# 100 questions that promote

# Discourse Discourse

### Help students work together to make sense of mathematics

- 1 What **strategy** did you use?
- 2 Do you agree?
- 3 Do you disagree?
- Would you ask the rest of the class that question?
- 5 Could you **share your method** with the class?
- What part of what he said do you understand?
- Would someone like to share \_\_\_\_?
- 8 Can you convince the rest of us that your answer makes sense?
- **9 What do others think** about what [student] said?

- Can someone **retell or restate** [student]'s explanation?
- Did you work together? In what way?
- Would anyone like to add to what was said?
- Have you **discussed** this with your group? With others?
- Did anyone get a different answer?
- **Where** would you go for **help**?
- Did everybody get a fair chance to talk, use the manipulatives, or be the recorder?
- How could you help another student without telling them the answer?
- How would you explain \_\_\_\_ to someone who missed class today?

Help students rely more on themselves to determine whether something is mathematically correct

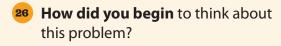
- 19 Is this a reasonable answer?
- **20** Does that make **sense**?
- **21 Why** do you think that? Why is that true?
- 22 Can you draw a picture or make a model to show that?
- **How** did you reach that conclusion?
- 24 Does anyone want to **revise** his or her answer?
- 25 How were you sure your answer was right?







# Help students learn to reason mathematically



- What is **another way** you could solve this problem?
- 28 How could you prove \_\_\_\_\_?
- Can you explain how your answer is different from or the same as [student]'s answer?
- Let's break the problem into parts. What would the parts be?
- Can you explain this part more specifically?
- 32 Does that always work?
- 33 Can you think of a case where that wouldn't work?
- How did you **organize** your information? Your thinking?

Help students with problem comprehension



- 35 What do you need to do next?
- 36 What have you accomplished?
- 37 What are your strengths and weaknesses?
- Was your group participation appropriate and helpful?
  - What is this problem about?
    What can you **tell me about it**?
  - Do you need to **define or set limits** for the problem?
  - 41 How would you interpret that?
  - Could you reword that in simpler terms?
  - 43 Is there something that can be eliminated or that is missing?
  - Could you explain what the problem is asking?
  - What **assumptions** do you have to make?
  - What do you **know** about this part?
  - Which words were most important? Why?



# 4

#### Help students learn to conjecture, invent, and solve problems

- What would happen if \_\_\_\_?
- Do you see a pattern?
- What are some **possibilities** here?
- Where could you find the **information** you need?
- How would you **check your steps** or your answer?
- What did not work?
- How is your solution method the same as or different from [student]'s method?
- Other than retracing your steps, **how** can you determine if your answers are appropriate?
- How did you **organize** the information? Do you have a **record**?
- How could you solve this using tables, lists, pictures, diagrams, etc.?
- What have you tried? What **steps** did you take?
- How would it look if you used this **model** or these **materials**?

- How would you draw a diagram or make a sketch to solve the problem?
- Is there **another possible answer**?
- Is there another way to solve the problem?
- ls there **another model** you could use to solve the problem?
- 64 Is there anything you've overlooked?
- 65 **How did you think** about the problem?
- 66 What was your estimate or prediction?
- 67) How **confident** are you in your answer?
- **68 What else** would you like to know?
- 69 What do you think comes **next**?
- ls the solution **reasonable**, considering the context?
- Did you have a system? Explain it.
- **72** Did you have a **strategy**? Explain it.
- 73 Did you have a **design**? Explain it.



## Help students learn to connect mathematics, its ideas, and its application

- What is the **relationship** between \_\_\_\_ and ?
- 75 Have we ever solved a problem like this before?
- 76 What uses of mathematics did you find in the **newspaper** last night?
- What is the **same**?
- 78 What is different?
- Did you use skills or build on concepts that were not necessarily mathematical?
- Which **skills or concepts** did you use?
- 81 What **ideas** have we explored before that were useful in solving this problem?

- 82 Is there a pattern?
- **83) Where else** would this strategy be useful?
- **84** How does this **relate** to ?
- **85** Is there a **general rule**?
- 86 Is there a real-life situation where this could be used?
- B7 How would your method work with other problems?
- What other problem does this seem to lead to?
  - Have you tried making a **guess**?
  - **90 What else** have you tried?
  - 91 Would another method work as well or better?
  - 92 Is there another way to draw, explain, or say that?
  - 93 Give me another related problem. Is there an easier problem?
  - 94 How would you explain what you know right now?

## **Help students** persevere

- 95 What was one thing you learned (or two, or more)?
- 96 Did you notice any patterns? If so, describe them.
- 97 What mathematics topics were used in this investigation?
- 98 What were the mathematical ideas in this problem?
- 99) What is mathematically different about these two situations?
- What are the **variables** in this problem? What stays constant?

Help students focus on the mathematics from activities



