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## Getting Unstuck

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If students are not getting stuck, then they're not solving interesting enough problems. But, good problem solvers have routines for finding new things to try and getting back onto good tracks.

Some facilitating questions:

- ▶ What is going on in this problem?
- ▶ What can you try?
- ▶ What does this remind you of?
- ▶ Why isn't this working?
- ▶ What are you missing?
- ▶ Do you need more ideas?
- ▶ Do you need help?

**Step 1 (diagnosis):** Figure out where students are stuck. Offer these possibilities:

\_\_\_\_\_ **Guess** stuck:

- ▶ I don't know what to guess. I don't even understand what the problem is asking.
- ▶ I don't know what a reasonable guess is to make.

\_\_\_\_\_ **Calculation** stuck:

- ▶ I made a guess but I don't know how to use it to see if it works.
- ▶ I don't know what calculations I can do based on my guess.
- ▶ I could check my guess, but I don't know how to do this calculation.

\_\_\_\_\_ **Check** stuck:

- ▶ I tested my guess and did some calculations, but I don't know what that tells me.
- ▶ How can I tell if I'm right?
- ▶ How can I tell if I got closer?
- ▶ How do I figure out if my results make sense?

**Step 2 (questions):** Ask students to explain what is hard or confusing to them. Encourage them to ask a specific question about that.

The goal is for the students to ask a question that gets them just enough information to make more progress but doesn't give them more than they really need.

Their explanation and question might sound like one of the following:

- ▶ I know that I have to figure out \_\_\_\_\_ and \_\_\_\_\_, but which one should I use for my guess?
- ▶ I guessed \_\_\_\_\_ but then when I tried it I had to figure out \_\_\_\_\_. How do I do that?
- ▶ I guessed \_\_\_\_\_ and I got \_\_\_\_\_. I think it works, but I don't know how to be sure that it's right. Is there something that I should be using to test my answer?

**Step 3 (answers):** Ask students to trade questions with their elbow partners. Have them work together to answer the questions.

If they have difficulty with one of the questions, suggest some of the questions listed in step 2 to see if there is another question they might ask that would help them make more progress.

Ask elbow partners to share their question with the class and see if there is another group that has some ideas for them.