Questions to Nurture Math Curiosity with K–5 Students

Asking questions throughout a mathematics lesson supports students as they make sense of the mathematics, supports teachers to understand the students' thinking, and models curiosity and wonder. While some questions emerge naturally in response to students' ideas, other questions can be intentionally planned. As you are thinking about upcoming lessons, we hope this collection of questions can offer ideas that you can incorporate. We organized these questions into categories that follow the four layers of argumentation we have seen in K–5 classrooms. These questions can be helpful across grades and types of activities.

Questions to Nudge at Noticing and Wondering

- What do you notice? What do you wonder?
- What patterns do you see? Will that pattern continue?
- What do the equations or expressions have in common?
- How do the equations or expressions relate to other observations?
- Who has a related observation? Where do you see connections?

Questions to Nudge at Conjecturing

- How will the pattern continue? Why do you think that pattern is happening?
- Is that observation always true? When will it be true?
- What do you believe to always be true about _____?
- Is that true always, sometimes, or never? How do you know?
- Can you draw a visual representation to show what you mean? What does each part of your representation show and how does it connect to your idea?
- How can you use a tool to show what you mean?

Questions to Nudge at Justifying

- Why do you think that pattern is happening?
- Can you draw a picture to show why that works?
- Can you use tools to show why that works?
- How can you convince someone that the conjecture is always true? Never true?
- Why is that true? Why is it not true?

Questions to Nudge at Extending

- Can someone restate _____'s conjecture?
- Does anyone have a similar idea or something you'd like to add?
- Does anyone have a different idea?
- Are there some words in the conjecture that anyone has a question about?
- How can we rewrite our conjecture to make it more precise?
- Are there other things you think might be true now that we've explored this conjecture?
- What else might be true?