Supporting Mathematical Practices Through Questioning

Mathematical practices are developed through discourse that includes exchanging ideas about mathematics. Students need opportunities to discuss their solution strategies and reasoning in order to build mathematical practices. Teachers can facilitate this through questioning. The following questions are examples of how questions support students' development of mathematical practices.

When you ask...	Students...
• What is the problem asking? • How will you use that information? • What other information do you need? • Why did you choose that operation? • What is another way to solve that problem? • What did you do first? Why? • What can you do if you don't know how to solve a problem? • Have you solved a problem similar to this one? • When did you realize your first method would not work for this problem? • How do you know your answer makes sense?	Make sense of problems and persevere in solving them.

When you ask...	Students...
• What is a situation that could be represented by this equation? • Why does that operation represent the situation? • What is another operation you could have used to represent the situation? • What properties did you use to find the answer? • How do you know your answer is reasonable?	Reason abstractly and quantitatively.

When you ask...	Students...
• Will that method always work? • How do you know? • What do you think about what she said? • Who can tell us about a different method? • What do you think will happen if...? • When would that **not** be true? • Why do you agree/disagree with what he said? • What do you want to ask her about that method? • How does that drawing support your work?	Construct viable arguments and critique the reasoning of others.

When you ask...	Students...
• Why is that a good model for this problem? • How can you use a simpler problem to help you find the answer? • What conclusions can you make from your model? • How would you change your model if...?	Model with mathematics.

When you ask...	Students...
• What could you use to help solve the problem? • What strategy could you use to make that calculation easier? • How would estimation help you solve that problem? • Why did you decide to use...?	Use appropriate tools strategically.

When you ask...	Students...
• How do you know your answer is reasonable? • How can you use math vocabulary in your explanation? • How do you know those answers are equivalent? • What does that mean?	Attend to precision.

When you ask...	Students...
• How did you discover that pattern? • What other patterns can you find? • What rule did you use to make this group? • Why can you use that property in this problem? • How is that like...?	Look for and make use of structure.

When you ask...	Students...
• What do you remember about...? • What happens when...? • What if you... instead of...? • What might be a shortcut for...?	Look for and express regularity in repeated reasoning.