

Questioning Strategies to Build Algebraic Thinking

Ask children to share and explain their ideas (i.e., strategies, representations, conjectures, and reasoning):

- Does anyone have a conjecture* to share?
- How did you model the problem?
- How did you represent your thinking?
- Why did you use this particular representation? How did it help you find the solution?
- What strategy did you use?
- How did you get your solution?
- What does the n stand for in your relationship?

Ask children to compare and contrast their ideas (i.e., strategies, representations, conjectures and reasoning):

- Marta, do you agree with Jack? Why?
- Did anybody get a different solution?
- How are your ideas different?
- Is there a better way to organize the information?
- Would you use a different argument to convince your friends than to convince the teacher? Why?

Ask children to find and describe conjectures about patterns and relationships:

- Do you notice anything that always happens?
- Do you notice anything that is always true?
- How would you describe what is going on in general here?
- Can you describe your pattern (relationship) in words?
- Can you describe your pattern (relationship) in symbols?
- How did you arrive at your pattern (relationship)?

Ask children to justify their conjectures:

- How do you know your conjecture will always be true?
- How do you know your solution will always work?
- How would you convince your friends?
- How could you convince your parents?

Ask children to develop more sophisticated ways of expressing their mathematical ideas:

- How could you describe this relationship using symbols (letters) instead of words?
- How can we represent this unknown quantity? How can we represent this varying quantity? Is there a letter or symbol we can use to represent it that might be easier than writing out the name of the quantity in words?

Figure 6-13 Questioning strategies to build algebraic thinking

*For more on conjecturing and justifying, see the section "Components of Building a Generalization" in this chapter. You might want to revisit this set of questioning strategies once you've finished reading about conjecturing and justifying.