2000 National Survey of Science and Mathematics Education

Mathematics Questionnaire

A. Teacher Opinions

1. Please provide your opinion about each of the following statements. (Darken one oval on each line.)

	Strongly Disagree	Disagree	No Opinion	Agree	Strongly Agree
a. Students learn mathematics best in classes with students of similar abilities.	○	○	○	○	●
b. The testing program in my state/district dictates what mathematics content I teach.	○	○	○	○	●
c. I enjoy teaching mathematics.	○	○	○	○	●
d. I consider myself a "master" mathematics teacher.	○	○	○	○	●
e. I have time during the regular school week to work with my colleagues on mathematics curriculum and teaching.	○	○	○	○	●
f. Mathematics teachers in this school regularly observe each other teaching classes as part of sharing and improving instructional strategies.	○	○	○	○	●
g. Most mathematics teachers in this school contribute actively to making decisions about the mathematics curriculum.	○	○	○	○	●

2. How familiar are you with the NCTM *Standards*? (Darken one oval.)

- ○ Not at all familiar
- ○ Somewhat familiar
- ○ Fairly familiar
- ● Very familiar

B. Teacher Background

3. Please indicate how well prepared you currently feel to do each of the following in your mathematics instruction. (Darken one oval on each line.)

	Not Adequately Prepared	Somewhat Prepared	Fairly Well Prepared	Very Well Prepared
a. Take students' prior understanding into account when planning curriculum and instruction	○	○	○	●
b. Have students work in cooperative learning groups	○	○	○	○
c. Use the textbook as a resource rather than the primary instructional tool	○	○	○	○
d. Teach groups that are heterogeneous in ability	○	○	○	○
e. Teach students who have limited English proficiency	○	○	○	○
f. Encourage participation of females in mathematics	○	○	○	○
g. Encourage participation of minorities in mathematics	○	○	○	○

4a. Do you have each of the following degrees?

Bachelors	○ Yes	○ No
Masters	○ Yes	○ No
Doctorate	○ Yes	○ No

4b. Please indicate the subject(s) for each of your degrees. (Darken all that apply.)

	Bachelors	Masters	Doctorate
Mathematics	○	○	○
Computer Science	○	○	○
Mathematics Education	○	○	○
Science/Science Education	○	○	○
Elementary Education	○	○	○
Other Education (e.g., History Education, Special Education)	○	○	○
Other, please specify _____	○	○	○

PLEASE DO NOT WRITE IN THIS AREA

[SERIAL]

5. Which of the following college courses have you completed? Include both semester hour and quarter hour courses, whether graduate or undergraduate level. Include courses for which you received college credit, even if you took the course in high school. (Darken all that apply.)

MATHEMATICS

- ○ Mathematics for elementary school teachers
- ○ Mathematics for middle school teachers
- ○ Geometry for elementary/middle school teachers
- ○ College algebra/trigonometry/elementary functions
- ○ Calculus
- ○ Advanced calculus
- ○ Real analysis
- ○ Differential equations
- ○ Geometry
- ○ Probability and statistics
- ○ Abstract algebra
- ○ Number theory
- ○ Linear algebra
- ○ Applications of mathematics/problem solving
- ○ History of mathematics
- ○ Discrete mathematics
- ○ Other upper division mathematics

SCIENCES/COMPUTER SCIENCES

- ○ Biological sciences
- ○ Chemistry
- ○ Physics
- ○ Physical science
- ○ Earth/space science
- ○ Engineering (any)
- ○ Computer programming
- ○ Other computer science

EDUCATION

- ○ General methods of teaching
- ○ Methods of teaching mathematics
- ○ Instructional uses of computers/other technologies
- ○ Supervised student teaching in mathematics

6. For each of the following subject areas, indicate the number of college semester and quarter courses you have completed. Count each course you have taken, regardless of whether it was a graduate or undergraduate course. If your transcripts are not available, provide your best estimates.

	Semester Courses	Quarter Courses
a. Mathematics education	○ 0 1 2 3 4 5 6 7 8 9 ≥10	○ 0 1 2 3 4 5 6 7 8 9 ≥10
b. Calculus	○ 0 1 2 3 4 5 6 7 8 9 ≥10	○ 0 1 2 3 4 5 6 7 8 9 ≥10
c. Statistics	○ 0 1 2 3 4 5 6 7 8 9 ≥10	○ 0 1 2 3 4 5 6 7 8 9 ≥10
d. Advanced calculus	○ 0 1 2 3 4 5 6 7 8 9 ≥10	○ 0 1 2 3 4 5 6 7 8 9 ≥10
e. All <u>other</u> mathematics courses	○ 0 1 2 3 4 5 6 7 8 9 ≥10	○ 0 1 2 3 4 5 6 7 8 9 ≥10
f. Computer science	○ 0 1 2 3 4 5 6 7 8 9 ≥10	○ 0 1 2 3 4 5 6 7 8 9 ≥10
g. Science	○ 0 1 2 3 4 5 6 7 8 9 ≥10	○ 0 1 2 3 4 5 6 7 8 9 ≥10

7. In what year did you last take a formal course for college credit in:

a. Mathematics: _____

b. The Teaching of Mathematics: _____

If you have never taken a course in the teaching of mathematics, darken this oval. ○

8. What is the **total** amount of time you have spent on professional development in mathematics or the teaching of mathematics in the last 12 months? in the last 3 years? (Include attendance at professional meetings, workshops, and conferences, but **do not** include formal courses for which you received college credit or time you spent **providing** professional development for other teachers.) (Darken one oval on each line.)

	Hours of In-service Education				
	None	Less than 6 hours	6-15 hours	16-35 hours	More than 35 hours
In the last 12 months	○	○	○	○	○
In the last 3 years	○	○	○	○	○

9. In the past **12 months**, have you: (Darken one oval on each line.)

a. Taught any in-service workshops in mathematics or mathematics teaching?	○ Yes	○ No
b. Mentored another teacher as part of a formal arrangement that is recognized or supported by the school or district, not including supervision of student teachers?	○ Yes	○ No
c. Received any local, state, or national grants or awards for mathematics teaching?	○ Yes	○ No
d. Served on a school or district mathematics curriculum committee?	○ Yes	○ No
e. Served on a school or district mathematics textbook selection committee?	○ Yes	○ No

10a. Do you teach in a **self-contained class**? (i.e., you teach multiple subjects to the same class of students all or most of the day.)

- Yes, CONTINUE WITH QUESTIONS 10b AND 10c
- No, SKIP TO QUESTION 11

10b. ***For teachers of self-contained classes*:** Many teachers feel better qualified to teach some subject areas than others. How well qualified do you feel to teach each of the following subjects **at the grade level(s) you teach**, whether or not they are currently included in your curriculum? (Darken one oval on each line.)

	Not Well Qualified	Adequately Qualified	Very Well Qualified
a. Life science			
b. Earth science			
c. Physical science			
d. Mathematics			
e. Reading/Language Arts			
f. Social Studies			

10c. ***For teachers of self-contained classes*:** We are interested in knowing how much time your students spend studying various subjects. In a typical week, how many days do you have lessons on each of the following subjects, and how many minutes long is an average lesson? (*Please indicate "0" if you do not teach a particular subject to this class.*)

	Days Per Week	Approximate Minutes Per Day		Days Per Week	Approximate Minutes Per Day
Mathematics	_____	_____	**Social Studies**	_____	_____
Science	_____	_____	**Reading/Language Arts**	_____	_____

NOW GO TO SECTION C, ON THE NEXT PAGE .

11. ***For teachers of non-self-contained classes*:** For each class period you are currently teaching, regardless of the subject, give *course title*, the *code-number* from the enclosed blue "List of Course Titles" that best describes the content addressed in the class, and the *number of students* in the class. (**If you teach more than one section of a course, record each section separately below**. **If you teach more than 6 classes per day, please provide the requested information for the additional classes on a separate sheet of paper.)**

Course Title	*Course Code*	*Number of Sudents*

PLEASE DO NOT WRITE IN THIS A REA

[SERIAL]

C. Your Mathematics Teaching in a Particular Class

The questions in this section are about a particular mathematics class you teach. **If you teach mathematics to more than one class per day, please consult the label on the cover letter to determine which mathematics class to use to answer these questions.**

12. Using the blue "List of Course Titles," indicate the code number that best describes this course. _____

(If "other" [Code 299], briefly describe content of course:_____

_____

_____)

13. Please indicate the grades of the students in this class. (Darken all that apply.)

(K) (1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12)

14a. What is the total number of students in this class? _____

14b. Please indicate the number of students in this class in each of the following categories. Consult the enclosed federal guidelines at the end of the course list (blue sheet) if you have any questions about how to classify particular students.

	Male	Female
American Indian or American Native	_____	_____
Asian	_____	_____
Black or African-American	_____	_____
Hispanic or Latino (any race)	_____	_____
Native Hawaiian or Other Pacific Islander	_____	_____
White	_____	_____

15. **This question applies only to teachers of non-self-contained classes. If you teach a self-contained class, please darken this oval** ⬭ **and skip to question 16.** What is the usual schedule and length (in minutes) of daily class meetings for this class? If the weekly schedule is normally the same, just complete Week 1, as in Example 1. If you are unable to describe this class in the format below, please attach a separate piece of paper with your description.

	Week 1	Week 2
Monday	_____	_____
Tuesday	_____	_____
Wednesday	_____	_____
Thursday	_____	_____
Friday	_____	_____

Examples

Example 1		Example 2	
Week 1	Week 2	Week 1	Week 2
45		90	
45			90
45		90	
45			90
45		90	

16. Are students assigned to this class by level of ability? (Darken one oval.) ○ Yes ○ No

17. Which of the following best describes the ability of the students in this class relative to other students in this school? (Darken one oval.)

- ○ Fairly homogeneous and low in ability
- ○ Fairly homogeneous and average in ability
- ○ Fairly homogeneous and high in ability
- ○ Heterogeneous, with a mixture of two or more ability levels

18. Indicate if any of the students in this mathematics class are **formally** classified as each of the following: (Darken all that apply.)

- ○ Limited English Proficiency
- ○ Learning Disabled
- ○ Mentally Handicapped
- ○ Physically Handicapped, please specify handicap(s): _____

19. Think about your plans for this mathematics class for the entire course. How much emphasis will each of the following **student objectives** receive? (Darken one oval on each line.)

	None	Minimal Emphasis	Moderate Emphasis	Heavy Emphasis
a. Increase students' interest in mathematics	○	○	○	③
b. Learn mathematical concepts	○	○	○	○
c. Learn mathematical algorithms/procedures	○	○	○	○
d. Develop students' computational skills	○	○	○	○
e. Learn how to solve problems	○	○	○	○
f. Learn to reason mathematically	○	○	○	○
g. Learn how mathematics ideas connect with one another	○	○	○	○
h. Prepare for further study in mathematics	○	○	○	○
i. Understand the logical structure of mathematics	○	○	○	○
j. Learn about the history and nature of mathematics	○	○	○	○
k. Learn to explain ideas in mathematics effectively	○	○	○	○
l. Learn how to apply mathematics in business and industry	○	○	○	○
m. Learn to perform computations with speed and accuracy	○	○	○	○
n. Prepare for standardized tests	○	○	○	○

20. About how often do **you** do each of the following in your mathematics instruction? (Darken one oval on each line.)

	Never	Rarely (e.g., a few times a year)	Sometimes (e.g., once or twice a month)	Often (e.g., once or twice a week)	All or almost all mathematics lessons
a. Introduce content through formal presentations	○	○	○	○	⑤
b. Pose open-ended questions	○	○	○	○	○
c. Engage the whole class in discussions	○	○	○	○	○
d. Require students to explain their reasoning when giving an answer	○	○	○	○	○
e. Ask students to explain concepts to one another	○	○	○	○	○
f. Ask students to consider alternative methods for solutions	○	○	○	○	○
g. Ask students to use multiple representations (e.g., numeric, graphic, geometric, etc.)	○	○	○	○	○
h. Allow students to work at their own pace	○	○	○	○	○
i. Help students see connections between mathematics and other disciplines	○	○	○	○	○
j. Assign mathematics homework	○	○	○	○	○
k. Read and comment on the reflections students have written, e.g., in their journals	○	○	○	○	○

21. About how often do students in this **mathematics** class take part in the following types of activities? (Darken one oval on each line.)

	Never	Rarely (e.g., a few times a year)	Sometimes (e.g., once or twice a month)	Often (e.g., once or twice a week)	All or almost all mathematics lessons
a. Listen and take notes during presentation by teacher	①	②	③	④	⑤
b. Work in groups	①	②	③	④	⑤
c. Read from a mathematics textbook in class	①	②	③	④	⑤
d. Read other (non-textbook) mathematics-related materials in class	①	②	③	④	⑤
e. Engage in mathematical activities using concrete materials	①	②	③	④	⑤
f. Practice routine computations/algorithms	①	②	③	④	⑤
g. Review homework/worksheet assignments	①	②	③	④	⑤
h. Follow specific instructions in an activity or investigation	①	②	③	④	⑤
i. Design their *own* activity or investigation	①	②	③	④	⑤
j. Use mathematical concepts to interpret and solve applied problems	①	②	③	④	⑤
k. Answer textbook or worksheet questions	①	②	③	④	⑤
l. Record, represent, and/or analyze data	①	②	③	④	⑤
m. Write reflections (e.g., in a journal)	①	②	③	④	⑤
n. Make formal presentations to the rest of the class	①	②	③	④	⑤
o. Work on extended mathematics investigations or projects (a week or more in duration)	①	②	③	④	⑤
p. Use calculators or computers for learning or practicing skills	①	②	③	④	⑤
q. Use calculators or computers to develop conceptual understanding	①	②	③	④	⑤
r. Use calculators or computers as a tool (e.g., spreadsheets, data analysis)	①	②	③	④	⑤

22. About how often do students in this mathematics class use **calculators/computers** to: (Darken one oval on each line.)

	Never	Rarely (e.g., a few times a year)	Sometimes (e.g., once or twice a month)	Often (e.g., once or twice a week)	All or almost all mathematics lessons
a. Do drill and practice	①	②	③	④	⑤
b. Demonstrate mathematics principles	①	②	③	④	⑤
c. Play mathematics learning games	①	②	③	④	⑤
d. Do simulations	①	②	③	④	⑤
e. Collect data using sensors or probes	①	②	③	④	⑤
f. Retrieve or exchange data	①	②	③	④	⑤
g. Solve problems using simulations	①	②	③	④	⑤
h. Take a test or quiz	①	②	③	④	⑤

23. How much of your own money do you estimate you will spend for supplies for this mathematics class this school year (or semester or quarter if not a full-year course)? _____ If none, darken this oval: ①

24. How much of your own money do you estimate you will spend for your own professional development activities during the period Sept. 1, 2000 - Aug. 31, 2001? _____ If none, darken this oval: ①

25. How much mathematics homework do you assign to this mathematics class in a typical **week**? (Darken one oval.)

① 0-30 min ② 31-60 min ③ 61-90 min ④ 91-120 min ⑤ 2-3 hours ⑥ More than 3 hours

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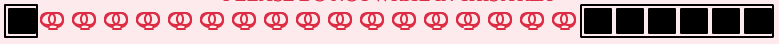

[SERIAL]

26a. Are you using one or more commercially published textbooks or programs for teaching mathematics to this class? (Darken one oval.)

- ⬭ No, SKIP TO SECTION D
- ⬭ Yes, CONTINUE WITH 26b

26b. Which best describes your use of textbooks/programs in this class? (Darken one oval.)

- ⬭ Use one textbook or program all or most of the time
- ⬭ Use multiple textbooks/programs

27a. Please indicate the title, author, publisher, and publication year of the **one** textbook/program used **most often** by students in this class.

Title: _____

First Author: _____

Publisher: _____

Publication Year: _____ Edition: _____

27b. Approximately what percentage of this textbook/program will you "cover" in this course? (Darken one oval.)

⬭ < 25% ⬭ 25-49% ⬭ 50-74% ⬭ 75-90% ⬭ >90%

27c. How would you rate the overall quality of this textbook/program? (Darken one oval.)

⬭ Very Poor ⬭ Poor ⬭ Fair ⬭ Good ⬭ Very Good ⬭ Excellent

D. Your Most Recent Mathematics Lesson in This Class

Questions 28-30 refer to the last time you taught mathematics to this class. Do not be concerned if this lesson was not typical of instruction in this class.

28a. How many minutes were allocated to the most recent mathematics lesson? _____
Note: Teachers in departmentalized and other non-self-contained settings should answer for the entire length of the class period, even if there were interruptions.

28b. Of these, how many minutes were spent on the following:
(The sum of the numbers in 1.-6. below should equal your response in 28a.)

_____ 1. Daily routines, interruptions, and other non-instructional activities

_____ 2. Whole class lecture/discussions

_____ 3. Individual students reading textbooks, completing worksheets, etc.

_____ 4. Working with hands-on or manipulative materials

_____ 5. Non-manipulative small group work

_____ 6. Other

29. Which of the following activities took place during that mathematics lesson? (Darken all that apply.)

- Lecture
- Discussion
- Students completing textbook/worksheet problems
- Students doing hands-on/manipulative activities
- Students reading about mathematics
- Students working in small groups
- Students using calculators
- Students using computers
- Students using other technologies
- Test or quiz
- None of these activities took place

30. Did that lesson take place on the most recent day you met with that class? Yes No

E. Demographic Information

31. Indicate your sex:

- Male
- Female

32. Are you: (Darken all that apply.)

- American Indian or Alaskan Native
- Asian
- Black or African-American
- Hispanic or Latino
- Native Hawaiian or Other Pacific Islander
- White

33. In what year were you born? _____

34. How many years have you taught at the K-12 level prior to this school year? _____

35. If you have an email address, please write it here: _____

36. When did you complete this questionnaire? Date: _____ / _____ / _____
Month Day Year

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Please make a photocopy of this questionnaire and keep it in case the original is lost in the mail. Please return the original to:

2000 National Survey of Science and Mathematics Education
Horizon Research, Inc.
326 Cloister Court
Chapel Hill, NC 27514

THANK YOU!

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