

**Identification Label**

Teacher Name: \_\_\_\_\_

Class Name: \_\_\_\_\_

Teacher ID: \_\_\_\_\_ Teacher Link # \_\_\_\_\_

Trends in International Mathematics and Science Study

# TIMSS 2007



## Teacher Questionnaire

**<Grade 4>**

**<TIMSS National Research Center Name>**

**<Address>**



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of Educational Achievement  
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# General Directions

Your school has agreed to participate in TIMSS 2007, a large international study of student learning in mathematics and science in more than 60 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 <fourth-grade> classes in <country> 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 background, 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 <country>.

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 2007 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.

Please identify a time and place where you will be able to complete this questionnaire without being interrupted. This 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 in the appropriate circle.

Once you have completed the questionnaire, place it in the return envelope provided and return it to: <Country Specific Information>

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

# Teacher Background Information

1 \_\_\_\_\_

How old are you?

Fill in **one** circle only

- Under 25 -----○  
 25–29-----○  
 30–39-----○  
 40–49-----○  
 50–59-----○  
 60 or older-----○

2 \_\_\_\_\_

Are you female or male?

Fill in **one** circle only

- Female-----○  
 Male-----○

3 \_\_\_\_\_

By the end of this school year, how many years will you have been teaching altogether?

\_\_\_\_\_  
 Number of years you have taught

4 \_\_\_\_\_

Do you have a teaching license or certificate?

Yes No  
 -----○-----○

Fill in **one** circle only-----○-----○

5 \_\_\_\_\_

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 4> -----○  
 Finished <ISCED 5B> -----○  
 Finished <ISCED 5A, first degree> -----○  
 Finished <ISCED 5A, second degree> or higher -----○

6 \_\_\_\_\_

A. During your <post-secondary> education, what was your major or main area(s) of study?

Fill in **one** circle for each row

- |                                           | Yes    | No     |
|-------------------------------------------|--------|--------|
| a) Education - <Primary/Elementary>-----○ | -----○ | -----○ |
| b) Education - Secondary-----○            | -----○ | -----○ |
| c) Mathematics-----○                      | -----○ | -----○ |
| d) Science-----○                          | -----○ | -----○ |
| e) Other-----○                            | -----○ | -----○ |

B. If your major or main area of study was education, did you have a <specialization> in any of the following?

Fill in **one** circle for each row

- |                           | Yes    | No     |
|---------------------------|--------|--------|
| a) Mathematics-----○      | -----○ | -----○ |
| b) Science-----○          | -----○ | -----○ |
| c) Language/reading-----○ | -----○ | -----○ |
| d) Other subject-----○    | -----○ | -----○ |

7

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 -- ○ -- ○ -- ○ -- ○
- b) Working on preparing instructional materials ----- ○ -- ○ -- ○ -- ○
- c) Visits to another teacher's classroom to observe his/her teaching ----- ○ -- ○ -- ○ -- ○
- d) Informal observations of **my** classroom by another teacher ----- ○ -- ○ -- ○ -- ○

8

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 is located in a safe neighborhood ----- ○ -- ○ -- ○ -- ○
- b) I feel safe at this school ----- ○ -- ○ -- ○ -- ○
- c) This school's security policies and practices are sufficient - ○ -- ○ -- ○ -- ○

9

In your current school, how severe is each problem?

Fill in **one** circle for each row

Serious problem  
Minor problem  
Not a problem

- a) The school building needs significant repair----- ○ -- ○ -- ○
- b) Classrooms are overcrowded----- ○ -- ○ -- ○
- c) Teachers do not have adequate workspace outside their classroom----- ○ -- ○ -- ○
- d) Materials are not available to conduct experiments or investigations----- ○ -- ○ -- ○

10

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 ----- ○ -- ○ -- ○ -- ○
- b) Teachers' understanding of the school's curricular goals ----- ○ -- ○ -- ○ -- ○
- c) Teachers' degree of success in implementing the school's curriculum-----○ -- ○ -- ○ -- ○
- d) Teachers' expectations for student achievement----- ○ -- ○ -- ○ -- ○
- e) Parental support for student achievement - ○ -- ○ -- ○ -- ○
- f) Parental involvement in school activities --- ○ -- ○ -- ○ -- ○
- g) Students' regard for school property ----- ○ -- ○ -- ○ -- ○
- h) Students' desire to do well in school ----- ○ -- ○ -- ○ -- ○

How well prepared do you feel you are to teach the following mathematics topics?

Fill in **one** circle for each row

|                                                                                                          | Not well prepared     | Somewhat prepared     | Very well prepared    | Not applicable        |
|----------------------------------------------------------------------------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>A. Number</b>                                                                                         |                       |                       |                       |                       |
| a) Whole numbers including place value and ordering -----                                                | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b) Adding, subtracting, multiplying and/or dividing with whole numbers-----                              | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c) Fractions (parts of a whole or a collection, location on a number line)-----                          | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| d) Fractions represented by words, numbers, or models -----                                              | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| e) Comparing and ordering fractions -----                                                                | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| f) Adding and subtracting with fractions -----                                                           | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| g) Adding and subtracting with decimals -----                                                            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| h) Number sentences (finding the missing number, modeling simple situations with number sentences) ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| i) Number patterns (extending number patterns and finding missing terms) -----                           | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| j) Relationships between given pairs of whole numbers -----                                              | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>B. Geometric Shapes and Measures</b>                                                                  |                       |                       |                       |                       |
| a) Comparing and drawing angles -----                                                                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b) Elementary properties of common geometric shapes -----                                                | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c) Relationships between two-dimensional and three-dimensional shapes -----                              | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| d) Finding areas and perimeters -----                                                                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| e) Estimating areas and volumes -----                                                                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| f) Using informal coordinate systems to locate points in a plane -----                                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| g) Reflections and rotations -----                                                                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>C. Data Display</b>                                                                                   |                       |                       |                       |                       |
| a) Reading data from tables, pictographs, bar graphs, or pie charts -----                                | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b) Drawing conclusions from data displays-----                                                           | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c) Displaying data using tables, pictographs, bar graphs, or pie charts -----                            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

## Teaching Mathematics to the TIMSS Class

Questions 12-26 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 2007 in your school.

12

**A. How many students are in the TIMSS class for mathematics?**

Write in the number of students

**B. How many students in Question 12A are in the <fourth-grade> ?**

Write in the number of <fourth grade> students

13

**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

14

**A. Do you use a textbook(s) in teaching mathematics to the <fourth-grade> students in the TIMSS class?**

Fill in **one** circle only ----- ☐ Yes ☐ No

If **No**, please go to question 15

**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 ----- ☐

As a supplementary resource ----- ☐

15

**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%

**16**

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 -----○  
 Yes, with restricted use -----○  
 No, calculators are not permitted -----○

If **No**, please go to question **18** ➡

**18**

A. Do the <fourth-grade> students in the TIMSS class have computer(s) available to use during their mathematics lessons?

Yes No  
 -----○-----○

Fill in **one** circle only -----○-----○

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

B. Do any of the computer(s) have access to the Internet?

Yes No  
 -----○-----○

Fill in **one** circle only -----○-----○

**17**

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

- |                                | Every or almost every lesson | About half the lessons | Some lessons | Never |
|--------------------------------|------------------------------|------------------------|--------------|-------|
| a) Check answers -----○        | ○                            | ○                      | ○            | ○     |
| b) Do routine computations---  | ○                            | ○                      | ○            | ○     |
| c) Solve complex problems ---○ | ○                            | ○                      | ○            | ○     |
| d) Explore number concepts --○ | ○                            | ○                      | ○            | ○     |

**19**

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

- |                                                     | Every or almost every lesson | About half the lessons | Some lessons | Never |
|-----------------------------------------------------|------------------------------|------------------------|--------------|-------|
| a) Discover mathematics principles and concepts---- | ○                            | ○                      | ○            | ○     |
| b) Practice skills and procedures -----○            | ○                            | ○                      | ○            | ○     |
| c) Look up ideas and information -----○             | ○                            | ○                      | ○            | ○     |

20

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

|                                                                                             | Every or almost every lesson | About half the lessons   | Some lessons             | Never                    |
|---------------------------------------------------------------------------------------------|------------------------------|--------------------------|--------------------------|--------------------------|
| a) Practice adding, subtracting, multiplying, and dividing without using a calculator ----- | -- <input type="radio"/>     | -- <input type="radio"/> | -- <input type="radio"/> | -- <input type="radio"/> |
| b) Work on fractions and decimals -----                                                     | -- <input type="radio"/>     | -- <input type="radio"/> | -- <input type="radio"/> | -- <input type="radio"/> |
| c) Measure things in the classroom and around the school -----                              | -- <input type="radio"/>     | -- <input type="radio"/> | -- <input type="radio"/> | -- <input type="radio"/> |
| d) Make tables, charts, or graphs -----                                                     | -- <input type="radio"/>     | -- <input type="radio"/> | -- <input type="radio"/> | -- <input type="radio"/> |
| e) Learn about shapes such as circles, triangles, rectangles, and cubes --                  | -- <input type="radio"/>     | -- <input type="radio"/> | -- <input type="radio"/> | -- <input type="radio"/> |
| f) Write equations for word problems -----                                                  | -- <input type="radio"/>     | -- <input type="radio"/> | -- <input type="radio"/> | -- <input type="radio"/> |
| g) Explain their answers ---                                                                | -- <input type="radio"/>     | -- <input type="radio"/> | -- <input type="radio"/> | -- <input type="radio"/> |
| h) Relate what they are learning in mathematics to their daily life -----                   | -- <input type="radio"/>     | -- <input type="radio"/> | -- <input type="radio"/> | -- <input type="radio"/> |
| i) Memorize formulas and procedures -----                                                   | -- <input type="radio"/>     | -- <input type="radio"/> | -- <input type="radio"/> | -- <input type="radio"/> |

21

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, decimals and number patterns) -----           | _____ % |
| b) Geometric Shapes and Measures (includes two- and three-dimensional shapes, length, area and volume) ----- | _____ % |
| c) Data Display (includes reading, making, and interpreting tables and graphs) -----                         | _____ % |
| d) Other, please specify:<br>_____                                                                           | _____ % |
| <b>Total</b> -----                                                                                           | 100%    |



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 but not yet completed, please choose "Mostly taught this year." If a topic is not in the curriculum, please choose "Not yet taught or just introduced."

Fill in **one** circle for each row

|                                                                                                                                                                         | Mostly taught before this year | Mostly taught this year | Not yet taught or just introduced |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|-------------------------|-----------------------------------|
| <b>A. Number</b>                                                                                                                                                        |                                |                         |                                   |
| a) Representing whole numbers using words, diagrams, or symbols -----                                                                                                   | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |
| b) Whole numbers including place value and ordering -----                                                                                                               | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |
| c) Computation with whole numbers -----                                                                                                                                 | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |
| d) Multiples and factors of numbers -----                                                                                                                               | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |
| e) Estimation with whole numbers -----                                                                                                                                  | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |
| f) Problems involving proportions -----                                                                                                                                 | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |
| g) Fractions (parts of a whole or a collection, location on a number line)-----                                                                                         | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |
| h) Equivalent fractions -----                                                                                                                                           | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |
| i) Comparing and ordering simple fractions -----                                                                                                                        | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |
| j) Fractions represented by words, numbers, or models -----                                                                                                             | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |
| k) Adding and subtracting simple fractions -----                                                                                                                        | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |
| l) Decimal place value including writing decimals using words and numbers -----                                                                                         | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |
| m) Adding and subtracting with decimals -----                                                                                                                           | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |
| n) Finding the missing number in a number sentence (e.g., if $17 + \underline{\quad} = 29$ , what number would go in the blank to make the number sentence true?) ----- | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |
| o) Model simple situations involving unknowns with expressions or number sentences -----                                                                                | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |
| p) Extending patterns and finding missing terms in them -----                                                                                                           | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |
| q) Describing relationships between adjacent terms in a sequence -----                                                                                                  | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |
| r) Generating pairs of numbers following a given rule<br>(e.g., multiply the first number by 3 and add 2 to get the second number) -----                                | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |
| s) Finding a rule for a relationship given some pairs of numbers which satisfy the relationship-----                                                                    | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |

## 22 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 but not yet completed, please choose "Mostly taught this year." If a topic is not in the curriculum, please choose "Not yet taught or just introduced."

Fill in **one** circle for each row

Not yet taught or  
just introduced  
 Mostly taught this year  
 Mostly taught before this year

### B. Geometric Shapes and Measures

- |                                                                                                                         |                       |    |                       |    |                       |
|-------------------------------------------------------------------------------------------------------------------------|-----------------------|----|-----------------------|----|-----------------------|
| a) Measuring and estimating lengths -----                                                                               | <input type="radio"/> | -- | <input type="radio"/> | -- | <input type="radio"/> |
| b) Parallel and perpendicular lines -----                                                                               | <input type="radio"/> | -- | <input type="radio"/> | -- | <input type="radio"/> |
| c) Comparing angles by size and drawing angles (e.g., a right angle, angles larger or smaller than a right angle) ----- | <input type="radio"/> | -- | <input type="radio"/> | -- | <input type="radio"/> |
| d) Elementary properties of common geometric shapes -----                                                               | <input type="radio"/> | -- | <input type="radio"/> | -- | <input type="radio"/> |
| e) Recognizing relationships between three-dimensional shapes and their two-dimensional representations -----           | <input type="radio"/> | -- | <input type="radio"/> | -- | <input type="radio"/> |
| f) Calculating areas and perimeters of squares and rectangles of given dimensions -----                                 | <input type="radio"/> | -- | <input type="radio"/> | -- | <input type="radio"/> |
| g) Finding areas by covering with a given shape or counting squares -----                                               | <input type="radio"/> | -- | <input type="radio"/> | -- | <input type="radio"/> |
| h) Estimating areas and volumes -----                                                                                   | <input type="radio"/> | -- | <input type="radio"/> | -- | <input type="radio"/> |
| i) Using informal coordinate systems to locate points in a plane -----                                                  | <input type="radio"/> | -- | <input type="radio"/> | -- | <input type="radio"/> |
| j) Figures with line symmetry -----                                                                                     | <input type="radio"/> | -- | <input type="radio"/> | -- | <input type="radio"/> |
| k) Reflections and rotations -----                                                                                      | <input type="radio"/> | -- | <input type="radio"/> | -- | <input type="radio"/> |

### C. Data Display

- |                                                                                                                                                                                                          |                       |    |                       |    |                       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|----|-----------------------|----|-----------------------|
| a) Reading data from tables, pictographs, bar graphs, or pie charts -----                                                                                                                                | <input type="radio"/> | -- | <input type="radio"/> | -- | <input type="radio"/> |
| b) Comparing information from related data sets, (e.g., given graphs showing the favorite flavors of ice cream in different classes, identify the class with chocolate as the most popular flavor) ----- | <input type="radio"/> | -- | <input type="radio"/> | -- | <input type="radio"/> |
| c) Using information from data displays to answer questions that go beyond directly reading the data displayed (e.g., by performing computations, drawing conclusions and making predictions) -----      | <input type="radio"/> | -- | <input type="radio"/> | -- | <input type="radio"/> |
| d) Comparing and matching different representations of the same data -----                                                                                                                               | <input type="radio"/> | -- | <input type="radio"/> | -- | <input type="radio"/> |
| e) Organizing and displaying data using tables, pictographs, bar graphs, or pie charts -----                                                                                                             | <input type="radio"/> | -- | <input type="radio"/> | -- | <input type="radio"/> |

**23** \_\_\_\_\_

**Do you assign mathematics homework to the <fourth-grade> students in the TIMSS class?**

Yes \_\_\_\_\_ No \_\_\_\_\_  
 Fill in **one** circle only-----○-----○

If **No**, please go to question **26** ➔

**24** \_\_\_\_\_

**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 -----○  
 About half the lessons -----○  
 Some lessons -----○

**25** \_\_\_\_\_

**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 -----○

**26** \_\_\_\_\_

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

Fill in **one** circle for each row  
 Not applicable \_\_\_\_\_ A little \_\_\_\_\_ Some \_\_\_\_\_ A lot \_\_\_\_\_

- a) Students with different academic abilities-----○--○--○--○--○
- b) Students who come from a wide range of backgrounds (e.g., economic, language) - ○--○--○--○--○
- c) Students with special needs, (e.g., hearing, vision, speech impairment, physical disabilities, mental or emotional/psychological impairment) -----○--○--○--○--○
- d) Uninterested students ○--○--○--○--○
- e) Disruptive students --○--○--○--○--○

**27** \_\_\_\_\_

**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 -----○--○
  - b) Mathematics pedagogy/instruction ----○--○
  - c) Mathematics curriculum -----○--○
  - d) Integrating information technology into mathematics -----○--○
  - e) Improving students' critical thinking or problem solving skills -----○--○
  - f) Mathematics assessment-----○--○

How well prepared do you feel to teach the following science topics?

Fill in **one** circle for each row

|                                                                                                                                                                                                                                      | Not well prepared     | Somewhat prepared     | Very well prepared    | Not applicable        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>A. Life Science</b>                                                                                                                                                                                                               |                       |                       |                       |                       |
| a) Major body structures and their functions in humans and other organisms (plants and animals) -----                                                                                                                                | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b) Reproduction and development in plants and animals (passing on of general characteristics; life cycles of familiar organisms) -----                                                                                               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c) Physical features, behavior, and survival of organisms living in different environments -----                                                                                                                                     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| d) Relationships in a living community (e.g., simple food chains, predator-prey relationships) -                                                                                                                                     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| e) Changes in environments (effects of human activity, pollution and its prevention) -----                                                                                                                                           | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| f) Human health (e.g., transmission/prevention of communicable diseases, signs of health/illness, diet, exercise) -----                                                                                                              | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>B. Physical Science</b>                                                                                                                                                                                                           |                       |                       |                       |                       |
| a) Classification of objects/materials based on physical properties (e.g., mass, shape, volume, color, hardness, texture, heat/electrical conductivity, magnetic attraction) -----                                                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b) Forming and separating mixtures -----                                                                                                                                                                                             | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c) States of matter (solids, liquids, gases) and differences in their physical properties (shape, volume), including changes in state of matter by heating and cooling (melting, freezing, boiling, evaporating, condensation) ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| d) Familiar changes in materials (e.g., decaying of animal/plant matter, burning, rusting, cooking) -----                                                                                                                            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| e) Common energy sources/forms and their practical uses (e.g., wind, sun, electricity, burning fuel, moving water, food) -----                                                                                                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| f) Light (e.g. sources and behavior) -----                                                                                                                                                                                           | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| g) Electrical circuits -----                                                                                                                                                                                                         | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| h) Properties of magnets -----                                                                                                                                                                                                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| i) Forces that cause objects to move (e.g., gravity, push/pull forces) -----                                                                                                                                                         | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>C. Earth Science</b>                                                                                                                                                                                                              |                       |                       |                       |                       |
| a) Features of Earth's landscape (e.g., mountains, plains, rivers, deserts) -----                                                                                                                                                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b) Water on Earth (location, types, and movement) -----                                                                                                                                                                              | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c) Air (composition, proof of its existence, uses, and importance for supporting life) -----                                                                                                                                         | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| d) Common features of Earth's landscape (e.g., mountains, plains, rivers, deserts) and relationship to human use (e.g., farming, irrigation, land development) -----                                                                 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| e) Weather conditions from day to day or over the seasons -----                                                                                                                                                                      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| f) Fossils of animals and plants (age, formation) -----                                                                                                                                                                              | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| g) Earth's solar system (planets, sun, moon) -----                                                                                                                                                                                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

## Teaching Science to the TIMSS Class

Questions 29-40 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 2007 in your school.

29

A. How many students are in the TIMSS class for science?

Write in the number of students

B. How many students in Question 29A are in the <fourth-grade> ?

Write in the number of <fourth grade> students

30

Is science taught mainly as a separate subject (i.e., not integrated with other subjects) to the <fourth-grade> students in the TIMSS class?

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

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

31

A. Do the <fourth-grade> students in the TIMSS class have computer(s) available to use when you are teaching science?

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

If **No**, please go to question 33 →

B. Do any of the computer(s) have access to the Internet?

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

32

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

- |                                                      | Every or almost every lesson | About half the lessons | Some lessons | Never |
|------------------------------------------------------|------------------------------|------------------------|--------------|-------|
| a) Do scientific procedures or experiments -----     | ○                            | ○                      | ○            | ○     |
| b) Study natural phenomena through simulations ----- | ○                            | ○                      | ○            | ○     |
| c) Practice skills and procedures -----              | ○                            | ○                      | ○            | ○     |
| d) Look up ideas and information -----               | ○                            | ○                      | ○            | ○     |

33

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

- |                                                                                                      | Every or almost every lesson | About half the lessons | Some lessons          | Never                 |
|------------------------------------------------------------------------------------------------------|------------------------------|------------------------|-----------------------|-----------------------|
| a) Observe natural phenomena such as the weather or a plant growing and describe what they see ----- | <input type="radio"/>        | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/> |
| b) Watch me do a science experiment -----                                                            | <input type="radio"/>        | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/> |
| c) Design or plan experiments or investigations -----                                                | <input type="radio"/>        | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/> |
| d) Do experiments or investigations -----                                                            | <input type="radio"/>        | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/> |
| e) Work together in small groups on experiments or investigations -----                              | <input type="radio"/>        | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/> |
| f) Read their textbooks or other resource materials -----                                            | <input type="radio"/>        | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/> |
| g) Have students memorize facts and principles -----                                                 | <input type="radio"/>        | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/> |
| h) Give explanations about something they are studying -----                                         | <input type="radio"/>        | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/> |
| i) Relate what they are learning in science to their daily lives -----                               | <input type="radio"/>        | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/> |
| j) Work individually at their own pace -----                                                         | <input type="radio"/>        | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/> |

34

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 environmental issues) ----- %
- b) Physical science (includes topics in physics and chemistry) ----- %
- c) Earth science (includes Earth and the solar system) ----- %
- d) Other, please specify:  
----- %
- Total** ----- 100%

35

A. Do you use a textbook(s) in teaching science to the <fourth-grade> students in the TIMSS class?

- |                                      | Yes                   | No                    |
|--------------------------------------|-----------------------|-----------------------|
| Fill in <b>one</b> circle only ----- | <input type="radio"/> | <input type="radio"/> |

If **No**, please go to question 36

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 ----- ☐
- As a supplementary resource ----- ☐

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 but not yet completed, please choose "Mostly taught this year." If a topic is not in the curriculum, please choose "Not yet taught or just introduced."

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 -----                                                                      | <input type="radio"/> | -- | <input type="radio"/> | -- | <input type="radio"/> |
| b) Major body structures and their function in humans and other organisms<br>(plants and animals)-----                                    | <input type="radio"/> | -- | <input type="radio"/> | -- | <input type="radio"/> |
| c) General steps in the life cycle of familiar organisms<br>(e.g., humans, butterflies, frogs, plants)-----                               | <input type="radio"/> | -- | <input type="radio"/> | -- | <input type="radio"/> |
| d) Plant and animal reproduction (passing on of general characteristics) -----                                                            | <input type="radio"/> | -- | <input type="radio"/> | -- | <input type="radio"/> |
| e) Physical features, behavior, and survival of plants and animals<br>in different environments -----                                     | <input type="radio"/> | -- | <input type="radio"/> | -- | <input type="radio"/> |
| f) Bodily actions in response to outside conditions (e.g., heat, cold, danger)<br>and activities (e.g., exercise)-----                    | <input type="radio"/> | -- | <input type="radio"/> | -- | <input type="radio"/> |
| g) Energy requirements of plants and animals (energy from the sun to make food and to<br>provide energy for growth and repair) -----      | <input type="radio"/> | -- | <input type="radio"/> | -- | <input type="radio"/> |
| h) Relationships in a living community (e.g., simple food chains<br>using common plants and animals and predator-prey relationships)----- | <input type="radio"/> | -- | <input type="radio"/> | -- | <input type="radio"/> |
| i) Changes in environments (effects of human activity, pollution and its prevention) -----                                                | <input type="radio"/> | -- | <input type="radio"/> | -- | <input type="radio"/> |
| j) Ways that common communicable diseases (e.g., colds, influenza)<br>are transmitted; signs, prevention, and treatment of illness -----  | <input type="radio"/> | -- | <input type="radio"/> | -- | <input type="radio"/> |
| k) Ways of maintaining good health, including diet and exercise -----                                                                     | <input type="radio"/> | -- | <input type="radio"/> | -- | <input type="radio"/> |



## 36 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 but not yet completed, please choose "Mostly taught this year." If a topic is not in the curriculum, please choose "Not yet taught or just introduced."

Fill in **one** circle for each row

|                                                                                                                                          | Mostly taught before this year | Mostly taught this year | Not yet taught or just introduced |
|------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|-------------------------|-----------------------------------|
| <b>B. Physical Science</b>                                                                                                               |                                |                         |                                   |
| a) Classification of objects and materials based on physical properties -----                                                            | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |
| b) Properties and uses of metals -----                                                                                                   | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |
| c) Forming and separating mixtures -----                                                                                                 | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |
| d) Properties and uses of water -----                                                                                                    | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |
| e) States of matter (solids, liquids, and gases) and differences in their physical properties in terms of shape and volume -----         | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |
| f) Changes in state of matter by heating and cooling (melting, freezing, boiling, evaporation, condensation) -----                       | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |
| g) Familiar changes in materials (e.g., decaying of animal/plant matter, burning, rusting, cooking)---                                   | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |
| h) Common energy sources/forms and their practical uses (e.g., wind, sun, electricity, burning fuel, water wheel, food) -----            | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |
| i) Heat flow and temperature -----                                                                                                       | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |
| j) Common sources of light and related phenomena (e.g., formation of rainbows and shadows, visibility of objects, mirrors, colors) ----- | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |
| k) Production of sound by vibrations -----                                                                                               | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |
| l) Electrical circuits -----                                                                                                             | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |
| m) Magnets (north and south poles, magnetic attraction, and repulsion) -----                                                             | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |
| n) Forces that cause objects to move (e.g., gravity, push/pull forces) -----                                                             | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |



## 36 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 but not yet completed, please choose "Mostly taught this year." If a topic is not in the curriculum, please choose "Not yet taught or just introduced."

Fill in **one** circle for each row

|                                                                                                                                                                          | Mostly taught before this year | Mostly taught this year | Not yet taught or just introduced |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|-------------------------|-----------------------------------|
| <b>C. Earth Science</b>                                                                                                                                                  |                                |                         |                                   |
| a) Rocks, minerals, sand, and soil -----                                                                                                                                 | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |
| b) Water on Earth (location, types, and movement) -----                                                                                                                  | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |
| c) Air (composition, proof of its existence, uses, and importance for supporting life) -----                                                                             | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |
| 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) ----- | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |
| e) Use and conservation of Earth's natural resources -----                                                                                                               | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |
| f) Earth's water cycle (water flowing in rivers from mountains to sea, cloud formation and precipitation) -----                                                          | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |
| g) Weather conditions from day to day or over the seasons -----                                                                                                          | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |
| h) Fossils of animals and plants (age, formation) -----                                                                                                                  | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |
| i) Earth's solar system (planets, sun, moon) -----                                                                                                                       | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |
| j) Earth's rotation on its axis (e.g., day and night, appearance of shadows) -----                                                                                       | <input type="radio"/>          | <input type="radio"/>   | <input type="radio"/>             |



**37** \_\_\_\_\_

**Do you assign science homework to the <fourth-grade> students in the TIMSS class?**

Yes \_\_\_\_\_ No \_\_\_\_\_  
 Fill in **one** circle only -----○-----○

If **No**, please go to question **40** ➔

**38** \_\_\_\_\_

**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 -----○  
 About half the lessons -----○  
 Some lessons -----○

**39** \_\_\_\_\_

**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 -----○

**40** \_\_\_\_\_

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

Fill in **one** circle for each row  
 Not applicable \_\_\_\_\_ A little \_\_\_\_\_ Some \_\_\_\_\_ A lot \_\_\_\_\_

- a) Students with different academic abilities -----○--○--○--○--○
- b) Students who come from a wide range of backgrounds (e.g., economic, language) - ○--○--○--○--○
- c) Students with special needs, (e.g., hearing, vision, speech impairment, physical disabilities, mental or emotional/psychological impairment) -----○--○--○--○--○
- d) Uninterested students ○--○--○--○--○
- e) Disruptive students --○--○--○--○--○

**41** \_\_\_\_\_

**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                                         | -----○--○ |          |
| b) Science pedagogy/instruction                            | -----○--○ |          |
| c) Science curriculum                                      | -----○--○ |          |
| d) Integrating information technology into science         | -----○--○ |          |
| e) Improving students' critical thinking or inquiry skills | -----○--○ |          |
| f) Science assessment                                      | -----○--○ |          |

# **Thank You**

**for completing  
this questionnaire**



**TIMSS & PIRLS**  
International Study Center  
Lynch School of Education, Boston College

# **Teacher Questionnaire**

**<Grade 4>**