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TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

# Teacher Questionnaire Mathematics

## **Grade 8**

National Center for Education Statistics U.S. Department of Education 1990 K St. NW Washington, DC 20006-5650



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OMB No. 1850-0695, Approval Expires 9/30/2017.

#### **Teacher** Questionnaire

Your school has agreed to participate in TIMSS 2015 (Trends in International Mathematics and Science Study), an educational research project sponsored by the International Association for the Evaluation of Educational Achievement (IEA). TIMSS measures trends in student achievement in mathematics and science and studies differences in national education systems in almost 60 countries in order to help improve teaching and learning worldwide.

This questionnaire is addressed to teachers of eighth-grade students and seeks information about teachers' academic and professional backgrounds, classroom resources, instructional practices, and attitudes toward teaching. Since your class has been selected as part of a nationwide sample, your responses are very important in helping to describe eighth-grade education in the United States.

Some of the questions in the questionnaire refer to the "TIMSS class" or "this class." This is the class that is identified on the front of this booklet and that will be tested as part of TIMSS 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.

Since TIMSS is an international study and all countries are using the same questionnaire, you may find that some of the questions seem unusual or are not entirely relevant to you or schools in the United States. Nevertheless, it is important that you do your best to answer all of the questions so comparisons can be made across countries in the studies.

It is estimated that you will need approximately 30 minutes to complete this questionnaire. We appreciate the time and effort that this takes and thank you for your cooperation and contribution.

When you have completed the questionnaire, please return it to the TIMSS school coordinator.

NCES is authorized to collect information from the guestionnaire under the Education Science Reform Act of 2002 (ESRA 2002), 20 U.S. Code, § 9543. You do not have to provide the information requested. However, the information you provide will help the U.S. Department of Education's ongoing efforts to understand better how the educational system in the United States compares to that in other countries. There are no penalties should you choose not to participate in this study. Your answers may be used only for statistical purposes and may not be disclosed, or used, in identifiable form for any other purpose except as required by law (20 U.S. Code, § 9573). Your response will be combined with those from other participants to produce summary statistics and reports.

This survey is estimated to take an average of 30 minutes, including time for reviewing instructions, and completing and reviewing the collection of information. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing burden, to: Stephen Provasnik, National Center for Education Statistics, U.S. Department of Education, 1990 K Street NW, Room 8123, Washington, DC 20006-5650. Do not return the completed form to this address.

Thank you.

# **TIMSS 2015**

1	

#### What year did you start teaching?

Please write in a year.

#### 2

# At the end of this school year, how many years will you have taught altogether?

\_\_\_\_\_ years
Please **round** to the nearest whole number.

#### 3

#### Are you female or male?

Fill in **one** circle only.

Female --- (1)

Male --- (2)

#### 4

#### 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 more --- (6)

#### 5

# What is the <u>highest</u> level of formal education you have completed?

Fill in **one** circle only.

Did not complete high school --- 1

High school graduate --- 2

(If you have not completed more than high school, go to question 7)

Associate's degree (2-year college program) --- ③

Bachelor's degree (4-year college program) --- 4

Master's degree or professional degree (MD, DDS, lawyer, minister) --- (5)

Doctorate (Ph.D., or Ed.D.) --- 6

#### 6

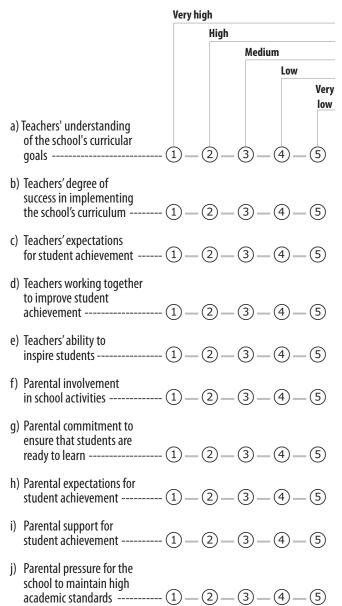
# During your college or university education, what was your <u>major or main</u> area(s) of study?

	Yes
	No
a) Mathematics	1 - 2
b) Biology	1 - 2
c) Physics	1 - 2
d) Chemistry	1 - 2
e) Earth Science	1 - 2
f) Education–Mathematics	1 - 2
g) Education—Science	1 - 2
h) Education—General	1 - 2
i) Other	(1) (2)

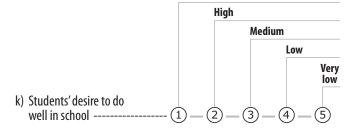
7

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

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



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



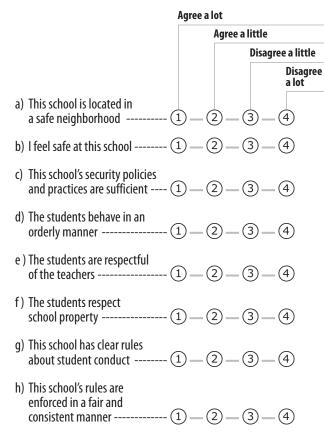
Very high

- I) Students' ability to reach school's academic goals ------ 1 2 3 4 5
- m) Students' respect for classmates who excel in school ------ 1 \_ 2 \_ 3 \_ 4 \_ 5
- n) Clarity of the school's educational objectives ------ 1 2 3 4 5
- o) Collaboration between school leadership and teachers to plan instruction --- 1 2 3 4 5
- p) Amount of instructional support provided to teachers by school leadership ------ 1 2 3 4 5
- q) School leadership's support for teachers' professional development ----- 1 2 3 4 5

R

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

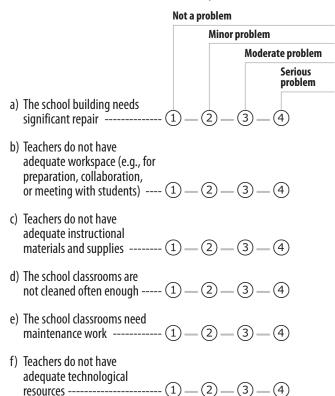
Fill in only **one** circle for each row.



9

#### In your current school, how severe is each problem?

Fill in only one circle for each row.



using technology ----- (1) — (2) — (3) — (4)

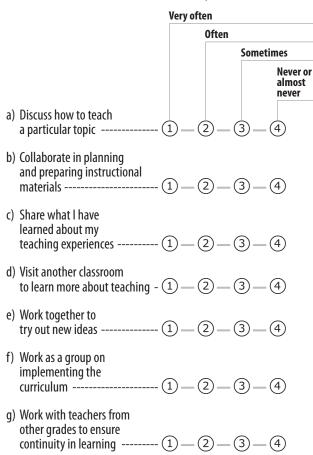
g) Teachers do not have

adequate support for

10-

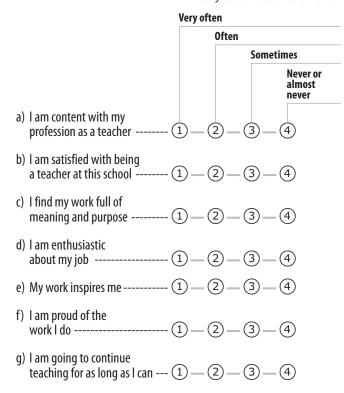
# How often do you have the following types of interactions with other teachers?

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



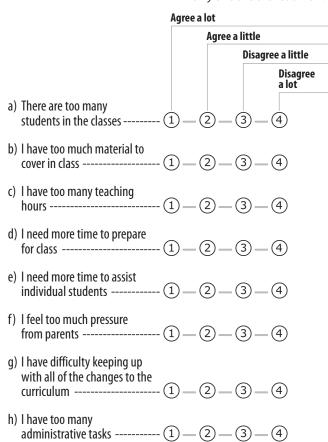
11

# How often do you feel the following way about being a teacher?



#### 12 -

# Indicate the extent to which you agree or disagree with each of the following statements.



#### **About Teaching the TIMSS Class**

## Questions 13 -16 ask about instruction for the eighth-grade students in the TIMSS class.

13

#### How many students are in this class?

students

Write in the number.

14.

## How many eighth-grade students experience difficulties understanding spoken English?

\_\_\_\_\_ students in this class Write in the number.

15 i

## How often do you do the following in teaching this class?

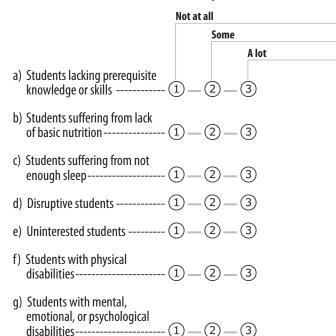
Fill in only **one** circle for each row.

# About half the lessons Some lessons Never a) Relate the lesson to students' daily lives ----- 1 2 3 4

- b) Ask students to explain their answers ------ (1) (2) (3) (4)
- c) Ask students to complete challenging exercises that require them to go beyond the instruction ------ 1 2 3 4
- d) Encourage classroom discussions among students ----- 1 2 3 4
- e) Link new content to students' prior knowledge ---- 1 2 3 4
- f) Ask students to decide their own problem solving procedures ----- 1 2 3 4
- g) Encourage students to express their ideas in class ---- 1 2 3 4

16

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



#### **Teaching Mathematics to the TIMSS Class**

Questions 17 - 20 ask about mathematics instruction for the <u>eighth-grade</u> students in the TIMSS class.

**17** 

In a typical week, how much time do you spend teaching mathematics to the students in this class?

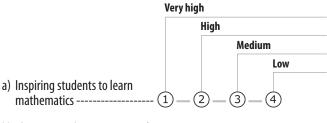
\_\_\_\_\_ minutes per week

Write in the number of minutes per week.
Please convert the number of hours into minutes.

18<sub>1</sub>

In teaching mathematics to this class, how would you characterize your confidence in doing the following?

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

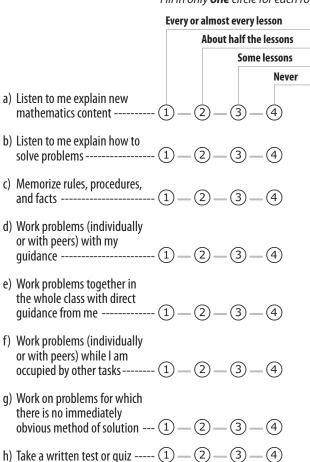


- b) Showing students a variety of problem solving strategies ---- 1 \_ 2 \_ 3 \_ 4
- c) Providing challenging tasks for the highest achieving students ----- 1 2 3 4
- d) Adapting my teaching to engage students' interest ----- 1 2 3 4
- e) Helping students appreciate the value of learning mathematics ----- 1 2 3 4
- f) Assessing student comprehension of mathematics ----- 1 2 3 4
- g) Improving the understanding of struggling students ----- 1 2 3 4
- h) Making mathematics relevant to students ----- (1) (2) (3) (4)
- i) Developing students' higher-order thinking skills ----- 1 2 3 4

19

In teaching mathematics to this class, how often do you ask students to do the following?

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



i) Work in mixed ability groups -- (1) -- (2) -- (3) -- (4)

j) Work in same ability groups -- (1) - (2) - (3) - (4)

#### 20\_\_\_

# Which best describes the mathematics course you are teaching to the class with the TIMSS students?

Fill in **one** circle only.

a) Basic or general eighth-grade math (not algebra or pre-algebra)	1
b) Pre-algebra or introduction to algebra	2
c) Two-year pre-algebra	3
d) Algebra I (one-year course)	4
e) Algebra I (first year of a two-year Algebra I course)	(5)
f) Algebra I (second year of two-year Algebra I course)	6
g) Geometry	7
h) Algebra II	8
i) Integrated or sequential math	9
j) Other math class	(0)

# Using Calculators and Computers for Teaching Mathematics to the TIMSS Class

Questions 21 - 22 ask about resources for teaching mathematics to the <u>eighth-grade</u> students in the TIMSS class.

21

A. Are the students in this class permitted to use calculators during mathematics lessons?

Fill in **one** circle only.

Yes, with unrestricted use---- 1

Yes, with restricted use ---- 2

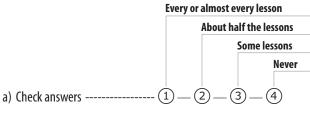
No, calculators are not permitted ---- ③

(If No, go to question 22)

If Yes,

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

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

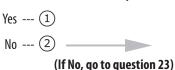


- b) Do routine computations ----- (1) (2) (3) (4)
- c) Solve complex problems ----- 1 2 3 4
- d) Explore number concepts ----- 1 2 3 4

22 -

A. Do the students in this class have computers (including tablets) available to use during their mathematics lessons?

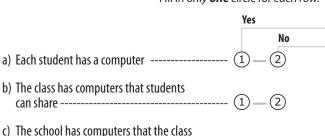
Fill in **one** circle only.



If Yes,

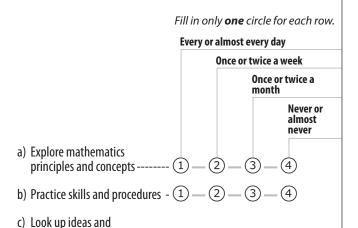
B. What access do the students have to computers?

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



can use sometimes ----- (1) = (2)

C. How often do you have the students do the following activities on computers during mathematics lessons?



d) Process and analyze data ----- 1 - 2 - 3 - 4

#### **Mathematics Topics Taught to the TIMSS Class**

Question 23 asks about the topics taught and the content covered in teaching mathematics to the eighth-grade students in the TIMSS class.

23 .

The following list includes the main topics addressed by the TIMSS mathematics test. Choose the response that best describes when the students in this class have been taught each topic. If a topic was in the curriculum before the <u>eighth grade</u>, please choose "Mostly taught before this year." 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 only **one** circle for each row. Mostly taught before this year Mostly taught this year Not yet taught or just introduced A. Number a) Computing with whole numbers -----(1) (2) (3)b) Comparing and ordering rational numbers ------(1) — (2) — (3) c) Computing with rational numbers (fractions, decimals, and integers) -----(1) (2) (3)d) Concepts of irrational numbers ------ (1) (2) (3) e) Problem solving involving percents or proportions ------ (1) (2) (3) **B.** Algebra a) Simplifying and evaluating algebraic expressions ----- (1) (2) (3)b) Simple linear equations and inequalities ----- $\widehat{1}$   $\widehat{2}$   $\widehat{3}$ c) Simultaneous (two variables) equations ------ (1) \_ (2) \_ (3) d) Numeric, algebraic, and geometric patterns or sequences (extension, missing terms, generalization of patterns) ------ (1) — (2) — (3) e) Representation of functions as ordered pairs, tables, graphs, words, or equations ------ 1 2 3 C. Geometry a) Geometric properties of angles and geometric shapes (triangles, quadrilaterals, and other common polygons) ----- (1) (2) (3)b) Congruent figures and similar triangles ----- (1) (2) (3)c) Relationship between three-dimensional shapes and their two-dimensional representations-----(1) (2) (3)e) Points on the Cartesian plane-----(1) (2) (3) f) Translation, reflection, and rotation -----(1) (2) (3)D. Data and Chance a) Characteristics of data sets (mean, median, mode, and shape of distributions) ------ 1 2 3 b) Interpreting data sets (e.g., draw conclusions, make predictions, and estimate values between and beyond given data points)------(1) (2) (3) c) Judging, predicting, and determining the chances of possible outcomes----- 1 - 2 - 3

# Mathematics Homework for the TIMSS Class

Question 24 asks about mathematics homework for the <u>eighth-grade</u> students in the TIMSS class.

24

A. How often do you usually assign mathematics homework to the students in this class?

Fill in **one** circle only.

I do not assign mathematics homework---- (1) (Go to question 25)

Less than once a week---- 2

1 or 2 times a week---- (3)

3 or 4 times a week---- (4)

Every day---- (5)

B. When you assign mathematics homework to the students in this 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.

15 minutes or less ---- (1)

16–30 minutes ---- (2)

31–60 minutes ---- (3)

61–90 minutes ---- (4)

More than 90 minutes ---- (5)

C. How often do you do the following with the mathematics homework assignments for this class?

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

Always or almost always



give feedback to students ----- 1 - 2 - 3
b) Have students correct

a) Correct assignments and

their own homework ----- 1 — 2 — 3

c) Discuss the homework in class ----- 1 2 3

d) Monitor whether or not the homework was completed ---- 1 \_ 2 \_ 3

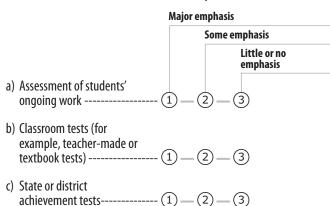
e) Use the homework to contribute towards students' grades or marks ---- (1) — (2) — (3)

# Mathematics Assessment of the TIMSS Class

Question 25 asks about mathematics assessment for the <u>eighth-grade</u> students in the TIMSS class.

25 ı

How much emphasis do you place on the following sources to monitor students' progress in mathematics?



**26** 

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

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

		Yes
		No
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
g)	Addressing individual students' needs	1)-2

**27** 

In the past two years, how many hours in total have you spent in formal in-service/professional development (e.g., workshops, seminars) for mathematics?

Fill in **one** circle only.

None (1)
Less than 6 hours 2
6–15 hours ③
16–35 hours 4

More than 35 hours ---- (5)

How well prepared do you feel you are to teach the following mathematics topics? If a topic is not in the <u>eighth-grade</u> curriculum or you are not responsible for teaching this topic, please choose "Not applicable."

	Not applicable
	Very well prepared
	Somewhat prepared
	Not well prepared
A. Number	
a) Computing with whole numbers	1-2-3-4
b) Comparing and ordering rational numbers	1-2-3-4
c) Computing with rational numbers (fractions, decimals, and integers)	1-2-3-4
d) Concepts of irrational numbers	1-2-3-4
e) Problem solving involving percents or proportions	1-2-3-4
B. Algebra	
a) Simplifying and evaluating algebraic expressions	1-2-3-4
b) Simple linear equations and inequalities	1-2-3-4
c) Simultaneous (two variables) equations	1-2-3-4
d) Numeric, algebraic, and geometric patterns or sequences (extension, missing terms, generalization of patterns)	1-2-3-4
e) Representation of functions as ordered pairs, tables, graphs, words, or equations	1-2-3-4
f) Properties of functions (slopes, intercepts, etc.)	1-2-3-4
C. Geometry	
a) Geometric properties of angles and geometric shapes (triangles, quadrilaterals, and other common polygons)	1-2-3-4
b) Congruent figures and similar triangles	1-2-3-4
c) Relationship between three-dimensional shapes and their two-dimensional representations	1-2-3-4
d) Using appropriate measurement formulas for perimeters, circumferences, areas, surface areas, and volumes	1-2-3-4
e) Points on the Cartesian plane	(1)-(2)-(3)-(4)
f) Translation, reflection, and rotation	(1)-(2)-(3)-(4)
D. Data and Chance	
a) Characteristics of data sets (mean, median, mode, and shape of distributions)	1-2-3-4
b) Interpreting data sets (e.g., draw conclusions, make predictions, and estimate values between and beyond given data points)	(1) $-(2)$ $-(3)$ $-(4)$
c) Judging, predicting, and determining the chances of possible outcomes	

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# Thank You

Thank you for the thought, time, and effort you have put into completing this questionnaire.

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# TIMSS 2015

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

# **Teacher Questionnaire Mathematics**

**Grade 8** 

