



SECTION ONE

Embracing the Profession of Teacher of Mathematics

As a certified math teacher, you are a professional educator. You have completed the necessary courses, demonstrated proficiency in mathematics, and acquired a variety of teaching techniques to provide meaningful instruction to your students. But as significant as these accomplishments are, they constitute only a part of your responsibilities as an educator.

Your professionalism is founded on your beliefs, attitudes, and actions, and extends well beyond the classroom. For example, in addition to teaching, you must build your lessons around clearly stated objectives; support school policies and procedures; attend meetings, workshops, and conferences; serve on committees; interact with administrators, colleagues, students, and parents and guardians; and dress and conduct yourself with discretion and common sense. You must acquire and maintain good work habits, and constantly strive to develop your knowledge and expertise. In short, you must fully embrace the profession of teacher of mathematics and all that it requires in everything that you do.

Traits of Great Math Teachers

There are math teachers, and there are great math teachers. Math teachers become great math teachers through commitment, dedication, and enthusiasm. They work hard to develop their professionalism and share many of the following traits. Great math teachers:

- ① Understand the content of the courses they teach
- ② Use state and district standards and goals to plan and deliver instruction

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- ⊕ Utilize the Principles and Standards of the NCTM, and the Focal Points of the NCTM as important resources in developing their instructional programs
- ⊕ Plan lessons that are based on the abilities and interests of their students
- ⊕ Design lessons that will enable students to learn math skills and concepts
- ⊕ Provide activities to meet the needs of students with various learning styles
- ⊕ Act as a facilitator of learning
- ⊕ Develop and maintain a practical set of classroom procedures and rules
- ⊕ Foster a classroom atmosphere that promotes learning
- ⊕ Develop and use a fair grading system
- ⊕ Evaluate student progress consistently, both formally and informally, and provide regular and prompt feedback
- ⊕ Teach and encourage the use of various problem-solving techniques
- ⊕ Ask questions that require higher-level thinking and are relevant to their students' lives
- ⊕ Provide problems that can be solved by a variety of methods
- ⊕ Use technology in instruction
- ⊕ Encourage their students to use technology to solve real-life problems
- ⊕ Provide activities that promote cooperative learning
- ⊕ Require students to write about and explain math concepts, problem-solving strategies, and solutions to problems
- ⊕ Promote mathematical reasoning
- ⊕ Encourage divergent thinking
- ⊕ Use manipulatives and models to demonstrate math concepts
- ⊕ Are receptive to new ideas and teaching strategies
- ⊕ Are willing to collaborate with other math teachers for planning and instruction
- ⊕ View math as a subject that all students, regardless of gender, ethnicity, or background, can learn
- ⊕ Encourage all their students to do their best every day
- ⊕ Are demanding in their expectations but are also considerate of their students' feelings and concerns
- ⊕ Are consistent and fair
- ⊕ Set realistic goals for themselves and their students
- ⊕ Demonstrate the connection of math to other subject areas
- ⊕ Are reflective and flexible

- ⊕ Encourage students to apply math to their everyday lives
- ⊕ Find genuine satisfaction in their students' growth

This seems like a lot, but we are sure that you can check off many of these things as already applying to your teaching. And with additional work, and the help of this book, you can acquire all of the professional traits that make math teachers great. One of your most important goals should be to become the best teacher you can.

Meeting State Standards and District Math Goals

A major aspect of your professional responsibilities is to ensure that your students meet or exceed the standards and goals established by your state and district. These objectives, which will help students attain the benchmarks of the No Child Left Behind Act, should be a part of your curriculum and be addressed in your daily instruction.

If you have not already done so, you can check the math standards of your state at www.educationworld.com/standards/state or by searching the Internet with the term “math content standards” and including the name of the state. You might also go directly to “math standards” on the Web site of your state department of education. Once you have obtained a copy of your state’s math standards, keep it with your curriculum guide. You should refer to these standards as you plan your lessons, activities, and assessments. In addition to their standards, many state departments of education also include teaching guidelines, activities, and assessment materials to support teachers in their efforts to plan and deliver effective instruction.

To learn about any math goals your district has identified, check with your math supervisor or principal. In some school systems, district goals are revised yearly; in others, long-range goals may cover a few years. Incorporate district goals into your math lessons whenever possible.

The curriculum of every course contains a set of objectives which, together with state standards and district goals, provides a framework for the content of that course. Being aware of the major objectives and requirements of the math courses that precede and follow the courses you are teaching is vital information. Knowing what students have learned the previous year, what they need to learn to be successful in your class now, and what they will need to know to be successful next year helps you to plan instruction that will best meet their needs for long-term achievement in math.

Along with your curriculum and state standards and district goals, you should become familiar with the Principles and Standards of the National Council of Teachers of Mathematics (NCTM), as well as the Focal Points and Connections to the Focal Points of the NCTM, both of which can be obtained at www.nctm.org. These resources support a vision for proficient math instruction for all students

and identify the math skills, concepts, and processes that students should master upon completion of specific grade levels. These resources can help you develop a successful and challenging math program.

In addition to understanding how state standards and district goals affect your teaching, you must also be aware of the prerequisites and requirements of each of your classes. Students who have not satisfactorily fulfilled the prerequisites for a course will likely experience difficulty in meeting the requirements of the course. A student cannot be expected to do well in Algebra II Honors if he has barely passed Algebra I. Although there are, of course, exceptions, overplacement is seldom beneficial to the student or his classmates. Students who are underplaced because they have exceeded the prerequisites of your course are also unlikely to benefit from it. You should consult with your math supervisor or guidance counselor to reassign incorrectly placed students to math classes appropriate for their abilities.

Understanding standards and goals enables you to provide instruction to your students that will help them learn the math concepts and skills necessary for them to satisfactorily complete your course. Standards and goals provide you with direction throughout the year.

School Policies and Procedures You Need to Know

Schools are complex institutions. For any school to function efficiently and safely, all staff members must understand the policies and procedures that govern its daily routines. Much of this information can be found in student and faculty handbooks, but some—especially revisions or additions to current practices—will be communicated during faculty meetings or via memos throughout the year. As a professional, you should know the policies and procedures for the following:

- ⊕ Student attendance
- ⊕ Homeroom procedures
- ⊕ Tardiness
- ⊕ Truancy
- ⊕ Chronic absences
- ⊕ Bell schedule
- ⊕ Class schedule
- ⊕ School calendar
- ⊕ Signing in and out of school
- ⊕ Earliest time faculty members can report to school
- ⊕ Latest time faculty members may stay at school on a typical day
- ⊕ Faculty attendance

- ⊗ Faculty dress code
- ⊗ Curriculum guides
- ⊗ Unit plan format
- ⊗ Daily lesson plan format
- ⊗ Homework and classwork
- ⊗ Grades
- ⊗ Reporting periods
- ⊗ Standardized testing schedule
- ⊗ Teacher evaluations
- ⊗ Substitute teacher plans
- ⊗ Contacting substitute teachers
- ⊗ Acceptable student behavior in class
- ⊗ Acceptable student behavior in common areas, including outside the building
- ⊗ Discipline
- ⊗ Student fighting
- ⊗ Harassment and bullying
- ⊗ Detention
- ⊗ Suspension
- ⊗ Cheating
- ⊗ Plagiarism
- ⊗ Student dress code
- ⊗ Referral of students for evaluation
- ⊗ Individualized Education Programs (IEPs)
- ⊗ 504 plans
- ⊗ Bus plan for students
- ⊗ Distribution of textbooks and other materials
- ⊗ Lost textbooks and other materials
- ⊗ Record keeping for books and materials
- ⊗ Ordering supplies and materials from vendors
- ⊗ Obtaining supplies and materials from the stock room
- ⊗ Work orders for repair and maintenance of equipment
- ⊗ Contacting the tech person in your school
- ⊗ Contacting janitors
- ⊗ Copy machine use

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- ⊕ Duty assignments
- ⊕ Fire drill procedures for each class
- ⊕ Emergencies and lockdowns
- ⊕ School closings, early dismissals, and delayed openings
- ⊕ Videotaping and photographing students
- ⊕ Student lunches
- ⊕ Teacher lunches
- ⊕ Student use of the media center
- ⊕ Student use of the computer lab
- ⊕ Student use of technology
- ⊕ Faculty meetings
- ⊕ Faculty committees
- ⊕ Faculty workshops and seminars
- ⊕ Back-to-school night
- ⊕ Contacting parents and guardians by phone and e-mail
- ⊕ Parent conferences during conference time
- ⊕ Parent conferences throughout the year
- ⊕ Family vacations and student absences
- ⊕ Extended student absence
- ⊕ Student injuries in class or on school grounds
- ⊕ Field trip procedures
- ⊕ Taking students outside the building (for example, to do an activity on measurement)
- ⊕ Classroom parties
- ⊕ Food in the classroom
- ⊕ Press releases
- ⊕ Guest speakers
- ⊕ Collecting money (for example, to pay for a field trip)

Once you understand the policies and procedures of your school, you must support and enforce them with fairness and consistency. Your students, colleagues, and administrators will respect your knowledge and dedication.

You also need to be aware of the chain of command in your school. Undoubtedly your school has procedures in place for management of discipline issues, referral of students to guidance counselors, and requests for the child study team to test and evaluate students for learning disabilities or emotional disorders. Following

the correct procedures in such instances ensures that the proper people become involved and that they receive the necessary information for addressing the problem. By following your school's procedures, the issue has a greater chance of being resolved quickly and satisfactorily.

Only by understanding and supporting your school's policies and procedures can you assume your responsibilities in the daily program of your school. Knowing how and why things are done is an essential mark of a professional.

Professionalism and Common Sense

Just as mathematical knowledge, efficient classroom management, and effective instruction are critical components of a math teacher's professionalism, so is common sense. Sometimes, however, in the pressing demands of the school day, common sense can be overlooked. The consequences of ignoring common sense can be minor and slightly embarrassing—you are leaving school early and meet the superintendent on your way out—or they can be major and really embarrassing—you are talking in the faculty room about a student's continual lack of preparation, unaware that the substitute sitting next to you is his mother. Regardless of whether the outcome is minor or major, exhibiting a lack of common sense always undermines professionalism.

The following list clarifies instances and situations where common sense will help you to avoid making common (and not so common) mistakes:

- ⊕ It is always better to arrive at school early. Use the time to grade a few papers, make copies, or respond to e-mail. Avoid arriving right on time, or worse, just a step ahead of your students.
- ⊕ Leave school after the contracted time teachers may go. Even if you only stay a few extra minutes, you can update your assignments on your school's homework hotline or clean up papers on your desk.
- ⊕ Adhere to the faculty dress code. If there is no dress code, wear clothing that you feel is appropriate. If you are not sure something is appropriate, do not wear it.
- ⊕ Never use offensive language.
- ⊕ Never discuss the behavior of students with other students.
- ⊕ Never discuss a student with the parents or guardians of other students.
- ⊕ Avoid gossip, which is often hurtful and is never professional.
- ⊕ Never discuss students in the faculty room if substitutes or parents or guardians are present.
- ⊕ Do not tell off-color jokes. Even though people may laugh to be polite, they may be offended.

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- ⊕ Never speak in a derogatory manner about any group.
- ⊕ Do not speak negatively about another member of the staff or administration.
- ⊕ Always give people your full attention when they are speaking to you. If they take the time to speak with you, you should take the time to listen.
- ⊕ Do not talk to students as if they are your peers or friends. This does not mean that you cannot be friendly or informal at times, but always remember that you are their teacher. You must model professional behavior.
- ⊕ Always attend required meetings and workshops.
- ⊕ Be willing to serve on committees.
- ⊕ Be attentive during faculty meetings, workshops, committee meetings, and seminars. Avoid grading papers, checking your cell phone for messages, or whispering to a colleague.
- ⊕ Always follow school rules. Talking on your cell phone during class, for instance, sets a poor example for students who are not permitted to use their cell phones in school.
- ⊕ Always be prepared for class. Lack of preparation shows students that the class is not important to you, and they may conclude it is not important for them either.
- ⊕ Do not leave students in the classroom unattended. You are responsible for them and anything that may occur in class.
- ⊕ Never lose your temper during meetings or conferences. Anger diverts energy from problem solving and makes finding solutions more difficult.
- ⊕ Avoid being territorial when sharing rooms or supplies with other staff members.
- ⊕ Do not hoard supplies.
- ⊕ Do not monopolize the copy machine. If you have five hundred copies to run off, and a colleague has a handful, let her go ahead of you.
- ⊕ Always complete paperwork on time.
- ⊕ Never leave a classroom messy or in disarray for the teacher who has the room next. Just as you expect to enter a clean and orderly classroom, so do others. Be sure to leave the room before the other class begins.
- ⊕ Never permit students to speak disrespectfully about other teachers, students, or classes.
- ⊕ Always be tactful when speaking with parents or guardians, especially when you see them outside of school. Be discreet in what you say.
- ⊕ Consider joining your parent-teacher association or similar organizations. Your membership and support will be appreciated.

- ⊕ Volunteer your help to administrators, colleagues, and parent groups in your school whenever possible.
- ⊕ Avoid making hasty decisions—they usually turn out to be the wrong decisions.
- ⊕ Avoid procrastination. The more you procrastinate, the more work piles up, which will lead to frustration and stress.

When you combine common sense with sound teaching methods, you can become a role model for your students and for other teachers. All will see you as a professional who speaks and acts with intelligence, consideration, and good judgment.

Professionalism Outside the Classroom

Your students, their parents or guardians, and any other community members who know you are a teacher will view you as a teacher no matter where or when they see you. Certainly at any school function, such as parent-teacher association meetings, school fundraisers, or attendance at school sporting events—but even outside the school setting, such as at the mall, hairdresser, or place of worship—you need to present yourself as a professional member of your school’s teaching staff. You must wear appropriate clothing, display proper conduct, and always use common sense. People will expect you to set a good example for their children.

Maintaining Your Professional Expertise

Acquiring and maintaining professional expertise is a goal you should pursue throughout your career. Only by constantly growing as a professional can you hope to provide the best learning environment and instruction for your students.

There are several ways you can improve your professional skills, including:

- ⊕ Attend in-services, workshops, seminars, and conferences. Throughout the year most school districts offer in-services designed to foster the classroom management and instructional skills of their teachers. Many districts also provide money for teachers to attend out-of-district workshops, seminars, and conferences that present information on new techniques, strategies, or issues that can affect all aspects of teaching. Attending such events helps keep you current in trends in mathematical education and pedagogy and can inspire you with new ideas, activities, and methods.
- ⊕ Further your own education by enrolling in graduate courses at local universities and colleges. Many school districts reimburse a portion of

tuition costs for graduate study. Before enrolling in any course, however, make sure that the course meets your district's guidelines for tuition reimbursement. An option is to enroll in courses that are offered online. To find online courses for math teachers, search with the term "math courses online for teachers."

- ④ Observe other math teachers. Seeing how your colleagues manage their classrooms and deliver instruction can offer valuable insight and give you ideas for improving your own methods. Before observing another teacher, always request his or her permission. Some people feel uncomfortable with another teacher in the room and you should respect their wishes. Other teachers will be happy to have you observe them. In this case, if possible, visit their classroom during a time that is convenient for them. You may later want to extend an invitation for them to sit in on your classes.
- ④ Join professional mathematics organizations. Such organizations keep you informed of current issues and trends affecting teachers, support your efforts in the classroom, and enable you to network with other teachers. The focus of these organizations vary: some concentrate on the needs of math educators or supervisors, and others address specific topics in the field of mathematics. Visit the Web sites of mathematics organizations to learn more about them. You might consider the following:
 - American Mathematical Society (AMS), 201 Charles Street, Providence, RI 02904, www.ams.org. This society is for those individuals interested in mathematics and its application to everyday life.
 - Association for Supervision and Curriculum Development (ASCD), 1703 North Beauregard Street, Alexandria, VA 22311, www.ascd.org. The ASCD is an organization for teachers and educational leaders.
 - Association for Women in Mathematics (AWM), 11240 Waples Mill Road, Suite 200, Fairfax, VA 22030, www.awm-math.org. This association encourages women in mathematics and the sciences.
 - Mathematical Association of America (MAA), 1529 18th Street, N.W., Washington, DC 20036-1385, www.maa.org. This association provides a forum for all those interested in mathematics.
 - National Council of Supervisors of Mathematics (NCSM), 6000 East Evans Avenue, Suite 3-205, Denver, CO 80222, www.ncsmonline.org. This mathematics leadership organization provides information for school math supervisors and other educational leaders to enhance student achievement.
 - National Council of Teachers of Mathematics (NCTM), 1906 Association Drive, Reston, VA 20191-1502, www.nctm.org. The NCTM is devoted to supporting the needs of math teachers.

- In addition to the above, you should check if your state has a professional organization for math teachers. Many do. Search the Internet using the term “professional math organizations” and include your state. Joining a state organization for math teachers provides you with the opportunity to attend workshops and conferences relatively close to home and meet with teachers from other school districts.
- ⊕ Join professional organizations for educators. Consider the following:
 - American Federation of Teachers (AFT), 555 New Jersey Avenue, N.W., Washington, DC 20001, www.aft.org. The AFT is a teacher’s union with 1.4 million members. It supports the interests of classroom teachers.
 - National Education Association (NEA), 1201 16th Street, N.W., Washington, DC 20036-3290, www.nea.org. The NEA is the largest organization for public school teachers in the United States with close to 3.2 million members. It is a powerful advocate for public education.
 - National High School Association (NHSA), 6615 East Pacific Coast Highway, Suite 120, Long Beach, CA 90803, www.nhsa.net. This association addresses the needs of high school educators.
 - National Middle School Association, (NMSA), 4151 Executive Parkway, Suite 300, Westerville, OH 43081, www.nmsa.org. The NMSA is dedicated to the needs of middle school educators.
- ⊕ Subscribe to professional journals. Subscriptions to many journals are included when you join a professional organization. For example, the NCTM publishes *Mathematics Teacher* for math teachers of grades 8–14 and *Mathematics Teaching in the Middle School* for math teachers of grades 5–9. You might also consider the following:
 - *Education Week*, Editorial Projects in Education, Inc., 6935 Arlington Road, Suite 100, Bethesda, MD 20814, www.edweek.org. Published weekly, this journal provides news and articles about education.
 - *Instructor*, Scholastic, Inc., P.O. Box 713, New York, NY 10013, www.scholastic.com/instructor. For K–8 teachers, this resource offers practical articles on numerous topics and includes activities, teaching techniques, and reproducibles.
 - *Teacher Magazine*, Editorial Projects in Education, Inc., 6935 Arlington Road, Suite 100, Bethesda, MD 20814, www.teachermagazine.org. This magazine provides teachers with information they need to provide quality instruction to their students.
- ⊕ Build a professional library. Start with the books and resource materials that you use for the courses you teach. Include your curriculum guides and the standards for your courses. Also include any texts your school no longer

uses, which, even if they are dated, can be wonderful sources for ideas. A math dictionary and other math reference books, manuals for calculators or computer software, and faculty and student handbooks should also be a part of your library. You may expand your library by adding resource books, reproducibles, and materials for special activities.

☉ Set yearly professional goals for yourself. As each year concludes, take some time to evaluate your performance as a teacher. Consider your strengths and weaknesses. Choose one or two areas in which you feel you could have done better and focus on improving these areas during the next year. Only concentrate on one or two, because attempting to work on too many will make your overall progress more difficult and likely frustrate you. You might consider the following:

- Improving your organizational skills
- Improving lesson planning for diverse learning styles
- Improving your skills in classroom management
- Incorporating technology in your lessons and student activities
- Implementing math projects in your program
- Integrating student writing in your curriculum
- Emphasizing problem-solving strategies
- Using portfolio assessment
- Improving your discipline
- Enrolling in a graduate program
- Handling paperwork more efficiently
- Creating rubrics for assessing student responses to open-ended questions

Achieving professional expertise as a math teacher is a significant accomplishment in your career. Continuing to grow as a professional is an even greater accomplishment.

Quick Review for Embracing the Profession of Teacher of Mathematics

Your professional obligations are apparent in all your interactions with your school community. Being aware of the following can help you to grow professionally throughout your teaching career:

☉ Work to acquire the traits of great math teachers. These traits are the foundation of professionalism.

- ⊕ Strive to meet state standards and district goals in your planning and instruction.
- ⊕ Be knowledgeable and supportive of your school's policies and procedures.
- ⊕ Always use common sense both inside and outside your school. Remember, you are a role model.
- ⊕ Continue developing your professional expertise by:
 - Attending in-services, workshops, seminars, and conferences
 - Observing other math teachers and sharing ideas for teaching
 - Enrolling in graduate courses
 - Joining professional organizations, particularly those that specifically address the needs of math teachers
 - Subscribing to and reading professional journals
 - Building a professional library
 - Setting goals for your personal professional improvement

⊕ Your professionalism distinguishes you as a teacher. Arising from your commitment, dedication, and expertise, it inspires your students and everyone else in your school community to do the best they can in all they can. Your school is a better school because of you. ⊕

