U.S. Department of Education
Institute of Education Sciences
NCES 2006-058

Trends in International Mathematics and Science Study (TIMSS) 2003

Data Analysis User's Guide

August 2006

David Kastberg
Stephen Roey
Trevor Williams
Westat

Patrick Gonzales
Project Officer
National Center for Education Statistics

U.S. Department of Education
Margaret Spellings
Secretary

Institute of Education Sciences
Grover J. Whitehurst
Director

National Center for Education Statistics
Mark Schneider
Commissioner

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August 2006

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Suggested Citation
Kastberg, D., Roey, S., and Williams, T. (2005). *Trends in International Mathematics and Science Study (TIMSS) 2003 Data Analysis User's Guide.* U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office.

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Content Contact
Patrick Gonzales
(415) 920-9229
patrick.gonzales@ed.gov

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1. User's Guide to the U.S. Data from TIMSS 2003

This user's guide contains a description of the procedures used to conduct the 2003 cycle of the Trends in International Mathematics and Science Study (TIMSS) in the United States, and instructions on how to access the U.S. data through the electronic codebook that is included as part of this package. The guide is designed to supplement information contained in the international publications produced by the International Study Center (ISC) at Boston College and, in particular, the *TIMSS 2003 User Guide* (Martin 2005), by describing those aspects of TIMSS 2003 that are unique to the United States. The following sections in this chapter provide general information about TIMSS.

1.1 The Trends in International Mathematics and Science Study (TIMSS)

TIMSS is the most recent international comparison of mathematics and science achievement carried out by the International Association for the Evaluation of Educational Achievement (IEA). IEA conducted international studies of mathematics and science as separate subjects at various times during the 1960s, 1970s, and 1980s. The United States has participated in each of these studies. Previously known as the Third International Mathematics and Science Study, TIMSS operates on a 4-year cycle collecting data in 1995, 1999, and 2003. The next cycle will occur in 2007.

1.2 TIMSS Administration and Participating Countries

IEA delegates responsibility for the overall coordination and management of the project to the ISC at Boston College. The United States, the World Bank, and participating nations contribute to the international costs of the study. Individual nations pay for and carry out their own national data collection according to international guidelines. In the United States, TIMSS is administered by the National Center for Education Statistics (NCES) in the Institute of Education Sciences, U.S. Department of Education, and by the National Science Foundation (NSF). Fifty-three countries participated in TIMSS 2003 and are shown in exhibit 1.

Exhibit 1. Countries participating in TIMSS 2003

Argentina	Hungary	Norway
Armenia	Indonesia	Republic of Slovenia
Australia	Iran, Islamic Republic of	Romania
Bahrain	Israel	Russian Federation
Belgium (Flemish)	Italy	Saudi Arabia
Botswana	Japan	Scotland
Bulgaria	Jordan	Singapore
Canada	Korea, Republic of	Slovak Republic
Chile	Kuwait	South Africa
Chinese Taipei	Latvia	Spain
Cyprus	Lithuania	Sudan
Denmark	Macedonia, Republic of	Sweden
Egypt	Malaysia	Syria
England	Mexico	Tunisia
Estonia	Moldova	USA
Ghana	Morocco	Yemen
Greece	Netherlands	Yugoslavia
Hong Kong	New Zealand	

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2003.

1.3 Importance of TIMSS for U.S. Education

TIMSS provides the U.S. education community with reliable and timely data on the mathematics and science achievement of U.S. students in an international context. It also provides cross-national data about students' achievement in relation to different types of curricula, instructional practices, and school environments.

1.4 Measuring Student Achievement in TIMSS

TIMSS measures student achievement in mathematics and science with pencil-and-paper assessments whose content reflects an international consensus of important mathematical and scientific concepts that students should have learned. Students are required to respond to questions using a mix of multiple-choice, short-answer, and extended-response answer formats. Developing the TIMSS tests for 2003 was a cooperative venture involving all of the National Research Coordinators (NRCs) during the

entire process. NRCs had several opportunities to review the items and scoring criteria to ensure that the tests represented the curricula of the participating countries and that the items exhibited no bias toward or against particular countries. The final forms of the test were endorsed by the NRCs, and countries had an opportunity to match the content of the test to their curriculum.

Not all of the students in the TIMSS assessment responded to all of the items. To ensure broad subject-matter coverage without overburdening individual students, TIMSS 2003, as in the 1995 and 1999 assessments, used a matrix-sampling technique that assigns each assessment item to one of a set of item blocks and then assembles student test booklets by combining the item blocks according to a balanced design. Each student received one booklet containing both mathematics and science items. Thus, the same students participated in both the mathematics and science testing.

TIMSS used Item Response Theory (IRT) methods to summarize the achievement results on a scale with a mean of 500 and a standard deviation of 100. Given the matrix-sampling approach, scaling averages students' responses in a way that accounts for differences in the difficulty of different subsets of items. It allows students' performances to be summarized on a common metric even though individual students responded to different items in the mathematics test.

1.5 Remainder of the TIMSS 2003 User's Guide

The remaining chapters of this user's guide provide information on the conduct of TIMSS 2003 in the United States and the elements and issues of analyzing the TIMSS 2003 data using the TIMSS electronic codebook. Chapter 2 describes the U.S. TIMSS sample and procedures for drawing the sample. The recruitment and participation of schools, teachers, and students is described in chapter 3, while chapter 4 briefly describes the data collection procedures and the scoring of data. Finally, descriptions of the TIMSS datasets are provided in chapter 5 along with information on how to combine datasets, considerations to be made when analyzing TIMSS data, and other sources of TIMSS research findings and information.

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2. U.S. TIMSS 2003 School Samples

2.1 Introduction

Since TIMSS 2003 was designed to assess students in both fourth and eighth grades, separate samples of schools containing fourth- and eighth-grade students respectively were selected for the United States in November 2002. The sample designs followed international requirements as given in the TIMSS sampling manual. Unlike the TIMSS 1999 eighth-grade sample, which had a three-stage design with geographic primary sampling units (PSUs) as the first stage of selection, both U.S. samples used a two-stage sampling process in 2003, with the first stage including a sample of schools, and the second stage including a sample of classrooms within schools. Neither of the TIMSS 2003 samples was clustered. In addition, the fourth-grade sample design allowed for oversampling of low-income schools by forming explicit strata of low- and high-income schools. There was no oversampling for the eighth grade and no explicit strata were formed.

The student population for the fourth-grade sample was the set of all fourth-graders in the United States. Likewise, the student population for the eighth-grade sample was the set of all eighth-graders in the United States. The fourth-grade school sample consisted of 310 schools containing a fourth-grade class. The eighth-grade sample consisted of 301 schools containing an eighth-grade class. In each case, schools were selected with probability proportional to the school's estimated grade enrollment, based on the 2003 National Assessment of Educational Progress (NAEP) school frame (2000-01 school data). In the fourth-grade sample, each student within the poverty strata had an equal probability of selection.

Two mathematics classes were selected within each school in an equal probability sample. In cases where there were only one or two classes, all classes were taken with certainty. In the case of eighth grade, the sample design was intended to approximate a self-weighting sample of students as much as possible, with each student in the United States having an equal probability of being selected. This was not the case at fourth grade.

The remainder of this report provides detail on the sample designs. Section 2.2 describes the school sampling frame. Section 2.3 describes the school sampling stage for both the fourth and eighth grades.

2.2 School Sampling Frame

The school frames for both samples were developed from the NAEP school frame with 2000-01 school data. See the 1998 NAEP technical report (Allen, Donoghue, and Schoeps 2001) for more information on the NAEP frame. For the most up-to-date information, see the NCES website at http://nces.ed.gov/nationsreportcard. The data for public schools were extracted from the Common Core of Data (CCD), and the data for private schools were from the Private School Survey (PSS).

2.2.1 Fourth-Grade Frame

Any school having a fourth grade as of the 2000-01 school year was included on the fourth-grade school sampling frame. Tables 1 and 2 present frame tabulations of the number of schools by the school grade span (lowest to highest grade level of the school) and public/private school status, respectively.

Table 1. Number and percentage of schools included in the U.S. TIMSS fourth-grade school sampling frame, by grade span: 2003

Grade span	Number of schools	Percent
Total	71,863	100.0
Grades 1-5	23,462	32.6
Grades 1-6	16,241	22.6
Grades 1-8	14,777	20.6
Grades 1-12	6,487	9.0
Other	10,896	15.2

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2003.

Table 2. Number and percentage of schools included in the U.S. TIMSS fourth-grade school sampling frame, by public/private school status: 2003

School status	Number of schools	Percent
Total	71,863	100.0
Private	20,760	28.9
Public	51,103	71.1

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2003.

2.2.2 Eighth-Grade Frame

Any school having an eighth grade as of the school year 2000-01 was included on the eighth-grade school sampling frame. Tables 3 and 4 present frame tabulations of the number of schools by the school grade span (lowest to highest grade level of the school) and public/private school status, respectively.

Table 3. Number and percentage of schools included in the U.S. TIMSS eighth-grade school sampling frame, by school grade span: 2003

Grade span	Number of schools	Percent
Total	45,472	100.0
Grades 1-8	14,777	32.5
Grades 6-8	8,805	19.4
Grades 1-12	6,487	14.3
Grades 7-12	3,823	8.4
Grades 7-8	2,659	5.8
Other	8,921	19.6

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2003.

Table 4. Number and percentage of schools included in the U.S. TIMSS eighth-grade school sampling frame, by public/private school status: 2003

School status	Schools	Percent
Total	45,472	100.0
Private	18,221	40.1
Public	27,251	59.9

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2003.

2.3 The School Sample

2.3.1 Measures of Size for School Selection

A school's measure of size (MOS) is proportional to its share of the target population, that is, the fourth- or eighth-grade enrollments. Schools with enrollments of only a few students would have very large weights if selected. To minimize the impact of these schools on variances and estimates, the minimum MOS was set to 5.

The following is a summary of the steps for assigning measures of size to the schools on the TIMSS frame. The field names on the SAS frame files are given in all caps.

- Determine the estimated target population size for the school. This is the enrollment per grade, GRDENL04 or GRDENL08, calculated by dividing the school's total enrollment by the number of grades in the school; and
- Calculate measures of size according to the enrollment per grade as shown for the fourth grade. The eighth grade used GRDENL08.

$$\text{MOS} = \begin{cases} 5 & \text{if GRDENL04} <= 5 \\ \text{GRDENL04} & \text{otherwise} \end{cases}$$

2.3.2 Fourth-Grade School Sample

The sample design for the fourth grade was a stratified systematic sample, with sampling probabilities proportional to MOS. The sample had two explicit strata based on poverty. It was assumed that a high poverty school was one in which 50 percent or more of the students were eligible for the federal free or reduced-price lunch program. This variable was not available for private schools; they were all assumed to be low poverty schools. The overall target sample size was 310 schools, including an oversample of 60 high poverty schools. The high poverty schools were oversampled at twice the rate of low poverty schools. This was nearly the rate based on proportionally allocating 250 schools to each stratum based on the number of schools on the frame plus the oversample of 60 schools in the high poverty stratum. This was also the rate NAEP used to oversample high minority schools. The target sample sizes were 120 high poverty and 190 low poverty schools.

Within the poverty strata, there are four categorical implicit stratification variables. They are listed in table 5 shown in sort order. There are a total of 128 implicit strata. The frame was sorted in alternating (serpentine) sort order according to these school characteristics within the explicit poverty strata, implicitly stratifying the frame. The last sort key within the implicit stratification was by grade enrollment (MOS). Alternating sort order sorts the frame from lowest to highest value with respect to the first sort variable, then within each level of the first sort variable, the second sort variable alternates its sort order, from lowest to highest for the first level of the first sort variable, then from highest to lowest for the second level of the first sort variable, then, again, from lowest to highest for the third level of the first sort variable, etc. Each of the variables alternate the sort order within each level of the preceding sort variable.

Table 5. U.S. TIMSS grade four sample implicit stratification variables: 2003

Variable name	Variable definition	Number of levels
PUBPRIV	Type of school: public or private	2
NAEPRG_S	Region of country: North East, South East, Central, West	4
TYP_LOC_R	Location of school relative to populous areas: 1 = large central city 250,000+ 2 = mid-size central city <250,000 3 = urban fringe of large central city 4 = urban fringe of mid-size central city 5 = large town 25,000+ 6 = small town 2,500-25,000 7 = rural outside MSA 8 = rural inside MSA	8
MINSTAT	Minority status: above or below 15 percent	2

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2003.

2.3.3 Fourth-Grade Tabulations Within Subgroups for Frame and Sample

This section provides an overview of the frame and sample for the implicit strata used in the sample process. The implicit stratification worked effectively; the sample percentage of schools was close to the MOS percentage of the frame for all the implicit strata within the poverty strata. For these strata-defining subgroups, tables 6 through 9 present the following summary tabulations in these subgroups:

- **Total MOS.** This is the summation of MOS_{ij} over the subgroup. Note that this is larger than the national population student size because the minimum MOS_{ij} is set to 5 for small schools; and
- **Sample size.** This is the final realized sample size of schools in the subgroup for the U.S. TIMSS sample.

Table 6. Number and percentage of schools included in the U.S. TIMSS fourth-grade school sampling frame and sample, by public/private school status: 2003

		Frame		Sample	
Stratum	School status	Measure of size	Percent	Number of schools	Percent
Total		4,162,288	100.0	310	100.0
	Total	1,360,834	100.0	120	100.0
High	Private	0	0.0	0	0
	Public	1,360,834	100.0	120	100.0
	Total	2,801,454	100.0	190	100.0
Low	Private	438,048	15.6	29	15.3
	Public	2,363,406	84.4	161	84.7

NOTE: High poverty schools were defined as schools with 50 percent or more of the students eligible for the federal free or reduced-price lunch program. Low poverty schools were schools with less than 50 percent of the students eligible for the federal free or reduced-price lunch program. Measure of size is the number of students enrolled in the target grade.
SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2003.

Table 7. Number and percentage of schools included in the U.S. TIMSS fourth-grade school sampling frame and sample, by region of the country: 2003

		Frame		Sample	
Stratum	Region of country	Measure of size	Percent	Number of schools	Percent
Total		4,162,288	100.0	310	100.0
	Total	1,360,834	100.0	120	100.0
High	North East	212,651	15.6	19	15.8
	South East	432,558	31.8	38	31.7
	Central	158,516	11.6	14	11.7
	West	557,109	40.9	49	40.8
	Total	2,801,454	100.0	190	100.0
Low	North East	627,693	22.4	43	22.6
	South East	571,242	20.4	38	20.0
	Central	794,006	28.3	54	28.4
	West	808,513	28.9	55	28.9

NOTE: High poverty schools were defined as schools with 50 percent or more of the students eligible for the federal free or reduced-price lunch program. Low poverty schools were schools with less than 50 percent of the students eligible for the federal free or reduced-price lunch program. Region of country is based on NAEP definitions. Measure of size is the number of students enrolled in the target grade.
SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2003.

Table 8. Number and percentage of schools included in the U.S. TIMSS fourth-grade school sampling frame and sample, by location of school relative to populous areas: 2003

Stratum	Location of school	Frame		Sample	
		Measure of size	Percent	Number of schools	Percent
Total		4,162,288	100.0	310	100.0
	Total	1,360,834	100.0	120	100.0
High	1	383,367	28.2	34	28.3
	2	225,654	16.6	19	15.8
	3	285,090	20.9	27	22.5
	4	94,450	6.9	6	5.0
	5	17,322	1.3	3	2.5
	6	140,940	10.4	13	10.8
	7	152,117	11.2	12	10.0
	8	61,894	4.5	6	5.0
	Total	2,801,454	100.0	190	100.0
Low	1	344,332	12.3	22	11.6
	2	346,674	12.4	24	12.6
	3	971,150	34.7	66	34.7
	4	280,107	10.0	20	10.5
	5	31,157	1.1	1	0.5
	6	214,968	7.7	16	8.4
	7	248,219	8.9	16	8.4
	8	364,847	13.0	25	13.2

NOTE: High poverty schools are defined as schools with 50 percent or more of the students eligible for the federal free or reduced-price lunch program. Low poverty schools are schools with less than 50 percent of the students eligible for the federal free or reduced-price lunch program. Location is defined as location relative to populous areas where 1 = large central city 250,000+; 2 = mid-size central city <250,000; 3 = urban fringe of large central city; 4 = urban fringe of mid-size central city; 5 = large town 25,000+; 6 = small town 2,500-25,000; 7 = rural outside MSA; 8 = rural inside MSA. Measure of size is the number of students enrolled in the target grade.
SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2003.

Table 9. Number and percentage of schools included in the U.S. TIMSS fourth-grade school sampling frame and sample, by minority status: 2003

Stratum	Minority status	Frame		Sample	
		Measure of size	Percent	Number of schools	Percent
Total		4,162,288	100.0	310	100.0
	Total	1,360,834	100.0	120	100.0
High	Above 15 percent	1,211,137	89.0	107	89.2
	Below 15 percent	149,697	11.0	13	10.8
	Total	2,801,454	100.0	190	100.0
Low	Above 15 percent	1,062,850	37.9	75	39.5
	Below 15 percent	1,738,604	62.1	115	60.5

NOTE: High poverty schools are defined as schools with 50 percent or more of the students eligible for the federal free or reduced-price lunch program. Low poverty schools are schools with less than 50 percent of the students eligible for the federal free or reduced-price lunch program. Measure of size is the number of students enrolled in the target grade.
SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2003.

2.3.4 Eighth-Grade School Sample

The sample design for the eighth-grade TIMSS sample was a stratified systematic sample, with sampling probabilities proportional to MOS. Unlike the fourth-grade sample, there were no explicit strata for the eighth-grade sample. The same four categorical implicit stratification variables were used as with the fourth-grade sample, as listed in table 5 shown in sort order. The frame was again sorted in alternating sort order according to these school characteristics, implicitly stratifying the frame. There were a total of 128 implicit strata. The last sort key within the implicit stratification was by grade enrollment (MOS) in descending order.

2.3.5 Eighth-Grade Tabulations Within Subgroups for Frame and Sample

This section provides an overview of the frame and sample for the implicit strata used in the sampling process. The implicit stratification worked effectively; the sample percentage of schools was close to the MOS percentage of the frame for all the implicit strata within the explicit poverty strata. For these strata-defining subgroups, tables 10 through 13 present the following summary tabulations in these subgroups:

- **Total MOS.** This is the summation of MOS_{ij} over the subgroup. Note that this is larger than the national population size because the minimum *MOS* is 5; and
- **Sample size.** This is the final realized sample size of schools in the subgroup for the U.S. TIMSS sample.

Table 10. Number and percentage of schools included in the U.S. TIMSS eighth-grade school sampling frame and sample, by public/private school status: 2003

	Frame		Sample	
School status	Measure of size	Percent	Number of schools	Percent
Total	3,932,230	100.0	301	100.0
Private	382,306	9.7	29	9.6
Public	3,549,924	90.3	272	90.4

NOTE: Measure of size is the number of students enrolled in the target grade.
SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2003.

Table 11. Number and percentage of schools included in the U.S. TIMSS eighth-grade school sampling frame and sample, by region of the country: 2003

	Frame		Sample	
Region of country	Measure of size	Percent	Number of Schools	Percent
Total	3,932,230	100.0	301	100.0
North East	794,230	20.2	61	20.3
South East	947,500	24.1	73	24.3
Central	914,629	23.3	69	22.9
West	1,275,871	32.4	98	32.6

NOTE: Region of country is based on NAEP definitions. Measure of size is the number of students enrolled in the target grade.
SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2003.

Table 12. Number and percentage of schools included in the U.S. TIMSS eighth-grade school sampling frame and sample, by location of school relative to populous areas: 2003

Strata	Frame		Sample	
Location of school	Measure of size	Percent	Number of schools	Percent
Total	3,932,230	100.0	301	100.0
1	632,705	16.1	48	15.9
2	543,943	13.8	40	13.3
3	1,185,694	30.2	92	30.6
4	362,560	9.2	30	10.0
5	48,593	1.2	3	1.0
6	382,776	9.7	30	10.0
7	371,503	9.4	27	9.0
8	404,456	10.3	31	10.3

NOTE: Location is defined as location relative to populous areas where 1 = large central city 250,000+; 2 = mid-size central city <250,000; 3 = urban fringe of large central city; 4 = urban fringe of mid-size central city; 5 = large town 25,000+; 6 = small town 2,500-25,000; 7 = rural outside MSA; 8 = rural inside MSA. Measure of size is the number of students enrolled in the target grade.
SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2003.

Table 13. Number and percentage of schools included in the U.S. TIMSS eighth-grade school sampling frame and sample, by minority status: 2003

	Frame		Sample	
Minority status	Measure of size	Percent	Number of schools	Percent
Total	3,932,230	100.0	301	100.0
Above 15 percent	2,082,120	53.0	158	52.5
Below 15 percent	1,850,110	47.0	143	47.5

NOTE: Measure of size is the number of students enrolled in the target grade.
SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2003.

2.4 TIMSS School Selection

2.4.1 Minimizing Overlap with NAEP

Overlap with the 2003 NAEP sample was minimized using a version of the Keyfitz procedure, originally introduced by Keyfitz (1951) and implemented as described in Rust and Johnson (1992). The expected large overlap with NAEP was minimized to reduce the burden for schools selected in both studies and to improve response rates. The method set a probability for each TIMSS school

conditional on the probability of selection for that school in NAEP, and whether the school was in the sample for NAEP. There were 7 fourth-grade sample schools and 25 eighth-grade sample schools that overlapped with NAEP. A general description of the procedure follows:

Let *T* denote the set of schools in the TIMSS sample and *N* denote the set of schools in the NAEP sample. Let P_{Ti} be the probability that school *i* is in *T* and P_{Ni} be the probability that school *i* is in *N*. The selection probability of a school in the TIMSS sample is

$$P_{Ti} = P_r\left(i \in T \middle| i \in N\right)P_{Ni} + P_r\left(i \in T \middle| i \notin N\right)\left(1 - P_{Ni}\right).$$

Schools with $P_{Ti} + P_{Ni} < 1$ that are in the NAEP sample, received a conditional selection probability of

$$P_r\left(i \in T \middle| i \in N\right) = 0.$$

Schools with $P_{Ti} + P_{Ni} < 1$ that are not in the NAEP sample, received a conditional selection probability of

$$P_r\left(i \in T \middle| i \notin N\right) = \frac{P_{Ti}}{\left(1 - P_{Ni}\right)}.$$

Schools with $P_{Ti} + P_{Ni} \geq 1$ that are in the NAEP sample, received a conditional selection probability of

$$P_r\left(i \in T \middle| i \in N\right) = \frac{P_{Ti} - 1 + P_{Ni}}{P_{Ni}}.$$

Schools with $P_{Ti} + P_{Ni} >= 1$ that are not in the NAEP sample, received a conditional selection probability of

$$P_r\left(i \in T \middle| i \notin N\right) = 1.$$

The selection probability in TIMSS of a school with $P_{Ti} + P_{Ni} < 1$ was, thus,

$$\begin{aligned} P_r\left(i \in T\right) &= P_r\left(i \in T \middle| i \in N\right)P_{Ni} + P_r\left(i \in T \middle| i \notin N\right)\left(1 - P_{Ni}\right) \\ &= 0 \cdot P_{Ni} + \frac{P_{Ti}}{\left(1 - P_{Ni}\right)}\left(1 - P_{Ni}\right) \\ &= P_{Ti} \quad \text{as desired.} \end{aligned}$$

For a school with selection probability $P_{Ti} + P_{Ni} \geq 1$, the selection probability is

$$P_r(i \in T) = \frac{P_{Ti} - 1 + P_{Ni}}{P_{Ni}} P_{Ni} + 1 \cdot (1 - P_{Ni})$$
$$= P_{Ti} \text{ as desired.}$$

2.4.2 Selection of Schools

The sample of schools was systematically selected from the ordered frame. Within each stratum a sampling interval was calculated by dividing the cumulative probability of selection by the sample size. A random number between 0 and the sampling interval was generated, and a sequence of numbers was, in turn, generated by adding integer multiples of the sampling interval _SKIPINT to the random number until the cumulative probability of selection, CUMPROB, was exceeded. For each number in the sequence, the first school with a cumulative probability of selection that meets or exceeds that number was selected. Westat's in-house software WESSAMP was utilized to do this systematic sampling.

2.4.3 Selection of Substitute Schools

Though efforts were made to secure the participation of all schools selected, it was anticipated that not all schools would choose to participate. Therefore, as each school was selected in the sample, the two neighboring schools in the sampling frame (immediately preceding and following it) were designated as replacement schools. If an original school refused to participate, the first replacement was then contacted. If that school also refused to participate, the second school was then contacted. There were several constraints on the assignment of substitutes. One sampled school was not allowed to substitute for another, and a given school could not be assigned to substitute for more than one sampled school. Furthermore, substitutes were required to be in the same implicit stratum as the sampled school. If the sampled school was the first or last school in the implicit stratum, then the second school following or preceding the sampled school was identified as the substitute. There were no restrictions for identifying substitute schools that were also in the NAEP sample. If the first substitute was a NAEP school, the second substitute was contacted first to reduce the burden on the schools. Under these rules, it was possible to identify two substitutes for all sampled schools.

2.5 Selection of Classrooms

The final sampling stage was selecting classrooms within schools. Within each sampled school that agreed to participate in TIMSS 2003, all fourth- or eighth-grade mathematics classrooms in the school were enumerated. Classrooms with less than 15 students were collapsed into pseudo-classrooms, so that each classroom on the school's classroom sampling frame had at least 20 students. An equal probability sample of two classrooms or pseudo-classrooms was sampled from the classroom frame for the school. All students in a sampled classroom (pseudo-classroom) were selected for assessment.

3. Enlistment of Schools, Students, and Teachers for TIMSS 2003

3.1 Contacting States, Districts, and Schools

Local control of public education in the United States tends to mean that the decision to participate may be made at any of state, district, or school levels. Thus, approaching schools requires that state, school district, and local school officials be contacted, in that order, for permission to proceed.

The recruitment process began by contacting the chief state school officer and state test director in each of the 46 states with schools in either the fourth- or eighth-grade sample. A package was sent to each state that included information on incentives and the study in general. Follow-up contact was undertaken by telephone, and, ultimately, all states granted permission to contact school districts in their jurisdiction.

Once permission to contact the districts was granted, the school district office for each selected public school was contacted and permission to approach the selected school(s) in that district was requested from the superintendent. Districts received a package of study information materials similar to that sent to schools. Follow-up phone calls were made in the same way. Schools in 254 districts and 16 dioceses were contacted in connection with the fourth-grade sample and 252 districts and 12 dioceses were contacted for the eighth-grade sample. Some districts required the submission of a formal research proposal. Once districts agreed to participate, they were asked to sign an Agreement to Participate form that was used to maintain a record of participation for the schools and field staff.

Once approval to contact the school(s) was obtained from the school district the sampled schools were contacted. At this time each school was sent a school information package addressed to the principal. A few days after this material was dispatched to the school, a follow-up contact was made by telephone.

The procedures for contacting private schools were slightly different. These schools were contacted directly unless, as in the case of Catholic schools, an organization such as the local diocese required approval similar to public school district approval.

3.2 Recruiting Parents and Students

Once the students were selected within a school, Westat staff worked with the school contact on the school-specific procedures for obtaining the consent of parents and students. Schools varied considerably in what they required in this respect; some used a simple notification, others a consent-by-default approach in which parents had to provide a written objection to participation and in a minority of cases, schools required explicit written consent from parents. Some schools also adopted similar procedures in asking for student consent. To accommodate these consent requirements, Westat provided three examples of parent permission letters that schools could use or adapt, or both, as desired to meet their own guidelines of parent permission or notification.

3.3 Student Sampling and Exclusion Criteria

As described in chapter 2 on sampling, because TIMSS sampled classes within schools, all students in a sampled classroom were selected for assessment. However, not all students participated in the assessment for various factors leading to their exclusion or they refused or were absent. The general categories for the U.S. exclusion criteria for students within TIMSS classes were adapted from the international criteria to contain appropriate terminology within the context of the U.S. educational system. Exhibit 2 displays the codes and criteria that were used by school coordinators for excluding sampled students from testing.

The fourth-grade sample had an unweighted exclusion rate of 4 percent with a total of 422 students excluded. The eighth-grade sample had an unweighted exclusion rate of 3 percent with a total of 279 students excluded.

Exhibit 2. TIMSS 2003 student exclusion criteria

INSTRUCTIONS FOR EXCLUDING STUDENTS

The following guidelines define general categories for the exclusion of students within schools. These guidelines need to be carefully implemented within the context of each educational system. The numbers to the left are codes to be entered in column 8 of the Student Tracking Form to identify excluded students.

1 = **Functionally disabled students**. These are students who are permanently physically disabled in such a way that they cannot perform in the TIMSS testing situation. Functionally disabled students who can respond should be included in the testing.

2 = **Educable mentally retarded students**. These are students who are considered in the professional opinion of the school principal or by other qualified staff members to be educable mentally retarded or who have been psychologically tested as such. This includes students who are emotionally or mentally unable to follow even the general instructions of the test. Students should not be excluded simply because of poor academic performance or disciplinary problems.

3 = **Limited English Proficiency**. Students who are unable to read or speak English and would be unable to overcome the language barrier in the test situation. Typically, a student who has received less than 1 year of instruction in English should be excluded; all others should be included.

4 = **Student is home-schooled.**

It is important that these criteria be followed strictly for the study to be comparable within and across countries. When in doubt, include the student.

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2003.

3.4 Participation Rates

The participation rates for schools, students, and teachers are presented in the following sections for both the fourth- and eighth-grade samples. Both unweighted and weighted response rates are given for school and student participation. For teachers, a breakdown of the response to the teacher questionnaire is provided.

3.4.1 School Participation

The TIMSS school samples for fourth grade consisted of 310 schools. Ten schools were ineligible, leaving 300 total eligible schools.[1] Of the 248 participating schools, 212 were original schools

[1]An ineligible school is a sampled school that does not contain any eligible students. This can occur when a school has closed since the sampling frame was created. This can also occur when a sampled school does not have any students in the target grade.

and 36 were replacements. The weighted response rate was 82.1 percent. The eighth-grade school sample consisted of 301 schools with 5 schools ineligible. Of the 296 eligible schools, 232 participated; 211 original schools and 21 replacements. The weighted response rate was 78.4 percent. The unweighted participation results are shown in table 14 for both fourth and eighth grade.

Table 14. School participation in U.S. TIMSS (unweighted), by grade: 2003

	Grade 4		Grade 8	
School participation status	Number	Percent	Number	Percent
Total schools sampled	310	100.0	301	100.0
Eligible schools	300	96.8	296	98.3
Total participating schools	248	82.7	232	78.4
Participating original schools	212	70.7	211	71.3
Replacement schools	36	12.0	21	7.1

NOTE: Eligible schools were those that included fourth or eighth grade students.
SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2003.

Although the response rates met the minimum international requirement, they failed to meet the 85 percent required by the NCES statistical standards. As a result, a bias analysis was conducted to determine if the characteristics of nonresponding schools differed from those of responding schools. On the whole, the evidence suggested minimal bias along the dimensions examined for both samples. The full nonresponse bias analysis is available in *Trends in International Mathematics and Science Study (TIMSS) 2003 Non-response Bias Analysis* (Ferraro and Van de Kerckhove forthcoming).

3.4.2 School and Teacher Questionnaires

Of the 248 participating fourth-grade schools, 223 completed and returned a school questionnaire—a response rate of 90 percent. Eighth-grade schools had analogous figures with 202 of 232 schools for a response rate of 88 percent. The response rate for questionnaires distributed to teachers was 91 percent for fourth-grade teachers (836 teachers completed questionnaires), 90 percent for eighth-grade mathematics teachers (411 teachers completed questionnaires), and 88 percent for eighth-grade science teachers (957 completed questionnaires). The number of teacher questionnaires is higher than the number of participating schools because TIMSS sampled two mathematics classrooms and also collected

a questionnaire from the science teacher of the students in the sampled classes. In many cases, more than one teacher taught mathematics and science to the TIMSS students.

Table 15. Number and percentage of U.S TIMSS fourth-grade teacher participation (unweighted), by participation status: 2003

	Grade 4	
Teacher participation status	Number	Percent
Total	921	100.0
Teacher did not participate	85	9.2
Completed questionnaire returned	836	90.7

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2003.

Table 16. Number and percentage of U.S. TIMSS eighth-grade teacher participation (unweighted), by participation status: 2003

	Grade 8 Mathematics		Grade 8 Science	
Teacher participation status	Number	Percent	Number	Percent
Total	456	100.0	1,090	100.0
Teacher did not participate	45	9.9	133	12.2
Completed questionnaire returned	411	90.1	957	87.8

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2003.

3.4.3 Student Participation

Table 17 shows the student participation for both fourth and eighth grade. At fourth grade, 10,795 students were selected from sampled classrooms. The result of attrition because of ineligibility, withdrawal, exclusion, or absenteeism was that 9,829 students took the assessment. The weighted student response rate was 95 percent, a rate that exceeds the TIMSS international standard of 85 percent. At eighth grade, 8,912 students took the assessment, and the weighted participation rate was 94 percent.

Table 17. Number and percentage of U.S. students sampled in TIMSS (unweighted), by participation status and grade: 2003

	Grade 4		Grade 8	
Participation status	Number	Percent	Number	Percent
Total students sampled	10,795	100.0	9,891	100.0
Excluded	429	3.9	279	2.8
No longer in school/classroom	49	0.5	90	0.9
Absent	488	4.5	610	6.2
Students assessed	9,829	91.1	8,912	90.1

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2003.

4. Training and Data Collection

4.1 Test Instruments

The instrumentation for TIMSS 2003 consisted of separately administered student and school components. The student component consisted of assessment items and a separately timed background questionnaire collecting basic demographic information, information on the student's instructional experiences, and attitudes about school. The school questionnaire, completed by the school principal or designate, collected information on the demographic characteristics of the school and the structure and approach to education instruction. A teacher questionnaire was given to both the teacher of the selected mathematics class and the science teachers of the students in the selected mathematics class. Each instrument was adapted to U.S. English. In addition, a small number of variables was added to the questionnaires (e.g., race/ethnicity) and a few items were deleted because they were deemed inappropriate to ask in the United States. The school, teacher, and student questionnaires are provided in appendix B. The specific U.S. adaptations to the background questionnaires are provided in appendix C. A detailed description of the assessment and questionnaire development is provided in chapters 2 and 3 of the *TIMSS 2003 Technical Report* (Martin et al. 2004; available at http://isc.bc.edu/timss2003i/technicalD.html).

4.1.1 Production of Assessment Booklets and Questionnaires

Pearson Educational Measurement, a subcontractor to Westat, assembled the booklets from files containing the scoring guides with cultural adaptations or translations approved by the International Study Center (ISC) at Boston College. As each book was completed, it was printed on a stand-alone printer and sent to Westat for further proofing. Final versions were sent to the ISC. All documents were produced in nonscannable form.

4.1.2 Distribution of Materials

Pearson was responsible for barcoding, spiraling, bundling, and shipping materials to Westat field staff. The assessment booklets, along with additional materials, such as mathematics ancillaries,

calculators, timers, and packing materials for the return of the assessments, were boxed and shipped to Westat field staff.

4.2 Field Staff Organization

The organization of field staff closely followed the guidelines presented in the international manuals. While these guidelines allow some flexibility in procedures to meet the needs of local school systems in each country, only minor adjustments to international protocols were necessary in this instance.

Westat employed four field managers and 86 field supervisors nationwide. Field supervisors were assigned to field managers who coordinate and monitor their work. The latter assumed all the responsibilities assigned internationally to test administrators who, in most countries, are school personnel. In the United States, the administration of national assessments tends to be assigned to local field supervisors employed by the surveying agency to reduce burden on schools and ensure the confidentiality of data. Field supervisors were permitted to hire an additional test administrator, who was responsible only for the test administration; the field supervisor carried out all other duties. Consistent with international guidelines, each school in the study was asked to appoint a school coordinator as the primary contact for Westat field staff. In the United States, however, school coordinator responsibilities were reduced to a subset of those specified internationally, since many tasks were reassigned to Westat staff for reasons noted above. The international version of the school coordinator manual was simplified and presented as a brochure describing the responsibilities of both the school and the school coordinator. Copies of this brochure were distributed to school coordinators, once appointed, and a toll-free number was provided as a reference point for questions or concerns about their responsibilities.

4.3 Training of Field Staff

Most field supervisors had worked on other educational assessments requiring adherence to strict policies of confidentiality and conduct. Before they were employed, the field supervisors were fingerprinted and subjected to background checks, the results of which are kept on file, and each field supervisor signed a nondisclosure statement indicating that he or she would maintain confidentiality of all survey materials and collected data.

The training provided an overview of the project, a discussion of the study materials, and instruction on gaining cooperation, a pre-assessment call to the school, preparation of the TIMSS booklets, conduct of the assessment, and post-assessment activities.

4.4 Conduct of the Assessment

Assessments were administered according to the instructions set forth in the international TIMSS test administrator manual. Supervisors (and test administrators if applicable) distributed the assessment booklets, matching the student with the pre-assigned booklet type according to directions specified in the international manual. A short break was given to the students between parts 1 and 2 of the assessment portion and before beginning the student questionnaire portion.

4.5 Sampling and Study Forms

Most of the forms described in this section were standard international forms developed by TIMSS for use in all countries. Several additional supplementary forms were created by Westat to facilitate the data collection in the United States. All TIMSS 2003 study forms are provided in appendix D.

Due to delays in the finalization of materials and an elongated approval process at the district, and subsequently the school level, the student IDs were preassigned to a modified Student Tracking Form (STF) and to student booklet labels, and the science teacher linkage information was added to the STF. This modified STF would then cover two data collection steps—the collection of student demographic data and science teacher and class information. The class ID issue was addressed by assigning interim class ID numbers “88” or “99” to the selected classes in all schools. These IDs were linked back subsequently to the selected classes. Once the classes were selected through the sampling software, the valid IDs were provided to the field staff and were incorporated into the Teacher Tracking Form (TTF) and the STF to provide the crosswalk for replacing the interim IDs at a later stage. In addition, to assign assessment booklets, Pearson spiraled the booklets in advance of sending them to schools.

4.5.1 Class Listing Form

Once schools agreed to participate, they were asked to complete a class listing form. This was then faxed back to Westat where two classes could be sampled using the Win3 software[2], standardized software developed for class sampling and distributed by the ISC. This form is identical to the international version.

4.5.2 Class Sampling Form

The Class Sampling Form (CSF) was created using the Win3 software. The U.S. version of the CSF included not only the newly assigned class ID (created by the Win3 program) but also the dummy ID created prior for future reference and quality checks.

4.5.3 Student Tracking Form

As noted in the introduction to this section, some relatively minor alterations were made to the international version of the student tracking form (STF). All international fields were included, but the U.S. version included fields for science teacher information for each student listed (science teacher name, science class, and period). This was done in an effort to streamline the information asked of schools by eliminating the need to complete a separate Student-Teacher Linkage Form. The science teacher information was obtained from the school on the STF along with the other student information and then promptly returned to the TIMSS supervisor. The STF could then be used to create the Student-Teacher Linkage Form as well as the teacher tracking form.

4.5.4 Teacher Tracking Form

Westat staff filled out the teacher tracking form (TTF) using the information obtained about the TIMSS students' mathematics and science teachers on the Class Listing Form and the STF. This form

[2] Win3 software used school and class information provided by the participating schools to select the within-school sample of classes, produce required sampling forms and assign testing materials to students. It was developed by the IEA Data Processing Center and distributed by the International Study Center at Boston College.

was used to assign teacher ID and link numbers (to be transferred onto the STF) as well as help in the assignment and distribution of the teacher questionnaires. A copy of the completed TTF was given to the school contact with the appropriate number of clearly labeled teacher questionnaires.

4.5.5 Student-Teacher Linkage

While the international version of this form was unchanged, the process leading to its completion was somewhat different in the United States. As described previously, in an effort to compress the number of contacts between the TIMSS staff and the schools, the mathematics and science teacher information for each student was obtained on other forms. The mathematics teacher information was recorded from the Class Listing Form and the science teacher information for each student was gathered on the modified STF, which made provision for students with multiple science teachers.

4.5.6 Test Administration Form

Field supervisors and test administrators completed a test administration form for each session. The form used was identical to that appearing in the international test administrator's manual. Inspection of the completed test administration forms showed no unusual events to interfere with the legitimacy of the assessments. The timing followed the international specifications and there were no problems noted with any of the assessment items. There were, however, some notes on the race question included in the U.S. student questionnaire as a national option. Some students, especially fourth-graders, had trouble understanding how they should respond. Students who had difficulty answering background questions could ask for assistance.

4.6 Scoring Procedures

Pearson constructed spreadsheets for open-ended items to reflect scoring protocols for open-ended responses using scoring guides from the ISC. The spreadsheets were used to modify the scoring software system for TIMSS. TIMSS used a computerized scoring monitor. Each line had ovals for score points 0 to 14 and several condition codes. To accommodate the double-digit TIMSS scores, each item was allotted two lines. The first line was designated the "tens" line for the tens digit of the double-digit

score. The second line was the "units" line for the unit digit of the double-digit score. Each line was coded for the specific values needed according to the scoring guides. Values not allowed were edited in the system.

Scoring monitors were also mocked up within the open-ended spreadsheet. The spreadsheet included the lines expected for each of the scoring monitors. The scoring monitor contained 44 lines. Because there were more than 22 open-ended items, each booklet had two scoring monitors associated with it.

For both the fourth- and eighth–grade assessment scoring, 25 percent of all booklets were second scored in their entirety. The first scorer and the second scorer were always different individuals. Scores were combined into the proper two-digit scores and a validation check was run. Invalid two-digit scores were rescored and hand entered into the dataset.

4.6.1 Additional Eighth-Grade Scoring: Cross-Country Scoring Reliability Study

Throughout the eighth-grade scoring, individual scorers from each team were asked to score several items from the Cross-Country Scoring Reliability Study (CCSRS). This image-based scoring system was organized by item.

4.6.2 Trend Scoring for Eighth Grade

The Trend Scoring Reliability Scoring (TSRS) was organized by 1999 booklet type. The items in Booklet 1 from 1999 did not correspond to a single 2003 booklet. Therefore, all scoring for the TSRS was completed after all the 2003 scoring was finished.

4.7 File Creation and Consistency Checks

After open-ended scoring was complete, the tens digit was placed with the units digit to create the two-digit score. These scores were first checked against allowed values, corrected if necessary,

and then merged with the demographic and key-entered data. At this time, final output files were produced for each file type. The final files were checked by the software quality specialists to ensure the data was in the correct format. In earlier editing functions, data was checked for completeness and compliance with codebook specifications. In addition, a check was performed to verify correct linking and matching of student, teacher, and school data files. All files were loaded in the WinDem software[3] for final completeness. These files were then sent to Westat for further checking.

[3] WinDem is data entry software used for compiling context questionnaire and scored assessment item responses to produce a final data set. WinDem was developed by the IEA Data Processing Center and distributed through the International Study Center at Boston College.

5. Using the Electronic Codebook and Data Files

The purpose of this chapter is to provide the user with an overview of the content of the TIMSS 2003 data and to highlight some considerations that need to be taken into account in analysis. It is highly recommended that the user refer first to the *TIMSS 2003 User Guide for the International Database* (Martin 2005) for detailed information on these analysis issues. That report is available for downloading at http://isc.bc.edu/timss2003i/userguide.html. The international data may be downloaded from this same site. Detailed instructions for using the electronic codebook (ECB) and for accessing the TIMSS data from the CD-ROM may be found in the quick guide document on the CD-ROM and in the help file of the ECB.

5.1 TIMSS 2003 Datasets

The TIMSS 2003 database is comprised of three types of datasets: background files for students, their mathematics and science teachers, and their school principals; achievement files with the students' responses to the assessment items; and the student-teacher link files. The data are in ASCII format and associated programs are included on the CD-ROM to read in these data to produce SAS and datasets and SPSS system files. The structure of the data is hierarchical; thus, all of the students are linked to both teachers and schools, and teachers are linked to schools. Each student record includes identification variables that enable the user to merge the school and teacher data with the student data. The school and teacher data may be merged with the student data by the variable IDSCHOOL.

Fourth-grade files begin with "a" while eighth-grade files begin with "b." The TIMSS 2003 fourth-grade files are as follows:

Fourth-grade data files:

- **asgusan3.raw.** This file contains data on students' demographic information, home background and school experiences, achievement scores, the sampling weights, and sampling information. There are 9,829 cases on this file.
- **atmusan3.raw.** This file contains the teacher background information from the survey, the teacher views on mathematics and science education, the activities used in mathematics and science education, and weights and sampling information. This file contains 921 cases.

- **acgusan3.raw.** This file contains background information on the school provided by the school principal or designate, demographic information about the school, school programs related to mathematics and science, and weights and sampling information. There are 248 cases on this file.

- **asausam.raw.** This file contains the student response data for the individual achievement items in the TIMSS fourth-grade achievement test. Test items were either multiple choice or open-ended. The test data contains the answers to the multiple-choice questions and the scoring codes assigned to the student responses for open-ended questions. This file contains 9,829 cases.

- **astusam3.raw.** This file contains information to link the student and teacher files and correctly compute weighted teacher-level data using the student as the unit of analysis. There are 18,448 cases on this file.

Eighth-grade data files:

- **bsgusan3.raw.** This file contains data on students' demographic information, home background and school experiences, achievement scores, the sampling weights, and sampling information. There are 8,912 cases on this file.

- **btmusan3.raw.** This file contains the mathematics teacher background information from the survey, the teacher views on mathematics education, the activities used in mathematics education, and weights and sampling information. This file contains 456 cases.

- **btsusan3.raw.** This file contains the science teacher background information from the survey, the teacher views on science education, the activities used in science education, and weights and sampling information. There are 1,090 cases on this file.

- **bcgusan3.raw.** This file contains background information on the school provided by the school principal or designate, demographic information about the school, school programs related to mathematics and science, and weights and sampling information. This file contains 232 cases.

- **bsausam3.raw.** This file contains the student response data for the individual achievement items in the TIMSS achievement test. Test items were either multiple choice or open-ended. The test data contains the answers to the multiple-choice questions and the scoring codes assigned to the student responses for open-ended questions. There are 8,912 cases on this file.

- **bstusam3.raw.** This file contains information to link the student and teacher files and correctly compute weighted teacher-level data using the student as the unit of analysis. This file contains 17,905 cases.

5.2 Definition of National Data

The U.S. national data contains variables of three kinds: *international variables* that have an identical format across countries*; adapted international variables,* international variables that have relatively minor adaptations to suit U.S. conditions and may not be exactly the same across countries*;* and*, U.S. variables,* a small number of variables included as national options in the U.S. data but not collected by other countries (e.g., race/ethnicity). All country-specific adaptations were approved by the International Study Center (ISC) for comparability prior to the assessment. The full set of adaptations for the United States is contained in appendix C. U.S.-only variables are identified by comments in the comment field of the ECB. The full set of international adaptations is available in supplement two of the *TIMSS 2003 User Guide* (available at http://isc.bc.edu/timss2003i/userguide.html).

A few international items were not administered because they were found to run counter to the Protection of Pupil Rights Amendment (PPRA), as amended under the No Child Left Behind Act of 2002. In the fourth-grade student questionnaire, question 12 was not asked. This was also deleted in the eighth-grade questionnaire, where it was question 16. The question asked about students' exclusion from school activities, having property stolen, and violence committed against them by other students.

5.3 Accessing the U.S. Data Through the Electronic Codebook

The ECB contains a feature that produces SAS and SPSS extract code to read in the data files and write out permanent SAS and SPSS datasets. Once the extract code is saved with the desired variables, the code can be run in SAS/SPSS to create a dataset ready for analysis. Users will need to make some minor edits to the code prior to running it. The use of these extract files is explained in the quick guide document available on the CD-ROM and in the help menu of the ECB under "Extracting Programs."

5.4 Confidentiality of the U.S. Data

Confidentiality analyses were conducted to provide assurance that the U.S. TIMSS 2003 public-use data files will not allow identification of individual schools, teachers, or students when compared against public data collections. While no public data collections identify teachers or students by

name, three publicly available data files identify schools by name. NCES regularly publishes the Common Core of Data (CCD), a detailed public school listing, and the Private School Survey (PSS), a detailed private school listing. Quality Education Data Inc. (QED), a private-owned educational research firm, also publishes a school-based file that provides demographic information for both public and private schools. There is a relatively remote possibility that some teachers or students, or both, in the U.S. TIMSS data files might be identified through comparisons with these public files. Schools considered problematic in this respect were identified and data masking procedures implemented to remove the risk of identification by systematic perturbation using both national and international variables.

5.5 Accessing Data From Other Countries

Currently, the international version of the TIMSS database may be downloaded, along with documentation explaining the structure and content of the database, at http://isc.bc.edu/timss2003i/userguide.html. The international student, teacher, and school datasets are large, single datasets containing all countries. Subsets of countries may be created or data from other countries may be combined with the U.S. dataset using merge procedures similar to those shown in chapter 4 of the *TIMSS 2003 User Guide* (Martin 2005).

5.6 Special Considerations in the Analysis of TIMSS 2003 Data

Three aspects of the design of TIMSS need careful attention in any analysis. The first aspect stems from the sample design. Schools and students had unequal, but known, probabilities of selection. As a consequence, analyses will need to apply the sampling weights provided on the file in order to generalize to the population sampled. Most software packages make provision for weighting. A detailed description of the procedures used in developing the weights for TIMSS is provided in chapter 9 of the *TIMSS 2003 Technical Report* (Martin et al. 2004; available at http://isc.bc.edu/timss2003i/technicalD.html) and in chapter 2 of the *TIMSS 2003 User Guide* (Martin 2005; available at http://isc.bc.edu/timss2003i/userguide.html).

The second aspect also stems from the sampling design and bears on the calculation of standard errors. Since the sample design is complex, most software packages, operating on the assumption of a simple random sample, will produce biased estimates of standard errors. Special

procedures are called for and these are described in detail in chapters 2, 4, and 5 of the *TIMSS 2003 User Guide* (Martin 2005). These procedures are implemented in several stand-alone software packages (e.g., WesVar, AM, and SUDAAN) and can also be implemented in SAS or SPSS using macros included in this package. Detailed descriptions of the macros and how to use them are provided in chapters 4 and 5 of the *TIMSS 2003 User Guide* (Martin 2005).

The third complexity arising from the design of the TIMSS assessment refers to the use of plausible values in analysis. In TIMSS, as in many national assessments, students do not take every assessment item. Each item then has missing student responses, though these are missing at random by design. As a consequence, students do not have a single test score but, rather, five plausible estimates of their test score known as plausible values. What this means, in effect, is that any analyses involving the achievement scores must be done five times, once for each plausible value, and the results averaged. A special provision also needs to be made in the estimation of the standard errors. These issues are described in chapters 2, 4, and 5 of the *TIMSS 2003 User Guide* (Martin 2005; available at http://isc.bc.edu/timss2003i/PDF/t03_userguide.pdf).

5.7 Analyzing School and Teacher Data

While TIMSS 2003 data has representative samples of schools and school sampling weights, making school-level analysis possible, the school samples were designed to provide an optimal sample of students, not an optimal sample of schools. The preferred approach, in general, is to disaggregate the school-level variables across students and analyze them as student attributes.

The teacher data do not describe a representative sample of teachers; rather, they describe the teachers of a representative sample of students. Thus, for analyses of the teacher data, it is advisable to disaggregate the teacher variables across students and analyze them as student attributes.

5.7.1 Merging Student and School Data

The school data may be disaggregated to the student level by merging the school-level data to the student file using IDSCHOOL. The disaggregated data can be analyzed at the student level using the student-level weight TOTWGT. Exhibits 3 and 4 show examples of how to merge the student and

school data using SAS and SPSS. Additional examples of how to merge the student and school files using SAS and SPSS are provided in chapters 4 and 5 in the *TIMSS 2003 User Guide* (Martin 2005; available at http://isc.bc.edu/timss2003i/userguide.html).

Exhibit 3. Example SAS code for merging U.S. TIMSS eighth-grade student and school data: 2003

```
libname bm3 "C:\TIMSS2003\Data\SAS_Data" ;
data SCHOOL ;
set bm3.BCGUSAN3;
proc sort data= SCHOOL;
by IDSCHOOL ;
data STUDENT ;
set bm3.BSGUSAN3;
proc sort data= STUDENT;
by IDSCHOOL;
data MERGE1 ;
merge STUDENT SCHOOL;
by IDSCHOOL;
run;
```

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2003.

The example creates a temporary SAS dataset (SCHOOL) using the permanent dataset, bm3.BCGUSAN3. It then sorts the school data by school ID (IDSCHOOL). A similar procedure is used for the student file (STUDENT), which is also sorted by the school ID using the permanent dataset bm3.BSGUSAN3. The final dataset is a permanent dataset called bm3.MERGE1 that contains the merged file from SCHOOL and STUDENT using IDSCHOOL as the merge variable.

Exhibit 4. Example SPSS code for merging U.S. TIMSS eighth-grade student and school data: 2003

```
get file = "C:\TIMSS2003\Data\SPSS_Data\BCGUSAN3.SAV".
sort cases by IDSCHOOL .
save outfile = SCHOOL .
get file = "C:\TIMSS2003\Data\SPSS_Data\BSGUSAN3.SAV".
sort cases by IDSCHOOL.
save outfile = STUDENT .
match files
/ file= STUDENT
/ table= SCHOOL
/ by IDSCHOOL.
save outfile = "C:\TIMSS2003\Data\SPSS_Data\MERGE1.SAV" .
```

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2003.

The SPSS example works in a similar way to the SAS version in exhibit 3. SPSS uses a file containing the school variables (BCGUSAN3.SAV) and sorts the cases by IDSCHOOL. The same procedure is used for the student dataset, BSGUSAN3.SAV. The "match files" command merges the two files, and the final, merged output file is saved as MERGE1.SAV.

5.7.2 Merging Student and Teacher Data

In the United States, the students were selected from intact classrooms. The teacher who was selected to complete the teacher questionnaire was the teacher of the selected classroom(s) of students. The teacher data may be analyzed by merging teacher data and student data with the student-teacher link file (astusam2.dat/bstusam2.dat**)**. The appropriate teacher weights are found on the student-teacher link file. Exhibits 5 and 6 provide sample code for merging the student and the mathematics teacher files in SAS and SPSS. It should be noted that for eighth grade there are two teacher files, one for mathematics teachers and another for science teachers. To use all teachers, these files need to be combined into a single teacher file. Additional examples of how to merge the student and teacher files using SAS and SPSS are provided in chapters 4 and 5 of the *TIMSS 2003 User Guide* (Martin 2005; available at http://isc.bc.edu/timss2003i/userguide.html).

Exhibit 5. Example SAS code for merging U.S. TIMSS eighth-grade student and mathematics teacher data: 2003

```
Libname bm3 "D:\TIMSS2003\Data\SAS_Data" ;
data TEACHER ;
set bm3.BTMUSAN3;
proc sort data= TEACHER;
by IDTEACH IDLINK ;
data STDTCH ;
set bm3.BSTUSAM3;
proc sort data= STDTCH;
by IDTEACH IDLINK;
data TEACHMRG;
merge TEACHER STDTCH;
by IDTEACH IDLINK;
if MATWGT > 0;
proc sort data = TEACHMRG;
by IDSTUD;
data STUDENT;
set bm3.bsgusan3;
proc sort data = STUDENT;
by IDSTUD;
data bm3.MERGE2;
merge STUDENT TEACHMRG;
by IDSTUD;
run;
```

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2003.

In the SAS example, the program creates temporary SAS dataset (TEACHER) using the permanent mathematics teacher file, bm3.BTMUSAN3. It then sorts the teacher data by the teacher ID (IDTEACH) and the link ID (IDLINK). A similar procedure is used for the student-teacher link file (STDTCH), using the permanent file (bm3.BSTUSAM3), which is also sorted by the teacher ID and the link ID. The weight variable for mathematics teachers (MATWGT) is used as a selection variable because mathematics teachers have been selected. The result is a merged file called bm3.TEACHMRG with disaggregated teacher data. Next the student file (STUDENT) is merged with bm3.TEACHMRG. The final dataset is a permanent dataset called bm3.MERGE2 that contains the merged file from TEACHMRG and STUDENT using IDSTUD as the merge variable.

Exhibit 6. Example SPSS code for merging U.S. TIMSS eighth-grade student and mathematics teacher data: 2003

```
get file = "C:\TIMSS2003\Data\SPSS_Data\BTMUSAN3.SAV".
sort cases by IDTEACH IDLINK .
save outfile = TEACHER .
get file = "C:\TIMSS2003\Data\SPSS_Data\BSTUSAM3.SAV".
select if MATWGT > 0 .
sort cases by IDTEACH IDLINK.
save outfile= STDTCH.
match files
/ file=STDTCH
/ table=TEACHER
/ by IDTEACH IDLINK.
sort cases by IDSTUD.
save outfile = TEACHMRG.
get file = "C:\TIMSS2003\Data\SPSS_Data\BSGUSAN3.SAV".
sort cases by IDSTUD.
save outfile=STUDENT.
match files
/ file=TEACHMRG
/ table=STUDENT
/ by IDSTUD.
save outfile = "C:\TIMSS2003\Data\SPSS_Data\MERGE2.SAV".
```

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2003.

The SPSS student-teacher merge in Exhibit 6 uses a file containing the teacher variables (BTMUSAN3.SAV) and sorts the cases by and IDTEACH and IDLINK. The file is then saved as TEACHER. The same procedure is used for the student-teacher linkage dataset BSTUSAM3.SAV. The "match files" command merges the two files by the ID variables IDTEACH and IDLINK, and the merged output file is saved as TEACHMRG. To include the student data, the student file is selected (BSGUSAN3.SAV), sorted by IDSTUD and saved as STUDENT. This file is merged with TEACHMRG using IDSTUD to create the final file MERGE2.SAV containing both teacher and student variables.

5.7.3 Merging Student, School, and Teacher Data

The final data combination is to merge the student, teacher, and school data together to form a single dataset of specific analysis variables from each dataset. To do this, the procedures from

sections 5.7.1 and 5.7.2 must be combined to arrive at a single dataset. Exhibits 7 and 8 show the example SAS and SPSS code to merge the three datasets together.

Exhibit 7. Example SAS code for merging U.S. TIMSS eighth-grade school, mathematics teacher and student data: 2003

```
libname bm3 "C:\TIMSS2003\Data\SAS_Data" ;
data SCHOOL ;
set bm3.BCGUSAN3;
proc sort data= SCHOOL;
by IDSCHOOL ;
data STUDENT ;
set bm3.BSGUSAN3;
proc sort data= STUDENT;
by IDSCHOOL;
data MERGE1 ;
merge STUDENT SCHOOL;
by IDSCHOOL;
proc sort data=MERGE1;
by IDSTUD;

data TEACHER ;
set bm3.BTMUSAN3;
proc sort data= TEACHER;
by IDTEACH IDLINK ;
data STDTCH ;
set bm3.BSTUSAM3;
proc sort data= STDTCH;
by IDTEACH IDLINK;
data MERGE2;
merge STDTCH TEACHER;
by IDTEACH IDLINK;
if MATWGT > 0;
proc sort data = MERGE2;
by IDSTUD;

data bm3.MERGEALL;
merge MERGE1 MERGE2;
by IDSTUD;
run;
```

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2003.

This example uses the same merging steps as with the previous school and teacher examples (MERGE1 and MERGE2), then merges the output files by the student id, IDSTUD, into a final file bm3.MERGEALL containing linked student, school, and teacher data at the student level.

Exhibit 8. Example SPSS code for merging U.S. TIMSS eighth-grade school, mathematics teacher and student data: 2003

```
get file = "C:\TIMSS2003\Data\SPSS_Data\BCGUSAN3.SAV".
sort cases by IDSCHOOL.
save outfile = SCHOOL.
get file = "C:\TIMSS2003\Data\SPSS_Data\BSGUSAN3.SAV".
sort cases by IDSCHOOL.
save outfile = STUDENT.
match files
/ file=STUDENT
/ table=SCHOOL
/ by IDSCHOOL.
save outfile = "C:\TIMSS2003\Data\SPSS_Data\MERGE1.SAV" .

get file = "C:\TIMSS2003\Data\SPSS_Data\BTMUSAN3.SAV".
sort cases by IDTEACH IDLINK .
save outfile = TEACHER .
get file = "C:\TIMSS2003\Data\SPSS_Data\BSTUSAM3.SAV".
select if MATWGT > 0 .
sort cases by IDTEACH IDLINK.
save outfile = STDTCH.
match files
/ file=STDTCH
/ table=TEACHER
/ by IDTEACH IDLINK.
save outfile = "C:\TIMSS2003\Data\SPSS_Data\MERGE2.SAV".

Get file = "C:\TIMSS2003\Data\SPSS_Data\MERGE1.SAV".
Sort cases by IDSTUD.
save outfile = MERGE1.
Get file = "C:\TIMSS2003\Data\SPSS_Data\MERGE2.SAV".
Sort cases by IDSTUD.
save outfile = MERGE2.
match files
/ file=MERGE2
/ table=MERGE1
/ by IDSTUD.
save outfile = "C:\TIMSS2003\Data\SPSS_Data\MERGEALL.SAV".
```

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2003.

In the SPSS example, the student and school data are first sorted by IDSCHOOL and then merged. The procedure followed for combining student and teacher data in Exhibit 6 is used again. Then the saved student-school and student-teacher files are merged by IDSTUD, and a final dataset MERGEALL.SAV is saved.

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Keyfitz, N. (1951). Sampling with Probability Proportional to Size: Adjustment for Changes in Probabilities. *Journal of the American Statistical Association*, *46*: 105-109.

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Appendix A

U.S. TIMSS 2003
Grade Eight and Grade Four
School, Teacher, and Student Questionnaires

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Identification Label

School ID: _____

National Center for Education Statistics
U.S Department of Education
1990 K St., NW
Washington, D.C. 20006

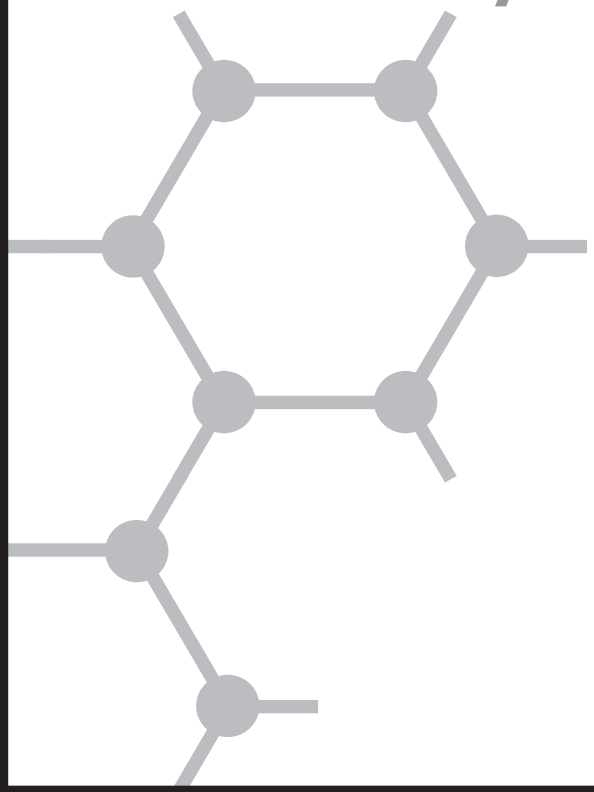
IEA Trends in International Mathematics and Science Study

TIMSS 2003

Main Survey

School Questionnaire

Grade 8



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O.M.B. No. 1850-0695, Approval Expires 02/28/2006

General Directions

Your school has agreed to participate in TIMSS 2003, a large international study of student learning in mathematics and science in more than 50 countries around the world. Sponsored by the International Association for the Evaluation of Educational Achievement (IEA), TIMSS (for Trends in International Mathematics and Science Study) is measuring trends in student achievement and studying differences in national education systems in order to help improve the teaching and learning of mathematics and science worldwide.

This questionnaire is addressed to school principals and department heads who are asked to supply information about their schools. Since your school has been selected as part of a nationwide sample, your responses are very important in helping to describe the school system in the United States.

It is important that you answer each question carefully so that the information provided reflects the situation in your school as accurately as possible. Some of the questions will require that you look up school records, so you may wish to arrange for the assistance of another staff member to help provide this information.

Please identify a time and place where you will be able to complete this questionnaire without being interrupted. Filling out this questionnaire should require no more than 30 minutes. To make it as easy as possible for you to respond, most questions may be answered simply by filling in the appropriate circle.

Once you have completed the questionnaire, place it in the return envelope provided and return it to the school coordinator.

Thank you very much for the time and effort you have put into responding to this questionnaire.

The School Characteristics

Some of the questions in this questionnaire ask about your school in general. If your school has a wide range of grades, please try to answer such questions with regard to the middle school / junior high school grades.

1

What are the lowest and highest grade levels in your school?

*Fill in **one** circle for each column*

	A: Lowest Grade	B: Highest Grade
Kindergarten	①	②
1	①	②
2	①	②
3	①	②
4	①	②
5	①	②
6	①	②
7	①	②
8	①	②
9	①	②
10	①	②
11	①	②
12	①	②
13	①	②

2

A. What is the total school enrollment (number of students) in all grades?

*Number of students:*_____

B. What is the enrollment in the eighth-grade?

*Number of students:*_____

3

How many people live in the city, town, or area where your school is located?

*Fill in **one** circle only*

More than 500,000 people ---------- ①
100,001 to 500,000 people ---------- ②
50,001 to 100,000 people ---------- ③
15,001 to 50,000 people ---------- ④
3,001 to 15,000 people ---------- ⑤
Fewer than 3,000 people ---------- ⑥

4

On a typical school day, what percentage of students are absent from school for any reason?

*Fill in **one** circle only*

Less than 5% ---------- ①
5 to 10% ---------- ②
11 to 20% ---------- ③
More than 20% ---------- ④

5

A. Of the students who were enrolled in your school at the start of this school year, about what percentage are still enrolled?

*Fill in **one** circle only*

96 to 100% ---------- ①
90 to 95% ---------- ②
80 to 89% ---------- ③
Less than 80% ---------- ④

B. What percentage of the students in your school enrolled after the beginning of the school year?

*Fill in **one** circle only*

Less than 5% ---------- ①
5 to 10% ---------- ②
11 to 20% ---------- ③
More than 20% ---------- ④

6

A. Approximately what percentage of students in your school have the following backgrounds?

*Fill in **one** circle for each row*

	More than 50%	26 to 50%	11 to 25%	0 to 10%
a) Come from economically disadvantaged homes	④	③	②	①
b) Come from economically affluent homes	①	②	③	④

B. Approximately what percentage of students in your school have English as their native language?

*Fill in **one** circle only*

More than 90% ---------- ①
76 to 90% ---------- ②
50 to 75% ---------- ③
Less than 50% ---------- ④

C. Around the first of October 2002, what percentage of students at this school were eligible to receive free or reduced-price lunches through the National School Lunch Program?

Check none if Zero (0), or write in a percent.

None ❒ *or* _____ *%*

7

How would you characterize each of the following within your school?

*Fill in **one** circle for each row*

	Very high	High	Medium	Low	Very low
a) Teachers' job satisfaction	①	②	③	④	⑤
b) Teachers' understanding of the school's curricular goals	①	②	③	④	⑤
c) Teachers' degree of success in implementing the school's curriculum	①	②	③	④	⑤
d) Teachers' expectations for student achievement	①	②	③	④	⑤
e) Parental support for student achievement	①	②	③	④	⑤
f) Parental involvement in school activities	①	②	③	④	⑤
g) Students' regard for school property	①	②	③	④	⑤
h) Students' desire to do well in school	①	②	③	④	⑤

Your Role as Principal

8

Including this year, how long have you been principal of this school?

*Number of years:*_____

9

By the end of this school year, approximately what percentage of time in your role as principal will you have spent on these activities?

Write in the percent
The total should add to 100%

a) Administrative duties (e.g., hiring, budgeting, scheduling) ---------- _____%

b) Instructional leadership (e.g., developing curriculum and pedagogy) ---------- _____%

c) Supervising and evaluating teachers and other staff ---------- _____%

d) Teaching ---------- _____%

e) Public relations and fundraising -- _____%

f) Other ---------- _____%

Total ---------- 100%

Parental Involvement

10

Does your school expect parents to do the following?

*Fill in **one** circle for each row*

		No	Yes
a)	Attend special events (e.g., science fair, concert, sporting events)	①	②
b)	Raise funds for the school	①	②
c)	Volunteer for school projects, programs, and trips	①	②
d)	Ensure that their child completes his/her homework	①	②
e)	Serve on school committees (e.g., select school personnel, review school finances)	①	②

Eighth-grade Instruction in Mathematics and Science

11

A. How many days per year is your school open for instruction for eighth-grade students?

Number of days: _____

B. How many instructional days are there in the school week (typical calendar week from Monday through Sunday) for eighth-grade students?

*Fill in **one** circle for each column*

	Number of FULL days (over 4 hours)	Number of HALF days (4 hours or less)
1 day	①	①
2 days	②	②
3 days	③	③
4 days	④	④
5 days	⑤	⑤
6 days	⑥	⑥
None	⑦	⑦

C. To the nearest half-hour, what is the total instructional time in a typical full day (excluding lunch breaks, study hall, and after school activities) for eighth-grade students?

*Fill in **one** circle only*

- 4 hours or less ①
- 4.5 hours ②
- 5 hours ③
- 5.5 hours ④
- 6 hours ⑤
- 6.5 hours or more ⑥

12

How does your school organize mathematics instruction for eighth-grade students with different levels of ability?

*Fill in **one** circle only*

- Students study the same mathematics curriculum ①
- Students study the same mathematics curriculum, but at different levels of difficulty ②
- Students study different mathematics curricula according to their ability levels ③

13

Are eighth-grade students in your school grouped by ability within their mathematics classes?

*Fill in **one** circle only* — **No** ① --- **Yes** ②

14

Does your school do either of the following for students in the eighth-grade?

*Fill in **one** circle for each row*

		No	Yes
a)	Offer enrichment mathematics	①	②
b)	Offer remedial mathematics	①	②

Eighth-grade Teachers in Your School

15

How does your school organize science instruction for eighth-grade students with different levels of ability?

*Fill in **one** circle only*

Students study the same science curriculum ---------- ①

Students study the same science curriculum, but at different levels of difficulty ---------- ②

Students study different science curricula according to their ability levels ---------- ③

16

Are eighth-grade students in your school grouped by ability within their science classes?

	No	Yes
*Fill in **one** circle only* ----------	①	②

17

Does your school do either of the following for students in the eighth-grade?

*Fill in **one** circle for each row*

	No	Yes
a) Offer enrichment science ----------	①	②
b) Offer remedial science ----------	①	②

18

How difficult was it to fill eighth-grade teaching vacancies for this school year for the following subjects?

*Fill in **one** circle for each row*

	Very difficult	Somewhat difficult	Easy to fill vacancies	No vacancies in this subject
a) Mathematics ----------	①	②	③	④
b) Science ----------	①	②	③	④
c) Computer science / information technology ------	①	②	③	④

19

Does your school currently use any incentives (e.g., pay, housing, signing bonus) to recruit or retain eighth-grade teachers in the following fields?

*Fill in **one** circle for each row*

	No	Yes
a) Mathematics ----------	①	②
b) Science ----------	①	②
c) Other ----------	①	②

20

During this school year, how often have your eighth-grade teachers been involved in professional development opportunities for mathematics and/or science targeted at the following?

*Fill in **one** circle for each row*

	Never	1 to 2 times	3 to 5 times	6 to 10 times	More than 10 times
a) Supporting the implementation of the state or district curriculum	①	②	③	④	⑤
b) Designing or supporting the school's own improvement goals	①	②	③	④	⑤
c) Improving content knowledge	①	②	③	④	⑤
d) Improving teaching skills	①	②	③	④	⑤
e) Using information and communication technology for educational purposes	①	②	③	④	⑤

21

A. In your school, are any of the following used to evaluate the practice of eighth-grade mathematics teachers?

*Fill in **one** circle for each row*

	Yes	No
a) Observations by the principal or senior staff	①	②
b) Observations by inspectors or other persons external to the school	①	②
c) Student achievement	①	②
d) Teacher peer review	①	②

B. In your school, are any of the following used to evaluate the practice of eighth-grade science teachers?

*Fill in **one** circle for each row*

	Yes	No
a) Observations by the principal or senior staff	①	②
b) Observations by inspectors or other persons external to the school	①	②
c) Student achievement	①	②
d) Teacher peer review	①	②

Student Behavior

22

How often do each of the following problem behaviors occur among eighth-grade students in your school?

If the behavior occurs, how severe a problem does it present?

A. Frequency in your school

*Fill in **one** circle for each row in this section*

B. Severity of problem in your school

*Fill in **one** circle for each row in this section*

		Never	Rarely	Monthly	Weekly	Daily	Not a problem	Minor problem	Serious problem
a)	Arriving late at school	①	②	③	④	⑤	①	②	③
b)	Absenteeism (i.e., unexcused absences)	①	②	③	④	⑤	①	②	③
c)	Skipping class	①	②	③	④	⑤	①	②	③
d)	Violating dress code	①	②	③	④	⑤	①	②	③
e)	Classroom disturbance	①	②	③	④	⑤	①	②	③
f)	Cheating	①	②	③	④	⑤	①	②	③
g)	Profanity	①	②	③	④	⑤	①	②	③
h)	Vandalism	①	②	③	④	⑤	①	②	③
i)	Theft	①	②	③	④	⑤	①	②	③
j)	Intimidation or verbal abuse of other students	①	②	③	④	⑤	①	②	③
k)	Physical injury to other students	①	②	③	④	⑤	①	②	③
l)	Intimidation or verbal abuse of teachers or staff	①	②	③	④	⑤	①	②	③
m)	Physical injury to teachers or staff	①	②	③	④	⑤	①	②	③

23

How much is your school's capacity to provide instruction affected by a shortage or inadequacy of any of the following?

*Fill in **one** circle for each row*

	Not at all	A little	Some	A lot
a) Instructional materials (e.g., textbooks)	①	②	③	④
b) Budget for supplies (e.g., paper, pencils)	①	②	③	④
c) School buildings and grounds	①	②	③	④
d) Heating/cooling and lighting systems	①	②	③	④
e) Instructional space (e.g., classrooms)	①	②	③	④
f) Special equipment for students with disabilities	①	②	③	④
g) Computers for mathematics instruction	①	②	③	④
h) Computer software for mathematics instruction	①	②	③	④
i) Calculators for mathematics instruction	①	②	③	④
j) Library materials relevant to mathematics instruction	①	②	③	④
k) Audiovisual resources for mathematics instruction	①	②	③	④

*Fill in **one** circle for each row*

	Not at all	A little	Some	A lot
l) Science laboratory equipment and materials	①	②	③	④
m) Computers for science instruction	①	②	③	④
n) Computer software for science instruction	①	②	③	④
o) Calculators for science instruction	①	②	③	④
p) Library materials relevant to science instruction	①	②	③	④
q) Audiovisual resources for science instruction	①	②	③	④
r) Teachers	①	②	③	④
s) Computer support staff	①	②	③	④

24

A. What is the total number of computers in your school that can be used for educational purposes by eighth-grade students?

*Number of computers:*_____

write 0 if none

*If **None,** please go to question* **25**

B. How many of these computers have access to the Internet (e-mail or World Wide Web) for educational purposes?

*Fill in **one** circle only*

All ---------- ①

Most ---------- ②

Some ---------- ③

None ---------- ④

25

A. Is anyone available to help your teachers use information and communication technology for teaching and learning?

No

Yes

*Fill in **one** circle only* ---------- ① --- ②

*If **No**, you have completed the questionnaire*

B. Which of the following statements best describes the person at this school who helps teachers use information and communication technology for teaching and learning?

*Fill in **one** circle for the best description of that person. If more than one person, choose the one person who spends the most time on this work.*

A full-time school level coordinator (who has no other job responsibility) ---------- ①

A library media specialist who also serves as computer coordinator ---------- ②

A teacher who also has the title of this type of coordinator ---------- ③

A teacher who provides leadership informally to other teachers ---------- ④

A district-level coordinator ---------- ⑤

The principal or another school administrator ------ ⑥

Other person ---------- ⑦

Thank You

for completing this questionnaire

TIMSS International Study Center
Boston College
Chestnut Hill, MA 02467

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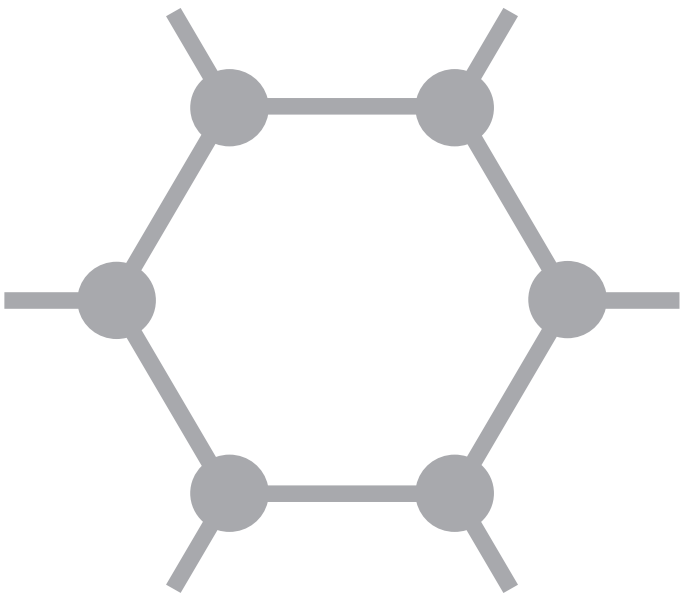


Identification Label

National Center for Education Statistics
U.S Department of Education
1990 K St., NW
Washington, D.C. 20006

Teacher Name: _____

Class Name: _____

Teacher ID: _____ Teacher Link # _____

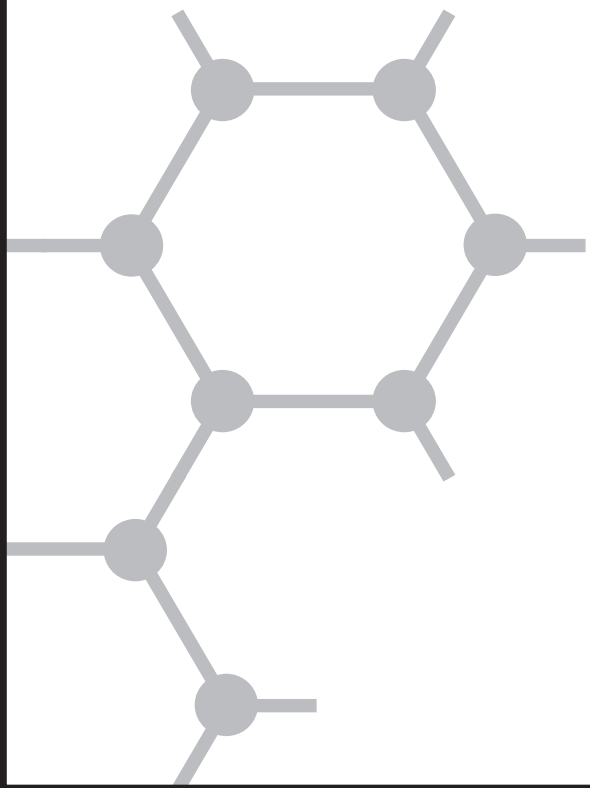
IEA Trends in International Mathematics and Science Study

T I M S S 2003

Main Survey

Teacher Questionnaire

Mathematics
Grade 8



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O.M.B. No. 1850-0695, Approval Expires 02/28/2006

General Directions

Your school has agreed to participate in TIMSS 2003, a large international study of student learning in mathematics and science in more than 50 countries around the world. Sponsored by the International Association for the Evaluation of Educational Achievement (IEA), TIMSS (for Trends in International Mathematics and Science Study) is measuring trends in student achievement and studying differences in national education systems in order to help improve the teaching and learning of mathematics and science worldwide.

As part of the study, students in a nationwide sample of eighth-grade classes in the United States will complete the TIMSS mathematics and science tests. This questionnaire is addressed to teachers who teach mathematics to these students, and seeks information about teachers' academic and professional backgrounds, instructional practices, and attitudes toward teaching mathematics. As a teacher of mathematics to students in one of these sampled classes, your responses to these questions are very important in helping to describe mathematics education in the United States.

Some of the questions in this questionnaire refer specifically to students in the "TIMSS class." This is the class that is identified on the cover of this questionnaire and that will be tested as part of TIMSS 2003 in your school. It is important that you answer each question carefully so that the information that you provide reflects your situation as accurately as possible.

Please identify a time and place where you will be able to complete this questionnaire without being interrupted. Filling out the questionnaire should require no more than 45 minutes. To make it as easy as possible for you to respond, most questions may be answered simply by checking or filling the appropriate circle.

Once you have completed the questionnaire, place it in the return envelope provided and return it to the school coordinator.

Thank you very much for the time and effort you have put into responding to this questionnaire.

Background Information

1

How old are you?

*Fill in **one** circle only*

Under 25 ---------- ①

25–29 ---------- ②

30–39 ---------- ③

40–49 ---------- ④

50–59 ---------- ⑤

60 or older ---------- ⑥

2

Are you female or male?

*Fill in **one** circle only*

Female ---------- ①

Male ---------- ②

3

By the end of this school year, how many years will you have been teaching altogether? Do not include teaching as a substitute or student teacher.

_____

*Number of **years** you have taught full time*

_____

*Number of **years** you have taught part time*

Preparation to Teach

4

What is the highest level of formal education you have completed?

*Fill in **one** circle only*

Did not complete high school ---------- ①

Completed high school ---------- ②

Completed a vocational/technical certificate after high school (e.g., cosmetology, welding) ---------- ③

Completed an Associate's degree (AA) in a vocational/technical program ---------- ④

Completed an academic Associate's or Bachelor's degree ---------- ⑤

Completed an academic Master's degree, postgraduate certificate program (e.g., teaching) or first professional degree (e.g., law, medicine, dentistry) ---------- ⑥

Completed a doctorate (Ph.D. or Ed.D) ---------- ⑦

5

How many years of preservice teacher training did you have (e.g., time spent in a teacher education program such as student teaching or a mentorship)? Please round to the nearest whole number.

*Fill in **one** circle only*

0 years ---------- ①

1 year ---------- ②

2 years ---------- ③

3 years ---------- ④

4 years ---------- ⑤

5 years ---------- ⑥

More than 5 years ---------- ⑦

6

During your college or university education, what was your main area(s) of study?

*Fill in **one** circle for each row*

	No	Minor	Major
a) Education - Mathematics	①	②	③
b) Mathematics	①	②	③
c) Education - Science	①	②	③
d) Science	①	②	③
e) Education - Other	①	②	③
f) Other	①	②	③

7

What requirements did you have to satisfy in order to become a mathematics teacher in grade 8?

*Fill in **one** circle for each row*

	No	Yes
a) Complete bachelor's degree	①	②
b) Complete a probationary period	①	②
c) Complete a minimum number of education courses	①	②
d) Complete a minimum number of mathematics courses	①	②
e) Pass a licensing examination	①	②

8

A. Do you have a teaching license or certificate?

	No	Yes
*Fill in **one** circle only*	①	②

*If **No**, please go to question **9** on next page* ➡

B. What type of license or certificate do you hold?

*Fill in **one** circle only*

- Regular or standard state certificate or advanced professional certificate ①
- Probationary certificate (the initial certificate issued after satisfying all requirements except the completion of a probationary period) ②
- Provisional or other type given to persons who are still participating in what the state calls an "alternative certification program" ③
- Temporary certificate (requires some additional college coursework and /or student teaching before regular certification can be obtained) ④
- Emergency certificate or waiver (issued to persons with insufficient teacher preparation who must complete a regular certification program in order to continue teaching) ⑤

9

Considering your training and experience in both mathematics content and instruction, how ready do you feel you are to teach these topics in the eighth grade?

*Fill in **one** circle for each row*

	Very ready	Ready	Not ready
A. Number			
a) Representing decimals and fractions using words, numbers, or models (including number lines)	①	②	③
b) Integers represented by words, numbers, or models (including number lines); ordering integers; and addition, subtraction, multiplication, and division with integers	①	②	③
B. Algebra			
a) Numeric, algebraic, and geometric patterns or sequences (extension, missing terms, generalization of patterns)	①	②	③
b) Simple linear equations and inequalities, and simultaneous (two variables) equations	①	②	③
c) Equivalent representations of functions as ordered pairs, tables, graphs, words, or equations	①	②	③
d) Attributes of a graph such as intercepts on axes, and intervals where the function increases, decreases, or is constant	①	②	③
C. Measurement			
a) Estimations of length, circumference, area, volume, weight, time, angle, and speed in problem situations (e.g., circumference of a wheel, speed of a runner)	①	②	③
b) Computations with measurements in problem situations (e.g., add measures, find average speed on a trip, find population density)	①	②	③
c) Measures of irregular or compound areas (e.g., by using grids or dissecting and rearranging pieces)	①	②	③
d) Precision of measurements (e.g., upper and lower bounds of a length reported as 8 centimeters to the nearest centimeter)	①	②	③
D. Geometry			
a) Pythagorean theorem (not proof) to find length of a side	①	②	③
b) Congruent figures (triangles, quadrilaterals) and their corresponding measures	①	②	③
c) Cartesian plane - ordered pairs, equations, intercepts, intersections, and gradient	①	②	③
d) Translation, reflection, rotation, and enlargement	①	②	③
E. Data			
a) Sources of error in collecting and organizing data (e.g., bias, inappropriate grouping)	①	②	③
b) Data collection methods (e.g., survey, experiment, questionnaire)	①	②	③
c) Characteristics of data sets including mean, median, range, and shape of distribution (in general terms)	①	②	③
d) Simple probability including using data from experiments to estimate probabilities	①	②	③

Teaching Time

10

A. In one typical calendar week from Monday to Sunday, what is the total number of single periods for which you are formally scheduled? Count a double period as two periods.

_____

Write in the number of periods

B. Of these formally scheduled periods, for how many are you assigned to do each of the following?

Write in the number of periods

a) Teach mathematics ---------- _____

b) Teach science ---------- _____

c) Teach other subjects ---------- _____

d) Perform other duties ---------- _____

Total ---------- _____

Should match number in 10A

C. How many minutes are in a typical single period?

_____

Write in the number of minutes

11

Outside the formal school day, approximately how many hours per week do you normally spend on each of these activities? Do not include the time already accounted for in Question 10. Please round to the nearest whole number.

Write in the number of hours per week

a) Grading student tests, exams, or other student work ---------- _____

b) Planning lessons ---------- _____

c) Administrative and recordkeeping tasks including staff meetings ----- _____

d) Other ---------- _____

Professional Development

12

How often do you have the following types of interactions with other teachers?

*Fill in **one** circle for each row*

	Never or almost never	2 or 3 times per month	1-3 times per week	Daily or almost daily
a) Discussions about how to teach a particular concept	①	②	③	④
b) Working on preparing instructional materials	①	②	③	④
c) Visits to another teacher's classroom to observe his/her teaching	①	②	③	④
d) Informal observations of **my** classroom by another teacher	①	②	③	④

13

In the past two years, have you participated in professional development in any of the following?

*Fill in **one** circle for each row*

	Yes	No
a) Mathematics content	②	①
b) Mathematics pedagogy/instruction	②	①
c) Mathematics curriculum	②	①
d) Integrating information technology into mathematics	②	①
e) Improving students' critical thinking or problem-solving skills	②	①
f) Mathematics assessment	②	①

Attitudes Toward Mathematics

14

To what extent do you agree or disagree with each of the following statements?

*Fill in **one** circle for each row*

	Agree a lot	Agree	Disagree	Disagree a lot
a) More than one representation (picture, concrete material, symbols, etc.) should be used in teaching a mathematics topic	①	②	③	④
b) Mathematics should be learned as sets of algorithms or rules that cover all possibilities	①	②	③	④
c) Solving mathematics problems often involves hypothesizing, estimating, testing, and modifying findings	①	②	③	④
d) Learning mathematics mainly involves memorizing	①	②	③	④
e) There are different ways to solve most mathematical problems	①	②	③	④
f) Few new discoveries in mathematics are being made	①	②	③	④
g) Modeling real-world problems is essential to teaching mathematics	①	②	③	④

Your School

15

Thinking about your school, indicate the extent to which you agree or disagree with each of the following statements about your school.

*Fill in **one** circle for each row*

	Agree a lot	Agree	Disagree	Disagree a lot
a) This school facility (building and grounds) is in need of significant repair	①	②	③	④
b) This school is located in a safe neighborhood	①	②	③	④
c) I feel safe at this school	①	②	③	④
d) This school's security policies and practices are sufficient	①	②	③	④

16

How would you characterize each of the following within your school?

*Fill in **one** circle for each row*

	Very high	High	Medium	Low	Very low
a) Teachers' job satisfaction	①	②	③	④	⑤
b) Teachers' understanding of the school's curricular goals	①	②	③	④	⑤
c) Teachers' degree of success in implementing the school's curriculum	①	②	③	④	⑤
d) Teachers' expectations for student achievement	①	②	③	④	⑤
e) Parental support for student achievement	①	②	③	④	⑤
f) Parental involvement in school activities	①	②	③	④	⑤
g) Students' regard for school property	①	②	③	④	⑤
h) Students' desire to do well in school	①	②	③	④	⑤

The TIMSS Class

The remaining questions refer to the TIMSS class. Remember, "the TIMSS class" is the class which is identified on the cover of this questionnaire and which will be tested as part of TIMSS 2003 in your school.

17

How many students are in the TIMSS class?

_____

Write in the number of students

18

How many minutes per week do you teach mathematics to the TIMSS class?

_____

Write in the number of minutes per week

19

A. Do you use a textbook(s) in teaching mathematics to the TIMSS class?

	No	Yes
*Fill in **one** circle only*	①	②

*If **No**, please go to question* **20**

B. How do you use a textbook(s) in teaching mathematics to the TIMSS class?

*Fill in **one** circle only*

As the primary basis for my lessons ---------- ①

As a supplementary resource ---------- ②

20

In a typical week of mathematics lessons for the TIMSS class, what percentage of time do students spend on each of the following activities?

Write in the percent
The total should add to 100%

a) Reviewing homework ---------- _____%

b) Listening to lecture-style presentations ---------- _____%

c) Working problems with your guidance ---------- _____%

d) Working problems on their own without your guidance ---------- _____%

e) Listening to you re-teach and clarify content/procedures ---------- _____%

f) Taking tests or quizzes ---------- _____%

g) Participating in classroom management tasks not related to the lesson's content/purpose (e.g., interruptions and keeping order) ---------- _____%

h) Other student activities ---------- _____%

Total ---------- 100%

Teaching Mathematics to the TIMSS Class

21

In teaching mathematics to the students in the TIMSS class, how often do you usually ask them to do the following?

*Fill in **one** circle for each row*

	Never	Some lessons	About half the lessons	Every or almost every lesson
a) Practice adding, subtracting, multiplying, and dividing without using a calculator	①	②	③	④
b) Work on fractions and decimals	①	②	③	④
c) Work on problems for which there is no immediately obvious method of solution	①	②	③	④
d) Interpret data in tables, charts, or graphs	①	②	③	④
e) Write equations and functions to represent relationships	①	②	③	④
f) Work together in small groups	①	②	③	④
g) Relate what they are learning in mathematics to their daily lives	①	②	③	④
h) Explain their answers	①	②	③	④
i) Decide on their own procedures for solving complex problems	①	②	③	④

22

In your view, to what extent do the following limit how you teach the TIMSS class?

*Fill in **one** circle for each row*

	Not applicable	Not at all	A little	Some	A lot
Students					
a) Students with different academic abilities		①	②	③	④ ⑤
b) Students who come from a wide range of backgrounds (e.g., economic, language)		①	②	③	④ ⑤
c) Students with special needs, (e.g., hearing, vision, speech impairment, physical disabilities, mental or emotional/psychological impairment)		①	②	③	④ ⑤
d) Uninterested students		①	②	③	④ ⑤
e) Low morale among students		①	②	③	④ ⑤
f) Disruptive students		①	②	③	④ ⑤
Resources					
g) Shortage of computer hardware		①	②	③	④ ⑤
h) Shortage of computer software		①	②	③	④ ⑤
i) Shortage of support for using computers		①	②	③	④ ⑤
j) Shortage of textbooks for student use		①	②	③	④ ⑤
k) Shortage of other instructional equipment for students' use		①	②	③	④ ⑤
l) Shortage of equipment for your use in demonstrations and other exercises		①	②	③	④ ⑤
m) Inadequate physical facilities		①	②	③	④ ⑤
n) High student/teacher ratio		①	②	③	④ ⑤

23

By the end of this school year, approximately what percentage of teaching time will you have spent during this school year on each of the following mathematics content areas for the TIMSS class?

Write in the percent
The total should add to 100%

a) Number (e.g., whole numbers, fractions, decimals, ratio, proportion, percent) ---------- _____%

b) Geometry (e.g., lines and angles, shapes, congruence and similarity, spatial relationships, symmetry and transformations) ---------- _____%

c) Algebra (e.g., patterns, equations and formulas, relationships) ---------- _____%

d) Data (e.g., data collection and organization, data representation, data interpretation, probability) -------- _____%

e) Measurement (e.g., attributes and units, tools, techniques and formulas) _____%

f) Other, please specify:

_____ ----- _____%

Total ---------- 100%

24

The following list includes the main topics addressed by the TIMSS mathematics test. Choose the response that best describes when students in the TIMSS class have been taught each topic. If a topic was taught half this year and half before this year, please choose "Mostly taught this year."

*Fill in **one** circle for each row*

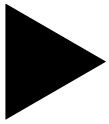
		Not yet taught or just introduced	Mostly taught this year	Mostly taught before this year
A. Number				
a)	Whole numbers including place value, factorization, and the four operations	①	②	③
b)	Computations, estimations, or approximations involving whole numbers	①	②	③
c)	Common fractions including equivalent fractions, and ordering of fractions	①	②	③
d)	Decimal fractions including place value, ordering, rounding, and converting to common fractions (and vice versa)	①	②	③
e)	Representing decimals and fractions using words, numbers, or models (including number lines)	①	②	③
f)	Computations with fractions	①	②	③
g)	Computations with decimals	①	②	③
h)	Integers represented by words, numbers, or models (including number lines), ordering integers, addition, subtraction, multiplication, and division with integers	①	②	③
i)	Ratios (equivalence, division of a quantity by a given ratio)	①	②	③
j)	Conversion of percents to fractions or decimals, and vice versa	①	②	③

24 continued

The following list includes the main topics addressed by the TIMSS mathematics test. Choose the response that best describes when students in the TIMSS class have been taught each topic. If a topic was taught half this year and half before this year, please choose "Mostly taught this year."

*Fill in **one** circle for each row*

	Not yet taught or just introduced	Mostly taught this year	Mostly taught before this year
B. Algebra			
a) Numeric, algebraic, and geometric patterns or sequences (extension, missing terms, generalization of patterns)	①	②	③
b) Sums, products, and powers of expressions containing variables	①	②	③
c) Simple linear equations and inequalities, and simultaneous (two variables) equations	①	②	③
d) Equivalent representations of functions as ordered pairs, tables, graphs, words, or equations	①	②	③
e) Proportional, linear, and nonlinear relationships (travel graphs and simple piecewise functions included)	①	②	③
f) Attributes of a graph such as intercepts on axes, and intervals where the function increases, decreases, or is constant	①	②	③
C. Measurement			
a) Standard units for measures of length, area, volume, perimeter, circumference, time, speed, density, angle, mass/weight	①	②	③
b) Relationships among units for conversions within systems of units, and for rates	①	②	③
c) Use standard tools to measure length, weight, time, speed, angle, and temperature	①	②	③
d) Estimations of length, circumference, area, volume, weight, time, angle, and speed in problem situations (e.g., circumference of a wheel, speed of a runner)	①	②	③
e) Computations with measurements in problem situations (e.g., add measures, find average speed on a trip, find population density)	①	②	③
f) Measurement formulas for perimeter of a rectangle, circumference of a circle, areas of plane figures (including circles), surface area and volume of rectangular solids, and rates	①	②	③
g) Measures of irregular or compound areas (e.g., by using grids or dissecting and rearranging pieces)	①	②	③
h) Precision of measurements (e.g., upper and lower bounds of a length reported as 8 centimeters to the nearest centimeter)	①	②	③



24 continued

The following list includes the main topics addressed by the TIMSS mathematics test. Choose the response that best describes when students in the TIMSS class have been taught each topic. If a topic was taught half this year and half before this year, please choose "Mostly taught this year."

*Fill in **one** circle for each row*

		Not yet taught or just introduced	Mostly taught this year	Mostly taught before this year
D. Geometry				
a)	Angles - acute, right, straight, obtuse, reflex, complementary, and supplementary	①	②	③
b)	Relationships for angles at a point, angles on a line, vertically opposite angles, angles associated with a transversal cutting parallel lines, and perpendicularity	①	②	③
c)	Properties of angle bisectors and perpendicular bisectors of lines	①	②	③
d)	Properties of geometric shapes: triangles and quadrilaterals	①	②	③
e)	Properties of other polygons (regular pentagon, hexagon, octagon, decagon)	①	②	③
f)	Construct or draw triangles and rectangles of given dimensions	①	②	③
g)	Pythagorean theorem (not proof) to find length of a side	①	②	③
h)	Congruent figures (triangles, quadrilaterals) and their corresponding measures	①	②	③
i)	Similar triangles and recall their properties	①	②	③
j)	Cartesian plane - ordered pairs, equations, intercepts, intersections, and gradient	①	②	③
k)	Relationships between two-dimensional and three-dimensional shapes	①	②	③
l)	Line and rotational symmetry for two-dimensional shapes	①	②	③
m)	Translation, reflection, rotation, and enlargement	①	②	③
E. Data				
a)	Organizing a set of data by one or more characteristics using a tally chart, table, or graph	①	②	③
b)	Sources of error in collecting and organizing data (e.g., bias, inappropriate grouping)	①	②	③
c)	Data collection methods (e.g., survey, experiment, questionnaire)	①	②	③
d)	Drawing and interpreting graphs, tables, pictographs, bar graphs, pie charts, and line graphs	①	②	③
e)	Characteristics of data sets including mean, median, range, and shape of distribution (in general terms)	①	②	③
f)	Interpreting data sets (e.g., draw conclusions, make predictions, and estimate values between and beyond given data points)	①	②	③
g)	Evaluating interpretations of data with respect to correctness and completeness of interpretation	①	②	③
h)	Simple probability including using data from experiments to estimate probabilities	①	②	③

Calculators and Computers in the TIMSS Class

25

Are the students in the TIMSS class permitted to use calculators during mathematics lessons?

*Fill in **one** circle only*

Yes, with unrestricted use ---------- ①

Yes, with restricted use ---------- ②

No, calculators are not permitted ---------- ③

*If **No,** please go to question **30** on next page* 

26

How many students in the TIMSS class have calculators available to use during mathematics lessons?

*Fill in **one** circle only*

All ---------- ①

Most ---------- ②

About half ---------- ③

Some ---------- ④

None ---------- ⑤

27

How many students in the TIMSS class have <u>graphing</u> calculators available to use during mathematics lessons?

*Fill in **one** circle only*

All ---------- ①

Most ---------- ②

About half ---------- ③

Some ---------- ④

None ---------- ⑤

28

How often do students in the TIMSS class use calculators in their mathematics lessons for the following activities?

*Fill in **one** circle for each row*

		Never	Some lessons	About half the lessons	Every or almost every lesson
a)	Check answers	①	②	③	④
b)	Do routine computations	①	②	③	④
c)	Solve complex problems	①	②	③	④
d)	Explore number concepts	①	②	③	④

29

How often are students in the TIMSS class permitted to use calculators during tests or examinations?

*Fill in **one** circle only*

Always ---------- ①

Sometimes ---------- ②

Never ---------- ③

30

A. Do students in the TIMSS class have computers available to use during their mathematics lessons? Do not include calculators.

	No	Yes
*Fill in **one** circle only*	①	②

*If **No,** please go to question **32** on next page* 

B. Do any of the computers have access to the Internet?

	No	Yes
*Fill in **one** circle only*	①	②

31

In teaching mathematics to the TIMSS class, how often do you have students use a computer for the following activities?

*Fill in **one** circle for each row*

	Never	Some lessons	About half the lessons	Every or almost every lesson
a) Discover mathematics principles and concepts	①	②	③	④
b) Practice skills and procedures	①	②	③	④
c) Look up ideas and information	①	②	③	④
d) Process and analyze data	①	②	③	④

Homework

32

Do you assign mathematics homework to the TIMSS class?

	No	Yes
*Fill in **one** circle only*	①	②

*If **No,** please go to question **37** on next page* 

33

How often do you usually assign mathematics homework to the TIMSS class?

*Fill in **one** circle only*

Every or almost every lesson ---------- ①

About half the lessons ---------- ②

Some lessons ---------- ③

34

When you assign mathematics homework to the TIMSS class, about how many minutes do you usually assign? (Consider the time it would take an average student in your class to complete the assignment.)

*Fill in **one** circle only*

Fewer than 15 minutes ---------- ①

15-30 minutes ---------- ②

31-60 minutes ---------- ③

61-90 minutes ---------- ④

More than 90 minutes ---------- ⑤

35

How often do you assign the following kinds of mathematics homework to the TIMSS class?

*Fill in **one** circle for each row*

	Never or almost never	Sometimes	Always or almost always
a) Doing problem/question sets	①	②	③
b) Gathering data and reporting	①	②	③
c) Finding one or more applications of the content covered	①	②	③

36

How often do you do the following with the mathematics homework assignments?

*Fill in **one** circle for each row*

	Never or almost never	Sometimes	Always or almost always
a) Monitor whether or not the homework was completed	①	②	③
b) Correct assignments and then give feedback to students	①	②	③
c) Have students correct their own homework in class	①	②	③
d) Use the homework as a basis for class discussion	①	②	③
e) Use the homework to contribute towards students' grades or marks	①	②	③

37

How often do you give a mathematics test or examination to the TIMSS class? Do not include quizzes.

*Fill in **one** circle only*

About once a week ---------- ①

About every two weeks ---------- ②

About once a month ---------- ③

A few times a year ---------- ④

Never ---------- ⑤

*If **Never**, you have completed the questionnaire*

38

What item formats do you typically use in your mathematics tests or examinations? Do not include quizzes.

*Fill in **one** circle only*

Only constructed-response ---------- ①

Mostly constructed-response ---------- ②

About half constructed-response and half objective (e.g., multiple-choice) ---------- ③

Mostly objective ---------- ④

Only objective ---------- ⑤

39

How often do you include the following types of questions in your mathematics tests or examinations? Do not include quizzes.

*Fill in **one** circle for each row*

		Never or almost never	**Sometimes**	**Always or almost always**
a)	Questions involving application of mathematical procedures	①	②	③
b)	Questions involving searching for patterns and relationships	①	②	③
c)	Questions requiring explanations or justifications	①	②	③

Thank You

for completing this questionnaire

TIMSS International Study Center
Boston College
Chestnut Hill, MA 02467

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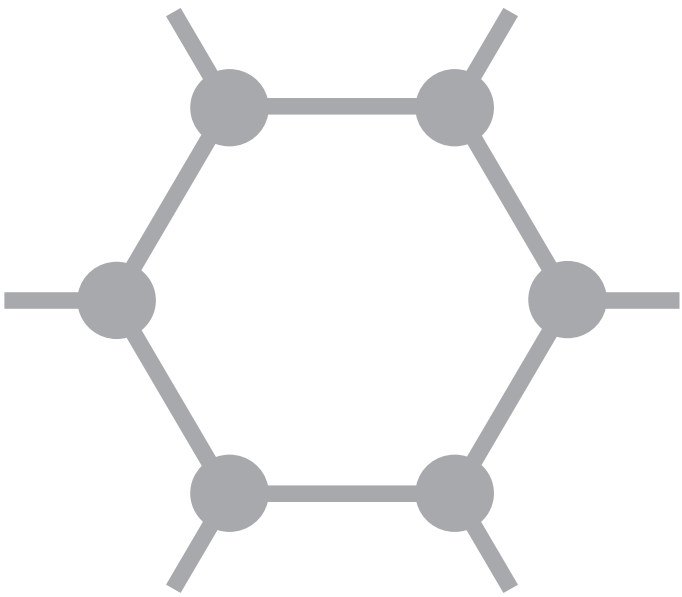


Identification Label

Teacher Name: _____

Class Name: _____

Teacher ID: _____ Teacher Link # _____

National Center for Education Statistics
U.S Department of Education
1990 K St., NW
Washington, D.C. 20006

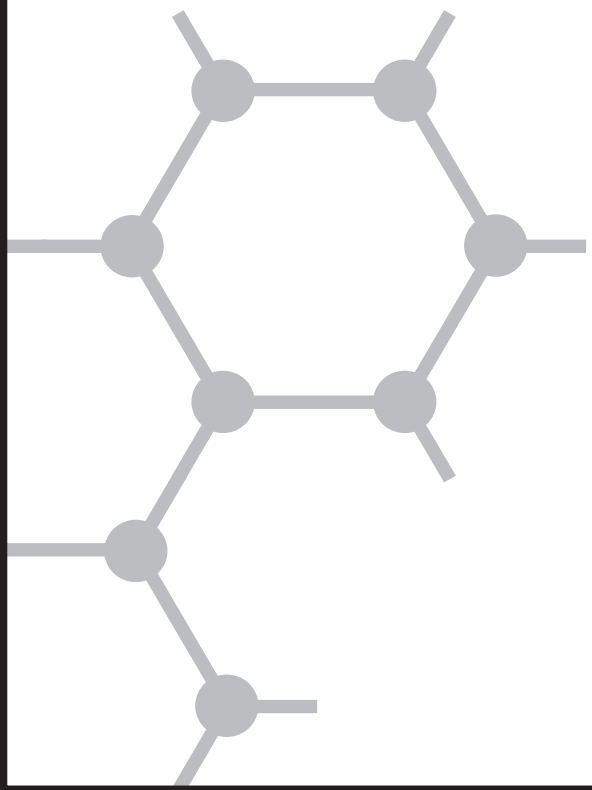
IEA Trends in International Mathematics and Science Study

TIMSS 2003

Main Survey

Teacher Questionnaire

Science
Grade 8



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General Directions

Your school has agreed to participate in TIMSS 2003, a large international study of student learning in mathematics and science in more than 50 countries around the world. Sponsored by the International Association for the Evaluation of Educational Achievement (IEA), TIMSS (for Trends in International Mathematics and Science Study) is measuring trends in student achievement and studying differences in national education systems in order to help improve the teaching and learning of mathematics and science worldwide.

As part of the study, students in a nationwide sample of eighth-grade classes in the United States will complete the TIMSS mathematics and science tests. This questionnaire is addressed to teachers who teach science to these students, and seeks information about teachers' academic and professional background, instructional practices, and attitudes toward teaching science. As a teacher of science to students in one of these sampled classes, your responses to these questions are very important in helping to describe science education in the United States.

Some of the questions in this questionnaire ask about a particular science class that you teach. This is the class which is identified on the cover of this questionnaire, and which includes students who will be tested as part of TIMSS 2003 in your school.

Please identify a time and place where you will be able to complete this questionnaire without being interrupted. Filling out the questionnaire should require no more than 45 minutes. To make it as easy as possible for you to respond, most questions may be answered simply by checking or filling the appropriate circle.

Once you have completed the questionnaire, place it in the return envelope provided and return it to the school coordinator.

Thank you very much for the time and effort you have put into responding to this questionnaire.

Background Information

1

How old are you?

*Fill in **one** circle only*

Under 25 ---------- ①

25–29 ---------- ②

30–39 ---------- ③

40–49 ---------- ④

50–59 ---------- ⑤

60 or older ---------- ⑥

2

Are you female or male?

*Fill in **one** circle only*

Female ---------- ①

Male ---------- ②

3

By the end of this school year, how many years will you have been teaching altogether? Do not include teaching as a substitute or student teacher.

_____

*Number of **years** you have taught full time*

_____

*Number of **years** you have taught part time*

Preparation to Teach

4

What is the highest level of formal education you have completed?

*Fill in **one** circle only*

Did not complete high school ---------- ①

Completed high school ---------- ②

Completed a vocational/technical certificate after high school (e.g., cosmetology, welding) ---------- ③

Completed an Associate's degree (AA) in a vocational/technical program ---------- ④

Completed an academic Associate's or Bachelor's degree ---------- ⑤

Completed an academic Master's degree, postgraduate certificate program (e.g., teaching) or first professional degree (e.g., law, medicine, dentistry) ---------- ⑥

Completed a doctorate (Ph.D. or Ed.D) ---------- ⑦

5

How many years of preservice teacher training did you have (e.g., time spent in a teacher education program such as student teaching or a mentorship)? Please round to the nearest whole number.

*Fill in **one** circle only*

0 years ---------- ①

1 year ---------- ②

2 years ---------- ③

3 years ---------- ④

4 years ---------- ⑤

5 years ---------- ⑥

More than 5 years ---------- ⑦

6

During your college or university education, what was your main area(s) of study?

*Fill in **one** circle for each row*

		No	Minor	Major
a)	Biology	①	②	③
b)	Physics	①	②	③
c)	Chemistry	①	②	③
d)	Earth Science	①	②	③
e)	Education - Science	①	②	③
f)	Mathematics	①	②	③
g)	Education - Mathematics	①	②	③
h)	Education - Other	①	②	③
i)	Other	①	②	③

7

What requirements did you have to satisfy in order to become a science teacher in grade 8?

*Fill in **one** circle for each row*

		No	Yes
a)	Complete a bachelor's degree	①	②
b)	Complete a probationary period	①	②
c)	Complete a minimum number of education courses	①	②
d)	Complete a minimum number of science courses	①	②
e)	Pass a licensing examination	①	②

8

A. Do you have a teaching license or certificate?

	No	Yes
*Fill in **one** circle only*	①	②

*If **No**, please go to question **9** on next page* ➡

B. What type of license or certificate do you hold?

*Fill in **one** circle only*

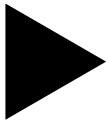
- Regular or standard state certificate or advanced professional certificate ①
- Probationary certificate (the initial certificate issued after satisfying all requirements except the completion of a probationary period) ②
- Provisional or other type given to persons who are still participating in what the state calls an "alternative certification program" ③
- Temporary certificate (requires some additional college coursework and /or student teaching before regular certification can be obtained) ④
- Emergency certificate or waiver (issued to persons with insufficient teacher preparation who must complete a regular certification program in order to continue teaching) ⑤

9

Considering your training and experience in both science content and instruction, how ready do you feel you are to teach these topics in the eighth grade?

*Fill in **one** circle for each row*

		Very ready	Ready	Not ready
A. Biology				
a)	Major organs and organ systems in humans and other organisms (structure/function, life processes that maintain stable bodily conditions)	①	②	③
b)	Cells and their functions, including respiration and photosynthesis as cellular processes	①	②	③
c)	Reproduction (sexual and asexual) and heredity (passing on of traits, inherited versus acquired/learned characteristics)	①	②	③
d)	Role of variation and adaptation in survival/extinction of species in a changing environment	①	②	③
e)	Interaction of living organisms and the physical environment in an ecosystem (energy flow, food webs, effect of changes, cycling of materials)	①	②	③
B. Chemistry				
a)	Classification and composition of matter (characteristics of elements, compounds, mixtures)	①	②	③
b)	Particulate structure of matter (molecules, atoms, protons, neutrons, and electrons)	①	②	③
c)	Properties of solutions (solvent, solute, concentration/dilution, effect of temperature on solubility)	①	②	③
d)	Properties and uses of common acids and bases	①	②	③
e)	Chemical change (transformation of reactants, evidence of chemical change, conservation of matter, common oxidation reactions - combustion and rusting)	①	②	③
C. Physics				
a)	Physical states and changes in matter (explanations of properties in terms of movement/distance between particles; phase change by supplying/removing heat/energy, thermal expansion and changes in volume and/or pressure)	①	②	③
b)	Energy types, sources, and conversions, including heat transfer	①	②	③
c)	Basic properties/behaviors of light (reflection, refraction, light and color, simple ray diagrams) and sound (production by vibration, transmission through media, relative speed of light and sound)	①	②	③
d)	Electric circuits (flow of current; types of circuits - opened/closed and parallel/series; current/voltage relationship)	①	②	③
e)	Forces and motion (types of forces, basic description of motion, use of distance/time graphs, effects of density and pressure	①	②	③



9 continued

Considering your training and experience in both science content and instruction, how ready do you feel you are to teach these topics in the eighth grade?

*Fill in **one** circle for each row*

	Very ready	Ready	Not ready
D. Earth Science			
a) Earth's structure and physical features (Earth's crust, mantle and core; use of topographic maps)	①	②	③
b) Earth's processes, cycles and history (rock cycle; water cycle; weather patterns; major geological events; formation of fossils and fossil fuels)	①	②	③
c) Earth in the solar system and the universe (phenomena on Earth - day/night, tides, phases of moon, eclipses, seasons; physical features of earth compared to other bodies; the Sun as a star)	①	②	③
E. Environmental Science			
a) Trends in human population and its effects on the environment	①	②	③
b) Use and conservation of Earth's natural resources (renewable/nonrenewable resources, human use of land/soil and water resources)	①	②	③
c) Changes in environments (role of human activity, global environmental concerns, impact of natural hazards)	①	②	③

Teaching Time

10

A. In one typical calendar week from Monday to Sunday, what is the total number of single periods for which you are formally scheduled? Count a double period as two periods.

_____

Write in the number of periods

B. Of these formally scheduled periods, for how many are you assigned to do each of the following?

Write in the number of periods

a) Teach general science ---------- _____

b) Teach physical science ---------- _____

c) Teach physics ---------- _____

d) Teach chemistry ---------- _____

e) Teach life science/biology ---------- _____

f) Teach Earth science ---------- _____

g) Teach mathematics ---------- _____

h) Teach other subjects ---------- _____

i) Perform other duties ---------- _____

Total ---------- _____

Should match number in 10A

C. How many minutes are in a typical single period?

_____

Write in the number of minutes

11

Outside the formal school day, approximately how many hours per week do you normally spend on each of these activities? Do not include the time already accounted for in Question 10. Please round to the nearest whole number.

Write in the number of hours per week

a) Grading student tests, exams, or other student work ---------- _____

b) Planning lessons ---------- _____

c) Administrative and recordkeeping tasks including staff meetings ----- _____

d) Other ---------- _____

Professional Development

12

How often do you have the following types of interactions with other teachers?

*Fill in **one** circle for each row*

	Daily or almost daily	1-3 times per week	2 or 3 times per month	Never or almost never
a) Discussions about how to teach a particular concept	①	②	③	④
b) Working on preparing instructional materials	①	②	③	④
c) Visits to another teacher's classroom to observe his/her teaching	①	②	③	④
d) Informal observations of **my** classroom by another teacher	①	②	③	④

13

In the past two years, have you participated in professional development in any of the following?

*Fill in **one** circle for each row*

	No	Yes
a) Science content	①	②
b) Science pedagogy/instruction	①	②
c) Science curriculum	①	②
d) Integrating information technology into science	①	②
e) Improving students' critical thinking or inquiry skills	①	②
f) Science assessment	①	②

Attitudes Toward Science

14

To what extent do you agree or disagree with each of the following statements?

*Fill in **one** circle for each row*

	Disagree a lot	Disagree	Agree	Agree a lot
a) More than one representation (picture, concrete material, symbols, etc.) should be used in teaching a science topic	①	②	③	④
b) Solving science problems often involves hypothesizing, estimating, testing, and modifying findings	①	②	③	④
c) Learning science mainly involves memorizing	①	②	③	④
d) There are many ways to conduct scientific investigation	①	②	③	④
e) Getting the correct answer is the most important outcome of a student's scientific experiment	①	②	③	④
f) Scientific theories are subject to change	①	②	③	④
g) Science is taught primarily to give students the skills and knowledge to explain natural phenomena	①	②	③	④
h) Modeling natural phenomena is essential to teaching science	①	②	③	④
i) Most scientific discoveries have no practical value	①	②	③	④

Your School

15

Thinking about your school, indicate the extent to which you agree or disagree with each of the following statements about your school.

*Fill in **one** circle for each row*

	Agree a lot	Agree	Disagree	Disagree a lot
a) This school facility (building and grounds) is in need of significant repair	①	②	③	④
b) This school is located in a safe neighborhood	①	②	③	④
c) I feel safe at this school	①	②	③	④
d) This school's security policies and practices are sufficient	①	②	③	④

16

How would you characterize each of the following within your school?

*Fill in **one** circle for each row*

	Very high	High	Medium	Low	Very low
a) Teachers' job satisfaction	①	②	③	④	⑤
b) Teachers' understanding of the school's curricular goals	①	②	③	④	⑤
c) Teachers' degree of success in implementing the school's curriculum	①	②	③	④	⑤
d) Teachers' expectations for student achievement	①	②	③	④	⑤
e) Parental support for student achievement	①	②	③	④	⑤
f) Parental involvement in school activities	①	②	③	④	⑤
g) Students' regard for school property	①	②	③	④	⑤
h) Students' desire to do well in school	①	②	③	④	⑤

The TIMSS Class

In this section, many of the questions refer to a **particular science class that you teach.** Please remember that this is the class which is identified on the cover of this questionnaire.

17

How many students are in the class with the TIMSS students?

_____

Write in the number of students

18

How many minutes per week do you teach science to the class with the TIMSS students?

_____

Write in the number of minutes per week

19

A. Do you use a textbook(s) in teaching science to the class with the TIMSS students?

	No	Yes
*Fill in **one** circle only*	①	②

*If **No**, please go to question* **20**

B. How do you use a textbook(s) in teaching science to the class with the TIMSS students?

*Fill in **one** circle only*

As the primary basis for my lessons ---------- ①

As a supplementary resource ---------- ②

20

In a typical week of science lessons for the class with the TIMSS students, what percentage of time do students spend on each of the following activities?

Write in the percent
The total should add to 100%

a) Reviewing homework ---------- _____%

b) Listening to lecture-style presentations ---------- _____%

c) Working problems with your guidance ---------- _____%

d) Working problems on their own without your guidance ---------- _____%

e) Listening to you re-teach and clarify content/procedures ---------- _____%

f) Taking tests or quizzes ---------- _____%

g) Participating in classroom management tasks not related to the lesson's content/purpose (e.g., interruptions and keeping order) ---------- _____%

h) Other student activities ---------- _____%

Total ---------- 100%

Teaching Science to the TIMSS Class

21

In teaching science to the students in the class with the TIMSS students, how often do you usually ask them to do the following?

*Fill in **one** circle for each row*

	Never	Some lessons	About half the lessons	Every or almost every lesson
a) Watch me demonstrate an experiment or investigation	①	②	③	④
b) Formulate hypotheses or predictions to be tested	①	②	③	④
c) Design or plan experiments or investigations	①	②	③	④
d) Conduct experiments or investigations	①	②	③	④
e) Work together in small groups on experiments or investigations	①	②	③	④
f) Write explanations about what was observed and why it happened	①	②	③	④
g) Put events or objects in order and give a reason for the organization	①	②	③	④
h) Study the impact of technology on society	①	②	③	④
i) Learn about the nature of science and inquiry	①	②	③	④
j) Relate what they are learning in science to their daily lives	①	②	③	④
k) Present their work to the class	①	②	③	④

22

In your view, to what extent do the following limit how you teach the class with the TIMSS students?

*Fill in **one** circle for each row*

	A lot	Some	A little	Not at all	Not applicable
Students					
a) Students with different academic abilities	①	②	③	④	⑤
b) Students who come from a wide range of backgrounds (e.g., economic, language)	①	②	③	④	⑤
c) Students with special needs (e.g., hearing, vision, speech impairment, physical disabilities, mental or emotional/psychological impairment)	①	②	③	④	⑤
d) Uninterested students	①	②	③	④	⑤
e) Low morale among students	①	②	③	④	⑤
f) Disruptive students	①	②	③	④	⑤
Resources					
g) Shortage of computer hardware	①	②	③	④	⑤
h) Shortage of computer software	①	②	③	④	⑤
i) Shortage of support for using computers	①	②	③	④	⑤
j) Shortage of textbooks for student use	①	②	③	④	⑤
k) Shortage of other instructional equipment for students' use	①	②	③	④	⑤
l) Shortage of equipment for your use in demonstrations and other exercises	①	②	③	④	⑤
m) Inadequate physical facilities	①	②	③	④	⑤
n) High student/teacher ratio	①	②	③	④	⑤

23

By the end of this school year, approximately what percentage of teaching time will you have spent during this school year on each of the following science content areas for the class with the TIMSS students?

Write in the percent
The total should add to 100%

a) Life science (e.g., types, characteristics, and classification of living things; structure/function and life processes in organisms; cells and their functions; development, reproduction, and heredity; diversity, adaptation, and natural selection; ecosystems; and human health) ---------- _____%

b) Chemistry (e.g., classification, composition and particulate structure of matter; properties and uses of water; acids and bases; and chemical change) ---------- _____%

c) Physics (e.g., physical states and changes in matter; energy types, sources, and conversions; heat and temperature; light; sound and vibration; electricity and magnetism; forces and motion) -------- _____%

d) Earth science (e.g., earth's structure and physical features; earth's processes, cycles and history; the solar system and universe) --------- _____%

e) Environmental science (e.g., changes in population; use and conservation of natural resources; and changes in environments) ---------- _____%

f) Other, please specify:

_____ ------- _____%

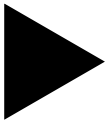
Total ---------- 100%

24

The following list includes the main topics addressed by the TIMSS science test. Choose the response that best describes when students in the class with the TIMSS students have been taught each topic. If a topic was taught half this year and half before this year, please choose "Mostly taught this year."

*Fill in **one** circle for each row*

	Not yet taught or just introduced	Mostly taught this year	Mostly taught before this year
A. Biology			
a) Classification of organisms on the basis of a variety of physical and behavioral characteristics	①	②	③
b) The major organ systems in humans and other organisms	①	②	③
c) How the systems function to maintain stable bodily conditions	①	②	③
d) Cell structures and functions	①	②	③
e) Photosynthesis and respiration as processes of cells and organisms, including substances used and produced	①	②	③
f) Life cycles of organisms, including humans, plants, birds, insects	①	②	③
g) Reproduction (sexual and asexual) and heredity (passing on of traits), versus inherited acquired/learned characteristics	①	②	③
h) The role of variation and adaptation in survival/extinction of species in a changing environment	①	②	③
i) The interaction of living organisms in an ecosystem (energy flow, food chains and food webs, food pyramids, and the effects of change upon the system)	①	②	③
j) Cycling of materials in nature (water, carbon/oxygen cycle, decomposition of organisms)	①	②	③
k) Causes of common infectious diseases, methods of infection/transmission, prevention, and the body's natural resistance and healing capabilities	①	②	③
l) Preventive medicine methods (diet, hygiene, exercise and lifestyle)	①	②	③



24 continued

The following list includes the main topics addressed by the TIMSS science test. Choose the response that best describes when students in the class with the TIMSS students have been taught each topic. If a topic was taught half this year and half before this year, please choose "Mostly taught this year."

*Fill in **one** circle for each row*

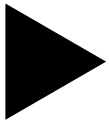
	Not yet taught or just introduced	Mostly taught this year	Mostly taught before this year
B. Chemistry			
a) Classification and composition of matter (physical and chemical characteristics, pure substances and mixtures, separation techniques)	①	②	③
b) Properties of solutions (solvents, solutes, effects of temperature on solubility)	①	②	③
c) Particulate structure of matter (molecules, atoms, protons, neutrons, and electrons)	①	②	③
d) Properties and uses of water (composition, melting/boiling points, changes in density/volume)	①	②	③
e) The properties and uses of common acids and bases	①	②	③
f) Chemical change (transformation of reactants, evidence of chemical change, conservation of matter)	①	②	③
g) The need for oxygen in common oxidation reactions (combustion, rusting) and the relative tendency of familiar substances to undergo these reactions	①	②	③
h) Classification of familiar chemical transformations as releasing or absorbing heat/energy	①	②	③

24 continued

The following list includes the main topics addressed by the TIMSS science test. Choose the response that best describes when students in the class with the TIMSS students have been taught each topic. If a topic was taught half this year and half before this year, please choose "Mostly taught this year."

*Fill in **one** circle for each row*

	Not yet taught or just introduced	Mostly taught this year	Mostly taught before this year
C. Physics			
a) Physical states and changes in matter (explanations of properties including volume, shape, density and compressibility in terms of movement/distance between particles)	①	②	③
b) The processes of melting, freezing, evaporation, and condensation (phase change by supplying/removing heat; melting/boiling points; effects of pressure and purity of substances)	①	②	③
c) Energy types, sources, and conversions, including heat transfer	①	②	③
d) Thermal expansion and changes in volume and/or pressure	①	②	③
e) Basic properties/behavior of light (reflection, refraction, light and color, simple ray diagrams)	①	②	③
f) Properties of sound (production by vibration, transmission through media, ways of describing sound (intensity, pitch), relative speed)	①	②	③
g) Electric circuits (flow of current, types of circuits – open/closed, parallel/series) and relationship between voltage and current	①	②	③
h) Properties of permanent magnets and electromagnets	①	②	③
i) Forces and motion (types of forces, basic description of motion), use of distance/time graphs	①	②	③
j) Effects of density and pressure	①	②	③



24 continued

The following list includes the main topics addressed by the TIMSS science test. Choose the response that best describes when students in the class with the TIMSS students have been taught each topic. If a topic was taught half this year and half before this year, please choose "Mostly taught this year."

*Fill in **one** circle for each row*

	Not yet taught or just introduced	Mostly taught this year	Mostly taught before this year
D. Earth Science			
a) Earth's structure and physical features (earth's crust, mantle, and core; topographic maps)	①	②	③
b) The physical state, movement, composition, and relative distribution of water on the earth	①	②	③
c) The Earth's atmosphere and the relative abundance of its main components	①	②	③
d) Earth's water cycle (steps, role of Sun's energy, circulation/renewal of fresh water)	①	②	③
e) Processes in the rock cycle and the formation of igneous, metamorphic, and sedimentary rock	①	②	③
f) Weather data/maps, and changes in weather patterns (e.g., seasonal changes, effects of latitude, altitude and geography)	①	②	③
g) Geological processes occurring over billions of years (e.g., erosion, mountain building, plate movement)	①	②	③
h) Formation of fossils and fossil fuels	①	②	③
i) Explanation of phenomena on Earth based on position/movement of bodies in the solar system and universe (e.g., day/night, tides, year, phases of the moon, eclipses, seasons, appearance of Sun, moon, planets, and constellations)	①	②	③
j) The physical features of Earth compared with the moon and other planets (e.g., atmosphere, temperature, water, distance from Sun, period of revolution/rotation, ability to support life)	①	②	③
k) The Sun as a star	①	②	③
E. Environmental Science			
a) Trends in human population and its effects on the environment	①	②	③
b) Use and conservation of natural resources (renewable/nonrenewable resources, human use of land/soil and water resources)	①	②	③
c) Changes in environments (role of human activity, effects/prevention of pollution, global environmental concerns, impact of natural hazards)	①	②	③

Computers in the TIMSS Class

25

A. Do students in the class with the TIMSS students have computers available to use during their science lessons? Do not include calculators.

	No	Yes
*Fill in **one** circle only*	①	②

*If **No**, please go to question **27** on next page* 

B. Do any of the computers have access to the Internet?

	No	Yes
*Fill in **one** circle only*	①	②

26

In teaching science to the class with the TIMSS students, how often do you have students use a computer for the following activities?

*Fill in **one** circle for each row*

	Never	Some lessons	About half the lessons	Every or almost every lesson
a) Do scientific procedures or experiments	①	②	③	④
b) Study natural phenomena through simulations	①	②	③	④
c) Practice skills and procedures	①	②	③	④
d) Look up ideas and information	①	②	③	④
e) Process and analyze data	①	②	③	④

Homework

27

Do you assign science homework to the class with the TIMSS students?

	No	Yes
*Fill in **one** circle only*	①	②

*If **No**, please go to question **32** on next page* 

28

How often do you usually assign science homework to the class with the TIMSS students?

*Fill in **one** circle only*

- Every or almost every lesson ①
- About half the lessons ②
- Some lessons ③

29

When you assign science homework to the class with the TIMSS students, about how many minutes do you usually assign? (Consider the time it takes an average student in your class to complete the assignment.)

*Fill in **one** circle only*

- Less than 15 minutes ①
- 15-30 minutes ②
- 31-60 minutes ③
- 61-90 minutes ④
- More than 90 minutes ⑤

30

How often do you assign the following kinds of science homework to the class with the TIMSS students?

*Fill in **one** circle for each row*

		Never or almost never	Sometimes	Always or almost always
a)	Doing problem/question sets	①	②	③
b)	Finding one or more applications of the content covered	①	②	③
c)	Reading from a textbook or supplementary materials	①	②	③
d)	Writing definitions or other short writing assignments	①	②	③
e)	Working on projects	①	②	③
f)	Working on small investigations or gathering data	①	②	③
g)	Preparing reports	①	②	③

31

How often do you do the following with the science homework assignments?

*Fill in **one** circle for each row*

		Never or almost never	Sometimes	Always or almost always
a)	Monitor whether or not the homework was completed	①	②	③
b)	Correct assignments and then give feedback to students	①	②	③
c)	Have students correct their own homework in class	①	②	③
d)	Use the homework as a basis for class discussion	①	②	③
e)	Use the homework to contribute towards students' grades or marks	①	②	③

32

How often do you give a science test or examination to the class with the TIMSS students? Do not include quizzes.

*Fill in **one** circle only*

About once a week ---------- ①

About every two weeks ---------- ②

About once a month ---------- ③

A few times a year ---------- ④

Never ---------- ⑤

*If **Never**, you have completed the questionnaire* ➡

33

What item formats do you typically use in your science tests or examinations? Do not include quizzes.

*Fill in **one** circle only*

Only constructed-response ---------- ①

Mostly constructed-response ---------- ②

About half constructed-response and half objective (e.g., multiple-choice) ---------- ③

Mostly objective ---------- ④

Only objective ---------- ⑤

34

How often do you include the following types of questions in your science tests or examinations? Do not include quizzes

*Fill in **one** circle for each row*

		Never or almost never	**Sometimes**	**Always or almost always**
a)	Questions requiring understanding of concepts, relationships, and processes	①	②	③
b)	Questions involving hypotheses and conclusions	①	②	③
c)	Questions based on recall of facts or procedures	①	②	③

Thank You

for completing this questionnaire

TIMSS International Study Center
Boston College
Chestnut Hill, MA 02467

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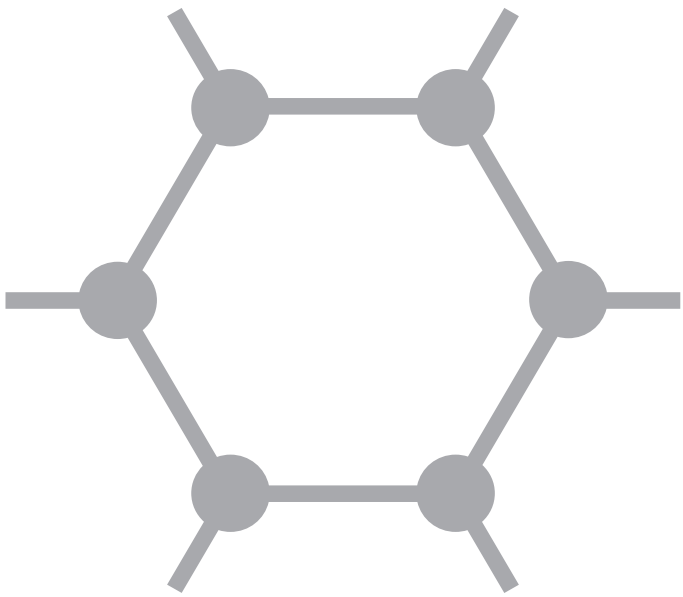


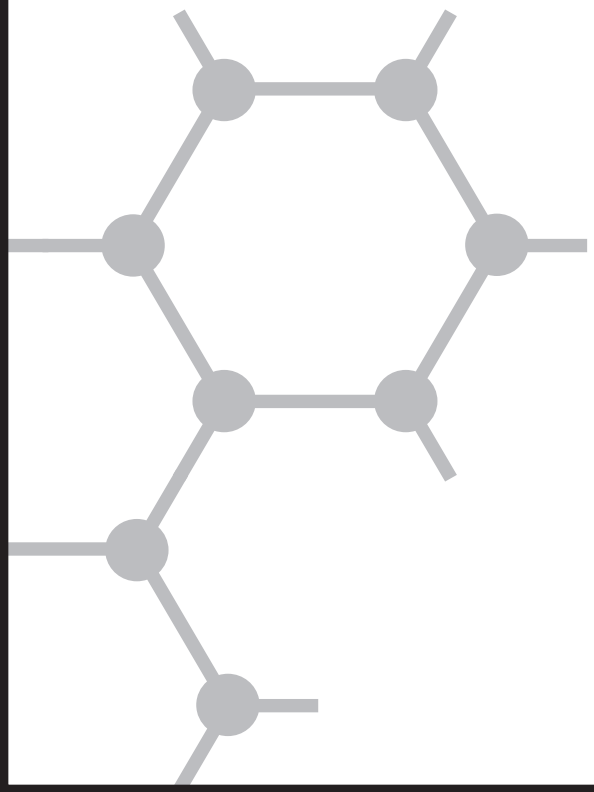
IEA Trends in International Mathematics and Science Study

TIMSS 2003

Main Survey

Student Questionnaire

Grade 8



General Directions

In this booklet, you will find questions about yourself. Some questions ask for facts while other questions ask for your opinions.

Read each question carefully and respond as accurately as possible. You may ask for help if you do not understand something or are not sure how to respond.

Each of the questions is followed by possible choices indicated with a circle with a number in it. For these questions, shade in the circle with the response of your choice as shown in Examples 1, 2, and 3.

Example 1

Do you go to school?

*Fill in **one** circle only*

Yes ---------- ●

No ---------- ②

Example 2

How often do you do these things?

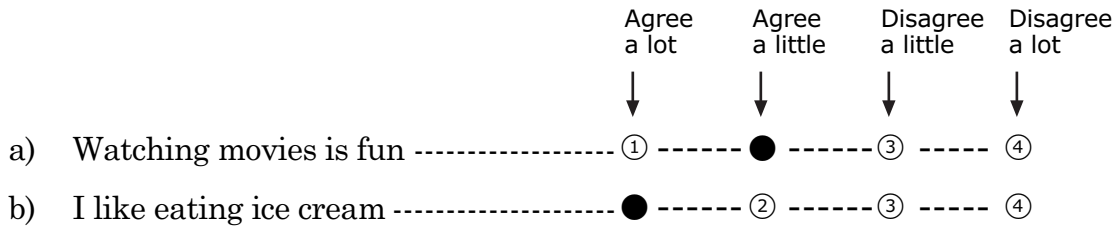
*Fill in **one** circle for each line*

	Every day	At least once a week	Once or twice a month	A few times a year	Never
a) I listen to music	①	②	●	④	⑤
b) I talk with my friends	●	②	③	④	⑤
c) I play sports	①	●	③	④	⑤

Example 3

Indicate how much you agree with each of these statements.

*Fill in **one** circle for each line*



Read each question carefully and pick the answer you think is best. Fill in the circle that shows your answer. If you decide to change your answer, erase your first answer and then fill in the circle next to or under your new answer. Ask for help if you do not understand something or are not sure how to answer.

Thank you for your time, effort, and thought in completing this questionnaire.

About You

1

When were you born?

A. Fill in the circle next to the year you were born

Year

① 1985
② 1986
③ 1987
④ 1988
⑤ 1989
⑥ 1990
⑦ 1991
⑧ 1992
⑨ Other

B. Fill in the circle next to the month you were born

Month

① January
② February
③ March
④ April
⑤ May
⑥ June
⑦ July
⑧ August
⑨ September
⑩ October
⑪ November
⑫ December

2

A. Are you a girl or a boy?

*Fill in **one** circle only*

Girl ---------- ①
Boy ---------- ②

B. Are you Hispanic or Latino?

*Fill in **one** circle only*

Yes, I am Hispanic or Latino. ---------- ①

No, I am not Hispanic or Latino. ---------- ②

C. Which of the following best describes you?

*Fill in **as many** circles as you need to*

White ---------- ①

Black or African American ---------- ②

Asian ---------- ③

American Indian or Alaska Native ---------- ④

Native Hawaiian or other Pacific Islander ---------- ⑤

3

How often do you speak English at home?

*Fill in **one** circle only*

Always ---------- ①

Almost always ---------- ②

Sometimes ---------- ③

Never ---------- ④

4

About how many books are there in your home? (Do not count magazines, newspapers, or your school books.)

*Fill in **one** circle only*

None or very few
(0-10 books) ---------- ①

Enough to fill one shelf
(11-25 books) ---------- ②

Enough to fill one bookcase
(26-100 books) ---------- ③

Enough to fill two bookcases
(101-200 books) ---------- ④

Enough to fill three or more bookcases
(more than 200 books) ---------- ⑤

5

Do you have any of these items in your home?

*Fill in **one** circle for each line*

		Yes	No
a)	Calculator	①	②
b)	Computer (do not include PlayStation®, GameCube®, XBox®, or other TV/video game system)	①	②
c)	Study desk/table for your use	①	②
d)	Dictionary	①	②
e)	Encyclopedia (as a book or CD)	①	②
f)	PlayStation®, Game Cube®, XBox®, or other TV/video game system	①	②
g)	DVD player	①	②
h)	Three or more cars, small trucks, or sport utility vehicles	①	②

6

A. What is the highest level of education completed by your mother (or stepmother or female guardian)?

*Fill in **one** circle only*

- Did not complete elementary school or did not go to school ①
- Completed elementary school ②
- Some high school ③
- Completed high school ④
- Completed a vocational/technical certificate after high school ⑤
- Completed an Associate's degree (AA) in a vocational/technical program ⑥
- Completed a 2-year or 4-year college or university degree (i.e., Associate's or Bachelor's degree) ⑦
- Completed a Master's degree, teaching certificate program, or professional degree (e.g., law, medicine, dentistry) ⑧
- Completed a doctorate (Ph.D. or Ed.D) ⑨
- I don't know ⓪

B. What is the highest level of education completed by your father (or stepfather or male guardian)?

*Fill in **one** circle only*

- Did not complete elementary school or did not go to school ①
- Completed elementary school ②
- Some high school ③
- Completed high school ④
- Completed a vocational/technical certificate after high school ⑤
- Completed an Associate's degree (AA) in a vocational/technical program ⑥
- Completed a 2-year or 4-year college or university degree (i.e., Associate's or Bachelor's degree) ⑦
- Completed a Master's degree, teaching certificate program, or professional degree (e.g., law, medicine, dentistry) ⑧
- Completed a doctorate (Ph.D. or Ed.D) ⑨
- I don't know ⓪

7

How far in school do you expect to go?

*Fill in **one** circle only*

Finish high school ---------- ①

Finish vocational/technical education after high school -------- ②

Finish community or junior college ---------- ③

Complete a bachelor's degree at a college or university -------- ④

Beyond bachelor's degree ---------- ⑤

I don't know ---------- ⑥

Mathematics in School

8

How much do you agree with these statements about learning mathematics?

*Fill in **one** circle for each line*

		Agree a lot	Agree a little	Disagree a little	Disagree a lot
a)	I usually do well in mathematics	①	②	③	④
b)	I would like to take more mathematics in school	①	②	③	④
c)	Mathematics is more difficult for me than for many of my classmates	①	②	③	④
d)	I enjoy learning mathematics	①	②	③	④
e)	Sometimes, when I do not initially understand a new topic in mathematics, I know that I will never really understand it	①	②	③	④
f)	Mathematics is not one of my strengths	①	②	③	④
g)	I learn things quickly in mathematics	①	②	③	④

9

How much do you agree with these statements about mathematics?

*Fill in **one** circle for each line*

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
a) I think learning mathematics will help me in my daily life	①	②	③	④
b) I need mathematics to learn other school subjects	①	②	③	④
c) I need to do well in mathematics to get into the university or college of my choice	①	②	③	④
d) I would like a job that involves using mathematics	①	②	③	④
e) I need to do well in mathematics to get the job I want	①	②	③	④

10

How often do you do these things in your mathematics lessons?

*Fill in **one** circle for each line*

		Every or almost every lesson	About half the lessons	Some lessons	Never
a)	We practice adding, subtracting, multiplying, and dividing without using a calculator	①	②	③	④
b)	We work on fractions and decimals	①	②	③	④
c)	We interpret data in tables, charts, or graphs	①	②	③	④
d)	We write equations and functions to represent relationships	①	②	③	④
e)	We work together in small groups	①	②	③	④
f)	We relate what we are learning in mathematics to our daily lives	①	②	③	④
g)	We explain our answers	①	②	③	④
h)	We decide on our own procedures for solving complex problems	①	②	③	④
i)	We review our homework	①	②	③	④
j)	We listen to the teacher give a lecture-style presentation	①	②	③	④
k)	We work on problems on our own	①	②	③	④
l)	We begin our homework in class	①	②	③	④
m)	We have a quiz or test	①	②	③	④
n)	We use calculators	①	②	③	④

Science in School

11

How much do you agree with these statements about learning science?

*Fill in **one** circle for each line*

		Agree a lot	Agree a little	Disagree a little	Disagree a lot
a)	I usually do well in science	①	②	③	④
b)	I would like to take more science in school	①	②	③	④
c)	Science is more difficult for me than for many of my classmates	①	②	③	④
d)	I enjoy learning science	①	②	③	④
e)	Sometimes, when I do not initially understand a new topic in science, I know that I will never really understand it	①	②	③	④
f)	Science is not one of my strengths	①	②	③	④
g)	I learn things quickly in science	①	②	③	④

12

How much do you agree with these statements about science?

*Fill in **one** circle for each line*

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
a) I think learning science will help me in my daily life	①	②	③	④
b) I need science to learn other school subjects	①	②	③	④
c) I need to do well in science to get into the university or college of my choice	①	②	③	④
d) I would like a job that involves using science	①	②	③	④
e) I need to do well in science to get the job I want	①	②	③	④

13

How often do you do these things in your science lessons?

*Fill in **one** circle for each line*

		Every or almost every lesson	About half the lessons	Some lessons	Never
a)	We watch the teacher demonstrate an experiment or investigation	①	②	③	④
b)	We formulate hypotheses or predictions to be tested	①	②	③	④
c)	We design or plan an experiment or investigation	①	②	③	④
d)	We conduct an experiment or investigation	①	②	③	④
e)	We work in small groups on an experiment or investigation	①	②	③	④
f)	We write explanations about what was observed and why it happened	①	②	③	④
g)	We study the impact of technology on society	①	②	③	④
h)	We relate what we are learning in science to our daily lives	①	②	③	④
i)	We present our work to the class	①	②	③	④
j)	We review our homework	①	②	③	④
k)	We listen to the teacher give a lecture-style presentation	①	②	③	④
l)	We work problems on our own	①	②	③	④
m)	We begin our homework in class	①	②	③	④
n)	We have a quiz or test	①	②	③	④

Computers

14

A. Do you ever use a computer? (Do not include PlayStation®, GameCube®, XBox®, or other TV/video game systems).

	Yes	No
*Fill in **one** circle only*	①	②

*If **No**, please go to question **15** on next page* →

B. Where do you use a computer?

*Fill in **one** circle for each line*

	Yes	No
a) At home	①	②
b) At school	①	②
c) At a library	①	②
d) At a friend's home	①	②
e) At an Internet café	①	②
f) Elsewhere	①	②

C. How often do you do these things with a computer?

*Fill in **one** circle for each line*

	Every day	At least once a week	Once or twice a month	A few times a year	Never
a) I look up ideas and information for mathematics	①	②	③	④	⑤
b) I look up ideas and information for science	①	②	③	④	⑤
c) I write reports for school	①	②	③	④	⑤
d) I process and analyze data	①	②	③	④	⑤

Your School

15

How much do you agree with these statements about your school?

*Fill in **one** circle for each line*

		Agree a lot	Agree a little	Disagree a little	Disagree a lot
a)	I like being in school	①	②	③	④
b)	I think that most students in my school try to do their best	①	②	③	④
c)	I think that most teachers in my school care about the students	①	②	③	④
d)	I think that most teachers in my school want students to do their best	①	②	③	④

Things You Do Outside of School

16

On a normal school day, how much time do you spend before or after school doing each of these things?

*Fill in **one** circle for each line*

	No time	Less than 1 hour	1-2 hours	More than 2 but less than 4 hours	4 or more hours
a) I watch television and videos	①	②	③	④	⑤
b) I play computer games	①	②	③	④	⑤
c) I play or talk with friends	①	②	③	④	⑤
d) I do jobs or chores at home	①	②	③	④	⑤
e) I work at a paid job	①	②	③	④	⑤
f) I play sports	①	②	③	④	⑤
g) I read a book for enjoyment	①	②	③	④	⑤
h) I use the Internet	①	②	③	④	⑤
i) I do homework	①	②	③	④	⑤

17

A. During this school year, how often have you had tutoring or extra lessons in <u>mathematics</u> that are not part of your regular class?

*Fill in **one** circle only*

Every or almost every day ---------- ①

Once or twice a week ---------- ②

Sometimes ---------- ③

Never or almost never ---------- ④

B. During this school year, how often have you had tutoring or extra lessons in <u>science</u> that are not part of your regular class?

*Fill in **one** circle only*

Every or almost every day ---------- ①

Once or twice a week ---------- ②

Sometimes ---------- ③

Never or almost never ---------- ④

18

A. How often does your teacher give you homework in <u>mathematics</u>?

*Fill in **one** circle only*

Every day ---------- ①

3 or 4 times a week ---------- ②

1 or 2 times a week ---------- ③

Less than once a week ---------- ④

Never ---------- ⑤

*If **Never**, please go to question **19** on next page* 

B. When your teacher gives you mathematics homework, about how long does it take you to complete this homework?

*Fill in **one** circle only*

Less than 15 minutes ---------- ①

15–30 minutes ---------- ②

31–60 minutes ---------- ③

61–90 minutes ---------- ④

More than 90 minutes ---------- ⑤

19

A. How often does your teacher give you homework in <u>science</u>?

*Fill in **one** circle only*

Every day ---------- ①

3 or 4 times a week ---------- ②

1 or 2 times a week ---------- ③

Less than once a week ---------- ④

Never ---------- ⑤

*If **Never**, please go to question **20** on next page* 

B. When your teacher gives you science homework, about how long does it take you to complete this homework?

*Fill in **one** circle only*

Less than 15 minutes ---------- ①

15–30 minutes ---------- ②

31–60 minutes ---------- ③

61–90 minutes ---------- ④

More than 90 minutes ---------- ⑤

More About You

20

Including yourself, how many people live in your home?

*Fill in **one** circle only*

2 ---------- ②

3 ---------- ③

4 ---------- ④

5 ---------- ⑤

6 ---------- ⑥

7 ---------- ⑦

8 or more ---------- ⑧

21

A. Was your mother (or stepmother or female guardian) born in the United States?*

	Yes	No
*Fill in **one** circle only*	①	②

B. Was your father (or stepfather or male guardian) born in the United States?*

	Yes	No
*Fill in **one** circle only*	①	②

***Note: "United States" includes the 50 states, its territories, the District of Columbia, and U.S. military bases abroad.**

22

A. Were you born in the United States?

	Yes	No
*Fill in **one** circle only*	①	②

*If **Yes**, you have completed the questionnaire*

B. If you were not born in the United States, how old were you when you came to the United States?

*Fill in **one** circle only*

Younger than 5 years old ①

5 to 10 years old ②

Older than 10 years old ③

Thank You

for completing this questionnaire

TIMSS International Study Center
Boston College
Chestnut Hill, MA 02467

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National Center for Education Statistics
U.S Department of Education
1990 K St., NW
Washington, D.C. 20006

Identification Label

School ID: _____

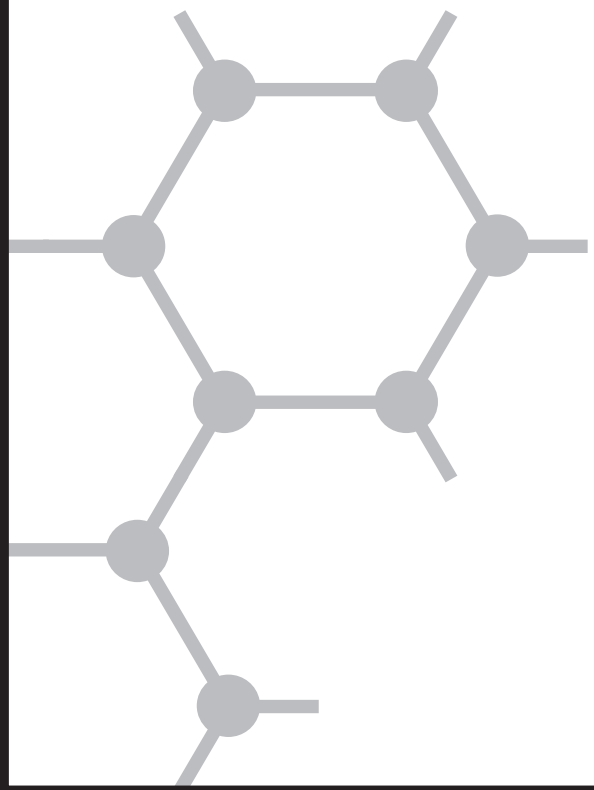
IEA Trends in International Mathematics and Science Study

TIMSS 2003

Main Survey

School Questionnaire

Grade 4



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O.M.B. No. 1850-0695, Approval Expires 02/28/2006

General Directions

Your school has agreed to participate in TIMSS 2003, a large international study of student learning in mathematics and science in more than 50 countries around the world. Sponsored by the International Association for the Evaluation of Educational Achievement (IEA), TIMSS (for Trends in International Mathematics and Science Study) is measuring trends in student achievement and studying differences in national education systems in order to help improve the teaching and learning of mathematics and science worldwide.

This questionnaire is addressed to school principals and department heads who are asked to supply information about their schools. Since your school has been selected as part of a nationwide sample, your responses are very important in helping to describe the school system in the United States.

It is important that you answer each question carefully so that the information provided reflects the situation in your school as accurately as possible. Some of the questions will require that you look up school records, so you may wish to arrange for the assistance of another staff member to help provide this information.

Please identify a time and place where you will be able to complete this questionnaire without being interrupted. This should require no more than 30 minutes. To make it as easy as possible for you to respond, most questions may be answered simply by filling in the appropriate circle.

Once you have completed the questionnaire, place it in the return envelope provided and return it to the school coordinator.

Thank you very much for the time and effort you have put into responding to this questionnaire.

The School Characteristics

Some of the questions in this questionnaire ask about your school in general. If your school has a wide range of grades, please try to answer such questions with regard to the primary grades.

1

What are the lowest and highest grade levels in your school?

*Fill in **one** circle for each column*

	A: Lowest Grade	B: Highest Grade
Kindergarten	①	②
1	①	②
2	①	②
3	①	②
4	①	②
5	①	②
6	①	②
7	①	②
8	①	②
9	①	②
10	①	②
11	①	②
12	①	②
13	①	②

2

A. What is the total school enrollment (number of students) in all grades?

*Number of students:*_____

B. What is the enrollment in the fourth-grade?

*Number of students:*_____

3

How many people live in the city, town, or area where your school is located?

*Fill in **one** circle only*

- More than 500,000 people ①
- 100,001 to 500,000 people ②
- 50,001 to 100,000 people ③
- 15,001 to 50,000 people ④
- 3,001 to 15,000 people ⑤
- Less than 3,000 people ⑥

4

On a typical school day, what percentage of students are absent from school for any reason?

*Fill in **one** circle only*

- Less than 5% ①
- 5 to 10% ②
- 11 to 20% ③
- More than 20% ④

5

A. Of the students who were enrolled in your school at the start of this school year, about what percentage are still enrolled?

*Fill in **one** circle only*

96 to 100% ---------- ①
90 to 95% ---------- ②
80 to 89% ---------- ③
Less than 80% ---------- ④

B. What percentage of the students in your school enrolled after the beginning of the school year?

*Fill in **one** circle only*

Less than 5% ---------- ①
5 to 10% ---------- ②
11 to 20% ---------- ③
More than 20% ---------- ④

6

A. Approximately what percentage of students in your school have the following backgrounds?

*Fill in **one** circle for each row*

	More than 50%	26 to 50%	11 to 25%	0 to 10%
a) Come from economically disadvantaged homes	①	②	③	④
b) Come from economically affluent homes	①	②	③	④

B. Approximately what percentage of students in your school have English as their native language?

*Fill in **one** circle only*

More than 90% ---------- ①
76 to 90% ---------- ②
50 to 75% ---------- ③
Less than 50% ---------- ④

C. Around the first of October 2002, what percentage of students at this school were eligible to receive free or reduced-price lunches through the National School Lunch Program?

Check none if Zero (0), or write in a percent

None ❒ *or* _____ *%*

7

How would you characterize each of the following within your school?

Fill in** one **circle for each row.

	Very low	Low	Medium	High	Very high
a) Teachers' job satisfaction	①	②	③	④	⑤
b) Teachers' understanding of the school's curricular goals	①	②	③	④	⑤
c) Teachers' degree of success in implementing the school's curriculum	①	②	③	④	⑤
d) Teachers' expectations for student achievement	①	②	③	④	⑤
e) Parental support for student achievement	①	②	③	④	⑤
f) Parental involvement in school activities	①	②	③	④	⑤
g) Students' regard for school property	①	②	③	④	⑤
h) Students' desire to do well in school	①	②	③	④	⑤

Your Role as Principal

8

Including this year, how long have you been principal of this school?

*Number of years:*_____

9

By the end of this school year, approximately what percentage of time in your role as principal will you have spent on these activities?

Write in the percent
The total should add to 100%

a) Administrative duties (e.g., hiring, budgeting, scheduling) ---------- _____%

b) Instructional leadership (e.g., developing curriculum and pedagogy) ---------- _____%

c) Supervising and evaluating teachers and other staff ---------- _____%

d) Teaching ---------- _____%

e) Public relations and fundraising -- _____%

f) Other ---------- _____%

Total ---------- 100%

Parental Involvement

10

Does your school expect parents to do the following?

*Fill in **one** circle for each row*

		No	Yes
a)	Attend special events (e.g., science fair, concert, sporting events)	①	②
b)	Raise funds for the school	①	②
c)	Volunteer for school projects, programs, and trips	①	②
d)	Ensure that their child completes his/her homework	①	②
e)	Serve on school committees (e.g., select school personnel, review school finances)	①	②

Fourth-grade Instruction in Mathematics and Science

11

A. How many days per year is your school open for instruction for fourth-grade students?

Number of days: _____

B. How many instructional days are there in the school week (typical calendar week from Monday through Sunday) for fourth-grade students?

*Fill in **one** circle for each column*

	Number of FULL days (over 4 hours)	Number of HALF days (4 hours or less)
1 day	①	②
2 days	①	②
3 days	①	②
4 days	①	②
5 days	①	②
6 days	①	②
None	①	②

C. To the nearest half-hour, what is the total instructional time in a typical full day (excluding lunch breaks and after school activities) for fourth-grade students?

*Fill in **one** circle only*

- 4 hours or less ①
- 4.5 hours ②
- 5 hours ③
- 5.5 hours ④
- 6 hours ⑤
- 6.5 hours or more ⑥

12

How does your school organize mathematics instruction for fourth-grade students with different levels of ability?

*Fill in **one** circle only*

- Students study the same mathematics curriculum ①
- Students study the same mathematics curriculum, but at different levels of difficulty ②
- Students study different mathematics curricula according to their ability levels ③

13

Are fourth-grade students in your school grouped by ability within their mathematics lessons?

	No	Yes
*Fill in **one** circle only*	①	②

14

Does your school do either of the following for students in the fourth-grade?

*Fill in **one** circle for each row*

	No	Yes
a) Offer enrichment mathematics	①	②
b) Offer remedial mathematics	①	③

Fourth-grade Teachers in Your School

15

How does your school organize science instruction for fourth-grade students with different levels of ability?

*Fill in **one** circle only*

Students study the same science curriculum ---------- ①

Students study the same science curriculum, but at different levels of difficulty ---------- ②

Students study different science curricula according to their ability levels ---------- ③

16

Are fourth-grade students in your school grouped by ability within their science lessons?

	No	Yes
*Fill in **one** circle only* ----------	①	②

17

Does your school do either of the following for students in the fourth-grade?

*Fill in **one** circle for each row*

		No	Yes
a)	Offer enrichment science ----------	①	②
b)	Offer remedial science ----------	①	②

18

How difficult was it to fill fourth-grade teaching vacancies for this school year?

*Fill in **one** circle only*

No vacancies ---------- ①

Easy to fill vacancies ---------- ②

Somewhat difficult ---------- ③

Very difficult ---------- ④

19

Does your school currently use any incentives (e.g., pay, housing, signing bonus) to recruit or retain fourth-grade teachers?

	No	Yes
*Fill in **one** circle only* ----------	①	②

20

During this school year, how often have your fourth-grade teachers been involved in professional development opportunities for mathematics and/or science targeted at the following?

*Fill in **one** circle for each row*

	Never	1 to 2 times	3 to 5 times	6 to 10 times	More than 10 times
a) Supporting the implementation of the state or district curriculum	①	②	③	④	⑤
b) Designing or supporting the school's own improvement goals	①	②	③	④	⑤
c) Improving content knowledge	①	②	③	④	⑤
d) Improving teaching skills	①	②	③	④	⑤
e) Using information and communication technology for educational purposes	①	②	③	④	⑤

21

In your school, are any of the following used to evaluate the practice of fourth-grade teachers?

*Fill in **one** circle for each row*

	Yes	No
a) Observations by the principal or senior staff	①	②
b) Observations by inspectors or other persons external to the school	①	②
c) Student achievement	①	②
d) Teacher peer review	①	②

Student Behavior

22

How often do each of the following problem behaviors occur among fourth-grade students in your school?

If the behavior occurs, how severe a problem does it present?

	A. Frequency in your school *Fill in **one** circle for each row in this section* Never ① Rarely ② Monthly ③ Weekly ④ Daily ⑤	B. Severity of problem in your school *Fill in **one** circle for each row in this section* Not a problem ① Minor problem ② Serious problem ③
a)	Arriving late at school	
b)	Absenteeism (i.e., unexcused absences)	
c)	Skipping class	
d)	Violating dress code	
e)	Classroom disturbance	
f)	Cheating	
g)	Profanity	
h)	Vandalism	
i)	Theft	
j)	Intimidation or verbal abuse of other students	
k)	Physical injury to other students	
l)	Intimidation or verbal abuse of teachers or staff	
m)	Physical injury to teachers or staff	

Resources and Technology

23

How much is your school's capacity to provide instruction affected by a shortage or inadequacy of any of the following?

*Fill in **one** circle for each row*

	A lot	Some	A little	Not at all
a) Instructional materials (e.g., textbooks)	①	②	③	④
b) Budget for supplies (e.g., paper, pencils)	①	②	③	④
c) School buildings and grounds	①	②	③	④
d) Heating/cooling and lighting systems	①	②	③	④
e) Instructional space (e.g., classrooms)	①	②	③	④
f) Special equipment for students with disabilities	①	②	③	④
g) Computers for mathematics instruction	①	②	③	④
h) Computer software for mathematics instruction	①	②	③	④
i) Calculators for mathematics instruction	①	②	③	④
j) Library materials relevant to mathematics instruction	①	②	③	④
k) Audiovisual resources for mathematics instruction	①	②	③	④

*Fill in **one** circle for each row*

	A lot	Some	A little	Not at all
l) Science laboratory equipment and materials	①	②	③	④
m) Computers for science instruction	①	②	③	④
n) Computer software for science instruction	①	②	③	④
o) Calculators for science instruction	①	②	③	④
p) Library materials relevant to science instruction	①	②	③	④
q) Audiovisual resources for science instruction	①	②	③	④
r) Teachers	①	②	③	④
s) Computer support staff	①	②	③	④

24

A. What is the total number of computers in your school that can be used for educational purposes by fourth-grade students?

*Number of computers:*_____

*If **None,** please go to question* **25**

B. How many of these computers have access to the Internet (e-mail or World Wide Web) for educational purposes?

*Fill in **one** circle only*

All ---------- ①

Most ---------- ②

Some ---------- ③

None ---------- ④

25

A. Is anyone available to help your teachers use information and communication technology for teaching and learning?

No

Yes

*Fill in **one** circle only* ---------- ① --- ②

*If **No**, you have completed the questionnaire*

B. Which of the following statements best describes the person at this school who helps teachers use information and communication technology for teaching and learning?

*Fill in **one** circle for the best description of that person. If more than one person, choose the one person who spends the most time on this work.*

A full-time school level coordinator (who has no other job responsibility) ---------- ①

A library media specialist who also serves as computer coordinator ---------- ②

A teacher who also has the title of this type of coordinator ---------- ③

A teacher who provides leadership informally to other teachers ---------- ④

A district-level coordinator ---------- ⑤

The principal or another school administrator ------ ⑥

Other person ---------- ⑦

Thank You

for completing this questionnaire

TIMSS International Study Center
Boston College
Chestnut Hill, MA 02467

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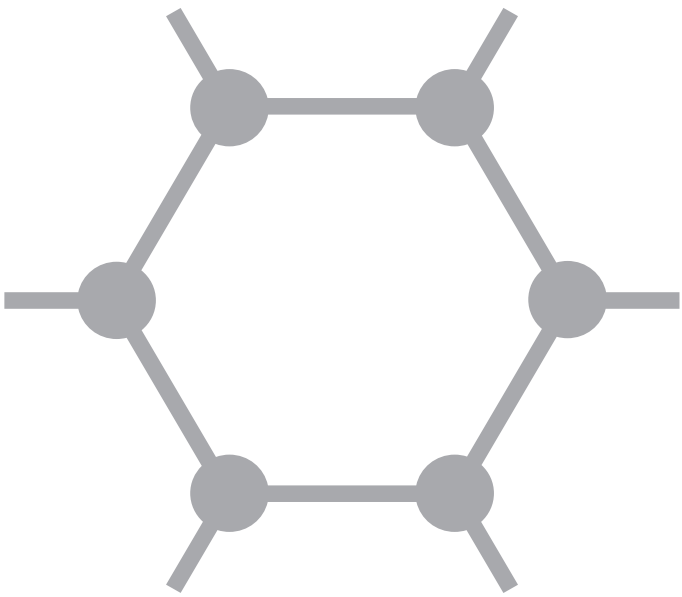


Identification Label

Teacher Name: _____

Class Name: _____

Teacher ID: _____ Teacher Link # _____

National Center for Education Statistics
U.S Department of Education
1990 K St., NW
Washington, D.C. 20006

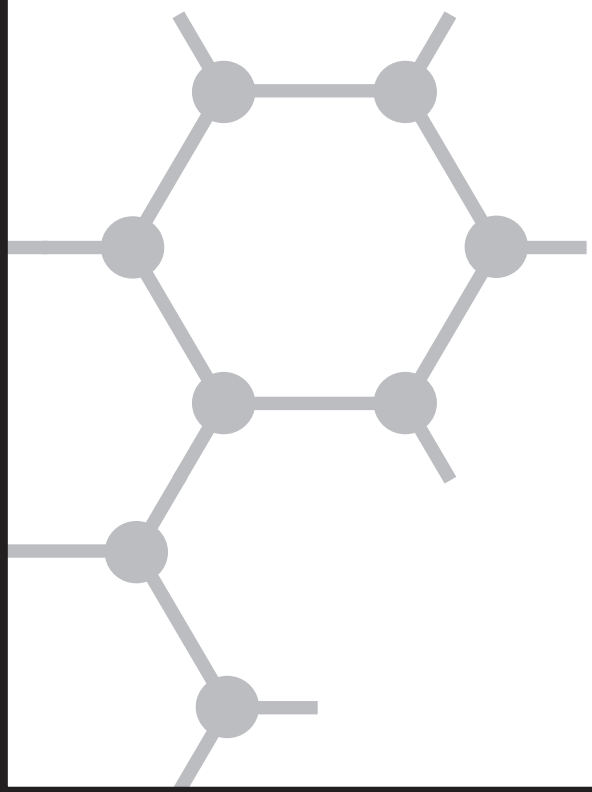
IEA Trends in International Mathematics and Science Study

TIMSS 2003

Main Survey

Teacher Questionnaire

Grade 4



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O.M.B. No. 1850-0695, Approval Expires 02/28/2006

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As part of the study, students in a nationwide sample of fourth-grade classes in the United States will complete the TIMSS mathematics and science tests. This questionnaire is addressed to teachers who teach mathematics and science to these students, and seeks information about teachers' academic and professional backgrounds, instructional practices, and attitudes toward teaching mathematics and science. As a teacher of the students in one of these sampled classes, your responses to these questions are very important in helping to describe mathematics and science education in the United States.

Some of the questions in this questionnaire refer to teaching mathematics and teaching science to the students participating in TIMSS 2003. If you teach **both** mathematics and science to the students in the class that is listed on the cover of this questionnaire, please complete the entire questionnaire. If you teach **only mathematics** or **only science** to these students, you will be guided to the appropriate sections to complete starting on page 3.

Please identify a time and place where you will be able to complete this questionnaire without being interrupted. Filling out the questionnaire should require no more than 45 minutes. To make it as easy as possible for you to respond, most questions may be answered simply by checking or filling the appropriate circle.

Once you have completed the questionnaire, place it in the return envelope provided and return it to the school coordinator.

Thank you very much for the time and effort you have put into responding to this questionnaire.

Teacher Background Information

To be completed by **all teachers**

1

How old are you?

*Fill in **one** circle only*

Under 25 ---------- ①

25–29 ---------- ②

30–39 ---------- ③

40–49 ---------- ④

50–59 ---------- ⑤

60 or older ---------- ⑥

2

Are you female or male?

*Fill in **one** circle only*

Female ---------- ①

Male ---------- ②

3

By the end of this school year, how many years will you have been teaching altogether? Do not include teaching as a substitute or student teacher.

_____

*Number of **years** you have taught full time*

_____

*Number of **years** you have taught part time*

4

What is the highest level of formal education you have completed?

*Fill in **one** circle only*

Did not complete high school ---------- ①

Completed high school ---------- ②

Completed a vocational/technical certificate after high school (e.g., cosmetology, welding) ----- ③

Completed an Associate's degree (AA) in a vocational/technical program ---------- ④

Completed an academic Associate's or Bachelor's degree ---------- ⑤

Completed an academic Master's degree, postgraduate certificate program (e.g., teaching) or first professional degree (e.g., law, medicine, dentistry) ---------- ⑥

Completed a doctorate (Ph.D. or Ed.D) ---------- ⑦

5

How many years of preservice teacher training did you have (e.g., time spent in a teacher education program such as student teaching or a mentorship)? Please round to the nearest whole number.

*Fill in **one** circle only*

0 years ---------- ①

1 year ---------- ②

2 years ---------- ③

3 years ---------- ④

4 years ---------- ⑤

5 years ---------- ⑥

More than 5 years ---------- ⑦

6

A. During your college or university education, what was your major or main area(s) of study?

*Fill in **one** circle for each row*

	No	Minor	Major
a) Education - Primary/Elementary	①	②	③
b) Education - Secondary	①	②	③
c) Education - Other	①	②	③
d) Mathematics	①	②	③
e) Science	①	②	③
f) Other	①	②	③

B. If your major or main area of study was education (a-c in 6A above), did you have a specialization in any of the following?

*Fill in **one** circle for each row*

	No	Yes
a) Mathematics	①	②
b) Science	①	②
c) Language/reading	①	②
d) Other subject	①	②

7

What requirements did you have to satisfy in order to become a teacher in grade 4?

*Fill in **one** circle for each row*

	No	Yes
a) Complete a bachelor's degree	①	②
b) Complete a probationary period	①	②
c) Complete a minimum number of education courses	①	②
d) Complete a minimum number of mathematics courses	①	②
e) Complete a minimum number of science courses	①	②
f) Pass a licensing examination	①	②

8

A. Do you have a teaching license or certificate?

	No	Yes
*Fill in **one** circle only*	①	②

*If **No**, please go to question **9** on next page* ➡

B. What type of license or certificate do you hold?

*Fill in **one** circle only*

- Regular or standard state certificate or advanced professional certificate ---------- ①
- Probationary certificate (the initial certificate issued after satisfying all requirements except the completion of a probationary period) ---------- ②
- Provisional or other type given to persons who are still participating in what the state calls an "alternative certification program" ---------- ③
- Temporary certificate (requires some additional college coursework and /or student teaching before regular certification can be obtained) ------- ④
- Emergency certificate or waiver (issued to persons with insufficient teacher preparation who must complete a regular certification program in order to continue teaching) ---------- ⑤

About Your School

To be completed by **all teachers**

9

How would you characterize each of the following within your school?

*Fill in **one** circle for each row*

	Very low	Low	Medium	High	Very high
a) Teachers' job satisfaction	①	②	③	④	⑤
b) Teachers' understanding of the school's curricular goals	①	②	③	④	⑤
c) Teachers' degree of success in implementing the school's curriculum	①	②	③	④	⑤
d) Teachers' expectations for student achievement	①	②	③	④	⑤
e) Parental support for student achievement	①	②	③	④	⑤
f) Parental involvement in school activities	①	②	③	④	⑤
g) Students' regard for school property	①	②	③	④	⑤
h) Students' desire to do well in school	①	②	③	④	⑤

10

Thinking about your school, indicate the extent to which you agree or disagree with each of the following statements about your school.

*Fill in **one** circle for each row*

	Disagree a lot	Disagree	Agree	Agree a lot
a) This school facility (building and grounds) is in need of significant repair	①	②	③	④
b) This school is located in a safe neighborhood	①	②	③	④
c) I feel safe at this school	①	②	③	④
d) This school's security policies and practices are sufficient	①	②	③	④

11

How often do you have the following types of interactions with other teachers?

*Fill in **one** circle for each row*

	Daily or almost daily	1-3 times per week	2 or 3 times per month	Never or almost never
a) Discussions about how to teach a particular concept	①	②	③	④
b) Working on preparing instructional materials	①	②	③	④
c) Visits to another teacher's classroom to observe his/her teaching	①	②	③	④
d) Informal observations of **my** classroom by another teacher	①	②	③	④

About Teaching Mathematics

If you **do not** teach mathematics to students in the class identified on the cover of this questionnaire, **proceed to Question 30.**
If you **do teach** mathematics to students in the class identified on the cover of this questionnaire, please **continue.**

12

Considering your training and experience in both mathematics content and instruction, how ready do you feel you are to teach these topics in the fourth-grade?

*Fill in **one** circle for each row*

	Very ready	Ready	Not ready
A. Number			
a) Adding, subtracting, multiplying and/or dividing with whole numbers	①	②	③
b) Fractions (parts of a whole or a collection, location on a number line)	①	②	③
c) Fractions or decimals represented by words, numbers, or models	①	②	③
d) Adding and subtracting with decimals	①	②	③
B. Patterns, Equations, and Relationships			
a) Patterns of numbers or shapes (extending sequences and finding missing terms)	①	②	③
b) Simple equations	①	②	③
c) Finding a rule for a relationship given some pairs of numbers	①	②	③
C. Measurement			
a) Recognizing and selecting appropriate units to measure length, weight, time, and temperature	①	②	③
b) Estimating and measuring length, area, volume, weight, and time	①	②	③
D. Geometry			
a) Familiar two- and three-dimensional shapes and their properties	①	②	③
b) Congruent triangles (i.e., same shape and size)	①	②	③
c) Relationships between two-dimensional and three-dimensional shapes	①	②	③
d) Translation, reflection, and rotation (shifts, flips, and turns of shapes)	①	②	③
E. Data			
a) Recognizing what various numbers, symbols, and points mean in data displays	①	②	③
b) Displaying data using tables, pictographs, and bar graphs	①	②	③
c) Drawing conclusions from data displays	①	②	③

13

In the past two years, have you participated in professional development in any of the following?

*Fill in **one** circle for each row*

		No	Yes
a)	Mathematics content	①	②
b)	Mathematics pedagogy/instruction	①	②
c)	Mathematics curriculum	①	②
d)	Integrating information technology into mathematics	①	②
e)	Improving students' critical thinking or problem-solving skills	①	②
f)	Mathematics assessment	①	②

Teaching Mathematics to the TIMSS Class

Questions 14–29 refer to the TIMSS class. Remember, "the TIMSS class" is the class that is identified on the cover of this questionnaire and that will be tested as part of TIMSS 2003 in your school.

14

A. How many students are in the TIMSS class for mathematics?

_____
Write in the number of students

B. How many students in Question 14A are in the fourth-grade ?

_____
Write in the number of fourth-grade students

15

How many minutes per week do you teach mathematics to the fourth-grade students in the TIMSS class?

_____
Write in the number of minutes per week

16

A. Do you use a textbook(s) in teaching mathematics to the fourth-grade students in the TIMSS class?

	No	Yes
*Fill in **one** circle only*	①	②

*If **No**, please go to question* **17**

B. How do you use a textbook(s) in teaching mathematics to the fourth-grade students in the TIMSS class?

*Fill in **one** circle only*

As the primary basis for my lessons ---------- ①

As a supplementary resource ---------- ②

17

In a typical week of mathematics lessons for the fourth-grade students in the TIMSS class, what percentage of time do students spend on each of the following activities?

Write in the percent
The total should add to 100%

a) Reviewing homework ---------- _____%

b) Listening to lecture-style presentations ---------- _____%

c) Working problems with your guidance ---------- _____%

d) Working problems on their own without your guidance ---------- _____%

e) Listening to you re-teach and clarify content/procedures ---------- _____%

f) Taking tests or quizzes ---------- _____%

g) Participating in classroom management tasks not related to the lesson's content/purpose (e.g., interruptions and keeping order) ---------- _____%

h) Other student activities ---------- _____%

Total ---------- 100%

18

Are the fourth-grade students in the TIMSS class permitted to use calculators during mathematics lessons?

*Fill in **one** circle only*

Yes, with unrestricted use ---------- ①

Yes, with restricted use ---------- ②

No, calculators are not permitted ---------- ③

*If **No,** please go to question* **22**

19

How many fourth-grade students in the TIMSS class have calculators available to use during mathematics lessons?

*Fill in **one** circle only*

All ---------- ①

Most ---------- ②

About half ---------- ③

Some ---------- ④

None ---------- ⑤

20

How often do the fourth-grade students in the TIMSS class use calculators in their mathematics lessons for the following activities?

*Fill in **one** circle for each row*

	Never	Some lessons	About half the lessons	Every or almost every lesson
a) Check answers	①	②	③	④
b) Do routine computations	①	②	③	④
c) Solve complex problems	①	②	③	④
d) Explore number concepts	①	②	③	④

21

How often are the fourth-grade students in the TIMSS class permitted to use calculators during tests or examinations?

*Fill in **one** circle only*

Always ---------- ①

Sometimes ---------- ②

Never ---------- ③

22

A. Do the fourth-grade students in the TIMSS class have computers available to use during their mathematics lessons?

*Fill in **one** circle only* ---------- No ① --- Yes ②

*If **No**, please go to question* **24**

B. Do any of the computers have access to the Internet?

*Fill in **one** circle only* ---------- No ① --- Yes ②

23

In teaching mathematics to the fourth-grade students in the TIMSS class, how often do you have students use a computer for the following activities?

*Fill in **one** circle for each row*

	Never	Some lessons	About half the lessons	Every or almost every lesson
a) Discover mathematics principles and concepts	①	②	③	④
b) Practice skills and procedures	①	②	③	④
c) Look up ideas and information	①	②	③	④

Mathematics

24

In teaching mathematics to the fourth-grade students in the TIMSS class, how often do you usually ask them to do the following?

*Fill in **one** circle for each row*

	Never	Some lessons	About half the lessons	Every or almost every lesson
a) Practice adding, subtracting, multiplying, and dividing without using a calculator	①	②	③	④
b) Work on fractions and decimals	①	②	③	④
c) Measure things in the classroom and around the school	①	②	③	④
d) Make tables, charts, or graphs	①	②	③	④
e) Learn about shapes such as circles, triangles, rectangles, and cubes	①	②	③	④
f) Write equations for word problems	①	②	③	④
g) Work together in small groups	①	②	③	④
h) Explain their answers	①	②	③	④

25

By the end of this school year, approximately what percentage of teaching time will you have spent during this school year on each of the following mathematics content areas for the fourth-grade students in the TIMSS class?

Write in the percent
The total should add to 100%

a) Number (includes computation with whole numbers, fractions, and decimals) _____%

b) Patterns, Equations, and Relationships (includes sequences of numbers or shapes, simple equations, and finding rules) _____%

c) Measurement (includes recognizing units and using tools) _____%

d) Geometry (includes two- and three- dimensional shapes) _____%

e) Data (includes reading, making, and interpreting tables and graphs) _____%

f) Other, please specify:

_____ _____%

Total 100%

26

The following list includes the main topics addressed by the TIMSS mathematics test. Choose the response that best describes when the fourth-grade students in the TIMSS class have been taught each topic. If a topic was taught half this year and half before this year, please choose "Mostly taught this year."

*Fill in **one** circle for each row*

		Not yet taught or just introduced	Mostly taught this year	Mostly taught before this year
A. Number				
a)	Whole numbers including place value and ordering	①	②	③
b)	Represent whole numbers using words, diagrams, or symbols	①	②	③
c)	Properties of whole numbers such as odd and even, multiples, or factors	①	②	③
d)	Computation with whole numbers	①	②	③
e)	Estimation with whole numbers	①	②	③
f)	Fractions (parts of a whole or a collection, location on a number line)	①	②	③
g)	Equivalent fractions	①	②	③
h)	Compare and order fractions	①	②	③
i)	Fractions or decimals represented by words, numbers, or models	①	②	③
j)	Adding and subtracting fractions with the same denominator	①	②	③
k)	Adding and subtracting with decimals (tenths and/or hundredths)	①	②	③
l)	Simple proportional reasoning	①	②	③
B. Patterns, Equations, and Relationships				
a)	Patterns of numbers or shapes (extending sequences and finding missing terms)	①	②	③
b)	Equality using equations, areas, volumes, masses/weights	①	②	③
c)	Missing number in an equation (e.g., if 17 + ___ = 29, what number would go in the blank to make the equation true?)	①	②	③
d)	Simple equations	①	②	③
e)	Pairs of numbers following a given rule (e.g., multiply the first number by 3 and add 2 to get the second number)	①	②	③
f)	Finding a rule for a relationship given some pairs of numbers	①	②	③

26 continued

The following list includes the main topics addressed by the TIMSS mathematics test. Choose the response that best describes when the fourth-grade students in the TIMSS class have been taught each topic. If a topic was taught half this year and half before this year, please choose "Mostly taught this year."

*Fill in **one** circle for each row*

	Not yet taught or just introduced	Mostly taught this year	Mostly taught before this year
C. Measurement			
a) Nonstandard units to measure length, area, volume, and time (e.g., paper clips for length, tiles for area, sugar cubes for volume)	①	②	③
b) Standard units to measure length, area, mass/weight, angle, and time (e.g., kilometers for car trips, centimeters for human height)	①	②	③
c) Conversion factors between standard units (e.g., hours to minutes, grams to kilograms)	①	②	③
d) Instruments to measure length, weight, time, and temperature in problem situations (e.g., rulers and scales)	①	②	③
e) Calculating areas and perimeters of squares	①	②	③
f) Estimating length, area, volume, weight, and time	①	②	③
D. Geometry			
a) Angles greater than, equal to, or less than a right angle (or 90º)	①	②	③
b) Parallel and perpendicular lines	①	②	③
c) Familiar two- and three-dimensional shapes and their properties	①	②	③
d) Congruent triangles (i.e., same shape and size)	①	②	③
e) Similar triangles (i.e., same shape and different size)	①	②	③
f) Points in a plane	①	②	③
g) Relationships between two-dimensional and three-dimensional shapes	①	②	③
h) Informal coordinate systems	①	②	③
i) Symmetry about a line	①	②	③
j) Two-dimensional symmetrical figures	①	②	③
k) Translation, reflection, and rotation (shifts, flips, and turns of shapes)	①	②	③

26 continued

The following list includes the main topics addressed by the TIMSS mathematics test. Choose the response that best describes when the fourth-grade students in the TIMSS class have been taught each topic. If a topic was taught half this year and half before this year, please choose "Mostly taught this year."

*Fill in **one** circle for each row*

	Not yet taught or just introduced	Mostly taught this year	Mostly taught before this year
E. Data			
a) Recognizing what various numbers, symbols, and points mean in data displays	①	②	③
b) Organizing a set of data by one characteristic (e.g., height, color, age, shape)	①	②	③
c) Reading data directly from tables, pictographs, bar graphs, and pie charts	①	②	③
d) Displaying data using tables, pictographs, and bar graphs	①	②	③
e) Comparing and matching different representations of the same data	①	②	③
f) Characteristics of related data sets (e.g., given data or representations of data on student heights in two classes, identify the class with the shortest/tallest person)	①	②	③
g) Drawing conclusions from data displays	①	②	③

27

Do you assign mathematics homework to the fourth-grade students in the TIMSS class?

	No	Yes
*Fill in **one** circle only*	①	②

*If **No**, please go to question **30** on next page* 

28

How often do you usually assign mathematics homework to the fourth-grade students in the TIMSS class?

*Fill in **one** circle only*

Every or almost every lesson ---------- ①

About half the lessons ---------- ②

Some lessons ---------- ③

29

When you assign mathematics homework to the fourth-grade students in the TIMSS class, about how many minutes do you usually assign? (Consider the time it takes an average student in your class to complete the assignment.)

*Fill in **one** circle only*

Less than 15 minutes ---------- ①

15-30 minutes ---------- ②

31-60 minutes ---------- ③

61-90 minutes ---------- ④

More than 90 minutes ---------- ⑤

About Teaching Science

If you **do not** teach science to the students in the class identified on the cover of this questionnaire, please **STOP HERE.**

If you **do** teach science to the students in the class identified on the cover of this questionnaire, please **continue.**

30

Considering your training and experience in both science content and instruction, how ready do you feel you are to teach these topics in the fourth-grade?

*Fill in **one** circle for each row*

	Very ready	Ready	Not ready
A. Life Science			
a) Major body structures and their functions in humans and other organisms (plant and animals)	①	②	③
b) Reproduction and development in plants and animals (passing on of general characteristics; life cycles of familiar organisms)	①	②	③
c) Physical features, behavior, and survival of organisms living in different environments	①	②	③
d) Relationships in a living community (e.g., simple food chains, predator/prey relationships)	①	②	③
e) Changes in environments (effects of human activity, pollution and its prevention)	①	②	③
f) Human health (e.g., transmission/prevention of communicable diseases, signs of health/illness, diet, exercise)	①	②	③
B. Physical Science			
a) Classification of objects/materials based on physical properties (e.g., mass, shape, volume, color, hardness, texture, heat/electrical conductivity, magnetic attraction)	①	②	③
b) Forming and separating mixtures	①	②	③
c) Chemical and physical changes (e.g., decaying of animal/plant matter, burning, rusting)	①	②	③
d) States of matter (solids, liquids, gases) and differences in their physical properties (shape, volume), including changes in state of water by heating and cooling (melting, freezing, boiling)	①	②	③
e) Common energy sources/forms and their practical uses (e.g., wind, Sun, electricity, burning fuel, water wheel, food)	①	②	③
f) Common uses of electricity and electrical circuits	①	②	③
g) Forces that cause objects to move (e.g., gravity, push/pull forces)	①	②	③
C. Earth Science			
a) Features of Earth's landscape (e.g., mountains, plains, rivers, deserts)	①	②	③
b) Water on Earth (location, types, and movement)	①	②	③
c) Air (composition, proof of its existence, uses, and importance for supporting life)	①	②	③
d) Common features of the Earth's landscape (e.g., mountains, plains, rivers, deserts) and relationship to human use (e.g., farming, irrigation, land development)	①	②	③
e) Fossils of animals and plants (age, formation)	①	②	③
f) Earth's solar system (planets, Sun, moon)	①	②	③

31

In the past two years, have you participated in professional development in any of the following?

*Fill in **one** circle for each row*

		Yes	No
a)	Science content	①	②
b)	Science pedagogy/instruction	①	②
c)	Science curriculum	①	②
d)	Integrating information technology into science	①	②
e)	Improving students' critical thinking or inquiry skills	①	②
f)	Science assessment	①	②

Teaching Science to the TIMSS Class

Questions 32 - 42 refer to the TIMSS class. Remember, "the TIMSS class" is the class that is identified on the cover of this questionnaire and that will be tested as part of TIMSS 2003 in your school.

32

A. How many students are in the TIMSS class for science?

_____

Write in the number of students

B. How many students in Question 32A are in the fourth-grade ?

_____

Write in the number of fourth-grade students

33

Is science taught mainly as a separate subject (i.e., not integrated with other subjects) to the fourth-grade students in the TIMSS class?

	No	Yes
*Fill in **one** circle only*	①	②

A. If YES...

How many minutes per week do you teach science to the fourth-grade students in the TIMSS class?

_____

Write in the number of minutes per week

B. If NO...

Please estimate the number of minutes per week that you spend on science topics with the fourth-grade students in the TIMSS class.

_____

Write in the number of minutes per week

34

A. Do you use a textbook(s) in teaching science to the fourth-grade students in the TIMSS class?

	No	Yes
*Fill in **one** circle only*	①	②

*If **No**, please go to question **35** on next page* 

B. How do you use a textbook(s) in teaching science to the fourth-grade students in the TIMSS class?

*Fill in **one** circle only*

As the primary basis for my lessons ---------- ①

As a supplementary resource ---------- ②

Science

Science

35

A. Do the fourth-grade students in the TIMSS class have computers available to use when you are teaching science? Do not include calcuators.

	No	Yes
*Fill in **one** circle only*	①	②

*If **No**, please go to question* **37**

B. Do any of the computers have access to the Internet?

	No	Yes
*Fill in **one** circle only*	①	②

36

In teaching science to the fourth-grade students in the TIMSS class, how often do you have students use a computer for the following activities?

*Fill in **one** circle for each row*

	Never	Some lessons	About half the lessons	Every or almost every lesson
a) Do scientific procedures or experiments	①	②	③	④
b) Study natural phenomena through simulations	①	②	③	④
c) Practice skills and procedures	①	②	③	④
d) Look up ideas and information	①	②	③	④

37

In teaching science to the fourth-grade students in the TIMSS class, how often do you usually ask them to do the following?

*Fill in **one** circle for each row*

	Never	Some lessons	About half the lessons	Every or almost every lesson
a) Watch me do a science experiment	①	②	③	④
b) Design or plan experiments or investigations	①	②	③	④
c) Do experiments or investigations	①	②	③	④
d) Work together in small groups on experiments or investigations	①	②	③	④
e) Relate what they are learning in science to their daily lives	①	②	③	④
f) Write or give explanations about something they are studying	①	②	③	④
g) Observe something like the weather or a plant growing and write down what they see	①	②	③	④
h) Present their work to the class	①	②	③	④

38

By the end of this school year, approximately what percentage of teaching time will you have spent during this school year on each of the following science content areas for the fourth-grade students in the TIMSS class?

Write in the percent
The total should add to 100%

a) Life science (includes characteristics and cycles of living things, environmental science, and human health) ----------_____%

b) Physical science (includes topics in physics and chemistry) --------_____%

c) Earth science (includes earth's physical features, natural resources, weather, and solar system) ----------_____%

d) Other, please specify:

_____ --------_____%

Total---------- 100%

39

The following list includes the main topics addressed by the TIMSS science test. Choose the response that best describes when the fourth-grade students in the TIMSS class have been taught each topic. If a topic was taught half this year and half before this year, please choose "Mostly taught this year."

*Fill in **one** circle for each row*

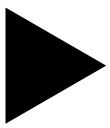
	Not yet taught or just introduced	Mostly taught this year	Mostly taught before this year
A. Life Science			
a) Types, characteristics, and classification of living things	①	②	③
b) Major body structures and their function in humans and other organisms (plants and animals)	①	②	③
c) Bodily actions in response to outside conditions (e.g., heat, cold, danger) and activities (e.g., exercise)	①	②	③
d) The general steps in the life cycle of familiar organisms (e.g., humans, insects, frogs, plants)	①	②	③
e) Plant and animal reproduction (passing on of general characteristics)	①	②	③
f) Physical features, behavior, and survival of plants and animals in different environments	①	②	③
g) Relationships in a living community (e.g., simple food chains using common plants and animals and predator/prey relationships)	①	②	③
h) Changes in environments (effects of human activity, pollution and its prevention)	①	②	③
i) Ways that common communicable diseases (e.g., colds, influenza) are transmitted; signs, prevention, and treatment of illness	①	②	③
j) Ways of maintaining good health, including diet and exercise	①	②	③

39 continued

The following list includes the main topics addressed by the TIMSS science test. Choose the response that best describes when the fourth-grade students in the TIMSS class have been taught each topic. If a topic was taught half this year and half before this year, please choose "Mostly taught this year."

*Fill in **one** circle for each row*

		Not yet taught or just introduced	Mostly taught this year	Mostly taught before this year
B. Physical Science				
a)	Classification of objects and materials based on physical properties	①	②	③
b)	Properties and uses of metals	①	②	③
c)	Forming and separating mixtures	①	②	③
d)	Properties and uses of water	①	②	③
e)	Chemical and physical changes (e.g., decaying of animal/plant matter, burning, rusting)	①	②	③
f)	States of matter (solids, liquids and gases) and differences in their physical properties in terms of shape and volume	①	②	③
g)	Changes in state of water by heating and cooling (melting, freezing, boiling)	①	②	③
h)	Common energy sources/forms and their practical uses (e.g., wind, sun, electricity, burning fuel, water wheel, food)	①	②	③
i)	Heat flow and temperature	①	②	③
j)	Common sources of light and related phenomena (e.g., formation of rainbows and shadows, visibility of objects, mirrors, colors)	①	②	③
k)	Common uses of electricity and electrical circuits	①	②	③
l)	Magnets (north and south poles, magnetic attraction and repulsion)	①	②	③
m)	Forces that cause objects to move (e.g., gravity, push/pull forces)	①	②	③



39 continued

The following list includes the main topics addressed by the TIMSS science test. Choose the response that best describes when the fourth-grade students in the TIMSS class have been taught each topic. If a topic was taught half this year and half before this year, please choose "Mostly taught this year."

*Fill in **one** circle for each row*

		Not yet taught or just introduced	Mostly taught this year	Mostly taught before this year
C. Earth Science				
a)	Rocks, minerals, sand, and soil	①	②	③
b)	Water on earth (location, types, and movement)	①	②	③
c)	Air (composition, proof of its existence, uses, and importance for supporting life)	①	②	③
d)	Common features of the earth's landscape (e.g., mountains, plains, rivers, deserts) and relationship to human use (e.g., farming, irrigation, land development)	①	②	③
e)	Use and conservation of earth's natural resources	①	②	③
f)	Earth's water cycle (water flowing in rivers from mountains to sea, cloud formation and precipitation)	①	②	③
g)	Weather conditions from day to day or over the seasons	①	②	③
h)	Fossils of animals and plants (age, formation)	①	②	③
i)	Earth's solar system (planets, sun, moon)	①	②	③

40

Do you assign science homework to the fourth-grade students in the TIMSS class?

No

Yes

*Fill in **one** circle only* ---------- ① --- ②

*If **No**, you have completed the questionnaire*

41

How often do you usually assign science homework to the fourth-grade students in the TIMSS class?

*Fill in **one** circle only*

Every or almost every lesson ---------- ①

About half the lessons ---------- ②

Some lessons ---------- ③

42

When you assign science homework to the fourth-grade students in the TIMSS class, about how many minutes do you usually assign? (Consider the time it takes an average student in your class to complete the assignment.)

*Fill in **one** circle only*

Fewer than 15 minutes ---------- ①

15-30 minutes ---------- ②

31-60 minutes ---------- ③

61-90 minutes ---------- ④

More than 90 minutes ---------- ⑤

Thank You

for completing this questionnaire

TIMSS International Study Center
Boston College
Chestnut Hill, MA 02467

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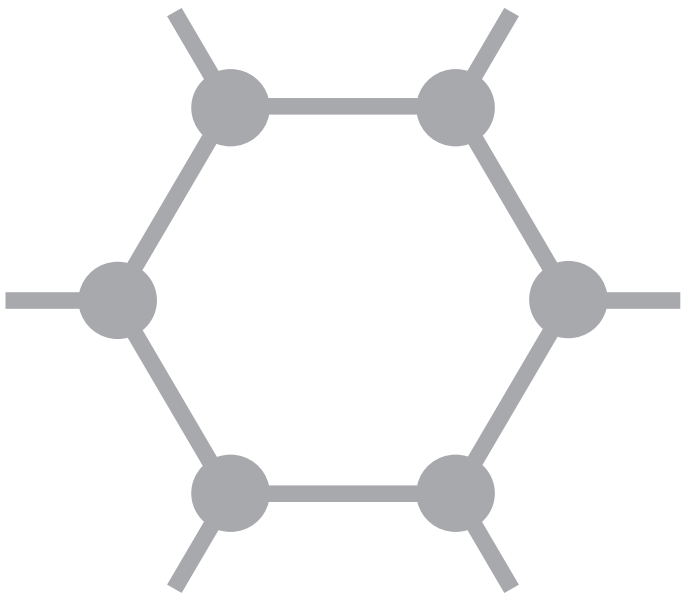


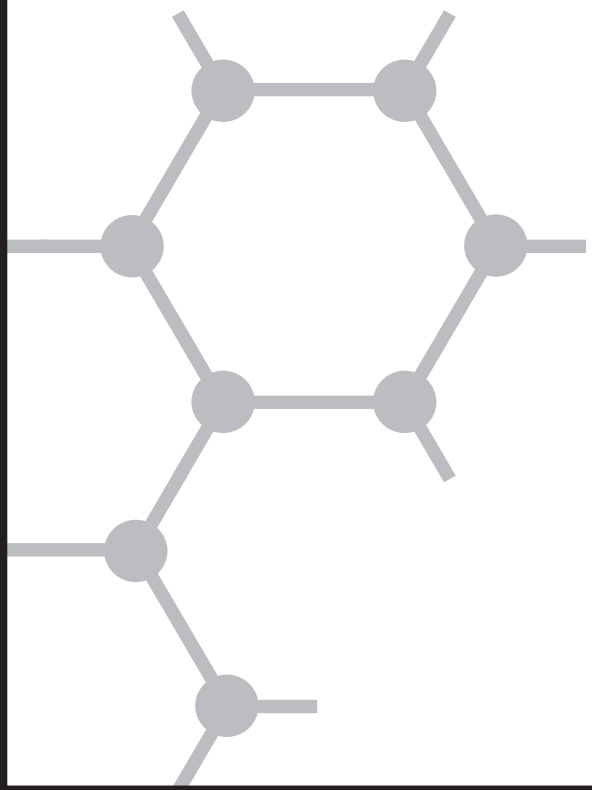
IEA Trends in International Mathematics and Science Study

TIMSS 2003

Main Survey

Student Questionnaire

Grade 4



General Directions

In this booklet, you will find questions about yourself. Some questions ask for facts while other questions ask for your opinions.

Read each question carefully and answer as accurately as possible. You may ask for help if you do not understand something or are not sure how to answer.

Each of the questions is followed by possible choices indicated by a circle with a number in it. For these questions, shade in the circle with the answer of your choice as shown in Examples 1, 2, and 3.

Example 1

Do you go to school?

*Fill in **one** circle only*

Yes ---------- ●

No ---------- ②

Example 2

How often do you do these things?

*Fill in **one** circle for each line*

		Every day	At least once a week	Once or twice a month	A few times a year	Never
a)	I listen to music	①	②	●	④	⑤
b)	I talk with my friends	●	②	③	④	⑤
c)	I play sports	①	●	③	④	⑤

Example 3

Indicate how much you agree with each of these statements.

*Fill in **one** circle for each line*

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
a) Watching movies is fun	①	●	③	④
b) I like eating ice cream	●	②	③	④

Read each question carefully and pick the answer you think is best. Fill in the circle that shows your answer. If you decide to change your answer, erase your first answer and then fill in the circle next to or under your new answer. Ask for help if you do not understand something or are not sure how to answer.

Thank you for your time, effort, and thought in completing this questionnaire.

About You

1

When were you born?

A. Fill in the circle next to the year you were born

Year

① 1990
② 1991
③ 1992
④ 1993
⑤ 1994
⑥ 1995
⑦ 1996
⑧ Other

B. Fill in the circle next to the month you were born

Month

① January
② February
③ March
④ April
⑤ May
⑥ June
⑦ July
⑧ August
⑨ September
⑩ October
⑪ November
⑫ December

2

A. Are you a girl or a boy?

*Fill in **one** circle only*

Girl ---------- ①
Boy ---------- ②

B. Are you Hispanic or Latino?

*Fill in **one** circle only*

Yes, I am Hispanic or Latino. ---------- ①

No, I am not Hispanic or Latino. ---------- ②

C. Which of the following best describes you?

*Fill in **as many** circles as you need to*

White ---------- ①

Black or African American ---------- ②

Asian ---------- ③

American Indian or Alaska Native ---------- ④

Native Hawaiian or other Pacific Islander ---------- ⑤

3

How often do you speak English at home?

*Fill in **one** circle only*

Always ---------- ①

Almost always ---------- ②

Sometimes ---------- ③

Never ---------- ④

4

About how many books are there in your home? (Do not count magazines, newspapers, or your school books.)

*Fill in **one** circle only*

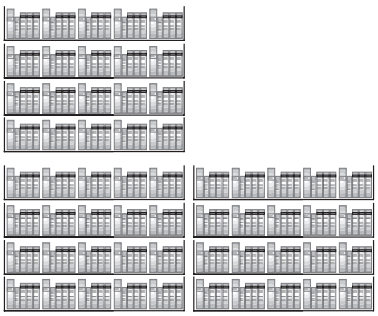
None or very few
(0-10 books) ---------- ① This shows 10 books

Enough to fill one shelf
(11-25 books) ---------- ② This shows 25 books

Enough to fill one bookcase
(26-100 books) ---------- ③ This shows 100 books

Enough to fill two bookcases
(101-200 books) ---------- ④ This shows 200 books

Enough to fill three or more bookcases
(more than 200 books) ---------- ⑤ This shows more than 200 books



5

Do you have any of these items at your home?

*Fill in **one** circle for each line*

		Yes	No
a)	Calculator	①	②
b)	Computer (do not include PlayStation®, GameCube®, XBox®, or other TV/video game system)	①	②
c)	Study desk/table for your use	①	②
d)	Dictionary	①	②
e)	Encyclopedia (as a book or CD)	①	②
f)	PlayStation®, GameCube®, XBox®, or other TV/video game system	①	②
g)	DVD player	①	②
h)	Three or more cars, small trucks or sport utility vehicles	①	②

Mathematics in School

6

How much do you agree with these statements about learning mathematics?

*Fill in **one** circle for each line*

		Agree a lot	Agree a little	Disagree a little	Disagree a lot
a)	I usually do well in mathematics	①	②	③	④
b)	I would like to do more mathematics in school	①	②	③	④
c)	Mathematics is harder for me than for many of my classmates	①	②	③	④
d)	I enjoy learning mathematics	①	②	③	④
e)	I am just not good at mathematics	①	②	③	④
f)	I learn things quickly in mathematics	①	②	③	④

7

How often do you do these things in your mathematics lessons?

*Fill in **one** circle for each line*

		Every or almost every lesson	About half the lessons	Some lessons	Never
a)	I practice adding, subtracting, multiplying, and dividing without using a calculator	①	②	③	④
b)	I work on fractions and decimals	①	②	③	④
c)	I measure things in the classroom and around the school	①	②	③	④
d)	I make tables, charts, or graphs	①	②	③	④
e)	I learn about shapes such as circles, triangles, and rectangles	①	②	③	④
f)	I work with other students in small groups	①	②	③	④
g)	I explain my answers	①	②	③	④
h)	I listen to the teacher talk	①	②	③	④
i)	I work problems on my own	①	②	③	④
j)	I use a calculator	①	②	③	④

Science in School

8

How much do you agree with these statements about learning science?

*Fill in **one** circle for each line*

		Agree a lot	Agree a little	Disagree a little	Disagree a lot
a)	I usually do well in science	①	②	③	④
b)	I would like to do more science in school	①	②	③	④
c)	Science is harder for me than for many of my classmates	①	②	③	④
d)	I enjoy learning science	①	②	③	④
e)	I am just not good at science	①	②	③	④
f)	I learn things quickly in science	①	②	③	④

9

In school, how often do you do these things?

*Fill in **one** circle for each line*

	At least once a week	Once or twice a month	A few times a year	Never
a) I watch the teacher do a science experiment	①	②	③	④
b) I design or plan a science experiment or investigation	①	②	③	④
c) I do a science experiment or investigation	①	②	③	④
d) I work with other students in a small group on a science experiment or investigation	①	②	③	④
e) I write or give an explanation for something I am studying in science	①	②	③	④
f) I look at something like the weather or a plant growing and write down what I see	①	②	③	④
g) I listen to the teacher talk	①	②	③	④
h) I work problems on my own	①	②	③	④

Computers

10

A. Do you ever use a computer? (Do not include PlayStation®, GameCube®, XBox®, or other TV/video game system).

	Yes	No
*Fill in **one** circle only*	①	②

*If **No**, please go to question **11** on next page* →

B. Where do you use a computer?

*Fill in **one** circle for each line*

	Yes	No
a) At home	①	②
b) At school	①	②
c) At a library	①	②
d) At a friend's home	①	②
e) At an Internet café	①	②
f) Elsewhere	①	②

C. How often do you do these things with a computer?

*Fill in **one** circle for each line*

	Every day	At least once a week	Once or twice a month	A few times a year	Never
a) I look up ideas and information for mathematics	①	②	③	④	⑤
b) I look up ideas and information for science	①	②	③	④	⑤
c) I write reports for school	①	②	③	④	⑤

Your School

11

How much do you agree with these statements about your school?

*Fill in **one** circle for each line*

		Agree a lot	Agree a little	Disagree a little	Disagree a lot
a)	I like being in school	①	②	③	④
b)	I think that most students in my school try to do their best	①	②	③	④
c)	I think that most teachers in my school care about the students	①	②	③	④
d)	I think that most teachers in my school want students to do their best	①	②	③	④

Things You Do Outside of School

12

On a normal school day, how much time do you spend before or after school doing each of these things?

*Fill in **one** circle for each line*

	No time	Less than 1 hour	1-2 hours	More than 2 but less than 4 hours	4 or more hours
a) I watch television and videos	①	②	③	④	⑤
b) I play computer games	①	②	③	④	⑤
c) I play or talk with friends	①	②	③	④	⑤
d) I do jobs or chores at home	①	②	③	④	⑤
e) I play sports	①	②	③	④	⑤
f) I read a book for enjoyment	①	②	③	④	⑤
g) I use the Internet	①	②	③	④	⑤
h) I do homework	①	②	③	④	⑤

13

A. During this school year, how often have you had tutoring or extra lessons in <u>mathematics</u> that are not part of your regular class?

*Fill in **one** circle only*

Every or almost every day ---------- ①

Once or twice a week ---------- ②

Sometimes ---------- ③

Never or almost never ---------- ④

B. During this school year, how often have you had tutoring or extra lessons in <u>science</u> that are not part of your regular class?

*Fill in **one** circle only*

Every or almost every day ---------- ①

Once or twice a week ---------- ②

Sometimes ---------- ③

Never or almost never ---------- ④

14

A. How often does your teacher give you homework in <u>mathematics</u>?

*Fill in **one** circle only*

- Every day ---------- ①
- 3 or 4 times a week ---------- ②
- 1 or 2 times a week ---------- ③
- Less than once a week ---------- ④
- Never ---------- ⑤

*If **Never**, please go to question **15** on next page* ➡

B. When your teacher gives you mathematics homework, about how long does it take you to complete this homework?

*Fill in **one** circle only*

- Less than 15 minutes ---------- ①
- 15–30 minutes ---------- ②
- 31–60 minutes ---------- ③
- 61–90 minutes ---------- ④
- More than 90 minutes ---------- ⑤

15

A. How often does your teacher give you homework in <u>science</u>?

*Fill in **one** circle only*

Every day ---------- ①

3 or 4 times a week ---------- ②

1 or 2 times a week ---------- ③

Less than once a week ---------- ④

Never ---------- ⑤

*If **Never**, please go to question **16** on next page* 

B. When your teacher gives you science homework, about how long does it take you to complete this homework?

*Fill in **one** circle only*

Less than 15 minutes ---------- ①

15–30 minutes ---------- ②

31–60 minutes ---------- ③

61–90 minutes ---------- ④

More than 90 minutes ---------- ⑤

More About You

16

Including yourself, how many people live in your home?

*Fill in **one** circle only*

2 ---------- ②

3 ---------- ③

4 ---------- ④

5 ---------- ⑤

6 ---------- ⑥

7 ---------- ⑦

8 or more ---------- ⑧

17

A. Was your mother (or stepmother or female guardian) born in the United States?*

	Yes	No
*Fill in **one** circle only*	①	②

B. Was your father (or stepfather or male guardian) born in the United States?*

	Yes	No
*Fill in **one** circle only*	①	②

***Note: "United States" includes the 50 states, its territories, the District of Columbia, and U.S. military bases abroad.**

18

A. Were you born in the United States?

Yes No

*Fill in **one** circle only* ---------- ① ------ ②

*If **Yes**, you have completed the questionnaire*

B. If you were not born in the United States, how old were you when you came to the United States?

*Fill in **one** circle only*

Younger than 1 year old ---------- ①

1 to 5 years old ---------- ②

Older than 5 years old ---------- ③

Thank You

for completing this questionnaire

TIMSS International Study Center
Boston College
Chestnut Hill, MA 02467

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Appendix B

U.S. TIMSS 2003
Grade Eight and Grade Four
School, Teacher, and Student Questionnaire
Adaptations

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TIMSS 2003 Grade Eight School Questionnaire Adaptations

(1) Question Number	(2) International Questionnaire Text	(3) Description of Adaptation
Instructions Page 3	<Some of the questions in this questionnaire ask about your school in general. If your school has a wide range of grades, please try to answer such questions with regard to the <junior secondary / middle school / basic> grades.>	<junior secondary/ middle school/ basic> grades to 'middle school/junior high school grades'
6C		National option- question asking for percentage of students receiving free or reduced school lunch. A common question designed as a to get a proxy measure of school poverty. Question is as follows: **6C. Around the first of October 2002, what percentage of students at this school were eligible to receive free or reduced-price lunches through the National School Lunch Program?**
18	**How difficult was it to fill <eighth-grade> teaching vacancies for this school year for the following subjects?** *Fill in **one** circle for each row* **Very difficult** **Somewhat difficult** **Easy to fill vacancies** **Were no vacancies in this subject** a) Mathematics ---------- ○ --- ○ --- ○ --- ○ b) Science ---------- ○ --- ○ --- ○ --- ○ c) Computer science / information technology ------ ○ --- ○ --- ○ --- ○	Changed first response category from 'Were no vacancies in this subject' to 'No vacancies in this subject'

TIMSS 2003 Grade Eight School Questionnaire Adaptations

(1) Question Number	(2) International Questionnaire Text	(3) Description of Adaptation
20	**During this school year, how often have your <eighth-grade> teachers been involved in professional development opportunities for mathematics and science targeted at the following?** *Fill in **one** circle for each row* **More than 10 times** **6 to 10 times** **3 to 5 times** **1 to 2 times** **Never** a) Supporting the implementation of the national or regional curriculum ---- ○ --- ○ --- ○ --- ○ --- ○ b) Designing or supporting the school's own improvement goals ---- ○ --- ○ --- ○ --- ○ --- ○ c) Improving content knowledge ---- ○ --- ○ --- ○ --- ○ --- ○ d) Improving teaching skills --------- ○ --- ○ --- ○ --- ○ --- ○ e) Using information and communication technology for educational purposes ---------- ○ --- ○ --- ○ --- ○ --- ○	In stem, changed '…opportunities for mathematics and science targeted at the following?' to ''…opportunities for mathematics and/or science targeted at the following?'

TIMSS 2003 Grade Eight School Questionnaire Adaptations

(1) Question Number	(2) International Questionnaire Text	(3) Description of Adaptation
22A(b)	**How often does each of the following problem behaviors occur among <eighth-grade> students in your school?** **A. Frequency in your school** *Fill in **one** circle for each row in this section* **Daily** **Weekly** **Monthly** **Rarely** **Never** a) Arriving late at school ----------○ --- ○ --- ○ --- ○ -- ○ b) Absenteeism (i.e., unjustified absences) ----------○ --- ○ --- ○ --- ○ -- ○ c) Skipping class <hours/periods> ------○ --- ○ --- ○ --- ○ -- ○ d) Violating dress code ----------○ --- ○ --- ○ --- ○ -- ○ e) Classroom disturbance ----------○ --- ○ --- ○ --- ○ -- ○ f) Cheating ----------○ --- ○ --- ○ --- ○ -- ○ g) Profanity ----------○ --- ○ --- ○ --- ○ -- ○ h) Vandalism ----------○ --- ○ --- ○ --- ○ -- ○ i) Theft ----------○ --- ○ --- ○ --- ○ -- ○ j) Intimidation or verbal abuse of other students ----------○ --- ○ --- ○ --- ○ -- ○ k) Physical injury to other students -----○ --- ○ --- ○ --- ○ -- ○ l) Intimidation or verbal abuse of teachers or staff ----------○ --- ○ --- ○ --- ○ -- ○ m) Physical injury to teachers or staff----○ --- ○ --- ○ --- ○ -- ○	22A(b) Changed ‘unjustified’ to ‘unexcused’ 22A(c) Delete <hours/periods>

TIMSS 2003 Grade Eight School Questionnaire Adaptations

(1) Question Number	(2) International Questionnaire Text	(3) Description of Adaptation
23	**Is your school's capacity to provide instruction affected by a shortage or inadequacy of any of the following?** *Fill in **one** circle for each row* **A lot** | **Some** | **A little** | **None** a) Instructional materials (e.g., textbook) ---------- ○ ○ ○ ○ b) Budget for supplies (e.g., paper, pencils) -------- ○ ○ ○ ○ c) School buildings and grounds ---------- ○ ○ ○ ○ d) Heating/cooling and lighting systems -------- ○ ○ ○ ○ e) Instructional space (e.g., classrooms) ---------- ○ ○ ○ ○ f) Special equipment for handicapped students ------- ○ ○ ○ ○ g) Computers for mathematics instruction ---------- ○ ○ ○ ○ h) Computer software for mathematics instruction ---- ○ ○ ○ ○ i) Calculators for mathematics instruction ---------- ○ ○ ○ ○ j) Library materials relevant to mathematics instruction - ○ ○ ○ ○ k) Audio-visual resources for mathematics instruction ---- ○ ○ ○ ○	1. Add 'How much' to front of stem 2. Changed first response category from 'None' to 'Not at all'

TIMSS 2003 Grade Eight Mathematics Teacher Questionnaire Adaptations

(1) Question Number	(2) International Question Text	(3) Description of Adaptation
3	**By the end of this school year, how many years will you have been teaching altogether?** _____ *Number of years you have taught*	1. Added statement to the end of the stem: "Do no include teaching as a substitute or a student teacher." 2. Broke response out to time spent teaching full-time and part-time: 'Number of years you have taught full-time' 'Number of years you have taught part-time'
4	**What is the highest level of formal education you have completed?** *Fill in one circle only* Did not complete <ISCED 3> ----------○ Finished <ISCED 3> ----------○ Finished <ISCED 4B> ----------○ Finished <ISCED 5B> ----------○ Finished <ISCED 5A, first degree> ----------○ Finished <ISCED 5A, second degree> or higher ---○	ISCED levels replaced with the following: (Did not complete ISCED 3) Did not complete high school (Finished ISCED 3) Completed high school; (Finished ISCED 4B) Completed a vocational/technical certificate after high school ; (Finished ISCED 5B) Completed an Associate's degree (AA) in a vocational/technical program; (Finished ISCED 5A, first degree) Completed an academic Associate's or Bachelor's degree; (Finished ISCED 5A, second degree or higher) Completed an academic Master's degree, postgraduate certificate program (e.g., teaching) or first professional degree (e.g., law, medicine, dentistry) Completed a doctorate (Ph.D. Or Ed.D)

TIMSS 2003 Grade Eight Mathematics Teacher Questionnaire Adaptations

(1) Question Number	(2) International Question Text	(3) Description of Adaptation
5	**How many years of <pre-service teacher training> did you have? Please round to the nearest whole number.** *Fill in one circle only* 0 years ○ 1 year ○ 2 years ○ 3 years ○ 4 years ○ 5 years ○ More than 5 years ○	After 'pre-service teacher training' added (e.g. time spent in a teacher education program such as student teaching or a mentorship).
6	**During your <post-secondary> education, what was your major or main area(s) of study?** *Fill in one circle for each row* No / Yes a) Mathematics ○ ○ b) Education - Mathematics ○ ○ c) Science ○ ○ d) Education - Science ○ ○ e) Education - General ○ ○ f) Other ○ ○	1.<post-secondary> to 'college or university' 2. delete 'major or' 3. Change response format from 'Yes', 'No' to 'Major', 'Minor', 'No' 4. 6e to Education - other

TIMSS 2003 Grade Eight Mathematics Teacher Questionnaire Adaptations

(1) Question Number	(2) International Question Text	(3) Description of Adaptation
7	**What requirements did you have to satisfy in order to become a mathematics teacher at <grade 8>?** *Fill in one circle for each row* a) Complete <ISCED 5A, first degree> — Yes ○ No ○ b) Complete a probationary period — Yes ○ No ○ c) Complete a minimum number of education courses — Yes ○ No ○ d) Complete a minimum number of mathematics courses — Yes ○ No ○ e) Pass a licensing examination — Yes ○ No ○	Replaced ISCED 5A with ‘ a bachelor’s degree’

TIMSS 2003 Grade Eight Mathematics Teacher Questionnaire Adaptations

(1) Question Number	(2) International Question Text	(3) Description of Adaptation
8B	**B. What type of license or certificate do you hold?** *Fill in one circle only* <Full certificate> ----------○ <Provisional certificate> ----------○ <Emergency certificate> ----------○ Other ----------○ (Please specify:_____)	Replaced categories with the following: Regular or standard state certificate or advanced professional certificate Probationary certificate (the initial certificate issued after satisfying all requirements except the completion of a probationary period) Provisional or other type given to persons who are still participating in what the state calls an "alternative certification program" Temporary certificate (requires some additional college coursework and/or student teaching before regular certification can be obtained. Emergency certificate or waiver (issued to persons with insufficient teacher preparation who must complete a regular certification program in order to continue teaching) These map to the original categories as follows: Regular or standard and Probationary = Full Provisional and termporary = Provisional Emergency or waiver = Emergency Did not administer Other

(1) Question Number	(2) International Question Text	(3) Description of Adaptation
9A(b); 9E(d)	**Considering your training and experience in both mathematics content and instruction, how ready do you feel you are to teach these topics at the <eighth> grade?** *Fill in one circle for each row* Very ready / Ready / Not ready **A. Number** a) Representing decimals and fractions using words, numbers, or models (including number lines) ○ ○ ○ b) Integers including words, numbers, or models (including number lines); ordering integers; and addition, subtraction, multiplication, and division with integers ○ ○ ○ **B. Algebra** a) Numeric, algebraic, and geometric patterns or sequences (extension, missing terms, generalization of patterns) ○ ○ ○ b) Simple linear equations and inequalities, and simultaneous (two variables) equations ○ ○ ○ c) Equivalent representations of functions as ordered pairs, tables, graphs, words, or equations ○ ○ ○ d) Attributes of a graph such as intercepts on axes, and intervals where the function increases, decreases, or is constant ○ ○ ○ **C. Measurement** a) Estimations of length, circumference, area, volume, weight, time, angle, and speed in problem situations (e.g., circumference of a wheel, speed of a runner) ○ ○ ○ b) Computations with measurements in problem situations (e.g., add measures, find average speed on a trip, find population density) ○ ○ ○ c) Measures of irregular or compound areas (e.g., by using grids or dissecting and rearranging pieces) ○ ○ ○ d) Precision of measurements (e.g., upper and lower bounds of a length reported as 8 centimeters to the nearest centimeter) ○ ○ ○ **D. Geometry** a) Pythagorean theorem (not proof) to find length of a side ○ ○ ○ b) Congruent figures (triangles, quadrilaterals) and their corresponding measures ○ ○ ○ c) Cartesian plane - ordered pairs, equations, intercepts, intersections, and gradient ○ ○ ○ d) Translation, reflection, rotation, and enlargement ○ ○ ○ **E. Data** a) Sources of error in collecting and organizing data (e.g., bias, inappropriate grouping) ○ ○ ○ b) Data collection methods (e.g., survey, experiment, questionnaire) ○ ○ ○ c) Characteristics of data sets including mean, median, range, and shape of distribution (in general terms) ○ ○ ○ d) Simple probability including using data from experiments to estimate probabilities for favorable outcomes ○ ○ ○	9A(b). 'Integers including' to 'Integers represented by' 9E(d). Delete '…for favorable outcomes'

TIMSS 2003 Grade Eight Mathematics Teacher Questionnaire Adaptations

(1) Question Number	(2) International Question Text	(3) Description of Adaptation
10A, 10B	**A. In one typical calendar week from Monday to Sunday, what is the total number of single periods for which you are formally <scheduled/time-tabled/assigned>? Count a double period as two periods.** _____ *Write in the number of periods* **B. Of these formally <scheduled/time-tabled/assigned> periods, how many are you assigned to do each of the following?** *Write in the number of periods* a) Teach mathematics ---------- _____ b) Teach science ---------- _____ c) Teach other subjects ---------- _____ d) Perform other duties ---------- _____ **Total** ---------- _____ *Should match number in 10A*	<scheduled/time-tabled/assigned> to 'scheduled'

TIMSS 2003 Grade Eight Mathematics Teacher Questionnaire Adaptations

(1) Question Number	(2) International Question Text	(3) Description of Adaptation
15	**Thinking about your CURRENT school, indicate the extent to which you agree or disagree with each of the following statements.** *Fill in one circle for each row* Disagree a lot | Disagree | Agree | Agree a lot a) This school facility (building and grounds) is in need of significant repair ---------- ○ ○ ○ ○ b) This school is located in a safe neighborhood -------- ○ ○ ○ ○ c) I feel safe at this school ----- ○ ○ ○ ○ d) This school's security policies and practices are sufficient - ○ ○ ○ ○	1. Delete 'CURRENT' 2. Add 'about your school' to end of stem

TIMSS 2003 Grade Eight Mathematics Teacher Questionnaire Adaptations

(1) Question Number	(2) International Question Text	(3) Description of Adaptation
24A(h)	**The following list includes the main topics addressed by the TIMSS mathematics test. Choose the response that best describes when students in the TIMSS class have been taught each topic. If a topic was taught half this year and half before this year, please choose "Mostly taught this year."** *Fill in one circle for each row* **A. Number** a) Whole numbers including place value, factorization, and the four operations ---------- ○ Not yet taught or just introduced ○ Mostly taught this year ○ Mostly taught before this year b) Computations, estimations, or approximations involving whole numbers ---------- ○ ○ ○ c) Common fractions including equivalent fractions, and ordering of fractions ---------- ○ ○ ○ d) Decimal fractions including place value, ordering, rounding, and converting to common fractions (and vice versa) ---------- ○ ○ ○ e) Representing decimals and fractions using words, numbers, or models (including number lines) ---------- ○ ○ ○ f) Computations with fractions ---------- ○ ○ ○ g) Computations with decimals ---------- ○ ○ ○ h) Integers including words, numbers, or models (including number lines), ordering integers, addition, subtraction, multiplication, and division with integers ---------- ○ ○ ○ i) Ratios (equivalence, division of a quantity by a given ratio) ---------- ○ ○ ○ j) Conversion of percents to fractions or decimals, and vice versa ---------- ○ ○ ○	'Integers including' to 'Integers represented by'

TIMSS 2003 Grade Eight Mathematics Teacher Questionnaire Adaptations

(1) Question Number	(2) International Question Text	(3) Description of Adaptation
24E(h)	**E. Data** a) Organizing a set of data by one or more characteristics using a tally chart, table, or graph b) Sources of error in collecting and organizing data (e.g., bias, inappropriate grouping) c) Data collection methods (e.g., survey, experiment, questionnaire) d) Drawing and interpreting graphs, tables, pictographs, bar graphs, pie charts, and line graphs e) Characteristics of data sets including mean, median, range, and shape of distribution (in general terms) f) Interpreting data sets (e.g., draw conclusions, make predictions, and estimate values between and beyond given data points) g) Evaluating interpretations of data with respect to correctness and completeness of interpretation h) Simple probability including using data from experiments to estimate probabilities for favorable outcomes	Delete '…for favorable outcomes'
30A	**A. Do students in the TIMSS class have computers available to use during their mathematics lessons?** **No** **Yes** *Fill in **one** circle only*	Added statement at end of stem, 'Do not include calculators.'

TIMSS 2003 Grade Eight Mathematics Teacher Questionnaire Adaptations

(1) Question Number	(2) International Question Text	(3) Description of Adaptation
34	**When you assign mathematics homework to the TIMSS class, about how many minutes do you usually assign? (Consider the time it would take an average student in your class.)** *Fill in one circle only* Fewer than 15 minutes ○ 15-30 minutes ○ 31-60 minutes ○ 61-90 minutes ○ More than 90 minutes ○	Added 'to complete the assignment to statement in parentheses. Reads ' (Consider the time it would take an average student in your class to complete the assignment.)'
37	**How often do you give a mathematics test or examination to the TIMSS class?** *Fill in one circle only* About once a week ○ About every two weeks ○ About once a month ○ A few times a year ○ Never ○	Added 'Do not include quizzes.' to the end of the stem

TIMSS 2003 Grade Eight Mathematics Teacher Questionnaire Adaptations

(1) Question Number	(2) International Question Text	(3) Description of Adaptation
38	**What item formats do you typically use in your mathematics tests or examinations?** *Fill in one circle only* Only constructed-response ○ Mostly constructed-response ○ About half constructed-response and half objective (e.g., multiple-choice) ○ Mostly objective ○ Only objective ○	Added 'Do not include quizzes.' to the end of the stem
39	**How often do you include the following types of questions in your mathematics tests or examinations?** *Fill in one circle for each row* **Never or almost never** | **Sometimes** | **Always or almost always** a) Questions involving application of mathematical procedures ○ ○ ○ b) Questions involving searching for patterns and relationships ○ ○ ○ c) Questions requiring explanations or justifications ○ ○ ○	Added 'Do not include quizzes.' to the end of the stem

TIMSS 2003 Grade Eight Science Teacher Questionnaire Adaptations

(1) Question Number	(2) International Question Text	(3) Description of Adaptation
Directions	Some of the questions in this questionnaire refer specifically to students in the "TIMSS class." This is the class that is identified on the cover of this questionnaire, and that will be tested as part of TIMSS 2003 in your school. If you teach science to some but not all of the students in the TIMSS class, please think of teaching the science class these students are in when answering these class-specific questions. It is important that you answer each question carefully so that the information that you provide reflects your situation as accurately as possible.	**Page 2, paragraph 3 – replace with the following:** Some of the questions in this questionnaire ask about a particular science class that you teach. This is the class which is identified on the cover of this questionnaire, and which includes students who will be tested as part of TIMSS 2003 in your school.
3	**By the end of this school year, how many years will you have been teaching altogether?** _____ *Number of years you have taught*	1. Added statement to the end of the stem: "Do no include teaching as a substitute or a student teacher." 2. Broke response out to time spent teaching full-time and part-time: 'Number of years you have taught full-time' 'Number of years you have taught part-time'

TIMSS 2003 Grade Eight Science Teacher Questionnaire Adaptations

(1) Question Number	(2) International Question Text	(3) Description of Adaptation
4	**What is the highest level of formal education you have completed?** *Fill in one circle only* Did not complete <ISCED 3> ----------○ Finished <ISCED 3> ----------○ Finished <ISCED 4B> ----------○ Finished <ISCED 5B> ----------○ Finished < ISCED 5A, first degree> ----------○ Finished <ISCED 5A, second degree> or higher ----------○	ISCED levels replaced with the following: (Did not complete ISCED 3) Did not complete high school (Finished ISCED 3) Completed high school; (Finished ISCED 4B) Completed a vocational/technical certificate after high school ; (Finished ISCED 5B) Completed an Associate's degree (AA) in a vocational/technical program; (Finished ISCED 5A, first degree) Completed an academic Associate's or Bachelor's degree; (Finished ISCED 5A, second degree or higher) Completed an academic Master's degree, postgraduate certificate program (e.g., teaching) or first professional degree (e.g., law, medicine, dentistry) Completed a doctorate (Ph.D. Or Ed.D)

TIMSS 2003 Grade Eight Science Teacher Questionnaire Adaptations

(1) Question Number	(2) International Question Text	(3) Description of Adaptation
5	**How many years of <pre-service teacher training> did you have? Please round to the nearest whole number.** *Fill in one circle only* 0 years ○ 1 year ○ 2 years ○ 3 years ○ 4 years ○ 5 years ○ More than 5 years ○	After 'pre-service teacher training' added (e.g. time spent in a teacher education program such as student teaching or a mentorship).
6	**During your <post-secondary> education, what was your major or main area(s) of study?** *Fill in one circle for each row* No / Yes a) Biology ○ ○ b) Physics ○ ○ c) Chemistry ○ ○ d) <Earth Science> ○ ○ e) Education - Science ○ ○ f) Mathematics ○ ○ g) Education - Mathematics ○ ○ h) Education - General ○ ○ i) Other ○ ○	1) In the stem: Changed <post-secondary> to 'college or university' Deleted 'major or' 2) Change response format from 'Yes', 'No' to 'Major', 'Minor', 'No' 6e from 'Education – General ' to 'Education – Other'

TIMSS 2003 Grade Eight Science Teacher Questionnaire Adaptations

(1) Question Number	(2) International Question Text	(3) Description of Adaptation
7	**What requirements did you have to satisfy in order to become a science teacher at <grade 8>?** *Fill in one circle for each row* No / Yes a) Complete <ISCED 5A, first degree> ---- ○ ○ b) Complete a probationary period ---------- ○ ○ c) Complete a minimum number of education courses ---------- ○ ○ d) Complete a minimum number of science courses ---------- ○ ○ e) Pass a licensing examination ---------- ○ ○	Replaced <ISCED 5A, first degree> with ' a bachelor's degree

TIMSS 2003 Grade Eight Science Teacher Questionnaire Adaptations

(1) Question Number	(2) International Question Text	(3) Description of Adaptation
8B	**B. What type of license or certificate do you hold?** *Fill in one circle only* <Full certificate> ---------- ○ <Provisional certificate> ---------- ○ <Emergency certificate> ---------- ○ Other ---------- ○ (Please specify:_____)	Replaced categories with the following: Regular or standard state certificate or advanced professional certificate Probationary certificate (the initial certificate issued after satisfying all requirements except the completion of a probationary period) Provisional or other type given to persons who are still participating in what the state calls an "alternative certification program" Temporary certificate (requires some additional college coursework and/or student teaching before regular certification can be obtained. Emergency certificate or waiver (issued to persons with insufficient teacher preparation who must complete a regular certification program in order to continue teaching) These map to the original categories as follows: Regular or standard and Probationary = Full Provisional and termporary = Provisional Emergency or waiver = Emergency Did not administer Other

TIMSS 2003 Grade Eight Science Teacher Questionnaire Adaptations

(1) Question Number	(2) International Question Text	(3) Description of Adaptation
10A, 10B	**A. In one typical calendar week from Monday to Sunday, what is the total number of single periods for which you are formally <scheduled/time-tabled/assigned>? Count a double period as two periods.** _____ *Write in the number of periods* **B. Of these formally <scheduled/time-tabled/assigned> periods, how many are you assigned to do each of the following?** *Write in the number of periods* a) Teach <general> science ---------- _____ b) Teach physical science ---------- _____ c) Teach physics ---------- _____ d) Teach chemistry ---------- _____ e) Teach life science/biology ---------- _____ f) Teach Earth science ---------- _____ g) Teach mathematics ---------- _____ h) Teach other subjects ---------- _____ i) Perform other duties ---------- _____ **Total** ---------- _____ *Should match number in 10A*	<scheduled/time-tabled/assigned> to 'scheduled'

TIMSS 2003 Grade Eight Science Teacher Questionnaire Adaptations

(1) Question Number	(2) International Question Text	(3) Description of Adaptation
15	**Thinking about your CURRENT school, indicate the extent to which you agree or disagree with each of the following statements.** *Fill in one circle for each row* **Disagree a lot** | **Disagree** | **Agree** | **Agree a lot** a) This school facility (building and grounds) is in need of significant repair ---------- ○ ---○ ---○ ---○ b) This school is located in a safe neighborhood ------- ○ ---○ ---○ ---○ c) I feel safe at this school ---- ○ ---○ ---○ ---○ d) This school's security policies and practices are sufficient - ○ ---○ ---○ ---○	1. Delete 'CURRENT' 2. Add 'about your school' to end of stem
Directions	The remaining questions refer to the <TIMSS class / class with the TIMSS students>. Remember, "the TIMSS class" is the class which is identified on the cover of this questionnaire, and which will be tested as part of TIMSS 2003 in your school.	Page10 - under '**The TIMSS Class**" – replace existing instructions with the following: In this section, many of the questions refer to **a particular science class that you teach**. Please remember that this is the class which is identified on the cover of this questionnaire.
17-30; 32		'TIMSS class' to 'class with the TIMSS students'

TIMSS 2003 Grade Eight Science Teacher Questionnaire Adaptations

(1) Question Number	(2) International Question Text	(3) Description of Adaptation
33	**What item formats do you typically use in your science tests or examinations?** *Fill in one circle only* Only constructed-response ○ Mostly constructed-response ○ About half constructed-response and half objective (e.g., multiple-choice) ○ Mostly objective ○ Only objective ○	Add 'Do not include quizzes.' to the end of the stem
34	**How often do you include the following types of questions in your science tests or examinations?** *Fill in one circle for each row* **Never or almost never** | **Sometimes** | **Always or almost always** a) Questions requiring understanding of concepts, relationships, and processes ○ ○ ○ b) Questions involving hypotheses and conclusions ○ ○ ○ c) Questions based on recall of facts or procedures ○ ○ ○	Add 'Do not include quizzes.' to the end of the stem

TIMSS 2003 Grade Eight Student Questionnaire Adaptations

(1) Question Number	(2) International Question Text	(3) Description of Adaptation
2	**Are you a girl or a boy?** *Fill in one circle only* Girl ---------- ① Boy ---------- ②	Added Race/Ethnicity (National option) to 2. Numbering becomes 2A – gender; 2B – ethnicity; 2C – race
3	**How often do you speak <language of test> at home?** *Fill in one circle only* Always ---------- ① Almost always ---------- ② Sometimes ---------- ③ Never ---------- ④	<language of test> to English

(1) Question Number	(2) International Question Text	(3) Description of Adaptation
5	**Do you have any of these items at your home?** *Fill in one circle for each line* Yes ↓ No ↓ a) Calculator ---------- ① ------ ② b) Computer (do not include PlayStation®, GameCube®, XBox®, or other TV/video game computers) --- ① ------ ② c) Study desk/table for your use ---------- ① ------ ② d) Dictionary ---------- ① ------ ② e) <country-specific> ---------- ① ------ ② f) <country-specific> ---------- ① ------ ② g) <country-specific> ---------- ① ------ ② h) <country-specific> ---------- ① ------ ②	National options for items e-h,: e) Encyclopedia (as a CD or book); f) PlayStation, GameCube, Xbox, or other TV/video game system; g) DVD player; h) three or more cars, small trucks or SUV's . deleted items i-p

TIMSS 2003 Grade Eight Student Questionnaire Adaptations

(1) Question Number	(2) International Question Text	(3) Description of Adaptation
6A, 6B	**A. What is the highest level of education completed by your mother (or stepmother or female guardian)?** *Fill in one circle only* Did not finish <ISCED 1> or did not go to school ---------- ① <ISCED 1> ---------- ② <ISCED 2> ---------- ③ <ISCED 3> ---------- ④ <ISCED 4B> ---------- ⑤ <ISCED 5B> ---------- ⑥ <ISCED 5A, first degree> ---------- ⑦ Beyond <ISCED 5A, first degree> ---------- ⑧ I don't know ---------- ⑨ **B. What is the highest level of education completed by your father (or stepfather or male guardian)?** *Fill in one circle only* Did not finish <ISCED 1> or did not go to school ---------- ① <ISCED 1> ---------- ② <ISCED 2> ---------- ③ <ISCED 3> ---------- ④ <ISCED 4B> ---------- ⑤ <ISCED 5B> ---------- ⑥ <ISCED 5A, first degree> ---------- ⑦ Beyond <ISCED 5A, first degree> ---------- ⑧ I don't know ---------- ⑨	ISCED levels replaced with the following: (Did not complete ISCED 1) Did not finish elementary school or did not go to school (ISCED 1) Completed elementary school ; (ISCED 2) Some high school ; (ISCED 3) Completed high school; (ISCED 4) Completed a vocational/technical certificate after high school; (ISCED 5B) Completed an Associate's degree (AA) in a vocational/technical program; (ISCED 5A) Completed a 2-year or 4-year college or university degree (i.e., Associate's or Bachelor's degree); (ISCED 5A) Completed a Master's degree, teaching certificate program, or professional degree (e.g., law, medicine, dentistry) (ISCED 6) Completed a doctorate (Ph.D. or Ed.D); I don't know

TIMSS 2003 Grade Eight Student Questionnaire Adaptations

(1) Question Number	(2) International Question Text	(3) Description of Adaptation
7	**How far in school do you expect to go?** *Fill in one circle only* Finish <ISCED 3> ---------- ① Finish <ISCED 4B> ---------- ② Finish <ISCED 5B> ---------- ③ Finish <ISCED 5A, first degree> ---------- ④ Beyond <ISCED 5A, first degree> ---------- ⑤ I don't know ---------- ⑥	ISCED levels replaced with the following: (ISCED 3) Finish high school; (ISCED 4) Finish vocational/technical education after high school ; (ISCED 5B) Finish community or junior college; (ISCED 5A) Complete a bachelor's degree at a college or university; (Beyond ISCED 5A) Beyond bachelor's degree; I don't know
9c,d	**How much do you agree with these statements about mathematics?** *Fill in one circle for each line* Agree a lot ↓ Agree a little ↓ Disagree a little ↓ Disagree a lot ↓ a) I think learning mathematics will help me in my daily life ---------- ① ------ ② ------ ③ ----- ④ b) I need mathematics to learn other school subjects ---------- ① ------ ② ------ ③ ----- ④ c) I need to do well in mathematics to get into the <university> of my choice ---------- ① ------ ② ------ ③ ----- ④ d) I would like a job that involved using mathematics ---------- ① ------ ② ------ ③ ----- ④ e) I need to do well in mathematics to get the job I want ---------- ① ------ ② ------ ③ ----- ④	9c. <university> to 'university or college' 9d. 'Involved' to 'involves'

TIMSS 2003 Grade Eight Student Questionnaire Adaptations

(1) Question Number	(2) International Question Text	(3) Description of Adaptation
10	**How often do you do these things in your mathematics lessons**	k) 'We work problems on our own' to 'We work on problems on our own'

Fill in one circle for each line

	Every or almost every lesson	About half the lessons	Some lessons	Never
a) We practice adding, subtracting, multiplying, and dividing without using a calculator	①	②	③	④
b) We work on fractions and decimals	①	②	③	④
c) We interpret data in tables, charts, or graphs	①	②	③	④
d) We write equations and functions to represent relationships	①	②	③	④
e) We work together in small groups	①	②	③	④
f) We relate what we are learning in mathematics to our daily lives	①	②	③	④
g) We explain our answers	①	②	③	④
h) We decide on our own procedures for solving complex problems	①	②	③	④
i) We review our homework	①	②	③	④
j) We listen to the teacher give a lecture-style presentation	①	②	③	④
k) We work problems on our own	①	②	③	④
l) We begin our homework in class	①	②	③	④
m) We have a quiz or test	①	②	③	④
n) We use calculators	①	②	③	④

(1) Question Number	(2) International Question Text	(3) Description of Adaptation
12c,d	**How much do you agree with these statements about science?** *Fill in **one** circle for each line* Agree a lot ↓ ① ------ Agree a little ↓ ② ------ Disagree a little ↓ ③ ----- Disagree a lot ↓ ④ a) I think learning science will help me in my daily life b) I need science to learn other school subjects c) I need to do well in science to get into the <university> of my choice d) I would like a job that involved using science e) I need to do well in science to get the job I want	12c. <university> to 'university or college' 12d. 'Involved' to 'involves'
14	**A. Do you ever use a computer? (Do not include PlayStation®, GameCube®, XBox®, or other TV/video game computers).** Yes ↓ ① ------ No ↓ ② *Fill in **one** circle only* *If **No**, please go to question **15*** →	In the stem,"….TV/video game computers)." To "…TV/video game systems.)"

(1) Question Number	(2) International Question Text	(3) Description of Adaptation
15b-c	**How much do you agree with these statements about your school?** *Fill in **one** circle for each line* Agree a lot ↓ ① ------ Agree a little ↓ ② ------ Disagree a little ↓ ③ ----- Disagree a lot ↓ ④ a) I like being in school ----------①------②------③-----④ b) I think that students in my school try to do their best ----------①------②------③-----④ c) I think that teachers in my school care about the students ----------①------②------③-----④ d) I think that teachers in my school want students to do their best ----------①------②------③-----④	Insert 'most' so that items read: b) most students; c) most teachers; d) most teachers
16	**<u>In school</u>, did any of these things happen during the <u>last month</u>?** *Fill in **one** circle for each line* Yes ↓ ① ------ No ↓ ② a) Something of mine was stolen ----------①------② b) I was hit or hurt by other student(s) (e.g., shoving, hitting, kicking) ----------①------② c) I was made to do things I didn't want to do by other students ----------①------② d) I was made fun of or called names -----①------② e) I was left out of activities by other students ----------①------②	ITEM DELETED

(1) Question Number	(2) International Question Text	(3) Description of Adaptation
17d (US 16d)	**On a normal school day, how much time do you spend before or after school doing each of these things?** *Fill in **one** circle for each line* No time / Less than 1 hour / 1-2 hours / More than 2 but less than 4 hours / 4 or more hours a) I watch television and videos ① ② ③ ④ ⑤ b) I play computer games ① ② ③ ④ ⑤ c) I play or talk with friends ① ② ③ ④ ⑤ d) I do jobs at home ① ② ③ ④ ⑤ e) I work at a paid job ① ② ③ ④ ⑤ f) I play sports ① ② ③ ④ ⑤ g) I read a book for enjoyment ① ② ③ ④ ⑤ h) I use the internet ① ② ③ ④ ⑤ i) I do homework ① ② ③ ④ ⑤	Insert 'or chores' after ' I do jobs…'. Item reads, "I do jobs or chores at home."

(1) Question Number	(2) International Question Text	(3) Description of Adaptation
18A,18B (US 17A, 17B)	**A. During this school year, how often have you had extra lessons or tutoring in mathematics that is not part of your regular class?** *Fill in **one** circle only* Every or almost every day ----------① Once or twice a week ----------② Sometimes ----------③ Never or almost never----------④ **B. During this school year, how often have you had extra lessons or tutoring in science that is not part of your regular class?** *Fill in **one** circle only* Every or almost every day ----------① Once or twice a week ----------② Sometimes ----------③ Never or almost never----------④	17A. In the stem, reverse order of 'extra lessons' and ' turtoring' and underline 'mathematics' 17B. Same reversal and underline 'science'

(1) Question Number	(2) International Question Text	(3) Description of Adaptation
19A,19B (US 18A, 18B)	**A. How often does your teacher give you homework in mathematics?** *Fill in **one** circle only* Every day ---------- ① 3 or 4 times a week ---------- ② 1 or 2 times a week ---------- ③ Less than once a week ---------- ④ Never ---------- ⑤ *If **Never**, please go to question **20*** ➡ **B. When your teacher gives you mathematics homework, about how many minutes are you usually given?** *Fill in **one** circle only* Fewer than 15 minutes ---------- ① 15–30 minutes ---------- ② 31–60 minutes ---------- ③ 61–90 minutes ---------- ④ More than 90 minutes ---------- ⑤	18A. Underline 'mathematics' 18B. Change stem to read, "When your teacher gives you mathematics homework, about how long does it take you to complete this homework?"

TIMSS 2003 Grade Eight Student Questionnaire Adaptations

(1) Question Number	(2) International Question Text	(3) Description of Adaptation
20A, 20B (US 19A, 19B)	**A. How often does your teacher give you homework in science?** *Fill in **one** circle only* Every day ① 3 or 4 times a week ② 1 or 2 times a week ③ Less than once a week ④ Never ⑤ *If **Never**, please go to question **21*** **B. When your teacher gives you science homework, about how many minutes are you usually given?** *Fill in **one** circle only* Fewer than 15 minutes ① 15–30 minutes ② 31–60 minutes ③ 61–90 minutes ④ More than 90 minutes ⑤	19A. Underline 'science' 19B. Same change as 18B

TIMSS 2003 Grade Eight Student Questionnaire Adaptations

(1) Question Number	(2) International Question Text	(3) Description of Adaptation
22A, 22B (US 21A, 21B)	A. Was your mother (or stepmother or female guardian) born in <country>? Yes No *Fill in **one** circle only* ---------- ① ------ ② B. Was your father (or stepfather or male guardian) born in <country>? Yes No *Fill in **one** circle only* ---------- ① ------ ②	<country> to the United States and added a note defining United States -- Note: "United States" includes the 50 states, its territories, the District of Columbia, and U.S. military bases abroad."
23A, 23B (US 22A, 22B)	A. Were you born in <country>? Yes No *Fill in **one** circle only* ---------- ① ------ ② *If **Yes**, you have completed the questionnaire* ➡ B. If you were not born in <country>, how old were you when you came to <country>? *Fill in **one** circle only* Older than 10 years old ---------- ① 5 to 10 years old ---------- ② Younger than 5 years old ---------- ③	22A, 22B. <country> to United States 22B. Switched 'older than 10 years old' and 'Younger than 5 years old'

TIMSS 2003 Grade Four School Questionnaire Adaptations

(1) Question Number	(2) International Questionnaire Text	(3) Description of Adaptation
6B	**B. Approximately what percentage of students in your school have <language of test> as their native language?** *Fill in one circle only* More than 90% ○ 76 to 90% ○ 50 to 75% ○ Less than 50% ○	<language of test> to 'English'
6C		National option- question asking for percentage of students receiving free or reduced school lunch. A common question designed as a to get a proxy measure of school poverty. Question is as follows: **6C. Around the first of October 2002, what percentage of students at this school was eligible to receive free or reduced-price lunches through the National School Lunch Program?** *Check None if zero (0), or write in a percent.* *None* ☐ *or* _____ *%*

TIMSS 2003 Grade Four School Questionnaire Adaptations

(1) Question Number	(2) International Questionnaire Text	(3) Description of Adaptation
11C	**C. To the nearest half-hour, what is the total instructional time in a typical full day (excluding lunch breaks, study hall, and after school activities) for <fourth-grade> students?** *Fill in one circle only* 4 hours or less ○ 4.5 hours ○ 5 hours ○ 5.5 hours ○ 6 hours ○ 6.5 hours or more ○	Delete 'study hall' in the stem
18	**How difficult was it to fill <fourth-grade> teaching vacancies for this school year?** *Fill in one circle only* Were no vacancies ○ Easy to fill vacancies ○ Somewhat difficult ○ Very difficult ○	Changed first category from 'Were no vacancies' to 'No vacancies'

TIMSS 2003 Grade Four School Questionnaire Adaptations

(1) Question Number	(2) International Questionnaire Text	(3) Description of Adaptation
20/20a	**During this school year, how often have your <fourth-grade> teachers been involved in professional development opportunities for mathematics and science targeted at the following?** *Fill in one circle for each row* More than 10 times 6 to 10 times 3 to 5 times 1 to 2 times Never a) Supporting the implementation of the national or regional curriculum b) Designing or supporting the school's own improvement goals c) Improving content knowledge d) Improving teaching skills e) Using information and communication technology for educational purposes	In stem, changed '…opportunities for mathematics and science targeted at the following?' to ''…opportunities for mathematics and/or science targeted at the following?' 20a. Changed 'national or regional curriculum' to 'state or district curriculum'

TIMSS 2003 Grade Four School Questionnaire Adaptations

(1) Question Number	(2) International Questionnaire Text	(3) Description of Adaptation
22A(b), 22A(c)	**How often does each of the following problem behaviors occur among <fourth-grade> students in your school?** **If the behavior occurs, how severe a problem does it present?** **A. Frequency in your school** *Fill in one circle for each ro… in this sectio…* Daily / Weekly / Monthly / Rarely / Never a) Arriving late at school b) Absenteeism (i.e., unjustified absences) c) Skipping class <hours/periods> d) Violating dress code e) Classroom disturbance f) Cheating g) Profanity h) Vandalism i) Theft j) Intimidation or verbal abuse of other students k) Physical injury to other students l) Intimidation or verbal abuse of teachers or staff m) Physical injury to teachers or staff	22A(b). Changed 'unjustified' to 'unexcused' 22A(c). Delete <hours/periods>

TIMSS 2003 Grade Four School Questionnaire Adaptations

(1) Question Number	(2) International Questionnaire Text	(3) Description of Adaptation
23	**Is your school's capacity to provide instruction affected by a shortage or inadequacy of any of the following?** *Fill in one circle for each row* A lot | Some | A little | None a) Instructional materials (e.g., textbook) ---------- ○ --- ○ --- ○ --- ○ b) Budget for supplies (e.g., paper, pencils) ------- ○ --- ○ --- ○ --- ○ c) School buildings and grounds ---------- ○ --- ○ --- ○ --- ○ d) Heating/cooling and lighting systems ------- ○ --- ○ --- ○ --- ○ e) Instructional space (e.g., classrooms) --------- ○ --- ○ --- ○ --- ○ f) Special equipment for handicapped students ------ ○ --- ○ --- ○ --- ○ g) Computers for mathematics instruction ---------- ○ --- ○ --- ○ --- ○ h) Computer software for mathematics instruction --- ○ --- ○ --- ○ --- ○ i) Calculators for mathematics instruction ---------- ○ --- ○ --- ○ --- ○ j) Library materials relevant to mathematics instruction - ○ --- ○ --- ○ --- ○ k) Audio-visual resources for mathematics instruction --- ○ --- ○ --- ○ --- ○	1. Add 'How much' to front of stem 2. Changed first response category from 'None' to 'Not at all'

TIMSS 2003 Grade Four Teacher Questionnaire Adaptations

(1) Question Number	(2) International Questionnaire Text	(3) Description of Adaptation
Directions	Some of the questions in this questionnaire refer specifically to students in the "TIMSS class." This is the class that is identified on the cover of this questionnaire, and that will be tested as part of TIMSS 2003 in your school. If you teach some but not all of the students in the TIMSS class, please think only of the students that you teach when answering these class-specific questions. It is important that you answer each question carefully so that the information that you provide reflects your situation as accurately as possible.	Page 2, paragraph 3 – replace with the following: Some of the questions in this questionnaire refer to teaching mathematics and teaching science to the students participating in TIMSS 2003. If you teach **both** mathematics and science to the students in the TIMSS class, please complete the entire questionnaire. If you teach **only mathematics** or **only science** to these students, you will be guided to the appropriate sections to complete.
Directions	**Teacher Background Information**	Page 3 – add instruction under **Teacher Background Information**: To be completed by **all teachers**
3	**By the end of this school year, how many years will you have been teaching altogether?** _____ *Number of years you have taught*	1. Added statement to the end of the stem: "Do no include teaching as a substitute or a student teacher." 2. Broke response out to time spent teaching full-time and part-time: 'Number of years you have taught full-time' 'Number of years you have taught part-time'

TIMSS 2003 Grade Four Teacher Questionnaire Adaptations

(1) Question Number	(2) International Questionnaire Text	(3) Description of Adaptation
4	**What is the highest level of formal education you have completed?** *Fill in one circle only* Did not complete <ISCED 3> ----------○ Finished <ISCED 3> ----------○ Finished <ISCED 4B> ----------○ Finished <ISCED 5B> ----------○ Finished < ISCED 5A, first degree> ----------○ Finished <ISCED 5A, second degree> or higher ----------○	ISCED levels replaced with the following: (Did not complete ISCED 3) Did not complete high school (Finished ISCED 3) Completed high school; (Finished ISCED 4B) Completed a vocational/technical certificate after high school ; (Finished ISCED 5B) Completed an Associate's degree (AA) in a vocational/technical program; (Finished ISCED 5A, first degree) Completed an academic Associate's or Bachelor's degree; (Finished ISCED 5A, second degree or higher) Completed an academic Master's degree, postgraduate certificate program (e.g., teaching) or first professional degree (e.g., law, medicine, dentistry) Completed a doctorate (Ph.D. Or Ed.D)

TIMSS 2003 Grade Four Teacher Questionnaire Adaptations

(1) Question Number	(2) International Questionnaire Text	(3) Description of Adaptation
5	**How many years of <pre-service teacher training> did you have? Please round to the nearest whole number.** *Fill in one circle only* 0 years ○ 1 year ○ 2 years ○ 3 years ○ 4 years ○ 5 years ○ More than 5 years ○	After 'pre-service teacher training' added (e.g. time spent in a teacher education program such as student teaching or a mentorship).
6A	**A. During your <post-secondary> education, what was your major or main area(s) of study?** *Fill in one circle for each row* No / Yes a) Education - <Primary/Elementary> ○ ○ b) Education - Secondary ○ ○ c) Mathematics ○ ○ d) Science ○ ○ e) Other ○ ○	1.<post-secondary> to 'college or university' 2. delete 'major or' 3. Change response format from 'Yes', 'No' to 'Major', 'Minor', 'No' 4. 6c to Education – Other 6d to Mathematics 6e to Science 6f to Other

TIMSS 2003 Grade Four Teacher Questionnaire Adaptations

(1) Question Number	(2) International Questionnaire Text	(3) Description of Adaptation
7	**What requirements did you have to satisfy in order to become a teacher at <grade 4>?** *Fill in one circle for each row* a) Complete <ISCED 5A, first degree> — Yes ○ No ○ b) Complete a probationary period — Yes ○ No ○ c) Complete a minimum number of education courses — Yes ○ No ○ d) Complete a minimum number of mathematics courses — Yes ○ No ○ e) Complete a minimum number of science courses — Yes ○ No ○ f) Pass a licensing examination — Yes ○ No ○	Replaced ISCED 5A with 'a bachelor's degree'

TIMSS 2003 Grade Four Teacher Questionnaire Adaptations

(1) Question Number	(2) International Questionnaire Text	(3) Description of Adaptation
8B	**B. What type of license or certificate do you hold?** *Fill in one circle only* <Full certificate> ----------○ <Provisional certificate> ----------○ <Emergency certificate> ----------○ Other ----------○ (Please specify:_____)	Replaced categories with the following: Regular or standard state certificate or advanced professional certificate Probationary certificate (the initial certificate issued after satisfying all requirements except the completion of a probationary period) Provisional or other type given to persons who are still participating in what the state calls an "alternative certification program" Temporary certificate (requires some additional college coursework and/or student teaching before regular certification can be obtained. Emergency certificate or waiver (issued to persons with insufficient teacher preparation who must complete a regular certification program in order to continue teaching) These map to the original categories as follows: Regular or standard and Probationary = Full Provisional and termporary = Provisional Emergency or waiver = Emergency Did not administer Other

TIMSS 2003 Grade Four Teacher Questionnaire Adaptations

(1) Question Number	(2) International Questionnaire Text	(3) Description of Adaptation
Directions	**About Your School**	Page 5 – add instruction under **About Your School:** To be completed by **all teachers**
10	**Thinking about your CURRENT school, indicate the extent to which you agree or disagree with each of the following statements.** *Fill in one circle for each row* Disagree a lot / Disagree / Agree / Agree a lot a) This school facility (building and grounds) is in need of significant repair b) This school is located in a safe neighborhood c) I feel safe at this school d) This school's security policies and practices are sufficient	3. Delete 'CURRENT' 4. Add 'about your school' to end of stem
Directions	**About Teaching Mathematics**	Page 6 – add instructions under About Teaching Mathematics: If you teach **do not** teach mathematics to students in the TIMSS class, **proceed to Question 30**. If you **do teach** mathematics to students in the TIMSS class, please **continue**.

TIMSS 2003 Grade Four Teacher Questionnaire Adaptations

(1) Question Number	(2) International Questionnaire Text	(3) Description of Adaptation
29	**When you assign mathematics homework to the <fourth-grade> students in the TIMSS class, about how many minutes do you usually assign? (Consider the time it would take an average student in your class.)** *Fill in one circle only* Fewer than 15 minutes ○ 15-30 minutes ○ 31-60 minutes ○ 61-90 minutes ○ More than 90 minutes ○	Added 'to complete the assignment to statement in parentheses. Reads ' (Consider the time it would take an average student in your class to complete the assignment.)'
Directions	**About Teaching Science**	Page 15 – add instruction under **About Teaching Science**: If you **do not** teach science to the students in the class identified on the cover of this questionnaire, please **STOP HERE**. If you **do** teach science to the students in the class identified on the cover of this questionnaire, please **continue**.
35A	**A. Do the <fourth grade> students in the TIMSS class have computers available to use when you are teaching science?** No Yes *Fill in one circle only* ○ ○ *If No, please go to question* **37**	Added statement at end of stem, 'Do not include calculators.'

TIMSS 2003 Grade Four Teacher Questionnaire Adaptations

(1) Question Number	(2) International Questionnaire Text	(3) Description of Adaptation
42	**When you assign science homework to the <fourth-grade> students in the TIMSS class, about how many minutes do you usually assign? (Consider the time it would take an average student in your class.)** *Fill in one circle only* Fewer than 15 minutes ○ 15-30 minutes ○ 31-60 minutes ○ 61-90 minutes ○ More than 90 minutes ○	Added 'to complete the assignment to statement in parentheses. Reads ' (Consider the time it would take an average student in your class to complete the assignment.)'

TIMSS 2003 Grade Four Student Questionnaire Adaptations

(1) Question Number	(2) International Questionnaire Text	(3) Description of Adaptation
2	**Are you a girl or a boy?** *Fill in **one** circle only* Girl ---------- ① Boy ---------- ②	Added Race/Ethnicity (National option) to Question 2. Numbering becomes: 2A – gender; 2B – ethnicity; 2C – race
3	**How often do you speak <language of test> at home?** *Fill in **one** circle only* Always ---------- ① Almost always ---------- ② Sometimes ---------- ③ Never ---------- ④	<language of test> to English

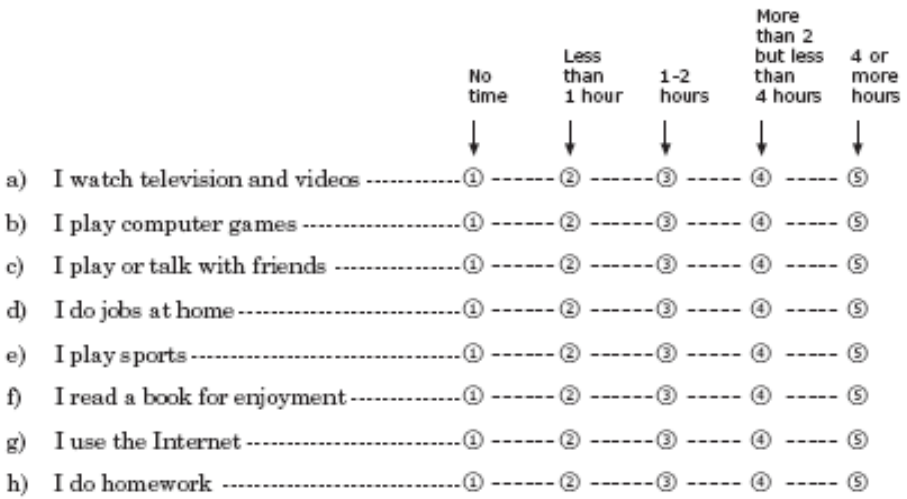
TIMSS 2003 Grade Four Student Questionnaire Adaptations

(1) Question Number	(2) International Questionnaire Text	(3) Description of Adaptation
5	**Do you have any of these items at your home?** *Fill in **one** circle for each line* Yes ↓ No ↓ a) Calculator ---------- ① ------ ② b) Computer (do not include PlayStation®, GameCube®, XBox®, or other TV/video game computers) --- ① ------ ② c) Study desk/table for your use ---------- ① ------ ② d) Dictionary ---------- ① ------ ② e) <country-specific> ---------- ① ------ ② f) <country-specific> ---------- ① ------ ② g) <country-specific> ---------- ① ------ ② h) <country-specific> ---------- ① ------ ②	National options for items e-h, deleted items i-p: e) Encyclopedia (as a CD or book) f) PlayStation, GameCube, Xbox, or other TV/video game system g) DVD player h) three or more cars, small trucks or SUV's .
10A	**A. Do you ever use a computer? (Do not include PlayStation®, GameCube®, XBox®, or other TV/video game computers).** Yes ↓ No ↓ *Fill in **one** circle only* ---------- ① ------ ② *If **No**, please go to question **11***	In stem, changed 'TV/video game computers' to 'TV/video game systems'

TIMSS 2003 Grade Four Student Questionnaire Adaptations

(1) Question Number	(2) International Questionnaire Text	(3) Description of Adaptation
11b-c	**How much do you agree with these statements about your school?** *Fill in **one** circle for each line* Agree a lot ↓ ① ------ Agree a little ↓ ② ------ Disagree a little ↓ ③ ----- Disagree a lot ↓ ④ a) I like being in school ---------- ① ------ ② ------ ③ ----- ④ b) I think that students in my school try to do their best ---------- ① ------ ② ------ ③ ----- ④ c) I think that teachers in my school care about the students ---------- ① ------ ② ------ ③ ----- ④ d) I think that teachers in my school want students to do their best ---------- ① ------ ② ------ ③ ----- ④	Insert 'most' so that items read: b) most students; c) most teachers; d) most teachers
12		ITEM DELETED

TIMSS 2003 Grade Four Student Questionnaire Adaptations

(1) Question Number	(2) International Questionnaire Text	(3) Description of Adaptation
13 (US 12)	**On a normal school day, how much time do you spend before or after school doing each of these things?** *Fill in **one** circle for each line*  	Insert 'or chores' after 'I do jobs…' Item reads, "I do jobs or chores at home."
14A (US 13A)	**A. During this school year, how often have you had extra lessons or tutoring in mathematics that is not part of your regular class?** *Fill in **one** circle only* Every or almost every day ---------- ① Once or twice a week ---------- ② Sometimes ---------- ③ Never or almost never ---------- ④	In the stem, reverse order of 'extra lessons' and ' tutoring' and underline 'mathematics'

TIMSS 2003 Grade Four Student Questionnaire Adaptations

(1) Question Number	(2) International Questionnaire Text	(3) Description of Adaptation
14B (US13B)	B. During this school year, how often have you had extra lessons or tutoring in science that is not part of your regular class? *Fill in **one** circle only* Every or almost every day ---------- ① Once or twice a week ---------- ② Sometimes ---------- ③ Never or almost never ---------- ④	Same reversal and underline 'science'
15A (US 14A)	A. How often does your teacher give you homework in mathematics? *Fill in **one** circle only* Every day ---------- ① 3 or 4 times a week ---------- ② 1 or 2 times a week ---------- ③ Less than once a week ---------- ④ Never ---------- ⑤ *If **Never**, please go to question **16***	Underline 'mathematics'
15B (US 14B)	B. When your teacher gives you mathematics homework, about how many minutes are you usually given? *Fill in **one** circle only* Fewer than 15 minutes ---------- ① 15–30 minutes ---------- ② 31–60 minutes ---------- ③ 61–90 minutes ---------- ④ More than 90 minutes ---------- ⑤	Change stem to read, "When your teacher gives you mathematics homework, about how long does it take you to complete this homework?"

(1) Question Number	(2) International Questionnaire Text	(3) Description of Adaptation
16A (US 15A)	A. How often does your teacher give you homework in science? *Fill in **one** circle only* Every day ---------- ① 3 or 4 times a week ---------- ② 1 or 2 times a week ---------- ③ Less than once a week ---------- ④ Never ---------- ⑤ *If **Never**, please go to question **17*** →	Underline 'science'
16B (US 15B)	B. When your teacher gives you science homework, about how many minutes are you usually given? *Fill in **one** circle only* Fewer than 15 minutes ---------- ① 15–30 minutes ---------- ② 31–60 minutes ---------- ③ 61–90 minutes ---------- ④ More than 90 minutes ---------- ⑤	Change stem to read, "When your teacher gives you mathematics homework, about how long does it take you to complete this homework?"

TIMSS 2003 Grade Four Student Questionnaire Adaptations

(1) Question Number	(2) International Questionnaire Text	(3) Description of Adaptation
18A,B (US 17A, B)	A. Was your mother (or stepmother or female guardian) born in <country>? Yes No *Fill in **one** circle only* ---------- ① ------ ② B. Was your father (or stepfather or male guardian) born in <country>? Yes No *Fill in **one** circle only* ---------- ① ------ ②	<country> to the United States and added a note defining United States -- Note: "United States" includes the 50 states, its territories, the District of Columbia, and U.S. military bases abroad."
19A (US 18A)	A. Were you born in <country>? Yes No *Fill in **one** circle only* ---------- ① ------ ② *If **Yes**, you have completed the questionnaire* ➡	<country> to 'the United States'

TIMSS 2003 Grade Four Student Questionnaire Adaptations

(1) Question Number	(2) International Questionnaire Text	(3) Description of Adaptation
19B (US 18B)	**B. If you were not born in <country>, how old were you when you came to <country>?** *Fill in **one** circle only* Older than 5 years old ---------- ① 1 to 5 years old ---------- ② Younger than 1 year old ---------- ③	1. <country> to 'the United States' 2. Switched 'older than 10 years old' and 'Younger than 5 years old'

Appendix C

TIMSS 2003
Sampling and Study Forms

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TIMSS 4 MATHEMATICS CLASS LISTING FORM

Participant: USA

Grade: 4TH Grade

School Name: _____

School ID: _____

Person Completing Form: _____

Phone Number: _____

Date Form Completed: _____

How many students are currently enrolled in the 4th grade?

_____

How many 4th grade students are not currently taking any mathematics classes?

_____

How many 4th grade students are currently taking more than one mathematics class?

_____

Teacher Name	Class Name/Identifier	Period/Time	Track/Stream/ Ability Level	No. of 4th Graders

TIMSS 8 MATHEMATICS CLASS LISTING FORM

Participant: USA

Grade: 8TH Grade

School Name: _____

School ID: _____

Person Completing Form: _____

Phone Number: _____

Date Form Completed: _____

How many students are currently enrolled in the 8th grade?

_____

How many 8th grade students are not currently taking any mathematics classes?

_____

How many 8th grade students are currently taking more than one mathematics class?

_____

Teacher Name	Class Name/Identifier	Period/Time	Track/Stream/ Ability Level	No. of 8th Graders

TIMSS 2003 - Class Sampling Form

School Name:

TIMSS Participant:

[a] School ID	[b] Grade

[a] School ID	[b] Grade	[c] MCS	[d] Random Number	[e] Selections	[f] Sampling Interval*	[g] Random Start

(1) Class Name	(2) Teacher Name	(3) Class ID	(4) Stream (sorted)	(5) Number of Students	(6) Cum. Count	(7) Excluded	(8) Line Number	(9) Selected

Use additional sheets if necessary

TIMSS 2003 – Student Tracking Form

School Name:

School ID:

Grade:

Teacher's Name:

Class Description:

Class ID:

PLEASE NOTE

For each student enter: **science teacher name,** science **class name** (e.g. biology), **time and period** this class meets (e.g. 7:55 am).
List all science teachers.
Enter NA if not in science class.

Student name	Student ID	Excl.	Date of birth (MM/YY)	Gender	Booklet	Participation status Session 1	Session 2	Make-up 1	Make-up 2	Science teacher/class/period

TIMSS 2003 – Teacher Tracking Form

School Name:

TIMSS Participant:

[a] School ID	[b] Grade

[a] School ID	[b] Grade

(1) Teacher Name	(2) Teacher ID	(3) Link No.	Check Sum	(4) Grade	(5) Selected Class ID	(6) Class Name	(7) Eligible Students	(8) Questionnaire Subject	(9) Participation Status
		01							
		02							
		03							
		04							
		05							
		06							
		07							
		08							
		09							
		10							
		11							
		12							

Use additional sheets if necessary

TIMSS 2003 - Test Administration Form

TIMSS Participant	*School Name*	*School ID*	*Class ID*	*Grade*

(1) Class name: _____

(2) School Coordinator:_____

(3) Test Administrator: _____

(4) Test Administrator's position:

[ ] TIMSS National Center Staff

[ ] Teacher from school but not teacher of the selected class

[ ] Teacher of the selected class

[ ] Other, please describe:

(5) Type of testing session: [ ] Regular [ ] Makeup

(6) Date of testing:

(7) Scheduled starting time:

Actual schedule of the testing sessions		
Start time	**End time**	
8a.	8b.	Administration for Part 1 (preparation of students, reading of instructions, distribution of student envelopes, etc.)
9a.	9b.	Testing session 1 (Part 1 of the test booklet)
10a.	10b.	Administration for Part 2 (reading of instructions, re-distribution of student booklets, etc.)
11a.	11b.	Testing session 2 (Part 2 of the test booklet)
12a.	12b.	Session for the *Student Questionnaires*. If the *Student Questionnaire* is administered on a different date, indicate the date here: _____

13. Where there any special circumstances or unusual events during the session?

[ ] No [ ] Yes, Explain below please:

14. Did students have any particular problems with the testing (for example, tests too difficult, not enough time provided, tiring, confusing)?

[ ] No [ ] Yes, Explain below please:

15. Where there any problems with the testing materials (for example, errors or omissions in the *Student Tracking Forms,* incorrect test booklet assignments, insufficient booklets)?

[ ] No [ ] Yes, Explain below please:

16. Did a National Quality Control Monitor observe the testing session?

[ ] No [ ] Yes

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Appendix D

Additional TIMSS 2003 Reports and References

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Several documents are available to analysts interested in analyzing TIMSS 2003 data. The following is a selected listing of both NCES and IEA TIMSS 2003 publications that are publicly available to users.

International publications

Data Analysis Manuals and Technical Reports

Martin, M. O. (Ed.) (2005). *TIMSS 2003 User Guide for the International Database.* Chestnut Hill, MA: TIMSS & PIRLS International Study Center, Boston College. http://isc.bc.edu/timss2003i/userguide.html

Martin, M.O., Mullis, I.V.S., & Chrostowski, S.J. (Eds.)(2004). *TIMSS 2003 Technical Report.* Chestnut Hill, MA: TIMSS & PIRLS International Study Center, Boston College. http://isc.bc.edu/timss2003i/technicalD.html

Summary and Achievement Reports

Mullis, I.V.S., Martin, M.O., Gonzalez, E.J., & Chrostowski, S.J. (2004). *TIMSS 2003 International Mathematics Report: Findings From IEA's Trends in International Mathematics and Science Study at the Fourth and Eighth Grades.* Chestnut Hill, MA: TIMSS & PIRLS International Study Center, Boston College.

Martin, M.O., Mullis, I.V.S., Gonzalez, E.J., & Chrostowski, S.J. (2004). *TIMSS 2003 International Sciences Report: Findings From IEA's Trends in International Mathematics and Science Study at the Fourth and Eighth Grades.* Chestnut Hill, MA: TIMSS & PIRLS International Study Center, Boston College.

Frameworks

Mullis, I. V. S., Martin, M. O., Smith, T. A., Garden, R. A. , Gregory, K. D., Gonzalez, E. J., Chrostowski, S. J., O'Connor, K. M. (2003). *TIMSS Assessment Frameworks and Specifications 2003.* Chestnut Hill, MA: Boston College.

Analogous international reports from previous cycles of TIMSS are available at http://isc.bc.edu/index.html.

NCES publications

Data Products

Gonzales, P., Williams, T., Roey, S., Kastberg, D., Smith, C. (2003).*Third International Mathematics and Science Study (TIMSS) 1999 U.S. National Restricted-Use Data and User's Guide* (NCES 2003-075). U.S. Department of Education. Washington, DC: National Center for Education Statistics.

Summary Reports

Gonzales, P., Guzmán, J.C., Partelow, L., Pahlke, E., Jocelyn,L., Kastberg, D., Williams, T. (2004). *Highlights From the Trends in I nternational Mathematics and Science Study (TIMSS) 2003*. (NCES 2005–005). U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office.

Gonzales, P., Calsyn, C., Jocelyn, L., Mak, K., Kastberg, D., Arafeh, S., Williams, T., and Tsen, W. (2000). *Pursuing Excellence: Comparisons of International Eighth-Grade Mathematics and Science Achievement From a U.S. Perspective, 1995 and 1999.* (NCES 2001–028). U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office

Thematic Reports

Johnson, E., Cohen, J., Chen, W.H., Jiang, T., and Zhang, Y. (2003). *2000 NAEP—1999 TIMSS Linking Report* (NCES 2005–01). U.S. Department of Education. Washington, DC: National Center for Education Statistics Working Paper.

Koretz, D., McCaffrey, D., Sullivan, T. (2001). *Using TIMSS to Analyze Correlates of Performance Variation in Mathematics*. (NCES 2001-05). U.S. Department of Education. Washington, DC: National Center for Education Statistics Working Paper.

Nohara, D.(2001). *A Comparison of the National Assessment of Educational Progress (NAEP), the Third International Mathematics and Science Study (TIMSS), and the Programme for International Student Assessment* (NCES 200107). U.S. Department of Education. Washington, DC: National Center for Education Statistics Working Paper.

Additional reports and products from previous cycles of TIMSS are available at: http://nces.ed.gov/TIMSS/publications.asp.