Questions to Elicit Student Thinking
(Math Solutions)

Getting Started
• What is this problem about?
• Would you please explain that in your own words?
• What do you know?
• What problems have you solved that are similar?
• Where can you begin?

While Working
• What have you already tried?
• How did you organize your information?
• What would happen if...?
• Do you see any patterns or relationships that might help you solve this?
• Can you make a drawing or model to explain your thinking?
• Can you make a prediction?
• Why did you...?
• What do you need to do next?
• What would happen if...?
• Is there another way to (draw, explain or say) that?

Reflecting About the Solution
• How do you know your solution is reasonable?
• How can you convince me that your answer makes sense?
• Have you answered the question?
• What were the mathematical ideas in this problem?
• What did you try that did not work?
• Is that the only possible answer?
• How do you know you have solved the problem?
• How did you know you were finished?

Responding to Help Clarify Thinking
• Tell me more.
• Can you explain that in a different way?
• Help me to understand this part...
• Would this method work in other problems?
• Is there a more efficient strategy?
• Is there another strategy that would work?
• How could you help another student without telling them the answer?
The Art of Questioning in Mathematics

The following is a set of questions, which may be helpful in guiding inquiry as an instructional strategy to deepen and expand students’ mathematical thinking and problem-solving abilities.

Help student work together to make sense of mathematics:
- Who agrees? Disagrees? Who will explain why or why not?
- Who has the same answer, but a different way to explain it?
- Who has a different answer? What is your answer and how did you get it?
- Please ask the rest of the class that question.”
- Explain to your partner your understanding of what was just said.
- Convince us that makes sense.

Help student learn to reason mathematically:
- Does that always work? Why or why not?
- Is that true for all cases? Explain.
- What is a counter example for this solution?
- How could you prove that?
- What assumptions are you making?

Help student learn to conjecture, invent, and solve problems:
- What would happen if ___________? What if not?
- Do you see a pattern? Explain.
- What about the last one?
- How did you think about the problem?
- What decision do you think he/she should make?
- What is alike and what is different about your method of solution and his/hers? Why?

Help student connect mathematics, its ideas, and its applications:
- How does this relate to ___________?
- What ideas that we have learned before were useful in solving this problem?
- What problem have we solved that is similar to this one? How are they the same? How are they different?
- What uses of mathematics did you find in the newspaper last night?
- What example can you give me for ___________?

Excerpt from NCTM Professional Teaching Standards
Learn more at National Council for Teachers of Mathematics