



KAY GILLILAND

THE PURPOSE OF THE “FAMILIES Ask” department is to help classroom teachers respond to questions commonly asked by caregivers of their students. Each month, a commonly asked question will be posed; a rationale for the response will be presented for teachers; and a reproducible page will be offered for duplication and distribution to parents, other caregivers, administrators, or community members—anyone involved in the mathematical education of middle school children.

Here is this month’s question:

My child never does timed tests in math class. I thought that speed and getting right answers quickly were important in mathematics.

The Need for Speed in Mathematics

Parents and other caregivers remember the stress of timed tests in arithmetic and believe that their children should also be taking such tests. But middle school students who have not learned the hundred or so most useful single-digit addition, subtraction, multiplication, and division facts are unlikely to be motivated to do so by timed tests. Many other methods can be used. All students need to be fluent in arithmetic computation, but they do not need to be faced with high-stress, highly competitive situations that serve only to decrease their confidence and increase their dislike of the subject.

In *About Teaching Mathematics*, Marilyn Burns writes the following:

What about using timed tests to help children learn their basic facts? This makes no instructional sense. Children who perform well under time pressure display their skills. Children who have difficulty with skills, or who work more slowly, run the risk of reinforcing wrong learning under pressure. In addition, children can become fearful and negative toward their math learning.

Also, timed tests do not measure children’s understanding. . . . It doesn’t ensure that students will be able to use the facts in problem-solving situations. Furthermore, it conveys to children that memorizing is the way to mathematical power, rather than learning to think and reason to figure out answers. (2000, p. 157)

Middle school students can learn to use the “tools” of mathematics appropriately: mental calculation, estimation, pencil and paper, calculators, computers, manipulatives, rulers, scales, protractors, models, and many others. Choosing the right tool for the right application is a skill to be learned and practiced in the middle grades. Students who evaluate problem situations to determine whether an exact answer or an estimate is needed, who make their own choices among tools, and who can give a rationale for their decision are increasingly well equipped to solve complex problems.

By considering problems in a variety of contexts, students learn the importance of, and the interrelationships among, representations. They learn that they can represent information as a table of numerical data, a graph of the data, an equation based on the data, and as a sentence that describes the data.

Teachers help students develop understanding by listening to their explanations; questioning their assumptions; and making a sincere effort to understand their way of seeing a problem and their way of communicating their insights through writings, drawings, and oral descriptions of their work. Parents observe this behavior and cannot connect it to the way that they were taught to carry out procedures and look for the answer in the back of the book. Is this unfamiliar approach really the way to learn mathematics? Will my child be able to pass the test?

To respond to their concern, the reproducible sheet for caregivers is designed to discuss the power of analyzing a problem in a conceptual manner. The page can be duplicated “as is” and distributed to family and community members to help address the question.

Bibliography

Burns, Marilyn. *About Teaching Mathematics*. Sausalito, Calif.: Math Solutions Publications, 2000.

National Council of Teachers of Mathematics (NCTM). *Principles and Standards for School Mathematics*. Reston, Va.: NCTM, 2000.

“Families Ask” responds to questions commonly asked about the current issues in mathematics education. It includes a “Families Ask Take-Home Page” to share with parents, caregivers, and other interested members of the community. Readers interested in submitting manuscripts to this department should send them to “Families Ask,” MTMS, NCTM, 1906 Association Drive, Reston, VA 20191-9988. ▲

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Ask

Families often ask a question like this:

My child never does timed tests in math class. I thought that speed and getting right answers quickly were important in mathematics.

Consider the following reply:

Middle school is a time for children to broaden their understanding of mathematics and to develop persistence and flexibility in their approach to mathematics problems. Adult mathematicians often spend weeks, months, or even years on a single problem. Students need to learn the value of continuing to work on a problem until they finally come up with answers that appear to be reasonable, correct, and useful. They need to have experience in defending their answers, justifying the steps they took, and communicating their findings clearly. All of this is a matter not of speed but of dedication. In *About Teaching Mathematics*, Marilyn Burns writes the following:

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Most middle school students have memorized the hundred or so most useful single-digit addition, subtraction, multiplication, and division facts. If not, this task can be accomplished without putting students through the anxiety of timed tests. Of course, if a child dearly loves to do timed tests and glories in beating his or her previous times, this endeavor can be enjoyed at home in the way that any other race or game is enjoyed, but it is not essential to doing mathematics.

At the heart of mathematics teaching is the view that students learn when they encounter problems in context; act on physical objects; use appropriate tools; and talk about, and reflect on, mathematical ideas. This view is described in *Everybody Counts* by the National Research Council (1989):

Educational research offers compelling evidence that students learn mathematics well only when they construct their own mathematical understanding. . . . This happens most readily when students work in groups, engage in discussion, make presentations, and in other ways take charge of their own learning. (pp. 58–59)

Students need to know the single-digit addition, subtraction, multiplication, and division facts, but timed tests are not necessary and often do more harm than good. The study of mathematics goes well beyond getting simple answers quickly.

References

- Burns, Marilyn. *About Teaching Mathematics*. Sausalito, Calif.: Math Solutions Publications, 2000.
- National Research Council. *Everybody Counts: A Report to the Nation on the Future of Mathematics Education*. Washington, D.C.: National Academy Press, 1989. ▲