

MESSAGE

27

A Math Message to Families

HELPING STUDENTS PREPARE FOR THE FUTURE

The world is changing. Not too many years ago, perhaps when you were in school, all students were expected to study mathematics, generally focused on arithmetic procedures, through elementary and middle school. Much of school mathematics beyond middle school was viewed as optional, with only some students enrolling in Algebra 1 and more advanced courses. Those who showed promise in mathematics probably began high school Algebra 1 early so that they could take more mathematics to prepare for a mathematics-related field in college. But many other students only studied mathematics for a year or two, often stopping without ever studying algebra, geometry, or higher-level mathematics.

What's Wrong with Yesterday?

Today we acknowledge several things about yesterday's vision of school mathematics. First, within that past system, we failed to recognize the talents of many students. Many classrooms consisted solely of lectures—teachers tended to tell students the procedures they should learn and then assign exercises to practice those procedures. Students who “got it” were able to master those procedures and perhaps apply them to solve word problems. Excellent teachers—teachers who may have pushed all students to succeed—taught the most fortunate students. But many students' talents went unnoticed and undeveloped as they sat unengaged in math class. Perhaps these students didn't learn well as passive listeners; perhaps they missed a critical lesson and never caught up; perhaps they just required more time to learn what some students learned more quickly. For whatever reason, many students did not receive the benefit of a challenging, high-quality mathematics education. Perhaps you were someone who thrived in the system. Or perhaps you were among those who never saw themselves as the math type and who never saw math in their

future. Whatever your experiences as a student, your current perceptions and beliefs about mathematics can have a tremendous impact on your son's or daughter's experience with mathematics.

What Students Need Today

As Thomas L. Friedman describes in depth in *The World Is Flat* (2007) the rapidly changing global society we now face calls for a dramatically different vision of the worker of the future. Regardless of whether a student enrolls in college or chooses to enter the workforce directly after high school, he will need a much stronger educational background than previous generations did. The need for communication skills, the arts, and the social sciences is as great as ever, but now our young people face competition from well-educated workers around the world—workers especially strong in math and science skills. The workplace training programs and certification programs they might pursue for their future now demand more mathematics, science, and technology than ever before, and essentially all workers in jobs with a future need to be able to reason and think critically and creatively.

Even in life beyond the workplace, scientific issues dominate the nation's political and economic discussions and overflow into every dimension of our lives, calling for scientific literacy in issues ranging from health care to energy use in our homes to taking care of our planet. Today we need new mathematical skills to bring meaning and order to the flood of data and statistical information that hits us every day. Our definition of an educated person is now a much richer vision than in previous times, when reading, writing, and some basic arithmetic would suffice for day-to-day survival. Today's literacy also means quantitative literacy, scientific literacy, and high-level critical thinking and problem-solving skills.

What Can You Do?

So what can families do to support a student's education, especially in mathematics? Consider the following suggestions:

- Help students understand the value of education and the importance of math and science. Let them know that even though math may get difficult sometimes, it is critical for their future.
- Send positive messages about mathematics. Saying that you never were good at math or that you don't like it can have a lasting impact on a student. Even if you can't show your love of mathematics, you can communicate enthusiasm and support for your daughter's or son's work and interest in mathematics.
- Look for math around you. With young children, notice the shapes and numbers in nature, buildings, and so on; with older students, notice and discuss the numerical data, statistical information, and scientific news in the media.
- Help students learn to persevere, a talent uniquely lacking in the U.S. student population compared with students from other countries. Sticking with a challenging math problem to arrive at a solution is one of the most rewarding experiences a student can have and also one of the most important habits of mind a student can develop.
- Be comfortable with not knowing everything your son or daughter is studying. Look at the resources listed at the end of this message to provide support as you help with homework. Come up with a family math problem to work on together that involves mathematics you have never seen before.
- Volunteer to help at school, but be flexible, as not all schools are set up to make good use of volunteers, especially if volunteers come only occasionally or at unscheduled times. Understand that the biggest help you can provide, whether you volunteer in school or not, is to be supportive of your daughter's or son's mathematical development within your own family.
- Be open to a changing picture of school, of the mathematics being taught, and of the ways in which mathematics is taught, as society's needs change and as we continue to learn more about teaching and learning.

Ideally, this message and these recommendations will cause you to think of other ways in which you can support a rich and successful mathematics education for your son or daughter. Educating a student is far more effective when parents or caregivers work in partnership with the school. Each plays important roles that help students develop mathematical thinking, knowledge, and skills. Helping every student build a strong mathematical foundation opens the door to higher-level mathematics, science, and other disciplines that will enable students to tackle the critical problems facing the world today and build a strong future for themselves and their families.

Reflection and Discussion

FOR TEACHERS

- What issues or challenges does this message raise for you? In what ways do you agree with or disagree with the main points of the message?
- How might you choose to use this message or something like it to reach out to parents and caregivers in support of students' mathematics learning?

FOR FAMILIES

- What questions or issues does this message raise for you to discuss with your son or daughter, the teacher, or school leaders?
- Which recommendations from this message seem like steps you might choose to take in support of your daughter's or son's mathematics learning? Which ones do you question or think might be difficult to undertake?
- In what other ways might you support your son's or daughter's mathematics learning?

FOR LEADERS AND POLICY MAKERS

- How does this message reinforce or challenge policies and decisions you have made or are considering?
- How might you use the ideas from this message or other ideas to engage families in supporting students' mathematics learning?

RELATED MESSAGES

- Message 1, “Math for a Flattening World,” makes a case for changing how schools prepare students for a rapidly changing twenty-first-century society.
- Message 18, “Faster Isn’t Smarter,” presents a changing view of timed tests on fact recall.
- Message 4, “Good Old Days,” looks at swings of the pendulum over time with respect to changing our philosophy of teaching mathematics.
- Message 13, “Seek First to Understand,” addresses the importance of involving families and other audiences in discussions and decisions involving school mathematics.
- The “For Families” discussion questions at the end of each message in this book can provide a starting place for involving families in the mathematics education of their children or teens.

FURTHER READING

- The Family Resources page of the National Council of Teachers of Mathematics (www.nctm.org/resources/families) provides resources and downloadable brochures for families, including tips for helping with homework and

talking with your student’s math teacher. It also includes links to other resources, such as NCTM’s Figure This! website (www.figurethis.org/) that contains problems for families to work on together with their middle school students.

- *A Family’s Guide: Fostering Your Child’s Success in School Mathematics* (Mirra 2005) provides families and schools with ideas for how to involve families in their children’s mathematics programs and how families can support their children’s mathematics learning.
- *Family Math* (Stenmark, Thompson, and Cossey 1986) and the Family Math program at the University of California Lawrence Hall of Science (www.lawrencehallofscience.org/equals) provide activities (some in Spanish) that families can do together with elementary and middle school children. They also suggest ways for schools and communities to offer Family Math events.
- *Getting Your Math Message Out to Parents: A K–6 Resource* (Litton 1998) offers suggestions for educators in reaching out to families in support of students’ mathematics learning, including ideas for newsletters, conferences, and how to involve family volunteers in schools.