you so far?**”

### An Example of Encouraging In-progress Thinking in Action



**Scenario:** Imagine you have presented the image on the left and, after providing 30 seconds of individual think time, students are discussing in small groups

which scenario they would choose and why. After monitoring and listening to groups’ initial ideas, you bring students back together to discuss.

**Teacher:** Group 1, you discussed some interesting ideas. **I know you haven’t found a solution yet, but I’d like for you to share what you are thinking so far.**

**Student 1:** Well, part of our group wanted to take the million, but [Student Name] started figuring out how many pennies we would have at the end of the month. We started doubling it, but we only got to day 10.[Student Name] made a table and figured out we’d have 512 pennies on day 10. But we think it will get a lot bigger!

**Teacher:** Nice. **Would anyone else like to share their rough draft ideas?**

**Student 2:** It feels like a trick. I want the million but that seems too easy.

**Teacher:** Interesting. Have you thought about how you might figure out if it’s a trick or not?

**Student 2:** I don’t want to keep doubling, that will take too long. We are trying to figure out a way to jump to the end of the month for the pennies.

**Teacher:** I wonder if [Student Name]’s table might help you refine your ideas. Let’s all try to figure out the number of pennies on day 30.



### Things to Remember

- Be explicit with students that this is their “rough draft” and not a polished solution yet. Mistakes and incomplete work are expected.
- Pair this move with “inviting student participation.” Invite students to share their ideas, even if they are not fully formed.
- Support multilingual learners and exceptional students by encouraging in-progress thinking when working with peers. This can be in the form of language or drawings.



### Questions to Consider with Colleagues

- 1 Students are sharing ideas before they’ve refined them. How do you see this benefiting both the students listening and those speaking?
- 2 How do your colleagues that teach English use rough drafts? How is it the same and different to how it can be used in a math classroom?
- 3 How do you see Encouraging In-progress thinking relating to the Standards of Mathematical Practice? Consider SMP 2, 4, 7, and 8 specifically.