

# 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 \_\_\_\_\_?