

Questions for Promoting Mathematical Power

From the *Professional Standards (NCTM, 1991, pp.3-4)*

Helping students work together to make sense of mathematics

Ask:

- What do you think about what Janine said?
- Do you agree? Disagree?
- Does anyone have the same answer but a different way to explain it?
- Would you ask the rest of the class that question?
- Do you understand what they are saying?
- Can you convince the rest of us that that makes sense?

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

Ask:

- Why do you think that?
- Why is that true?
- How did you reach that conclusion?
- Does that make sense?
- Can you make a model to show that?

Helping students to learn to reason mathematically

Ask:

- Does that always work?
- Is that true for all cases?
- Can you think of a counter example?
- How could you prove that?
- What assumptions are you making?

Helping students to conjecture, invent and solve problems

Ask:

- What would happen if ... ? What if not?
- Do you see a pattern?
- What are some possibilities here?
- Can you predict the next one? What about the last one?
- How did you think about the problem?
- What decision do you think you should make?
- What is alike and different about your method of solution and hers?

Helping students to connect mathematics, its ideas and its applications

Ask:

- How does this relate to ... ?
- What ideas that we have learned before were useful in solving this?
- Have we ever solved a problem like this one before?
- What uses of mathematics did you find in the newspaper last night?
- Can you give an example of ... ?