Comments on Doing Math Mentally

I am an advocate for doing calculations mentally much of the time. I wrote *Five Keys for Teaching Mental Math* in the March 2015 issue of the NCTM's *Mathematics Teacher*. The article mainly focused on doing calculations (e.g., 23×200) mentally. The comments here broaden the scope to include other mathematical processes (e.g., anti-differentiating mentally).

I do feel that doing processes mentally is often useful. It often indicates a higher level of understanding than doing it on paper. The process is internalized (in the brain), which often has benefits. (My article lists additional reasons for the usefulness of mental math.)

However, we need to be have a realistic, appropriate, and balanced approach.

Realistic & Appropriate Approach

Mental processes can be a useful tool. However, doing things mentally is one method of three. Appropriately using mental, paper-and-pencil, *and* technology-assisted methods is important for learners (and citizens). Also, students are different, so our expectations cannot be the same for all. Some may be more adept to mental processes than others. Students should be encouraged to appropriate tools strategically (and this may vary somewhat from student to student).

Balanced Approach

I think it's possible to over-emphasize doing things on one's head. Showing steps on paper is useful for communication and clarity. It may also improve correctness. Relying only on the screen inside one's head may lead the problem-solver to errors or not take something into consideration.

Mental processes should be learned gradually without over-emphasis. It should be realized that not everyone can do mental gymnastics when it comes to mathematics. There are many math majors and math professors who are *not* great at mental calculations.

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