

## Appendix C

### TIMSS and TIMSS Advanced 2015 Main Study Questionnaires

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TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

Booklet



Grade 4

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



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

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**TIMSS  
2015**

**TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY**

# **Student Questionnaire**

## **Grade 4**

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



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

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In this booklet, you will find questions about you and what you think. For each question, you should choose the answer you think is best.

Let us take a few minutes to practice the kinds of questions you will answer in this booklet.

Example 1 is one kind of question you will find in this booklet.

## Example 1

Do you go to school?

Fill in **one** oval only.

Yes -- ①

No -- ②

Example 2 is another kind of question you will find in this booklet.

## Example 2

How often do you do these things?

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

	Every day or almost every day	Once or twice a week	Once or twice a month	Never or almost never
a) I talk with my friends .....	①	②	③	④
b) I play sports .....	①	②	③	④
c) I ride a skateboard .....	①	②	③	④

Example 3 is another kind of question you will find in this booklet.

## Example 3

What do you think? Tell how much you agree with these statements.

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

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
	↓	↓	↓	↓
a) Watching movies is fun .....	①	②	③	④
b) I like eating ice cream .....	①	②	③	④
c) I do not like waking up early .....	①	②	③	④
d) I enjoy doing chores .....	①	②	③	④

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



## 1 \_\_\_\_\_

### A. Are you a girl or a boy?

*Fill in **one** oval only.*

Girl -- ①

Boy -- ②

### B. Are you Hispanic or Latino?

*Fill in **one** oval 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 ovals for **all** that apply.*

White -- ①

Black or African American -- ①

Asian -- ①

American Indian or Alaska Native -- ①

Native Hawaiian or other  
Pacific Islander -- ①

**2****When were you born?**

*Fill in the ovals next to the month and year you were born.*

**a) Month**

- January -- (A)  
February -- (B)  
March -- (C)  
April -- (D)  
May -- (E)  
June -- (f)  
July -- (g)  
August -- (h)  
September -- (i)  
October -- (j)  
November -- (k)  
December -- (l)

**b) Year**

- 2002 -- (1)  
2003 -- (2)  
2004 -- (3)  
2005 -- (4)  
2006 -- (5)  
2007 -- (6)  
2008 -- (7)  
Other -- (8)

### 3

---

#### A. How often do you speak English at home?


*Fill in **one** oval only.*

I always speak  
English at home -- ① *If Always, please go to question 4* 

I almost always speak  
English at home -- ②

I sometimes speak English  
and sometimes speak  
another language at home -- ③

I never speak  
English at home -- ④

*If Almost always, Sometimes, Never,  
please go to question 3B* 

#### B. What language do you speak at home (other than English)?

*Fill in **one** oval only.*

Spanish -- ①

Other -- ② Please specify \_\_\_\_\_

## 4

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

*Fill in **one** oval only.*

None or very few (0–10 books) -- ①

This shows 10 books



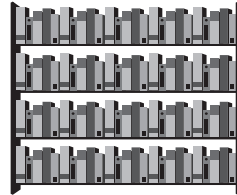
Enough to fill one shelf (11–25 books) -- ②

This shows 25 books



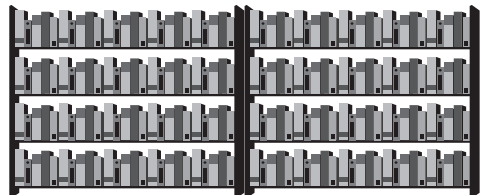
Enough to fill one bookcase  
(26–100 books) -- ③

This shows 100 books



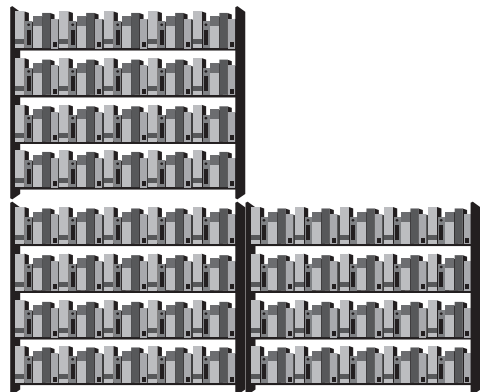
Enough to fill two bookcases  
(101–200 books) -- ④

This shows 200 books



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

This shows more than 200 books



# 5

---

Do you have any of these things at your home?

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

- |   | Yes<br>↓ | No<br>↓ |
|---|----------|---------|
| a) A computer or tablet of your own ---                                   | ①        | ②       |
| b) A computer or tablet that is shared<br>with other people at home ----- | ①        | ②       |
| c) Study desk/table for your use -----                                    | ①        | ②       |
| d) Your own room -----  | ①        | ②       |
| e) Internet connection -----  | ①        | ②       |
| f) Your own cell phone -----  | ①        | ②       |
| g) A gaming system<br>(e.g., PlayStation®,<br>Wii®, Xbox®)-----           | ①        | ②       |
| h) VCR, DVD, or Blu-ray player -----                                      | ①        | ②       |

**6**

---

- A. Was your mother (or stepmother or female legal guardian) born in the United States? (“United States” includes the 50 states, its territories, the District of Columbia, and U.S. military bases abroad.)

*Fill in **one** oval only.*

Yes -- ①

No -- ②

I don't know -- ③

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

*Fill in **one** oval only.*

Yes -- ①

No -- ②

I don't know -- ③

**7**

---

- Were you born in the United States?

*Fill in **one** oval only.*

Yes -- ①

No -- ②

## 8

---

The following questions ask about activities you do outside of school.

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

- |   | Yes    | No     |
|---|--------|--------|
| a) Do you play on a sports team outside of school?-----   | ↓<br>① | ↓<br>② |
| b) Do you often play a musical instrument outside of school? -----                                      | ①      | ②      |
| c) Are you studying something in a class outside of school? -----                                       | ①      | ②      |
| d) Do you belong to a club outside of school (like Boy/Girl Scouts, 4-H, or Boys and Girls Club)? ----- | ①      | ②      |

## 9

---

Are you preparing for or have you participated in a science club, a science fair, or a science competition?

Fill in **one** oval only.

Yes -- ①

No -- ②

## 10

---

Have you ever repeated a grade in elementary school?

Fill in **one** oval only.

Yes -- ①

No -- ②

**11****A. About how often are you absent from school?**

*Fill in one oval only.*

- Once a week or more -- ①
- Once every two weeks -- ②
- Once a month -- ③
- Never or almost never -- ④

**B. How many days were you absent from school in the last month?**

*Fill in one oval only.*

- None -- ①
- 1 or 2 days -- ②
- 3 or 4 days -- ③
- 5 to 10 days -- ④
- More than 10 days -- ⑤

**12****How often do you eat breakfast on school days?**

*Fill in one oval only.*

- Every day -- ①
- Most days -- ②
- Sometimes -- ③
- Never or almost never -- ④



# 13

**How often do you use a computer or tablet in each of these places for schoolwork (including classroom tasks, homework, studying outside of class)?**

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

	Every day or almost every day	Once or twice a week	Once or twice a month	Never or almost never
a) At home .....	①	②	③	④
b) At school .....	①	②	③	④
c) Some other place .....	①	②	③	④

## 14

What do you think about your school? Tell how much you agree with these statements.

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

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
a) I like being in school .....	①	②	③	④
b) I feel safe when I am at school .....	①	②	③	④
c) I feel like I belong at this school .....	①	②	③	④
d) I like to see my classmates at school .....	①	②	③	④
e) Teachers at my school are fair to me .....	①	②	③	④
f) I am proud to go to this school .....	①	②	③	④
g) I learn a lot in school .....	①	②	③	④

# 15

**During this school year, how often have other students from your school done any of the following things to you (including through texting or the Internet)?**

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

	At least once a week	Once or twice a month	A few times a year	Never
a) Made fun of me or called me names .....	↓ ①	↓ ②	↓ ③	↓ ④
b) Left me out of their games or activities .....	①	②	③	④
c) Spread lies about me .....	①	②	③	④
d) Stole something from me .....	①	②	③	④
e) Hit or hurt me ( <i>e.g., shoving, hitting, kicking</i> ) .....	①	②	③	④
f) Made me do things I didn't want to do .....	①	②	③	④
g) Shared embarrassing information about me .....	①	②	③	④
h) Threatened me .....	①	②	③	④

## 16

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

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

- |  | Agree<br>a lot | Agree<br>a little | Disagree<br>a little | Disagree<br>a lot |
|--|----------------|-------------------|----------------------|-------------------|
| a) I enjoy learning mathematics -----                      | ①              | ②                 | ③                    | ④                 |
| b) I wish I did not have to study<br>mathematics -----     | ①              | ②                 | ③                    | ④                 |
| c) Mathematics is boring -----                             | ①              | ②                 | ③                    | ④                 |
| d) I learn many interesting<br>things in mathematics ----- | ①              | ②                 | ③                    | ④                 |
| e) I like mathematics -----                                | ①              | ②                 | ③                    | ④                 |
| f) I like any schoolwork that<br>involves numbers -----    | ①              | ②                 | ③                    | ④                 |
| g) I like to solve mathematics<br>problems -----           | ①              | ②                 | ③                    | ④                 |
| h) I look forward to<br>mathematics lessons -----          | ①              | ②                 | ③                    | ④                 |
| i) Mathematics is one of my<br>favorite subjects -----     | ①              | ②                 | ③                    | ④                 |

# 17

How much do you agree with these statements about your mathematics lessons?

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

- |   | Agree<br>a lot | Agree<br>a little | Disagree<br>a little | Disagree<br>a lot |
|---|----------------|-------------------|----------------------|-------------------|
| a) I know what my teacher expects me to do .....                    | ↓<br>①         | ↓<br>②            | ↓<br>③               | ↓<br>④            |
| b) My teacher is easy to understand --                              | ①              | ②                 | ③                    | ④                 |
| c) I am interested in what my teacher says .....                    | ①              | ②                 | ③                    | ④                 |
| d) My teacher gives me interesting things to do .....               | ①              | ②                 | ③                    | ④                 |
| e) My teacher has clear answers to my questions .....               | ①              | ②                 | ③                    | ④                 |
| f) My teacher is good at explaining mathematics .....               | ①              | ②                 | ③                    | ④                 |
| g) My teacher lets me show what I have learned .....                | ①              | ②                 | ③                    | ④                 |
| h) My teacher does a variety of things to help us learn .....       | ①              | ②                 | ③                    | ④                 |
| i) My teacher tells me how to do better when I make a mistake ..... | ①              | ②                 | ③                    | ④                 |
| j) My teacher listens to what I have to say .....                   | ①              | ②                 | ③                    | ④                 |

# 18

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

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

- |  | Agree<br>a lot | Agree<br>a little | Disagree<br>a little | Disagree<br>a lot |
|--|----------------|-------------------|----------------------|-------------------|
| a) I usually do well in mathematics ---                                | ①              | ②                 | ③                    | ④                 |
| b) Mathematics is harder for me<br>than for many of my classmates ---- | ①              | ②                 | ③                    | ④                 |
| c) I am just not good at mathematics -                                 | ①              | ②                 | ③                    | ④                 |
| d) I learn things quickly<br>in mathematics .....                      | ①              | ②                 | ③                    | ④                 |
| e) Mathematics makes me nervous ----                                   | ①              | ②                 | ③                    | ④                 |
| f) I am good at working out difficult<br>mathematics problems .....    | ①              | ②                 | ③                    | ④                 |
| g) My teacher tells me I am good<br>at mathematics .....               | ①              | ②                 | ③                    | ④                 |
| h) Mathematics is harder for me<br>than any other subject .....        | ①              | ②                 | ③                    | ④                 |
| i) Mathematics makes me confused---                                    | ①              | ②                 | ③                    | ④                 |

## 19

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

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

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
a) I enjoy learning science .....	①	②	③	④
b) I wish I did not have to study science .....	①	②	③	④
c) Science is boring .....	①	②	③	④
d) I learn many interesting things in science .....	①	②	③	④
e) I like science .....	①	②	③	④
f) I look forward to learning science in school .....	①	②	③	④
g) Science teaches me how things in the world work .....	①	②	③	④
h) I like to do science experiments ----	①	②	③	④
i) Science is one of my favorite subjects .....	①	②	③	④

## 20

How much do you agree with these statements about your science lessons?

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

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
a) I know what my teacher expects me to do .....	↓ ①	↓ ②	↓ ③	↓ ④
b) My teacher is easy to understand --	①	②	③	④
c) I am interested in what my teacher says .....	①	②	③	④
d) My teacher gives me interesting things to do .....	①	②	③	④
e) My teacher has clear answers to my questions .....	①	②	③	④
f) My teacher is good at explaining science .....	①	②	③	④
g) My teacher lets me show what I have learned .....	①	②	③	④
h) My teacher does a variety of things to help us learn .....	①	②	③	④
i) My teacher tells me how to do better when I make a mistake .....	①	②	③	④
j) My teacher listens to what I have to say .....	①	②	③	④



# 21

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

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

- |  | Agree<br>a lot | Agree<br>a little | Disagree<br>a little | Disagree<br>a lot |
|--|----------------|-------------------|----------------------|-------------------|
| a) I usually do well in science .....                              | ↓<br>①         | ↓<br>②            | ↓<br>③               | ↓<br>④            |
| b) Science is harder for me<br>than for many of my classmates ---- | ①              | ②                 | ③                    | ④                 |
| c) I am just not good at science .....                             | ①              | ②                 | ③                    | ④                 |
| d) I learn things quickly<br>in science .....                      | ①              | ②                 | ③                    | ④                 |
| e) My teacher tells me I am good<br>at science .....               | ①              | ②                 | ③                    | ④                 |
| f) Science is harder for me<br>than any other subject .....        | ①              | ②                 | ③                    | ④                 |
| g) Science makes me confused .....                                 | ①              | ②                 | ③                    | ④                 |

**22**

**How hard was this test compared to most other tests you have taken this year in school?**

*Fill in **one** oval only.*

- Easier than other tests -- ①
- About as hard as other tests -- ②
- Harder than other tests -- ③
- Much harder than other tests -- ④

**23**

**How hard did you try on this test compared to how hard you tried on most other tests you have taken this year in school?**

*Fill in **one** oval only.*

- Not as hard as on other tests -- ①
- About as hard as on other tests -- ②
- Harder than on other tests -- ③
- Much harder than on other tests -- ④

**24**

**How important was it to you to do well on this test?**

*Fill in **one** oval only.*

- Not very important -- ①
- Somewhat important -- ②
- Important -- ③
- Very important -- ④

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BOSTON  
COLLEGE

# TIMSS 2015

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

# Student Questionnaire

## Grade 4



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International Association  
for the Evaluation of  
Educational Achievement

[timss.bc.edu](http://timss.bc.edu)

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Student ID input boxes

Student ID

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Participation Status

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

Booklet



Grade 8

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



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

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According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless such collection displays a valid OMB control number. The valid OMB control number for this voluntary information collection is 1850-0695. The time required to complete this information collection is estimated to average 30 minutes per respondent, including the time to review instructions, and complete and review the information collection. If you have any comments concerning the accuracy of the time estimate(s), suggestions for improving the form, or comments or concerns regarding the status of your individual submission of this form, write directly to: Trends in International Mathematics and Science Study (TIMSS), National Center for Education Statistics, U.S. Department of Education, 1990 K Street N.W., Washington, D.C. 20006. OMB No. 1850-0695, Approval Expires 9/30/2017.



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**TIMSS  
2015**

**TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY**

# **Student Questionnaire**

## **Grade 8**

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



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

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

Each question is followed by a number of answers. Fill in the oval next to or under the answer of your choice as shown in Examples 1, 2, and 3.

## Example 1

Do you go to school?

Fill in **one** oval only.

Yes --

No --

## Example 2

How often do you do these things?

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

	Every day or almost every day	Once or twice a week	Once or twice a month	Never or almost never
a) I talk with my friends .....	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) I play sports .....	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) I ride a skateboard .....	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

## Example 3

What do you think? Tell how much you agree with these statements.

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

	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
c) I do not like waking up early .....	①	②	●	④
d) I enjoy doing chores .....	①	②	③	●

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

## 1

---

### A. Are you a girl or a boy?

*Fill in **one** oval only.*

Girl -- ①

Boy -- ②

### B. Are you Hispanic or Latino?

*Fill in **one** oval 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 ovals for **all** that apply.*

White -- ①

Black or African American -- ①

Asian -- ①

American Indian or Alaska Native -- ①

Native Hawaiian or other  
Pacific Islander -- ①

**2****When were you born?**

*Fill in the oval next to the month and year you were born.*

**a) Month**

- January -- (A)  
February -- (B)  
March -- (C)  
April -- (D)  
May -- (E)  
June -- (f)  
July -- (g)  
August -- (h)  
September -- (i)  
October -- (j)  
November -- (k)  
December -- (l)

**b) Year**

- 1997 -- (1)  
1998 -- (2)  
1999 -- (3)  
2000 -- (4)  
2001 -- (5)  
2002 -- (6)  
2003 -- (7)  
2004 -- (8)  
2005 -- (9)  
Other -- (0)

**3****A. How often do you speak English at home?**

*Fill in **one** oval only.*

Always -- ① *If **Always**, please go to question 4* →

Almost always -- ②

Sometimes -- ③

Never -- ④

*If **Almost always, Sometimes, Never**,  
please go to question 3B* ↘

**B. What language do you speak at home (other than English)?**

*Fill in **one** oval only.*

Spanish -- ①

Other -- ② Please specify \_\_\_\_\_

## 4

---

The following questions ask about activities you do outside of school.

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

- |  | Yes | No |
|--|-----|----|
|  | ↓   | ↓  |
| a) Do you play on a sports team outside of school?-----  | ①   | ②  |
| b) Do you often play a musical instrument outside of school? -----                                     | ①   | ②  |
| c) Are you studying something in a class outside of school? -----                                      | ①   | ②  |
| d) Do you belong to a club outside of school (like Boy/Girl Scouts, 4-H, or Boys and Girls Club)?----- | ①   | ②  |

## 5

---

In this school year, are you preparing for or have you participated in any of the following activities?

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

- |                              | Yes | No |
|------------------------------|-----|----|
|                              | ↓   | ↓  |
| a) Science fair-----         | ①   | ②  |
| b) Science club-----         | ①   | ②  |
| c) Science competition ----- | ①   | ②  |



## 6

---

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

*Fill in **one** oval 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) -- ⑤

## 7

---

**How many digital information devices are there in your home? Count computers, tablets, smartphones, smart TVs, and e-readers. (Do not count other devices.)**

*Fill in **one** oval only.*

None -- ①

1-3 devices -- ②

4-6 devices -- ③

7-10 devices -- ④

More than 10 devices -- ⑤

## 8

**Do you have any of these things at your home?**

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

- |   | Yes<br>↓ | No<br>↓ |
|---|----------|---------|
| a) A computer or tablet of your own ---                                   | ①        | ②       |
| b) A computer or tablet that is shared<br>with other people at home ----- | ①        | ②       |
| c) Study desk/table for your use -----                                    | ①        | ②       |
| d) Your own room -----  | ①        | ②       |
| e) Internet connection -----  | ①        | ②       |
| f) Your own cell phone -----  | ①        | ②       |
| g) A gaming system<br>(e.g., PlayStation®, Wii®, XBox®)--                 | ①        | ②       |
| h) VCR, DVD, or Blu-ray player -----                                      | ①        | ②       |

## 9

---

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

*Fill in **one** oval only.*

- Less than high school -- ①
- Some high school -- ②
- High school graduate -- ③
- Associate's degree (2-year college program) -- ④
- Bachelor's degree (4-year college program) -- ⑤
- Master's degree or professional degree (MD, DDS, lawyer, minister) -- ⑥
- Doctorate (Ph.D., or Ed.D.) -- ⑦
- I don't know -- ⑧

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

*Fill in **one** oval only.*

- Less than high school -- ①
- Some high school -- ②
- High school graduate -- ③
- Associate's degree (2-year college program) -- ④
- Bachelor's degree (4-year college program) -- ⑤
- Master's degree or professional degree (MD, DDS, lawyer, minister) -- ⑥
- Doctorate (Ph.D., or Ed.D.) -- ⑦
- I don't know -- ⑧

## 10

---

**How far in your education do you expect to go?**

*Fill in **one** oval only*

- Finish middle school -- ①
- Finish high school -- ②
- Finish Associate's degree  
(2-year college program) -- ③
- Finish Bachelor's degree  
(4-year college program) -- ④
- Finish Master's degree or  
professional degree (MD,  
DDS, lawyer, minister) -- ⑤
- Finish Doctorate (Ph.D., Ed.D.) -- ⑥

## 11

---

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

*Fill in **one** oval only.*

- Yes -- ①
- No -- ②
- I don't know -- ③

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

*Fill in **one** oval only.*

- Yes -- ①
- No -- ②
- I don't know -- ③

**12**

**A. Were you born in the United States?**

*Fill in **one** oval only.*

Yes -- ① 

**(If Yes, go to question 13)**

No -- ②

**If No,**

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

*Fill in **one** oval only.*

Older than 10 years old -- ①

5 to 10 years old -- ②

Younger than 5 years old -- ③

# 13

---

## A. About how often are you absent from school?

*Fill in **one** oval only.*

- Once a week or more -- ①
- Once every two weeks -- ②
- Once a month -- ③
- Never or almost never -- ④

## B. How many days were you absent from school in the last month?

*Fill in **one** oval only.*

- None -- ①
- 1 or 2 days -- ②
- 3 or 4 days -- ③
- 5 to 10 days -- ④
- More than 10 days -- ⑤

# 14

---

## Have you ever repeated a grade?

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

- |  | Yes | No |
|--|-----|----|
|  | ↓   | ↓  |
| a) In elementary school.....             | ①   | ②  |
| b) In middle or junior high school ..... | ①   | ②  |

15

How often do you eat breakfast on school days?

Fill in **one** oval only.

Every day -- ①

Most days -- ②

Sometimes -- ③

Never or almost never -- ④

16

How often do you use a computer or tablet in each of these places for schoolwork (including classroom tasks, homework, studying outside of class)?

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

	Every day or almost every day	Once or twice a week	Once or twice a month	Never or almost never
a) At home .....	①	②	③	④
b) At school .....	①	②	③	④
c) Some other place .....	①	②	③	④

# 17

---

**Do you use the Internet to do any of the following tasks for schoolwork (including classroom tasks, homework, studying outside of class)?**

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

- |   | Yes | No |
|---|-----|----|
|   | ↓   | ↓  |
| a) Access the textbook or other course materials .....                                | ①   | ②  |
| b) Access assignments posted online by my teacher .....                               | ①   | ②  |
| c) Collaborate with classmates on assignments or projects .....                       | ①   | ②  |
| d) Communicate with the teacher .....   | ①   | ②  |
| e) Find information, articles, or tutorials to aid in understanding mathematics ..... | ①   | ②  |
| f) Find information, articles, or tutorials to aid in understanding science .....     | ①   | ②  |



## 18

What do you think about your school? Tell how much you agree with these statements.

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

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
a) I like being in school .....	①	②	③	④
b) I feel safe when I am at school .....	①	②	③	④
c) I feel like I belong at this school .....	①	②	③	④
d) I like to see my classmates at school .....	①	②	③	④
e) Teachers at my school are fair to me .....	①	②	③	④
f) I am proud to go to this school .....	①	②	③	④
g) I learn a lot in school .....	①	②	③	④

# 19

During this school year, how often have other students from your school done any of the following things to you (including through texting or the Internet)?

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

	At least once a week	Once or twice a month	A few times a year	Never
a) Made fun of me or called me names .....	↓ ①	↓ ②	↓ ③	↓ ④
b) Left me out of their games or activities .....	①	②	③	④
c) Spread lies about me .....	①	②	③	④
d) Stole something from me .....	①	②	③	④
e) Hit or hurt me ( <i>e.g., shoving, hitting, kicking</i> ) .....	①	②	③	④
f) Made me do things I didn't want to do .....	①	②	③	④
g) Shared embarrassing information about me .....	①	②	③	④
h) Posted embarrassing things about me online .....	①	②	③	④
i) Threatened me .....	①	②	③	④

## 20

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

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

- |  | Agree<br>a lot | Agree<br>a little | Disagree<br>a little | Disagree<br>a lot |
|--|----------------|-------------------|----------------------|-------------------|
| a) I enjoy learning mathematics -----                      | ①              | ②                 | ③                    | ④                 |
| b) I wish I did not have to<br>study mathematics -----     | ①              | ②                 | ③                    | ④                 |
| c) Mathematics is boring -----                             | ①              | ②                 | ③                    | ④                 |
| d) I learn many interesting<br>things in mathematics ----- | ①              | ②                 | ③                    | ④                 |
| e) I like mathematics -----                                | ①              | ②                 | ③                    | ④                 |
| f) I like any schoolwork that<br>involves numbers -----    | ①              | ②                 | ③                    | ④                 |
| g) I like to solve<br>mathematics problems -----           | ①              | ②                 | ③                    | ④                 |
| h) I look forward to<br>mathematics class -----            | ①              | ②                 | ③                    | ④                 |
| i) Mathematics is one of<br>my favorite subjects -----     | ①              | ②                 | ③                    | ④                 |

# 21

How much do you agree with these statements about your mathematics lessons?

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

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
a) I know what my teacher expects me to do .....	↓ ①	↓ ②	↓ ③	↓ ④
b) My teacher is easy to understand --	①	②	③	④
c) I am interested in what my teacher says .....	①	②	③	④
d) My teacher gives me interesting things to do .....	①	②	③	④
e) My teacher has clear answers to my questions .....	①	②	③	④
f) My teacher is good at explaining mathematics .....	①	②	③	④
g) My teacher lets me show what I have learned .....	①	②	③	④
h) My teacher does a variety of things to help us learn .....	①	②	③	④
i) My teacher tells me how to do better when I make a mistake .....	①	②	③	④
j) My teacher listens to what I have to say .....	①	②	③	④

## 22

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

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

- |  | Agree<br>a lot | Agree<br>a little | Disagree<br>a little | Disagree<br>a lot |
|--|----------------|-------------------|----------------------|-------------------|
| a) I usually do well in mathematics ---                                      | ↓<br>①         | ↓<br>②            | ↓<br>③               | ↓<br>④            |
| b) Mathematics is more difficult for me than for many of my classmates ----- | ①              | ②                 | ③                    | ④                 |
| c) Mathematics is not one of my strengths -----                              | ①              | ②                 | ③                    | ④                 |
| d) I learn things quickly in mathematics -----                               | ①              | ②                 | ③                    | ④                 |
| e) Mathematics makes me nervous -----  | ①              | ②                 | ③                    | ④                 |
| f) I am good at working out difficult mathematics problems -----             | ①              | ②                 | ③                    | ④                 |
| g) My teacher tells me I am good at mathematics -----                        | ①              | ②                 | ③                    | ④                 |
| h) Mathematics is harder for me than any other subject -----                 | ①              | ②                 | ③                    | ④                 |
| i) Mathematics makes me confused -----                                       | ①              | ②                 | ③                    | ④                 |

## 23

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

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

- |  | Agree<br>a lot | Agree<br>a little | Disagree<br>a little | Disagree<br>a lot |
|--|----------------|-------------------|----------------------|-------------------|
| a) I think learning mathematics will help me in my daily life .....                          | ↓<br>①         | ↓<br>②            | ↓<br>③               | ↓<br>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 college or university of my choice ..... | ①              | ②                 | ③                    | ④                 |
| d) I need to do well in mathematics to get the job I want .....                              | ①              | ②                 | ③                    | ④                 |
| e) I would like a job that involves using mathematics .....                                  | ①              | ②                 | ③                    | ④                 |
| f) It is important to learn about mathematics to get ahead in the world .....                | ①              | ②                 | ③                    | ④                 |
| g) Learning mathematics will give me more job opportunities when I am an adult .....         | ①              | ②                 | ③                    | ④                 |
| h) My parents think that it is important that I do well in mathematics .....                 | ①              | ②                 | ③                    | ④                 |
| i) It is important to do well in mathematics .....   | ①              | ②                 | ③                    | ④                 |

## 24

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

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

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
a) I enjoy learning science .....	①	②	③	④
b) I wish I did not have to study science .....	①	②	③	④
c) Science is boring .....	①	②	③	④
d) I learn many interesting things in science .....	①	②	③	④
e) I like science .....	①	②	③	④
f) I look forward to learning science in school .....	①	②	③	④
g) Science teaches me how things in the world work .....	①	②	③	④
h) I like to conduct science experiments .....	①	②	③	④
i) Science is one of my favorite subjects .....	①	②	③	④

## 25

How much do you agree with these statements about your science lessons?

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

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
a) I know what my teacher expects me to do .....	↓ ①	↓ ②	↓ ③	↓ ④
b) My teacher is easy to understand --	①	②	③	④
c) I am interested in what my teacher says .....	①	②	③	④
d) My teacher gives me interesting things to do .....	①	②	③	④
e) My teacher has clear answers to my questions .....	①	②	③	④
f) My teacher is good at explaining science .....	①	②	③	④
g) My teacher lets me show what I have learned .....	①	②	③	④
h) My teacher does a variety of things to help us learn .....	①	②	③	④
i) My teacher tells me how to do better when I make a mistake .....	①	②	③	④
j) My teacher listens to what I have to say .....	①	②	③	④



## 26

How much do you agree with these statements about science?

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

- |  | Agree<br>a lot | Agree<br>a little | Disagree<br>a little | Disagree<br>a lot |
|--|----------------|-------------------|----------------------|-------------------|
| a) I usually do well in science .....                                      | ↓<br>①         | ↓<br>②            | ↓<br>③               | ↓<br>④            |
| b) Science is more difficult for me<br>than for many of my classmates ---- | ①              | ②                 | ③                    | ④                 |
| c) Science is not one of<br>my strengths .....                             | ①              | ②                 | ③                    | ④                 |
| d) I learn things quickly<br>in science .....                              | ①              | ②                 | ③                    | ④                 |
| e) I am good at working out<br>difficult science problems .....            | ①              | ②                 | ③                    | ④                 |
| f) My teacher tells me I am good<br>at science .....                       | ①              | ②                 | ③                    | ④                 |
| g) Science is harder for me than<br>any other subject .....                | ①              | ②                 | ③                    | ④                 |
| h) Science makes me confused .....   | ①              | ②                 | ③                    | ④                 |

## 27

How much do you agree with these statements about science?

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

- |  | Agree<br>a lot | Agree<br>a little | Disagree<br>a little | Disagree<br>a lot |
|--|----------------|-------------------|----------------------|-------------------|
| a) I think learning science will help me in my daily life .....                          | ↓<br>①         | ↓<br>②            | ↓<br>③               | ↓<br>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 college or university of my choice ..... | ①              | ②                 | ③                    | ④                 |
| d) I need to do well in science to get the job I want .....                              | ①              | ②                 | ③                    | ④                 |
| e) I would like a job that involves using science .....                                  | ①              | ②                 | ③                    | ④                 |
| f) It is important to learn about science to get ahead in the world .....                | ①              | ②                 | ③                    | ④                 |
| g) Learning science will give me more job opportunities when I am an adult .....         | ①              | ②                 | ③                    | ④                 |
| h) My parents think that it is important that I do well in science .....                 | ①              | ②                 | ③                    | ④                 |
| i) It is important to do well in science .....   | ①              | ②                 | ③                    | ④                 |

## 28

A. How often does your teacher give you homework in the following subjects?

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

	Every day	3 or 4 times a week	1 or 2 times a week	Less than once a week	Never
a) Mathematics .....	↓ ①	↓ ②	↓ ③	↓ ④	↓ ⑤
b) Science .....	①	②	③	④	⑤

B. When your teacher gives you homework in the following subjects, about how many minutes do you usually spend on your homework?

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

	My teacher never gives me homework in...	1-15 minutes	16-30 minutes	31-60 minutes	61-90 minutes	More than 90 minutes
a) Mathematics .....	↓ ①	↓ ②	↓ ③	↓ ④	↓ ⑤	↓ ⑥
b) Science .....	①	②	③	④	⑤	⑥

## 29

**A. During the last 12 months, have you attended extra lessons or tutoring not provided by the school in the following subjects?**

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

	Yes, to excel in class	Yes, to keep up in class	No
a) Mathematics .....	↓ ①	↓ ②	↓ ③
b) Science .....	①	②	③

**B. For how many of the last 12 months have you attended extra lessons or tutoring?**

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

	Did not attend	Less than 4 months	4–8 months	More than 8 months
a) Mathematics .....	↓ ①	↓ ②	↓ ③	↓ ④
b) Science .....	①	②	③	④

**30**

**How hard was this test compared to most other tests you have taken this year in school?**

*Fill in **one** oval only.*

Easier than other tests -- ①

About as hard as other tests -- ②

Harder than other tests -- ③

Much harder than other tests -- ④

**31**

**How hard did you try on this test compared to how hard you tried on most other tests you have taken this year in school?**

*Fill in **one** oval only.*

Not as hard as on other tests -- ①

About as hard as on other tests -- ②

Harder than on other tests -- ③

Much harder than on other tests -- ④

**32**

**How important was it to you to do well on this test?**

*Fill in **one** oval only.*

Not very important -- ①

Somewhat important -- ②

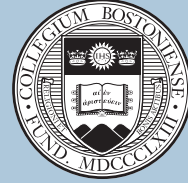
Important -- ③

Very important -- ④



**Thank You!**

**Thank you for filling out the questionnaire!**



BOSTON  
COLLEGE

# TIMSS 2015

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

# Student Questionnaire

## Grade 8



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International Association  
for the Evaluation of  
Educational Achievement

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Place Label Here

School ID: \_\_\_\_\_

Class ID: \_\_\_\_\_

Teacher ID: \_\_\_\_\_

Link #: \_\_\_\_\_ Subject: \_\_\_\_\_

Checksum: \_\_\_\_\_

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

# Teacher Questionnaire

## Grade 4

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



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

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*U.S. participation in this study is sponsored by the National Center for Education Statistics (NCES), U.S. Department of Education, and authorized by the Education Science Reform Act of 2002 (20 U.S.C., § 9543). Your responses are protected by federal statute (20 U.S.C., § 9573). 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.*

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless such collection displays a valid OMB control number. The valid OMB control number for this voluntary information collection is 1850-0695. The time required to complete this information collection is estimated to average 30 minutes per respondent, including the time to review instructions, search existing data resources, gather the data needed, and complete and review the information collection. **If you have any comments concerning the accuracy of the time estimate(s), suggestions for improving the form, or comments or concerns regarding the status of your individual submission of this form, write directly to:** Trends in International Mathematics and Science Study (TIMSS), National Center for Education Statistics, U.S. Department of Education, 1990 K Street N.W., Washington, D.C. 20006. OMB No. 1850-0695, Approval Expires 9/30/2017.



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 fourth-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 fourth-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 which 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 place it in the accompanying envelope and return it to the TIMSS school coordinator.

NCES is authorized to collect information from the questionnaire 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?

\_\_\_\_\_ years  
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 **highest** 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** \_\_\_\_\_

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

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

- |                                       | Yes   | No  |
|---------------------------------------|-------|-----|
| a) Education—Primary/Elementary ----- | (1) — | (2) |
| b) Education—Secondary -----          | (1) — | (2) |
| c) Mathematics -----                  | (1) — | (2) |
| d) Science -----                      | (1) — | (2) |
| e) English -----                      | (1) — | (2) |
| f) Other -----                        | (1) — | (2) |

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

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

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

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

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

- 
- a) Teachers' understanding of the school's curricular goals --- ① --- ② --- ③ --- ④ --- ⑤
  - b) Teachers' degree of success in implementing the school's curriculum ----- ① --- ② --- ③ --- ④ --- ⑤
  - c) Teachers' expectations for student achievement ----- ① --- ② --- ③ --- ④ --- ⑤
  - d) Teachers working together to improve student achievement ----- ① --- ② --- ③ --- ④ --- ⑤
  - e) Teachers' ability to inspire students ----- ① --- ② --- ③ --- ④ --- ⑤
  - f) Parental involvement in school activities ----- ① --- ② --- ③ --- ④ --- ⑤
  - g) Parental commitment to ensure that students are ready to learn ----- ① --- ② --- ③ --- ④ --- ⑤
  - h) Parental expectations for student achievement ----- ① --- ② --- ③ --- ④ --- ⑤
  - i) Parental support for student achievement ----- ① --- ② --- ③ --- ④ --- ⑤
  - j) Parental pressure for the school to maintain high academic standards ----- ① --- ② --- ③ --- ④ --- ⑤

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

- 
- k) Students' desire to do well in school ----- ① --- ② --- ③ --- ④ --- ⑤
  - l) 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

8

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.

	Agree a lot Agree a little Disagree a little Disagree a lot	
a) This school is located in a safe neighborhood -----	① — ② — ③ — ④	
b) I feel safe at this school -----	① — ② — ③ — ④	
c) This school's security policies and practices are sufficient ----	① — ② — ③ — ④	
d) The students behave in an orderly manner -----	① — ② — ③ — ④	
e) The students are respectful of the teachers -----	① — ② — ③ — ④	
f) The students respect school property -----	① — ② — ③ — ④	
g) This school has clear rules about student conduct -----	① — ② — ③ — ④	
h) This school's rules are enforced in a fair and consistent manner -----	① — ② — ③ — ④	

9

In your current school, how severe is each problem?

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

	Not a problem Minor problem Moderate problem Serious problem	
a) The school building needs significant repair -----	① — ② — ③ — ④	
b) Teachers do not have adequate workspace (e.g., for preparation, collaboration, or meeting with students) ----	① — ② — ③ — ④	
c) Teachers do not have adequate instructional materials and supplies -----	① — ② — ③ — ④	
d) The school classrooms are not cleaned often enough ----	① — ② — ③ — ④	
e) The school classrooms need maintenance work -----	① — ② — ③ — ④	
f) Teachers do not have adequate technological resources -----	① — ② — ③ — ④	
g) Teachers do not have adequate support for using technology -----	① — ② — ③ — ④	

**10**

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

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

	Very often	Often	Sometimes	Never or almost never
a) Discuss how to teach a particular topic -----	①	②	③	④
b) Collaborate in planning and preparing instructional materials -----	①	②	③	④
c) Share what I have learned about my teaching experiences -----	①	②	③	④
d) Visit another classroom to learn more about teaching -	①	②	③	④
e) Work together to try out new ideas -----	①	②	③	④
f) Work as a group on implementing the curriculum -----	①	②	③	④
g) Work with teachers from other grades to ensure continuity in learning -----	①	②	③	④

**11**

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

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

	Very often	Often	Sometimes	Never or almost never
a) I am content with my profession as a teacher -----	①	②	③	④
b) I am satisfied with being a teacher at this school -----	①	②	③	④
c) I find my work full of meaning and purpose -----	①	②	③	④
d) I am enthusiastic about my job -----	①	②	③	④
e) My work inspires me -----	①	②	③	④
f) I am proud of the work I do ---	①	②	③	④
g) I am going to continue teaching for as long as I can ---	①	②	③	④

**12**

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

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

- Agree a lot  
 Agree a little  
 Disagree a little  
 Disagree a lot
- a) There are too many students in the classes ----- ① — ② — ③ — ④
- b) I have too much material to cover in class ----- ① — ② — ③ — ④
- c) I have too many teaching hours ----- ① — ② — ③ — ④
- d) I need more time to prepare for class ----- ① — ② — ③ — ④
- e) I need more time to assist individual students ----- ① — ② — ③ — ④
- f) I feel too much pressure from parents ----- ① — ② — ③ — ④
- g) I have difficulty keeping up with all of the changes to the curriculum ----- ① — ② — ③ — ④
- h) I have too many administrative tasks ----- ① — ② — ③ — ④

**13**

A. How many students are in this class?

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

B. How many of the students in question 13A are in fourth-grade?

\_\_\_\_\_ fourth-grade students  
Write in the number.

**14**

How many fourth-grade students experience difficulties understanding spoken English?

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

15

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

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

- |  | Every or almost every lesson | 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) Bring interesting materials to class -----  | ①                            | ②                      | ③            | ④     |
| d) Ask students to complete challenging exercises that require them to go beyond the instruction ----- | ①                            | ②                      | ③            | ④     |
| e) Encourage classroom discussions among students -----  | ①                            | ②                      | ③            | ④     |
| f) Link new content to students' prior knowledge -----   | ①                            | ②                      | ③            | ④     |
| g) Ask students to decide their own problem solving procedures -----                                   | ①                            | ②                      | ③            | ④     |
| h) 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?

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

- |   | Not at all | Some | A lot |
|---|------------|------|-------|
| a) Students lacking prerequisite knowledge or skills -----              | ①          | ②    | ③     |
| b) Students suffering from lack of basic nutrition -----                | ①          | ②    | ③     |
| c) Students suffering from not enough sleep -----                       | ①          | ②    | ③     |
| d) Disruptive students -----  | ①          | ②    | ③     |
| e) Uninterested students -----  | ①          | ②    | ③     |
| f) Students with physical disabilities -----                            | ①          | ②    | ③     |
| g) Students with mental, emotional, or psychological disabilities ----- | ①          | ②    | ③     |

Questions 17 - 19 ask about mathematics instruction for the fourth-grade 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**

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

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

- 
- a) Inspiring students to learn mathematics ----- (1) — (2) — (3) — (4)
  - 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.

- 
- a) Listen to me explain new mathematics content ----- (1) — (2) — (3) — (4)
  - b) Listen to me explain how to solve problems ----- (1) — (2) — (3) — (4)
  - c) Memorize rules, procedures, and facts ----- (1) — (2) — (3) — (4)
  - d) Work problems (individually or with peers) with my guidance- (1) — (2) — (3) — (4)
  - e) Work problems together in the whole class with direct guidance from me ----- (1) — (2) — (3) — (4)
  - f) Work problems (individually or with peers) while I am occupied by other tasks ----- (1) — (2) — (3) — (4)
  - g) Take a written test or quiz ---- (1) — (2) — (3) — (4)
  - h) Work in mixed ability groups -- (1) — (2) — (3) — (4)
  - i) Work in same ability groups -- (1) — (2) — (3) — (4)



Questions 20 - 21 ask about resources for teaching mathematics to the fourth-grade students in the TIMSS class.

**20**

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

**21**

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

Fill in **one** circle only.

- Yes --- ①
  - No --- ②
- (If No, go to question 22)

**If Yes,**

B. What access do the students have to computers?

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

- |  | Yes | No |
|--|-----|----|
| a) Each student has a computer -----                               | ①   | ②  |
| b) The class has computers that students can share -----           | ①   | ②  |
| c) The school has computers that the class can use sometimes ----- | ①   | ②  |

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

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

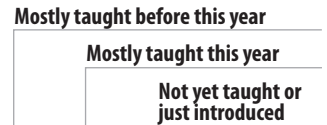
- |  | Every or almost every day | Once or twice a week | Once or twice a month | Never or almost never |
|--|---------------------------|----------------------|-----------------------|-----------------------|
| a) Explore mathematics principles and concepts ----- | ①                         | ②                    | ③                     | ④                     |
| b) Practice skills and procedures -                  | ①                         | ②                    | ③                     | ④                     |
| c) Look up ideas and information -----               | ①                         | ②                    | ③                     | ④                     |

Question 22 asks about the topics taught and the content covered in teaching mathematics to the fourth-grade students in the TIMSS class.

22

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 fourth-grade, 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.



**A. Number**

- a) Concepts of whole numbers, including place value and ordering ----- ① — ② — ③
- b) Adding, subtracting, multiplying, and/or dividing with whole numbers ----- ① — ② — ③
- c) Concepts of multiples and factors; odd and even numbers ----- ① — ② — ③
- d) Concepts of fractions (fractions as parts of a whole or of a collection, or as a location on a number line) ----- ① — ② — ③
- e) Adding and subtracting with fractions, comparing and ordering fractions ----- ① — ② — ③
- f) Concepts of decimals, including place value and ordering, adding and subtracting with decimals ----- ① — ② — ③
- g) Number sentences (finding the missing number, modeling simple situations with number sentences) ----- ① — ② — ③
- h) Number patterns (extending number patterns and finding missing terms) ----- ① — ② — ③

**B. Geometric Shapes and Measures**

- a) Lines: measuring, estimating length of; parallel and perpendicular lines ----- ① — ② — ③
- b) Comparing and drawing angles ----- ① — ② — ③
- c) Using informal coordinate systems to locate points in a plane (e.g., in square B4) ----- ① — ② — ③
- d) Elementary properties of common geometric shapes ----- ① — ② — ③
- e) Reflections and rotations ----- ① — ② — ③
- f) Relationships between two-dimensional and three-dimensional shapes ----- ① — ② — ③
- g) Finding and estimating areas, perimeters, and volumes ----- ① — ② — ③

**C. Data Display**

- a) Reading and representing data from tables, pictographs, bar graphs, or pie charts ----- ① — ② — ③
- b) Drawing conclusions from data displays ----- ① — ② — ③

**Question 23 asks about mathematics homework for the fourth-grade students in the TIMSS class.**

**Question 24 asks about mathematics assessment for the fourth-grade students in the TIMSS class.**

**23**


**24**

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

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

Fill in **one** circle only.

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

I do not assign mathematics homework --- (1) 

(Go to question 24)

Less than once a week --- (2)

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

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

Every day --- (5)



a) Assessment of students' ongoing work ----- (1) --- (2) --- (3)

b) Classroom tests (for example, teacher-made or textbook tests) ----- (1) --- (2) --- (3)

c) State or district achievement tests ----- (1) --- (2) --- (3)

**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)

More than 60 minutes --- (4)

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

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



a) Correct assignments and give feedback to students ----- (1) --- (2) --- (3)

b) Discuss the homework in class ----- (1) --- (2) --- (3)

c) Monitor whether or not the homework was completed ----- (1) --- (2) --- (3)

25

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<br>technology into mathematics -----             | ①   | ②  |
| e) Improving students' critical thinking or<br>problem solving skills ----- | ①   | ②  |
| f) Mathematics assessment -----   | ①   | ②  |
| g) Addressing individual students' needs -----                              | ①   | ②  |

26

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

## 27

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

If a topic is not in the fourth-grade curriculum or you are not responsible for teaching this topic, please choose "Not applicable."

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

	Not applicable	Very well prepared	Somewhat prepared	Not well prepared
<b>A. Number</b>				
a) Concepts of whole numbers, including place value and ordering -----	①	②	③	④
b) Adding, subtracting, multiplying, and/or dividing with whole numbers -----	①	②	③	④
c) Concepts of multiples and factors; odd and even numbers -----	①	②	③	④
d) Concepts of fractions (fractions as parts of a whole or of a collection, or as a location on a number line) -----	①	②	③	④
e) Adding and subtracting with fractions, comparing and ordering fractions -----	①	②	③	④
f) Concepts of decimals, including place value and ordering, adding and subtracting with decimals -----	①	②	③	④
g) Number sentences (finding the missing number, modeling simple situations with number sentences) -----	①	②	③	④
h) Number patterns (extending number patterns and finding missing terms) -----	①	②	③	④
<b>B. Geometric Shapes and Measures</b>				
a) Lines: measuring, estimating length of; parallel and perpendicular lines -----	①	②	③	④
b) Comparing and drawing angles -----	①	②	③	④
c) Using informal coordinate systems to locate points in a plane (e.g., in square B4) -----	①	②	③	④
d) Elementary properties of common geometric shapes -----	①	②	③	④
e) Reflections and rotations -----	①	②	③	④
f) Relationships between two-dimensional and three-dimensional shapes -----	①	②	③	④
g) Finding and estimating areas, perimeters, and volumes -----	①	②	③	④
<b>C. Data Display</b>				
a) Reading and representing data from tables, pictographs, bar graphs, or pie charts -----	①	②	③	④
b) Drawing conclusions from data displays -----	①	②	③	④

Questions 28 - 30 ask about science instruction for the fourth-grade students in the TIMSS class.

**28**

**A. Is science taught mainly as a separate subject (i.e., not integrated with other subjects) to the students in this class?**

Fill in **one** circle only.

Yes --- (1)

No --- (2)

**B. Please estimate the time that you spend on science topics with students in this class.**

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

Write in the number of minutes per week.

Please convert the number of hours into minutes.

**29**

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

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

a) Inspiring students to learn science ----- (1) — (2) — (3) — (4)

b) Explaining science concepts or principles by doing science experiments ----- (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 science ----- (1) — (2) — (3) — (4)

f) Assessing student comprehension of science ----- (1) — (2) — (3) — (4)

g) Improving the understanding of struggling students ----- (1) — (2) — (3) — (4)

h) Making science relevant to students ----- (1) — (2) — (3) — (4)

i) Developing students' higher-order thinking skills ----- (1) — (2) — (3) — (4)

j) Teaching science using inquiry methods ----- (1) — (2) — (3) — (4)

30

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

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

- |  |  |                              |                        |              |
|--|--|------------------------------|------------------------|--------------|
|  |  | Every or almost every lesson |                        |              |
|  |  |                              | About half the lessons |              |
|  |  |                              |                        | Some lessons |
|  |  |                              |                        | Never        |
- a) Listen to me explain new science content ----- ① — ② — ③ — ④
  - b) Observe natural phenomena such as the weather or a plant growing and describe what they see ----- ① — ② — ③ — ④
  - c) Watch me demonstrate an experiment or investigation --- ① — ② — ③ — ④
  - d) Design or plan experiments or investigations ----- ① — ② — ③ — ④
  - e) Conduct experiments or investigations ----- ① — ② — ③ — ④
  - f) Present data from experiments or investigations - ① — ② — ③ — ④
  - g) Interpret data from experiments or investigations - ① — ② — ③ — ④
  - h) Use evidence from experiments or investigations to support conclusions ----- ① — ② — ③ — ④
  - i) Read their textbooks or other resource materials ----- ① — ② — ③ — ④
  - j) Have students memorize facts and principles ----- ① — ② — ③ — ④
  - k) Do field work outside the class ① — ② — ③ — ④
  - l) Take a written test or quiz ----- ① — ② — ③ — ④
  - m) Work in mixed ability groups -- ① — ② — ③ — ④
  - n) Work in same ability groups -- ① — ② — ③ — ④

31

Question 31 asks about resources for teaching science to the fourth-grade students in the TIMSS class.

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

Fill in **one** circle only.

Yes --- ①

No --- ②

(If No, go to question 32)

If Yes,

B. What access do the students have to computers?

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

- |  |  |     |  |    |
|--|--|-----|--|----|
|  |  | Yes |  |    |
|  |  |     |  | No |
- a) Each student has a computer ----- ① — ②
  - b) The class has computers that students can share ----- ① — ②
  - c) The school has computers that the class can use sometimes ----- ① — ②

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

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

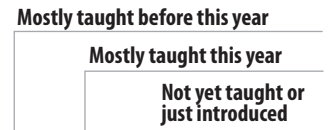
- |  |  |                           |                      |                       |
|--|--|---------------------------|----------------------|-----------------------|
|  |  | Every or almost every day |                      |                       |
|  |  |                           | Once or twice a week |                       |
|  |  |                           |                      | Once or twice a month |
|  |  |                           |                      | Never or almost never |
- a) Practice skills and procedures - ① — ② — ③ — ④
  - b) Look up ideas and information ----- ① — ② — ③ — ④
  - c) Do scientific procedures or experiments ----- ① — ② — ③ — ④
  - d) Study natural phenomena through simulations ----- ① — ② — ③ — ④

Question 32 asks about the topics taught and the content covered in teaching science to the fourth-grade students in the TIMSS class.

32

The following list includes the main topics addressed by the TIMSS science 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 fourth-grade, 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.



**A. Life Science**

- a) Characteristics of living things and the major groups of living things (e.g., mammals, birds, insects, flowering plants) ----- ① — ② — ③
- b) Major body structures and their functions in humans, other animals, and plants ----- ① — ② — ③
- c) Life cycles of common plants and animals (e.g., humans, butterflies, frogs, flowering plants) ----- ① — ② — ③
- d) Understanding that some characteristics are inherited and some are the result of the environment ----- ① — ② — ③
- e) How physical features and behaviors help living things survive in their environments ----- ① — ② — ③
- f) Relationships in communities and ecosystems (e.g., simple food chains, predator-prey relationships, human impacts on the environment) ----- ① — ② — ③
- g) Human health (transmission and prevention of diseases, symptoms of health and illness, importance of a healthy diet and exercise) ----- ① — ② — ③

**B. Physical Science**

- a) States of matter (solid, liquid, gas) and properties of the states of matter (volume, shape); how the state of matter changes by heating or cooling ----- ① — ② — ③
- b) Classifying materials based on physical properties (e.g., weight/mass, volume, conducting heat, conducting electricity, magnetic attraction) ----- ① — ② — ③
- c) Mixtures and how to separate a mixture into its components (e.g., sifting, filtering, evaporation, using a magnet) ----- ① — ② — ③
- d) Chemical changes in everyday life (e.g., decaying, burning, rusting, cooking) ----- ① — ② — ③
- e) Common sources of energy (e.g., the Sun, electricity, wind) and uses of energy (heating and cooling homes, providing light) ----- ① — ② — ③
- f) Light and sound in everyday life (e.g., understanding shadows and reflection, understanding that vibrating objects make sound) ----- ① — ② — ③
- g) Electricity and simple circuits (e.g., identifying materials that are conductors, recognizing that electricity can be changed to light or sound, knowing that a circuit must be complete to work correctly) ----- ① — ② — ③
- h) Properties of magnets (e.g., knowing that like poles repel and opposite poles attract, recognizing that magnets can attract some objects) ----- ① — ② — ③
- i) Forces that cause objects to move (e.g., gravity, pushing/pulling) ----- ① — ② — ③



## 32 (continued)

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 **fourth-grade**, 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.

### C. Earth Science

- |  | Mostly taught before this year | Mostly taught this year | Not yet taught or just introduced |
|--|--------------------------------|-------------------------|-----------------------------------|
| a) Common features of the Earth's landscape (e.g., mountains, plains, deserts, rivers, oceans) and their relationship to human use (farming, irrigation, land development) -----                   | ①                              | ②                       | ③                                 |
| b) Where water is found on the Earth and how it moves in and out of the air (e.g., evaporation, rainfall, cloud formation, dew formation) -----  | ①                              | ②                       | ③                                 |
| c) Understanding that weather can change from day to day, from season to season, and by geographic location -----  | ①                              | ②                       | ③                                 |
| d) Understanding what fossils are and what they can tell us about past conditions on Earth-----  | ①                              | ②                       | ③                                 |
| e) Objects in the solar system (the Sun, the Earth, the Moon, and other planets) and their movements (the Earth and other planets revolve around the Sun, the Moon revolves around the Earth)----- | ①                              | ②                       | ③                                 |
| f) Understanding how day and night result from the Earth's rotation on its axis and how the Earth's rotation results in changing shadows throughout the day -----                                  | ①                              | ②                       | ③                                 |
| g) Understanding how seasons are related to the Earth's annual movement around the Sun -----   | ①                              | ②                       | ③                                 |

**Question 33 asks about science homework for the fourth-grade students in the TIMSS class.**

**Question 34 asks about science assessment for the fourth-grade students in the TIMSS class.**

**33**


**34**

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

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

Fill in **one** circle only.

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

- I do not assign science homework --- (1) 
- (Go to question 34)
- Less than once a week --- (2)
- 1 or 2 times a week --- (3)
- 3 or 4 times a week --- (4)
- Every day --- (5)

- Major emphasis**
- Some emphasis**
- Little or no emphasis**
- a) Assessment of students' ongoing work ----- (1) --- (2) --- (3)
- b) Classroom tests (for example, teacher-made or textbook tests) ----- (1) --- (2) --- (3)
- c) State or district achievement tests ----- (1) --- (2) --- (3)

**B. When you assign science 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)
- More than 60 minutes --- (4)

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

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

- Always or almost always**
- Sometimes**
- Never or almost never**
- a) Correct assignments and give feedback to students ----- (1) --- (2) --- (3)
- b) Discuss the homework in class ----- (1) --- (2) --- (3)
- c) Monitor whether or not the homework was completed ----- (1) --- (2) --- (3)

35

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) Science content -----   | ①   | ②  |
| b) Science pedagogy/instruction -----  | ①   | ②  |
| c) Science curriculum -----  | ①   | ②  |
| d) Integrating information<br>technology into science -----                        | ①   | ②  |
| e) Improving students' critical thinking or<br>inquiry skills -----                | ①   | ②  |
| f) Science assessment -----  | ①   | ②  |
| g) Addressing individual students' needs -----                                     | ①   | ②  |
| h) Integrating science with other subjects<br>(e.g., mathematics, technology)----- | ①   | ②  |

36

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

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

## 37

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

**If a topic is not in the fourth-grade curriculum or you are not responsible for teaching this topic, please choose "Not applicable."**

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



### A. Life Science

- a) Characteristics of living things and the major groups of living things (e.g., mammals, birds, insects, flowering plants) ----- ① — ② — ③ — ④
- b) Major body structures and their functions in humans, other animals, and plants ----- ① — ② — ③ — ④
- c) Life cycles of common plants and animals (e.g., humans, butterflies, frogs, flowering plants) ----- ① — ② — ③ — ④
- d) Understanding that some characteristics are inherited and some are the result of the environment ----- ① — ② — ③ — ④
- e) How physical features and behaviors help living things survive in their environments ----- ① — ② — ③ — ④
- f) Relationships in communities and ecosystems (e.g., simple food chains, predator-prey relationships, human impacts on the environment) ----- ① — ② — ③ — ④
- g) Human health (transmission and prevention of diseases, symptoms of health and illness, importance of a healthy diet and exercise) ----- ① — ② — ③ — ④

### B. Physical Science

- a) States of matter (solid, liquid, gas) and properties of the states of matter (volume, shape); how the state of matter changes by heating or cooling ----- ① — ② — ③ — ④
- b) Classifying materials based on physical properties (e.g., weight/mass, volume, conducting heat, conducting electricity, magnetic attraction) ----- ① — ② — ③ — ④
- c) Mixtures and how to separate a mixture into its components (e.g., sifting, filtering, evaporation, using a magnet) ----- ① — ② — ③ — ④
- d) Chemical changes in everyday life (e.g., decaying, burning, rusting, cooking) ----- ① — ② — ③ — ④
- e) Common sources of energy (e.g., the Sun, electricity, wind) and uses of energy (heating and cooling homes, providing light) ----- ① — ② — ③ — ④
- f) Light and sound in everyday life (e.g., understanding shadows and reflection, understanding that vibrating objects make sound) ----- ① — ② — ③ — ④
- g) Electricity and simple circuits (e.g., identifying materials that are conductors, recognizing that electricity can be changed to light or sound, knowing that a circuit must be complete to work correctly) ----- ① — ② — ③ — ④
- h) Properties of magnets (e.g., knowing that like poles repel and opposite poles attract, recognizing that magnets can attract some objects) ----- ① — ② — ③ — ④
- i) Forces that cause objects to move (e.g., gravity, pushing/pulling) ----- ① — ② — ③ — ④

**37** (continued)

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

If a topic is not in the fourth-grade curriculum or you are not responsible for teaching this topic, please choose "Not applicable."

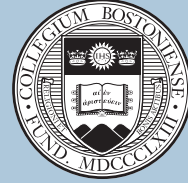
Fill in only **one** circle for each row.

	Not applicable	Very well prepared	Somewhat prepared	Not well prepared
<b>C. Earth Science</b>				
a) Common features of the Earth's landscape (e.g., mountains, plains, deserts, rivers, oceans) and their relationship to human use (farming, irrigation, land development) -----	①	②	③	④
b) Where water is found on the Earth and how it moves in and out of the air (e.g., evaporation, rainfall, cloud formation, dew formation) -----	①	②	③	④
c) Understanding that weather can change from day to day, from season to season, and by geographic location -----	①	②	③	④
d) Understanding what fossils are and what they can tell us about past conditions on Earth-----	①	②	③	④
e) Objects in the solar system (the Sun, the Earth, the Moon, and other planets) and their movements (the Earth and other planets revolve around the Sun, the Moon revolves around the Earth)-----	①	②	③	④
f) Understanding how day and night result from the Earth's rotation on its axis and how the Earth's rotation results in changing shadows throughout the day -----	①	②	③	④
g) Understanding how seasons are related to the Earth's annual movement around the Sun -----	①	②	③	④

# Thank You

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

---



BOSTON  
COLLEGE

**TIMSS**  
**2015**

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

# Teacher Questionnaire

## Grade 4



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for the Evaluation of  
Educational Achievement

[timss.bc.edu](http://timss.bc.edu)



Place Label Here

School ID: \_\_\_\_\_

Class ID: \_\_\_\_\_

Teacher ID: \_\_\_\_\_

Link #: \_\_\_\_\_ Subject: \_\_\_\_\_

Checksum: \_\_\_\_\_

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



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

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*U.S. participation in this study is sponsored by the National Center for Education Statistics (NCES), U.S. Department of Education, and authorized by the Education Science Reform Act of 2002 (20 U.S.C., § 9543). Your responses are protected by federal statute (20 U.S.C., § 9573). 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.*

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless such collection displays a valid OMB control number. The valid OMB control number for this voluntary information collection is 1850-0695. The time required to complete this information collection is estimated to average 30 minutes per respondent, including the time to review instructions, search existing data resources, gather the data needed, and complete and review the information collection. **If you have any comments concerning the accuracy of the time estimate(s), suggestions for improving the form, or comments or concerns regarding the status of your individual submission of this form, write directly to:** Trends in International Mathematics and Science Study (TIMSS), National Center for Education Statistics, U.S. Department of Education, 1990 K Street N.W., Washington, D.C. 20006. OMB No. 1850-0695, Approval Expires 9/30/2017.



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 which 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 questionnaire 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?

\_\_\_\_\_ years  
Please write in a year.

**2** \_\_\_\_\_

At the end of this school year, how many years will you have been teaching 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 **highest** 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 **major or main area(s)** of study?

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

	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.

	Very high	High	Medium	Low	Very low
a) Teachers' understanding of the school's curricular goals -----	①	②	③	④	⑤
b) Teachers' degree of success in implementing the school's curriculum -----	①	②	③	④	⑤
c) Teachers' expectations for student achievement -----	①	②	③	④	⑤
d) Teachers working together to improve student achievement -----	①	②	③	④	⑤
e) Teachers' ability to inspire students -----	①	②	③	④	⑤
f) Parental involvement in school activities -----	①	②	③	④	⑤
g) Parental commitment to ensure that students are ready to learn -----	①	②	③	④	⑤
h) Parental expectations for student achievement -----	①	②	③	④	⑤
i) Parental support for student achievement -----	①	②	③	④	⑤
j) Parental pressure for the school to maintain high academic standards -----	①	②	③	④	⑤

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

	Very high	High	Medium	Low	Very low
k) Students' desire to do well in school -----	①	②	③	④	⑤
l) 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

8

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.

	Agree a lot Agree a little Disagree a little Disagree a lot
a) This school is located in a safe neighborhood -----	① — ② — ③ — ④
b) I feel safe at this school -----	① — ② — ③ — ④
c) This school's security policies and practices are sufficient ----	① — ② — ③ — ④
d) The students behave in an orderly manner -----	① — ② — ③ — ④
e) The students are respectful of the teachers -----	① — ② — ③ — ④
f) The students respect school property -----	① — ② — ③ — ④
g) This school has clear rules about student conduct -----	① — ② — ③ — ④
h) This school's rules are enforced in a fair and consistent manner -----	① — ② — ③ — ④

9

In your current school, how severe is each problem?

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

	Not a problem Minor problem Moderate problem Serious problem
a) The school building needs significant repair -----	① — ② — ③ — ④
b) Teachers do not have adequate workspace (e.g., for preparation, collaboration, or meeting with students) ----	① — ② — ③ — ④
c) Teachers do not have adequate instructional materials and supplies -----	① — ② — ③ — ④
d) The school classrooms are not cleaned often enough ----	① — ② — ③ — ④
e) The school classrooms need maintenance work -----	① — ② — ③ — ④
f) Teachers do not have adequate technological resources -----	① — ② — ③ — ④
g) Teachers do not have adequate support for using technology -----	① — ② — ③ — ④

10

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

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

	Very often	Often	Sometimes	Never or almost never
a) Discuss how to teach a particular topic -----	①	②	③	④
b) Collaborate in planning and preparing instructional materials -----	①	②	③	④
c) Share what I have learned about my teaching experiences -----	①	②	③	④
d) Visit another classroom to learn more about teaching -----	①	②	③	④
e) Work together to try out new ideas -----	①	②	③	④
f) Work as a group on implementing the curriculum -----	①	②	③	④
g) Work with teachers from other grades to ensure continuity in learning -----	①	②	③	④

11

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

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

	Very often	Often	Sometimes	Never or almost never
a) I am content with my profession as a teacher -----	①	②	③	④
b) I am satisfied with being a teacher at this school -----	①	②	③	④
c) I find my work full of meaning and purpose -----	①	②	③	④
d) I am enthusiastic about my job -----	①	②	③	④
e) My work inspires me -----	①	②	③	④
f) I am proud of the work I do -----	①	②	③	④
g) I am going to continue teaching for as long as I can -----	①	②	③	④

## 12

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

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

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
a) There are too many students in the classes -----	①	②	③	④
b) I have too much material to cover in class -----	①	②	③	④
c) I have too many teaching hours -----	①	②	③	④
d) I need more time to prepare for class -----	①	②	③	④
e) I need more time to assist individual students -----	①	②	③	④
f) I feel too much pressure from parents -----	①	②	③	④
g) I have difficulty keeping up with all of the changes to the curriculum -----	①	②	③	④
h) I have too many administrative tasks -----	①	②	③	④

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

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

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

- Every or almost every lesson  
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?

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

- Not at all  
Some  
A lot
- a) Students lacking prerequisite knowledge or skills ----- (1) — (2) — (3)
- b) Students suffering from lack of basic nutrition ----- (1) — (2) — (3)
- c) Students suffering from not enough sleep ----- (1) — (2) — (3)
- d) Disruptive students ----- (1) — (2) — (3)
- e) Uninterested students ----- (1) — (2) — (3)
- f) Students with physical disabilities ----- (1) — (2) — (3)
- g) Students with mental, emotional, or psychological disabilities ----- (1) — (2) — (3)

Questions 17 - 20 ask about mathematics instruction for the eighth-grade 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

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

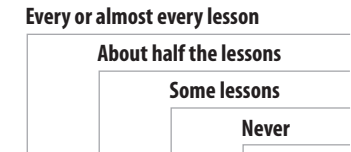
Fill in only **one** circle for each row.

- 
- a) Inspiring students to learn mathematics ----- ① — ② — ③ — ④
- 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.

- 
- a) Listen to me explain new mathematics content ----- ① — ② — ③ — ④
- b) Listen to me explain how to solve problems ----- ① — ② — ③ — ④
- c) Memorize rules, procedures, and facts ----- ① — ② — ③ — ④
- d) Work problems (individually or with peers) with my guidance ----- ① — ② — ③ — ④
- e) Work problems together in the whole class with direct guidance from me ----- ① — ② — ③ — ④
- f) Work problems (individually or with peers) while I am occupied by other tasks ----- ① — ② — ③ — ④
- g) Work on problems for which there is no immediately obvious method of solution --- ① — ② — ③ — ④
- h) Take a written test or quiz ---- ① — ② — ③ — ④
- 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)

Questions 21 - 22 ask about resources for teaching mathematics to the eighth-grade 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)

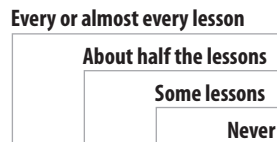
No, calculators are not permitted --- (3)

(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.



- 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)

**22**

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

Fill in **one** circle only.

Yes --- (1)

No --- (2)

(If No, go to question 23)

**If Yes,**

**B. What access do the students have to computers?**

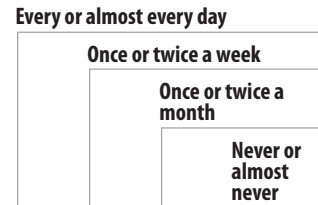
Fill in only **one** circle for each row.



- a) Each student has a computer ----- (1) (2)
- b) The class has computers that students can share ----- (1) (2)
- c) The school has computers that the class can use sometimes ----- (1) (2)

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

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



- a) Explore 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)

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 eighth-grade, 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.



**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 ----- ① — ② — 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
- f) Properties of functions (slopes, intercepts, etc.) ----- 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
- d) Using appropriate measurement formulas for perimeters, circumferences, areas, surface areas, and volumes ----- 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

**24**

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

**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

Sometimes

Never or almost never

a) Correct assignments and give feedback to students ----- ① — ② — ③

b) Have students correct 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

**25**

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

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

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

Major emphasis

Some emphasis

Little or no emphasis

a) Assessment of students' ongoing work ----- ① — ② — ③

b) Classroom tests (for example, teacher-made or textbook tests) ----- ① — ② — ③

c) State or district achievement tests ----- ① — ② — ③

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<br>technology into mathematics -----             | ①   | ②  |
| e) Improving students' critical thinking or<br>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, etc.) for mathematics?

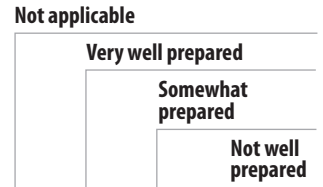
Fill in **one** circle only.

- None --- ①
- Less than 6 hours --- ②
- 6–15 hours --- ③
- 16–35 hours --- ④
- More than 35 hours --- ⑤

28

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

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



**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 ----- ① — ② — ③ — ④

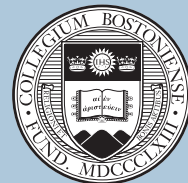
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# Thank You

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







BOSTON  
COLLEGE

**TIMSS**  
**2015**

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

# Teacher Questionnaire Mathematics

## Grade 8



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for the Evaluation of  
Educational Achievement

[timss.bc.edu](http://timss.bc.edu)



Place Label Here

School ID: \_\_\_\_\_

Class ID: \_\_\_\_\_

Teacher ID: \_\_\_\_\_

Link #: \_\_\_\_\_ Subject: \_\_\_\_\_

Checksum: \_\_\_\_\_

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

# Teacher Questionnaire

## Science

### Grade 8

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



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

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*U.S. participation in this study is sponsored by the National Center for Education Statistics (NCES), U.S. Department of Education, and authorized by the Education Science Reform Act of 2002 (20 U.S.C., § 9543). Your responses are protected by federal statute (20 U.S.C., § 9573). 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.*

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless such collection displays a valid OMB control number. The valid OMB control number for this voluntary information collection is 1850-0695. The time required to complete this information collection is estimated to average 30 minutes per respondent, including the time to review instructions, search existing data resources, gather the data needed, and complete and review the information collection. **If you have any comments concerning the accuracy of the time estimate(s), suggestions for improving the form, or comments or concerns regarding the status of your individual submission of this form, write directly to:** Trends in International Mathematics and Science Study (TIMSS), National Center for Education Statistics, U.S. Department of Education, 1990 K Street N.W., Washington, D.C. 20006. OMB No. 1850-0695, Approval Expires 9/30/2017.

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 which 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 questionnaire 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?

\_\_\_\_\_ years  
Please write in a year.

**2** \_\_\_\_\_

At the end of this school year, how many years will you have been teaching 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 **highest** 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 **major or main area(s)** of study?

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

	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.

- 
- a) Teachers' understanding of the school's curricular goals ----- (1) — (2) — (3) — (4) — (5)
  - b) Teachers' degree of success in implementing the school's curriculum ----- (1) — (2) — (3) — (4) — (5)
  - c) Teachers' expectations for student achievement ----- (1) — (2) — (3) — (4) — (5)
  - d) Teachers working together to improve student achievement ----- (1) — (2) — (3) — (4) — (5)
  - e) Teachers' ability to inspire students ----- (1) — (2) — (3) — (4) — (5)
  - f) Parental involvement in school activities ----- (1) — (2) — (3) — (4) — (5)
  - g) Parental commitment to ensure that students are ready to learn ----- (1) — (2) — (3) — (4) — (5)
  - h) Parental expectations for student achievement ----- (1) — (2) — (3) — (4) — (5)
  - i) Parental support for student achievement ----- (1) — (2) — (3) — (4) — (5)
  - j) Parental pressure for the school to maintain high academic standards ----- (1) — (2) — (3) — (4) — (5)

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

- 
- k) Students' desire to do well in school ----- (1) — (2) — (3) — (4) — (5)
  - l) 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)

8

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.

	Agree a lot Agree a little Disagree a little Disagree a lot
a) This school is located in a safe neighborhood -----	① — ② — ③ — ④
b) I feel safe at this school -----	① — ② — ③ — ④
c) This school's security policies and practices are sufficient ----	① — ② — ③ — ④
d) The students behave in an orderly manner -----	① — ② — ③ — ④
e) The students are respectful of the teachers -----	① — ② — ③ — ④
f) The students respect school property -----	① — ② — ③ — ④
g) This school has clear rules about student conduct -----	① — ② — ③ — ④
h) This school's rules are enforced in a fair and consistent manner -----	① — ② — ③ — ④

9

In your current school, how severe is each problem?

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

	Not a problem Minor problem Moderate problem Serious problem
a) The school building needs significant repair -----	① — ② — ③ — ④
b) Teachers do not have adequate workspace (e.g., for preparation, collaboration, or meeting with students) ----	① — ② — ③ — ④
c) Teachers do not have adequate instructional materials and supplies -----	① — ② — ③ — ④
d) The school classrooms are not cleaned often enough ----	① — ② — ③ — ④
e) The school classrooms need maintenance work -----	① — ② — ③ — ④
f) Teachers do not have adequate technological resources -----	① — ② — ③ — ④
g) Teachers do not have adequate support for using technology -----	① — ② — ③ — ④

10

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

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

	Very often	Often	Sometimes	Never or almost never
a) Discuss how to teach a particular topic -----	①	②	③	④
b) Collaborate in planning and preparing instructional materials -----	①	②	③	④
c) Share what I have learned about my teaching experiences -----	①	②	③	④
d) Visit another classroom to learn more about teaching -	①	②	③	④
e) Work together to try out new ideas -----	①	②	③	④
f) Work as a group on implementing the curriculum -----	①	②	③	④
g) Work with teachers from other grades to ensure continuity in learning -----	①	②	③	④

11

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

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

	Very often	Often	Sometimes	Never or almost never
a) I am content with my profession as a teacher -----	①	②	③	④
b) I am satisfied with being a teacher at this school -----	①	②	③	④
c) I find my work full of meaning and purpose -----	①	②	③	④
d) I am enthusiastic about my job -----	①	②	③	④
e) My work inspires me -----	①	②	③	④
f) I am proud of the work I do -----	①	②	③	④
g) I am going to continue teaching for as long as I can ---	①	②	③	④

12

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

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

- Agree a lot  
 Agree a little  
 Disagree a little  
 Disagree a lot
- a) There are too many students in the classes ----- ① — ② — ③ — ④
- b) I have too much material to cover in class ----- ① — ② — ③ — ④
- c) I have too many teaching hours ----- ① — ② — ③ — ④
- d) I need more time to prepare for class ----- ① — ② — ③ — ④
- e) I need more time to assist individual students ----- ① — ② — ③ — ④
- f) I feel too much pressure from parents ----- ① — ② — ③ — ④
- g) I have difficulty keeping up with all of the changes to the curriculum ----- ① — ② — ③ — ④
- h) I have too many administrative tasks ----- ① — ② — ③ — ④

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

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

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

- Every or almost every lesson  
 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?

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

- |   |            |      |       |
|---|------------|------|-------|
|   | Not at all |      |       |
|   | 1          | 2    | 3     |
|   |            | Some | A lot |
| a) Students lacking prerequisite knowledge or skills -----              | ①          | ②    | ③     |
| b) Students suffering from lack of basic nutrition -----                | ①          | ②    | ③     |
| c) Students suffering from not enough sleep -----                       | ①          | ②    | ③     |
| d) Disruptive students -----  | ①          | ②    | ③     |
| e) Uninterested students -----  | ①          | ②    | ③     |
| f) Students with physical disabilities -----                            | ①          | ②    | ③     |
| g) Students with mental, emotional, or psychological disabilities ----- | ①          | ②    | ③     |

17

Questions 17 - 20 ask about science instruction for the **eighth-grade** students in the TIMSS class.

In a typical week, how much time do you spend teaching science 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

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

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

- |   |           |      |        |     |
|---|-----------|------|--------|-----|
|   | Very high |      |        |     |
|   | 1         | 2    | 3      | 4   |
|   |           | High | Medium | Low |
| a) Inspiring students to learn science -----                                    | ①         | ②    | ③      | ④   |
| b) Explaining science concepts or principles by doing science experiments ----- | 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 science --                 | ①         | ②    | ③      | ④   |
| f) Assessing student comprehension of science -----                             | ①         | ②    | ③      | ④   |
| g) Improving the understanding of struggling students -----                     | ①         | ②    | ③      | ④   |
| h) Making science relevant to students -----                                    | ①         | ②    | ③      | ④   |
| i) Developing students' higher-order thinking skills -----                      | ①         | ②    | ③      | ④   |
| j) Teaching science using inquiry methods -----                                 | ①         | ②    | ③      | ④   |

19

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

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

- |   | Every or almost every lesson | About half the lessons | Some lessons | Never |
|---|------------------------------|------------------------|--------------|-------|
| a) Listen to me explain new science content -----                               | ①                            | ②                      | ③            | ④     |
| b) Observe natural phenomena and describe what they see ---                     | ①                            | ②                      | ③            | ④     |
| c) Watch me demonstrate an experiment or investigation -----                    | ①                            | ②                      | ③            | ④     |
| d) Design or plan experiments or investigations -----                           | ①                            | ②                      | ③            | ④     |
| e) Conduct experiments or investigations -----                                  | ①                            | ②                      | ③            | ④     |
| f) Present data from experiments or investigations -                            | ①                            | ②                      | ③            | ④     |
| g) Interpret data from experiments or investigations -                          | ①                            | ②                      | ③            | ④     |
| h) Use evidence from experiments or investigations to support conclusions ----- | ①                            | ②                      | ③            | ④     |
| i) Read their textbooks or other resource materials -----                       | ①                            | ②                      | ③            | ④     |
| j) Have students memorize facts and principles -----                            | ①                            | ②                      | ③            | ④     |
| k) Use scientific formulas and laws to solve routine problems -----             | ①                            | ②                      | ③            | ④     |
| l) Do field work outside of class--   | ①                            | ②                      | ③            | ④     |
| m) Take a written test or quiz-----   | ①                            | ②                      | ③            | ④     |
| n) Work in mixed ability groups --  | ①                            | ②                      | ③            | ④     |
| o) Work in same ability groups ---  | ①                            | ②                      | ③            | ④     |

20

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

Fill in **one** circle only.

- a) General science (several content areas of science taught separately)----- ①
- b) Integrated science (several content areas of science combined and taught together throughout the year) ----- ②
- c) Life science (e.g., biology, ecosystems, human health)----- ③
- d) Physical science (e.g., physics or chemistry)----- ④
- e) Earth science (e.g., geology, Earth and the solar system, fossils)----- ⑤

**Question 21** asks about resources for teaching science to the eighth-grade students in the TIMSS class.

**21**

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

Fill in **one** circle only.

Yes --- (1)

No --- (2) 

(If No, go to question 22)

**If Yes,**

**B. What access do the students have to computers?**

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

	Yes	No
a) Each student has a computer -----	(1)	(2)
b) The class has computers that students can share -----	(1)	(2)
c) The school has computers that the class can use sometimes -----	(1)	(2)

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

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

	Every or almost every day	Once or twice a week	Once or twice a month	Never or almost never
a) Practice skills and procedures -----	(1)	(2)	(3)	(4)
b) Look up ideas and information -----	(1)	(2)	(3)	(4)
c) Do scientific procedures or experiments -----	(1)	(2)	(3)	(4)
d) Study natural phenomena through simulations -----	(1)	(2)	(3)	(4)
e) Process and analyze data -----	(1)	(2)	(3)	(4)

Question 22 asks about the topics taught and the content covered in teaching science to the eighth-grade students in the TIMSS class.

22

The following list includes the main topics addressed by the TIMSS science 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 eighth-grade, 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.



**A. Biology**

- a) Differences among major taxonomic groups of organisms (plants, animals, fungi, mammals, birds, reptiles, fish, amphibians) ----- ① — ② — ③
- b) Major organs and organ systems in humans and other organisms (structure/function, life processes that maintain stable bodily conditions) ----- ① — ② — ③
- c) Cells, their structure and functions, including respiration and photosynthesis as cellular processes ----- ① — ② — ③
- d) Life cycles, sexual reproduction, and heredity (passing on of traits, inherited versus acquired/learned characteristics) ----- ① — ② — ③
- e) Role of variation and adaptation in survival/extinction of species in a changing environment (including fossil evidence for changes in life on Earth over time) ----- ① — ② — ③
- f) Interdependence of populations of organisms in an ecosystem (e.g., energy flow, food webs, competition, predation) and factors affecting population size in an ecosystem ----- ① — ② — ③
- g) Human health (causes of infectious diseases, methods of infection, prevention, immunity) and the importance of diet and exercise in maintaining health ----- ① — ② — ③

**B. Chemistry**

- a) Classification, composition, and particulate structure of matter (elements, compounds, mixtures, molecules, atoms, protons, neutrons, electrons) ----- ① — ② — ③
- b) Physical and chemical properties of matter ----- ① — ② — ③
- c) Mixtures and 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, rusting, tarnishing) ----- ① — ② — ③
- f) The role of electrons in chemical bonds ----- ① — ② — ③

## 22 (continued)

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 eighth-grade, 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
<b>C. Physics</b>			
a) Physical states and changes in matter (explanations of properties in terms of movement and distance between particles; phase change, thermal expansion, and changes in volume and/or pressure) -----	①	②	③
b) Energy forms, transformations, heat, and temperature -----	①	②	③
c) Basic properties/behaviors of light (reflection, refraction, light and color, simple ray diagrams) and sound (transmission through media, loudness, pitch, amplitude, frequency) -----	①	②	③
d) Electric circuits (flow of current; types of circuits - parallel/series) and properties and uses of permanent magnets and electromagnets -----	①	②	③
e) Forces and motion (types of forces, basic description of motion, effects of density and pressure) -----	①	②	③
<b>D. Earth Science</b>			
a) Earth's structure and physical features (Earth's crust, mantle, and core; composition and relative distribution of water, and composition of air) -----	①	②	③
b) Earth's processes, cycles, and history (rock cycle; water cycle; weather versus climate; major geological events; formation of fossils and fossil fuels) -----	①	②	③
c) Earth's resources, their use and conservation (e.g., renewable/nonrenewable resources, human use of land/soil, water resources) -----	①	②	③
d) 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) -----	①	②	③

**23**

Question 23 asks about science homework for the **eighth-grade** students in the TIMSS class.

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

Fill in **one** circle only.

I do not assign science homework --- (1)  (Go to question 24)

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 science 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 science homework assignments for this class?**

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

Always or almost always

Sometimes

Never or almost never

a) Correct assignments and give feedback to students ----- (1) — (2) — (3)

b) Have students correct 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)

**24**

Question 24 asks about science assessment for the **eighth-grade** students in the TIMSS class.

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

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

Major emphasis

Some emphasis

Little or no emphasis

a) Assessment of students' ongoing work ----- (1) — (2) — (3)

b) Classroom tests (for example, teacher-made or textbook tests) ----- (1) — (2) — (3)

c) State or district achievement tests ----- (1) — (2) — (3)

**25**

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) Science content -----  | ①   | ②  |
| b) Science pedagogy/instruction -----                               | ①   | ②  |
| c) Science curriculum -----   | ①   | ②  |
| d) Integrating information technology<br>into science -----         | ①   | ②  |
| e) Improving students' critical thinking or<br>inquiry skills ----- | ①   | ②  |
| f) Science assessment -----   | ①   | ②  |
| g) Addressing individual students' needs -----                      | ①   | ②  |

**26**

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

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

## 27

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

**If a topic is not in the eighth-grade curriculum or you are not responsible for teaching this topic, please choose "Not applicable."**

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

	Not applicable	Very well prepared	Somewhat prepared	Not well prepared
<b>A. Biology</b>				
a) Differences among major taxonomic groups of organisms (plants, animals, fungi, mammals, birds, reptiles, fish, amphibians) -----	①	②	③	④
b) Major organs and organ systems in humans and other organisms (structure/function, life processes that maintain stable bodily conditions) -----	①	②	③	④
c) Cells, their structure and functions, including respiration and photosynthesis as cellular processes -----	①	②	③	④
d) Life cycles, sexual reproduction, and heredity (passing on of traits, inherited versus acquired/learned characteristics) -----	①	②	③	④
e) Role of variation and adaptation in survival/extinction of species in a changing environment (including fossil evidence for changes in life on Earth over time) -----	①	②	③	④
f) Interdependence of populations of organisms in an ecosystem (e.g., energy flow, food webs, competition, predation) and factors affecting population size in an ecosystem -----	①	②	③	④
g) Human health (causes of infectious diseases, methods of infection, prevention, immunity) and the importance of diet and exercise in maintaining health -----	①	②	③	④
<b>B. Chemistry</b>				
a) Classification, composition, and particulate structure of matter (elements, compounds, mixtures, molecules, atoms, protons, neutrons, electrons) -----	①	②	③	④
b) Physical and chemical properties of matter -----	①	②	③	④
c) Mixtures and solutions (solvent, solute, concentration/dilution, effect of temperature on solubility) -----	①	②	③	④
d) Properties and uses of common acids and bases -----	①	②	③	④
e) Chemical change (transformation of reactants, evidence of chemical change, conservation of matter, common oxidation reactions – combustion, rusting, tarnishing) -----	①	②	③	④
f) The role of electrons in chemical bonds -----	①	②	③	④

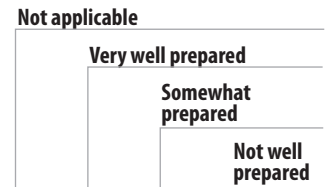


**27** (continued)

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

**If a topic is not in the eighth grade curriculum or you are not responsible for teaching this topic, please choose "Not applicable."**

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



**C. Physics**

- a) Physical states and changes in matter (explanations of properties in terms of movement and distance between particles; phase change, thermal expansion, and changes in volume and/or pressure) ----- ① — ② — ③ — ④
- b) Energy forms, transformations, heat, and temperature ----- ① — ② — ③ — ④
- c) Basic properties/behaviors of light (reflection, refraction, light and color, simple ray diagrams) and sound (transmission through media, loudness, pitch, amplitude, frequency) ----- ① — ② — ③ — ④
- d) Electric circuits (flow of current; types of circuits - parallel/series) and properties and uses of permanent magnets and electromagnets ----- ① — ② — ③ — ④
- e) Forces and motion (types of forces, basic description of motion, effects of density and pressure) ----- ① — ② — ③ — ④

**D. Earth Science**

- a) Earth's structure and physical features (Earth's crust, mantle, and core; composition and relative distribution of water, and composition of air) ----- ① — ② — ③ — ④
- b) Earth's processes, cycles, and history (rock cycle; water cycle; weather versus climate; major geological events; formation of fossils and fossil fuels) ----- ① — ② — ③ — ④
- c) Earth's resources, their use and conservation (e.g., renewable/nonrenewable resources, human use of land/soil, water resources) ----- ① — ② — ③ — ④
- d) 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) ----- ① — ② — ③ — ④

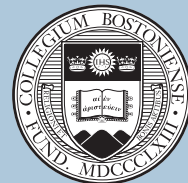
# Thank You

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

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BOSTON  
COLLEGE

**TIMSS**  
**2015**

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

# Teacher Questionnaire Science

**Grade 8**



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for the Evaluation of  
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Place Label Here

School ID \_\_\_\_\_

Checksum \_\_\_\_\_

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

# School Questionnaire

## Grade 4

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



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

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*U.S. participation in this study is sponsored by the National Center for Education Statistics (NCES), U.S. Department of Education, and authorized by the Education Science Reform Act of 2002 (20 U.S.C., § 9543). Your responses are protected by federal statute (20 U.S.C., § 9573). 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.*

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless such collection displays a valid OMB control number. The valid OMB control number for this voluntary information collection is 1850-0695. The time required to complete this information collection is estimated to average 30 minutes per respondent, including the time to review instructions, search existing data resources, gather the data needed, and complete and review the information collection. **If you have any comments concerning the accuracy of the time estimate(s), suggestions for improving the form, or comments or concerns regarding the status of your individual submission of this form, write directly to:** Trends in International Mathematics and Science Study (TIMSS), National Center for Education Statistics, U.S. Department of Education, 1990 K Street N.W., Washington, D.C. 20006. OMB No. 1850-0695, Approval Expires 9/30/2017.

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 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 fourth-grade education 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.

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 study.

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 place it in the accompanying envelope and return it to the TIMSS school coordinator.

NCES is authorized to collect information from the questionnaire 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 is the total enrollment of students in your school as of March 1, 2015?

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

**2** \_\_\_\_\_

What is the total enrollment of fourth-grade students in your school as of March 1, 2015?

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

**3** \_\_\_\_\_

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

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

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

**4** \_\_\_\_\_

Around the first of October 2014, what percentage of students at this school were eligible to receive free or reduced-price lunches through the National School Lunch Program?

\_\_\_\_\_ percentage of students  
Write in the number.

**5** \_\_\_\_\_

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
- 51 to 75% --- ③
- 26 to 50% --- ④
- 25% or less --- ⑤

**6** \_\_\_\_\_

Of the students currently enrolled in your school, what percentage has been identified as limited-English proficient (LEP)/English language learners (ELL)?

Fill in **one** circle only.

- 0% --- ①
- 1 - 5% --- ②
- 6 - 10% --- ③
- 11 - 25% --- ④
- 26 - 50% --- ⑤
- 51 - 75% --- ⑥
- 76 - 90% --- ⑦
- Over 90% --- ⑧



7

**What type of school is this?***Fill in one circle only.*

Regular public school - ①

A regular public school with  
a magnet program - ②A magnet school or school with a special program  
emphasis (e.g., Montessori, science/math school,  
performing arts school, talented/gifted school,  
foreign language immersion school, etc.) - ③Special education: a school that primarily  
serves students with disabilities - ④Alternative: a school designed to address the  
needs of students, typically at risk of educational  
failure, which cannot be met in regular schools - ⑤

Vocational - ⑥

Charter School - ⑦

Private (independent) - ⑧

Private (religiously affiliated) - ⑨

Other - ⑩

8

**A. 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

30,001 to 50,000 people --- ④

15,001 to 30,000 people --- ⑤

3,001 to 15,000 people --- ⑥

3,000 people or fewer --- ⑦

**B. Which best describes the immediate area in which your school is located?***Fill in one circle only.*

Urban—Densely populated --- ①

Suburban—On fringe or  
outskirts of urban area --- ②

Medium size city or large town --- ③

Small town or village --- ④

Remote rural --- ⑤

9

**Which best characterizes the average income level of the school's immediate area?***Fill in one circle only.*

High --- ①

Medium --- ②

Low --- ③

10

**Does your school provide free meals for students?***Fill in only one circle for each row.*

Yes, for all students

Yes, for some students

No

a) Breakfast ----- ① — ② — ③

b) Lunch ----- ① — ② — ③

11

**To what degree are the following health topics emphasized in your school?***Fill in only one circle for each row.*

Very high

High

Medium

Low

a) Washing hands ----- ① — ② — ③ — ④

b) Brushing teeth ----- ① — ② — ③ — ④

c) A healthy diet/nutrition ----- ① — ② — ③ — ④

d) Disease prevention ----- ① — ② — ③ — ④

**12**

For the fourth-grade students in your school:

A. How many days per year is your school open for instruction?

\_\_\_\_\_ days  
Write in the number.

B. What is the total instructional time, excluding breaks, in a typical day?

\_\_\_\_\_ hours \_\_\_\_\_ minutes  
Write in the number of hours and minutes per day.

C. In one calendar week, how many days is the school open for instruction?

Fill in **one** circle only.

- 6 days --- (1)
- 5 1/2 days --- (2)
- 5 days --- (3)
- 4 1/2 days --- (4)
- 4 days --- (5)
- Other --- (6)

**13**

A. Does your school provide a place where students can work on their schoolwork before or after school?

Fill in **one** circle only.

- Yes --- (1)
  - No --- (2)
- (If No, go to question 14)

**If Yes,**

B. Is someone available to assist them with their schoolwork?

Fill in **one** circle only.

- Yes --- (1)
- No --- (2)

**14**

As a general school policy, is student achievement used to assign fourth-grade students to classes (e.g., streaming, tracking, setting)?

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

- |                                  | Yes | No  |
|----------------------------------|-----|-----|
| a) For mathematics classes ----- | (1) | (2) |
| b) For science classes -----     | (1) | (2) |

**15**

How many computers (including tablets) does your school have for use by fourth-grade students?

\_\_\_\_\_ computers  
Write in the number.

**16**

**A. Does your school have a science laboratory that can be used by fourth-grade students?**

Fill in **one** circle only.

Yes --- ①

No --- ②

**B. Do teachers usually have assistance available when students are conducting science experiments?**

Fill in **one** circle only.

Yes --- ①

No --- ②

**17**

Does your school have a school library?

Fill in **one** circle only.

Yes --- ①

No --- ② 

(If No, go to question 18)

**If Yes,**

**A. Approximately how many books (print and digital) with different titles does your school library have (exclude magazines and periodicals)?**

Fill in only **one** circle in each column.

Print	Digital
250 or fewer --- ①	①
251–500 --- ②	②
501–2,000 --- ③	③
2,001–5,000 --- ④	④
5,001–10,000 --- ⑤	⑤
More than 10,000 --- ⑥	⑥

**B. Approximately how many titles of magazines and other periodicals (print and digital) does your school library have?**

Fill in only **one** circle in each column.

Print	Digital
0 --- ①	①
1–5 --- ②	②
6–10 --- ③	③
11–30 --- ④	④
31 or more --- ⑤	⑤

## 18

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

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

	Not at all	A little	Some	A lot
<b>A. General School Resources</b>				
a) Instructional materials (e.g., textbooks) -----	①	②	③	④
b) Supplies (e.g., papers, pencils, materials) -----	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) Technologically competent staff -----	①	②	③	④
g) Audio-visual resources for delivery of instruction (e.g., interactive white boards, digital projectors) -----	①	②	③	④
h) Computer technology for teaching and learning (e.g., computers or tablets for student use) -----	①	②	③	④
i) Resources for students with disabilities -----	①	②	③	④

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

	Not at all	A little	Some	A lot
<b>B. Resources for Mathematics Instruction</b>				
a) Teachers with a specialization in mathematics -----	①	②	③	④
b) Computer software/ applications for mathematics instruction -----	①	②	③	④
c) Library resources relevant to mathematics instruction -----	①	②	③	④
d) Calculators for mathematics instruction -----	①	②	③	④
e) Concrete objects or materials to help students understand quantities or procedures -----	①	②	③	④
<b>C. Resources for Science Instruction</b>				
a) Teachers with a specialization in science -----	①	②	③	④
b) Computer software/ applications for science instruction -----	①	②	③	④
c) Library resources relevant to science instruction -----	①	②	③	④
d) Science equipment and materials for experiments -----	①	②	③	④

**19**

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

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

	Very high	High	Medium	Low	Very low
a) Teachers' understanding of the school's curricular goals -----	①	②	③	④	⑤
b) Teachers' degree of success in implementing the school's curriculum -----	①	②	③	④	⑤
c) Teachers' expectations for student achievement -----	①	②	③	④	⑤
d) Teachers working together to improve student achievement -----	①	②	③	④	⑤
e) Teachers' ability to inspire students -----	①	②	③	④	⑤
f) Parental involvement in school activities -----	①	②	③	④	⑤
g) Parental commitment to ensure that students are ready to learn -----	①	②	③	④	⑤
h) Parental expectations for student achievement -----	①	②	③	④	⑤
i) Parental support for student achievement -----	①	②	③	④	⑤
j) Parental pressure for the school to maintain high academic standards -----	①	②	③	④	⑤
k) Students' desire to do well in school -----	①	②	③	④	⑤
l) 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

**20**

**To what degree is each of the following a problem among fourth-grade students in your school?**

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

	Not a problem	Minor problem	Moderate problem	Serious problem
a) Arriving late at school -----	①	②	③	④
b) Absenteeism (i.e., unjustified absences) -----	①	②	③	④
c) Classroom disturbance -----	①	②	③	④
d) Cheating -----	①	②	③	④
e) Profanity -----	①	②	③	④
f) Vandalism -----	①	②	③	④
g) Theft -----	①	②	③	④
h) Intimidation or verbal abuse among students (including texting, emailing, etc.) -----	①	②	③	④
i) Physical fights among students -----	①	②	③	④
j) Intimidation or verbal abuse of teachers or staff (including texting, emailing, etc.) -----	①	②	③	④

**21**

**To what degree is each of the following a problem among teachers in your school?**

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

	Not a problem	Minor problem	Moderate problem	Serious problem
a) Arriving late or leaving early --	①	②	③	④
b) Absenteeism -----	①	②	③	④

22

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

Fill in only **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  |

23

About how many of the students in your school can do the following when they begin the first grade of primary/elementary school?

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

- |  |               |        |        |               |
|--|---------------|--------|--------|---------------|
|  | Less than 25% | 25-50% | 51-75% | More than 75% |
| a) Recognize most of the letters of the alphabet ----- | ①             | ②      | ③      | ④             |
| b) Read some words -----                               | ①             | ②      | ③      | ④             |
| c) Read sentences -----                                | ①             | ②      | ③      | ④             |
| d) Write letters of the alphabet --                    | ①             | ②      | ③      | ④             |
| e) Write some words -----                              | ①             | ②      | ③      | ④             |
| f) Count up to 100 or higher -----                     | ①             | ②      | ③      | ④             |
| g) Recognize written numbers from 1-10 -----           | ①             | ②      | ③      | ④             |
| h) Recognize written numbers higher than 10 -----      | ①             | ②      | ③      | ④             |
| i) Write numbers from 1-10 -----                       | ①             | ②      | ③      | ④             |
| j) Do simple addition -----                            | ①             | ②      | ③      | ④             |
| k) Do simple subtraction -----                         | ①             | ②      | ③      | ④             |

24

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

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

25

By the end of this school year, how many years will you have been a principal at this school?

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

26

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

Fill in **one** circle only.

- Did not complete Bachelor's degree (4-year college program) --- (1)
- Bachelor's degree (4-year college program) --- (2)
- Master's degree or professional degree (MD, DDS, lawyer, minister) --- (3)
- Doctorate (Ph.D., or Ed.D.) --- (4)

27

Do you hold the following degrees in educational leadership?

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

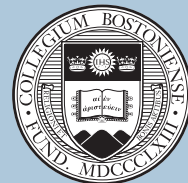
- |   |     |     |  |     |
|---|-----|-----|--|-----|
|   |     | Yes |  |     |
|   |     |     |  | No  |
| a) Master's degree or professional degree (MD, DDS, lawyer, minister) ----- | (1) |     |  | (2) |
| b) Doctorate (Ph.D., or Ed.D.) -----  | (1) |     |  | (2) |

# Thank You

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

---





BOSTON  
COLLEGE

**TIMSS**  
**2015**

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

# School Questionnaire

## Grade 4



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Place Label Here

School ID \_\_\_\_\_

Checksum \_\_\_\_\_

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

# School Questionnaire

## Grade 8

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



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

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*U.S. participation in this study is sponsored by the National Center for Education Statistics (NCES), U.S. Department of Education, and authorized by the Education Science Reform Act of 2002 (20 U.S.C., § 9543). Your responses are protected by federal statute (20 U.S.C., § 9573). 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.*

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless such collection displays a valid OMB control number. The valid OMB control number for this voluntary information collection is 1850-0695. The time required to complete this information collection is estimated to average 30 minutes per respondent, including the time to review instructions, search existing data resources, gather the data needed, and complete and review the information collection. **If you have any comments concerning the accuracy of the time estimate(s), suggestions for improving the form, or comments or concerns regarding the status of your individual submission of this form, write directly to:** Trends in International Mathematics and Science Study (TIMSS), National Center for Education Statistics, U.S. Department of Education, 1990 K Street N.W., Washington, D.C. 20006. OMB No. 1850-0695, Approval Expires 9/30/2017.

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 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 eighth-grade education 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.

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 study.

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 place it in the accompanying envelope and return it to the TIMSS school coordinator.

NCES is authorized to collect information from the questionnaire 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

Grade 8 School Questionnaire

**1** \_\_\_\_\_

What is the total enrollment of students in your school as of March 1, 2015?

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

**2** \_\_\_\_\_

What is the total enrollment of eighth-grade students in your school as of March 1, 2015?

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

**3** \_\_\_\_\_

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

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

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

**4** \_\_\_\_\_

Around the first of October 2014, what percentage of students at this school were eligible to receive free or reduced-price lunches through the National School Lunch Program?

\_\_\_\_\_ percentage of students  
Write in the number.

**5** \_\_\_\_\_

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
- 51 to 75% --- ③
- 26 to 50% --- ④
- 25% or less --- ⑤

**6** \_\_\_\_\_

Of the students currently enrolled in your school, what percentage has been identified as limited-English proficient (LEP)/English language learners (ELL)?

Fill in **one** circle only.

- 0% --- ①
- 1 - 5% --- ②
- 6 - 10% --- ③
- 11 - 25% --- ④
- 26 - 50% --- ⑤
- 51 - 75% --- ⑥
- 76 - 90% --- ⑦
- Over 90% --- ⑧

**7****What type of school is this?***Fill in **one** circle only.*

Regular public school - ①

A regular public school with  
a magnet program - ②A magnet school or school with a special program  
emphasis (e.g., Montessori, science/math school,  
performing arts school, talented/gifted school,  
foreign language immersion school, etc.) - ③Special education: a school that primarily  
serves students with disabilities - ④Alternative: a school designed to address the  
needs of students, typically at risk of educational  
failure, which cannot be met in regular schools - ⑤

Vocational - ⑥

Charter School - ⑦

Private (independent) - ⑧

Private (religiously affiliated) - ⑨

Other - ⑩

**8****A. 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

30,001 to 50,000 people --- ④

15,001 to 30,000 people --- ⑤

3,001 to 15,000 people --- ⑥

3,000 people or fewer --- ⑦

**B. Which best describes the immediate area in which your school is located?***Fill in **one** circle only.*

Urban—Densely populated --- ①

Suburban—On fringe or  
outskirts of urban area --- ②

Medium size city or large town --- ③

Small town or village --- ④

Remote rural --- ⑤

**9****Which best characterizes the average income level of the school's immediate area?***Fill in **one** circle only.*

High --- ①

Medium --- ②

Low --- ③

**10****Does your school provide free meals for students?***Fill in only **one** circle for each row.*

Yes, for all students

Yes, for some students

No

a) Breakfast ----- ① — ② — ③

b) Lunch ----- ① — ② — ③

**11**

For the eighth-grade students in your school:

A. How many days per year is your school open for instruction?

\_\_\_\_\_ days  
Write in the number.

B. What is the total instructional time, excluding breaks, in a typical day?

\_\_\_\_\_ hours \_\_\_\_\_ minutes  
Write in the number of hours and minutes per day.

C. In one calendar week, how many days is the school open for instruction?

Fill in **one** circle only.

- 6 days --- ①
- 5 1/2 days --- ②
- 5 days --- ③
- 4 1/2 days --- ④
- 4 days --- ⑤
- Other --- ⑥

**12**

A. Does your school provide a place where students can work on their schoolwork before or after school?

Fill in **one** circle only.

- Yes --- ①
- No --- ② (If No, go to question 13)

**If Yes,**

B. Is someone available to assist them with their schoolwork?

Fill in **one** circle only.

- Yes --- ①
- No --- ②

**13**

As a general school policy, is student achievement used to assign eighth-grade students to classes (e.g., streaming, tracking, setting)?

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

- |                                  |     |    |
|----------------------------------|-----|----|
|                                  | Yes | No |
| a) For mathematics classes ----- | ①   | ②  |
| b) For science classes -----     | ①   | ②  |

**14**

How many computers (including tablets) does your school have for use by eighth-grade students?

\_\_\_\_\_ computers  
Write in the number.

**15**

**A. Does your school have a science laboratory that can be used by eighth-grade students?**

Fill in **one** circle only.

- Yes --- ①
- No --- ②

**B. Do teachers usually have assistance available when students are conducting science experiments?**

Fill in **one** circle only.

- Yes --- ①
- No --- ②

**16**

Does your school have a school library?

Fill in **one** circle only.

- Yes --- ①
- No --- ②

(If No, go to question 17)

**If Yes,**

**A. Approximately how many books (print and digital) with different titles does your school library have (exclude magazines and periodicals)?**

Fill in only **one** circle in each column.

Print	Digital
250 or fewer --- ①	①
251–500 --- ②	②
501–2,000 --- ③	③
2,001–5,000 --- ④	④
5,001–10,000 --- ⑤	⑤
More than 10,000 --- ⑥	⑥

**B. Approximately how many titles of magazines and other periodicals (print and digital) does your school library have?**

Fill in only **one** circle in each column.

Print	Digital
0 --- ①	①
1–5 --- ②	②
6–10 --- ③	③
11–30 --- ④	④
31 or more --- ⑤	⑤

## 17

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

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

	Not at all	A little	Some	A lot
<b>A. General School Resources</b>				
a) Instructional materials (e.g., textbooks) -----	①	②	③	④
b) Supplies (e.g., papers, pencils, materials) -----	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) Technologically competent staff -----	①	②	③	④
g) Audio-visual resources for delivery of instruction (e.g., interactive white boards, digital projectors) -----	①	②	③	④
h) Computer technology for teaching and learning (e.g., computers or tablets for student use) -----	①	②	③	④
i) Resources for students with disabilities -----	①	②	③	④

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

	Not at all	A little	Some	A lot
<b>B. Resources for Mathematics Instruction</b>				
a) Teachers with a specialization in mathematics -----	①	②	③	④
b) Computer software/ applications for mathematics instruction -----	①	②	③	④
c) Library resources relevant to mathematics instruction -----	①	②	③	④
d) Calculators for mathematics instruction -----	①	②	③	④
e) Concrete objects or materials to help students understand quantities or procedures -----	①	②	③	④
<b>C. Resources for Science Instruction</b>				
a) Teachers with a specialization in science -----	①	②	③	④
b) Computer software/ applications for science instruction -----	①	②	③	④
c) Library resources relevant to science instruction -----	①	②	③	④
d) Calculators for science instruction -----	①	②	③	④
e) Science equipment and materials for experiments -----	①	②	③	④



**18**

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

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

- |   |           |      |        |     |          |   |       |   |       |   |
|---|-----------|------|--------|-----|----------|---|-------|---|-------|---|
|   | Very high |      |        |     |          |   |       |   |       |   |
|   |           | High |        |     |          |   |       |   |       |   |
|   |           |      | Medium |     |          |   |       |   |       |   |
|   |           |      |        | Low |          |   |       |   |       |   |
|   |           |      |        |     | Very low |   |       |   |       |   |
| a) Teachers' understanding of the school's curricular goals             | -----     | ①    | -----  | ②   | -----    | ③ | ----- | ④ | ----- | ⑤ |
| b) Teachers' degree of success in implementing the school's curriculum  | -----     | ①    | -----  | ②   | -----    | ③ | ----- | ④ | ----- | ⑤ |
| c) Teachers' expectations for student achievement                       | -----     | ①    | -----  | ②   | -----    | ③ | ----- | ④ | ----- | ⑤ |
| d) Teachers working together to improve student achievement             | -----     | ①    | -----  | ②   | -----    | ③ | ----- | ④ | ----- | ⑤ |
| e) Teachers' ability to inspire students                                | -----     | ①    | -----  | ②   | -----    | ③ | ----- | ④ | ----- | ⑤ |
| f) Parental involvement in school activities                            | -----     | ①    | -----  | ②   | -----    | ③ | ----- | ④ | ----- | ⑤ |
| g) Parental commitment to ensure that students are ready to learn       | -----     | ①    | -----  | ②   | -----    | ③ | ----- | ④ | ----- | ⑤ |
| h) Parental expectations for student achievement                        | -----     | ①    | -----  | ②   | -----    | ③ | ----- | ④ | ----- | ⑤ |
| i) Parental support for student achievement                             | -----     | ①    | -----  | ②   | -----    | ③ | ----- | ④ | ----- | ⑤ |
| j) Parental pressure for the school to maintain high academic standards | -----     | ①    | -----  | ②   | -----    | ③ | ----- | ④ | ----- | ⑤ |
| k) Students' desire to do well in school                                | -----     | ①    | -----  | ②   | -----    | ③ | ----- | ④ | ----- | ⑤ |
| l) 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 |

**19**

To what degree is each of the following a problem among eighth-grade students in your school?

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

- |  |       |               |               |                  |                 |   |       |   |
|--|-------|---------------|---------------|------------------|-----------------|---|-------|---|
|  |       | Not a problem |               |                  |                 |   |       |   |
|  |       |               | Minor problem |                  |                 |   |       |   |
|  |       |               |               | Moderate problem |                 |   |       |   |
|  |       |               |               |                  | Serious problem |   |       |   |
| a) Arriving late at school   | ----- | ①             | -----         | ②                | -----           | ③ | ----- | ④ |
| b) Absenteeism (i.e., unjustified absences)  | ----- | ①             | -----         | ②                | -----           | ③ | ----- | ④ |
| c) Classroom disturbance   | ----- | ①             | -----         | ②                | -----           | ③ | ----- | ④ |
| d) Cheating  | ----- | ①             | -----         | ②                | -----           | ③ | ----- | ④ |
| e) Profanity   | ----- | ①             | -----         | ②                | -----           | ③ | ----- | ④ |
| f) Vandalism   | ----- | ①             | -----         | ②                | -----           | ③ | ----- | ④ |
| g) Theft   | ----- | ①             | -----         | ②                | -----           | ③ | ----- | ④ |
| h) Intimidation or verbal abuse among students (including texting, emailing, etc.)       | ----- | ①             | -----         | ②                | -----           | ③ | ----- | ④ |
| i) Physical injury to other students   | ----- | ①             | -----         | ②                | -----           | ③ | ----- | ④ |
| j) Intimidation or verbal abuse of teachers or staff (including texting, emailing, etc.) | ----- | ①             | -----         | ②                | -----           | ③ | ----- | ④ |
| k) Physical injury to teachers or staff  | ----- | ①             | -----         | ②                | -----           | ③ | ----- | ④ |

**20**

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

Fill in only **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

**21**

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

Fill in only **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

**22**

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

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

	Were no vacancies in this subject			
	Easy to fill vacancies			
	Somewhat difficult			Very difficult
a) Mathematics -----	①	②	③	④
b) Science -----	①	②	③	④
c) Other -----	①	②	③	④

**23**

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

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

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

**24**

To what degree is each of the following a problem among teachers in your school?

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

	Not a problem			
	Minor problem			Moderate problem
	Serious problem			
a) Arriving late or leaving early --	①	②	③	④
b) Absenteeism -----	①	②	③	④

**25**

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

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

**26**

By the end of this school year, how many years will you have been a principal at this school?

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

**27**

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

Fill in **one** circle only.

- Did not complete Bachelor's degree (4-year college program) --- (1)
- Bachelor's degree (4-year college program) --- (2)
- Master's degree or professional degree (MD, DDS, lawyer, minister) --- (3)
- Doctorate (Ph.D., or Ed.D.) --- (4)

**28**

Do you hold the following degrees in educational leadership?

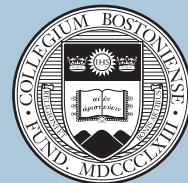
Fill in only **one** circle for each row.

- |   | Yes | No  |
|---|-----|-----|
| a) Master's degree or professional degree (MD, DDS, lawyer, minister) ----- | (1) | (2) |
| b) Doctorate (Ph.D., or Ed.D.) -----  | (1) | (2) |

# Thank You

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

---



BOSTON  
COLLEGE

**TIMSS**  
**2015**

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

# School Questionnaire

## Grade 8



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TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

# Student Questionnaire Advanced Mathematics

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



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

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*U.S. participation in this study is sponsored by the National Center for Education Statistics (NCES), U.S. Department of Education, and authorized by the Education Science Reform Act of 2002 (20 U.S.C., § 9543). Your responses are protected by federal statute (20 U.S.C., § 9573). 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.*

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless such collection displays a valid OMB control number. The valid OMB control number for this voluntary information collection is 1850-0695. The time required to complete this information collection is estimated to average 30 minutes per respondent, including the time to review instructions, and complete and review the information collection. **If you have any comments concerning the accuracy of the time estimate(s), suggestions for improving the form, or comments or concerns regarding the status of your individual submission of this form, write directly to:** Trends in International Mathematics and Science Study (TIMSS), National Center for Education Statistics, U.S. Department of Education, 1990 K Street N.W., Washington, D.C. 20006. OMB No. 1850-0695, Approval Expires 9/30/2017.

**THIS PAGE LEFT BLANK ON PURPOSE**

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

Each question is followed by a number of answers. Fill in the oval next to or under the answer of your choice as shown in the example below.

## Example

How often do you do these things?

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

	Every day or almost every day	Once or twice a week	Once or twice a month	Never or almost never
a) I talk with my friends .....	<input checked="" type="radio"/>	<input type="radio"/> ②	<input type="radio"/> ③	<input type="radio"/> ④
b) I play sports .....	<input type="radio"/> ①	<input checked="" type="radio"/>	<input type="radio"/> ③	<input type="radio"/> ④
c) I listen to music .....	<input type="radio"/> ①	<input type="radio"/> ②	<input checked="" type="radio"/>	<input type="radio"/> ④

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



## 1

---

**A. Are you female or male?**

*Fill in **one** oval only.*

Female -- ①

Male -- ②

**B. Are you Hispanic or Latino?**

*Fill in **one** oval 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 ovals for **all** that apply.*

White -- ①

Black or African American -- ①

Asian -- ①

American Indian or Alaska Native -- ①

Native Hawaiian or other  
Pacific Islander -- ①

**2****When were you born?**

*Fill in the ovals next to the month and year you were born.*

**a) Month**

- January -- (A)  
February -- (B)  
March -- (C)  
April -- (D)  
May -- (E)  
June -- (f)  
July -- (g)  
August -- (h)  
September -- (i)  
October -- (j)  
November -- (k)  
December -- (l)

**b) Year**

- 1993 -- (1)  
1994 -- (2)  
1995 -- (3)  
1996 -- (4)  
1997 -- (5)  
1998 -- (6)  
1999 -- (7)  
2000 -- (8)  
2001 -- (9)  
Other -- (0)

**3****A. How often do you speak English at home?**

*Fill in **one** oval only.*

Always -- ① If **Always**, please go to question 4 

Almost always -- ②

Sometimes -- ③

Never -- ④

If **Almost always, Sometimes, Never**,  
please go to question 3B 

**B. What language do you speak at home (other than English)?**

*Fill in **one** oval only.*

Spanish -- ①

Other -- ② Please specify \_\_\_\_\_

**4**

**How many days were you absent from school in the last month?**

*Fill in **one** oval only.*

- None -- ①
- 1 or 2 days -- ②
- 3 or 4 days -- ③
- 5 to 10 days -- ④
- More than 10 days -- ⑤

**5**

**Have you ever repeated a grade?**

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

- |  | Yes | No |
|--|-----|----|
|  | ↓   | ↓  |
| a) In elementary school.....             | ①   | ②  |
| b) In middle or junior high school ..... | ①   | ②  |
| c) In high school .....                  | ①   | ②  |

**6**

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

*Fill in **one** oval 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) -- ⑤

**7**

**How many digital information devices are there in your home? Count computers, tablets, smartphones, smart TVs, and e-readers. (Do not count other devices.)**

*Fill in **one** oval only.*

None -- ①

1-3 devices -- ②

4-6 devices -- ③

7-10 devices -- ④

More than 10 devices -- ⑤

## 8

Do you have any of these things?

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

- |  | Yes<br>↓ | No<br>↓ |
|--|----------|---------|
| a) Your own computer .....                                 | ①        | ②       |
| b) Your own tablet .....                                   | ①        | ②       |
| c) Your own smartphone .....                               | ①        | ②       |
| d) Your own graphing calculator .....                      | ①        | ②       |
| e) A gaming system<br>(e.g., PlayStation®, Wii®, Xbox®) -- | ①        | ②       |
| f) Study desk/table for your use .....                     | ①        | ②       |
| g) Your own room .....                                     | ①        | ②       |
| h) Your own car .....                                      | ①        | ②       |

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

*Fill in **one** oval only.*

- Less than high school -- ①
- Some high school -- ②
- High school graduate -- ③
- Associate's degree (2-year college program) -- ④
- Bachelor's degree (4-year college program) -- ⑤
- Master's degree or professional degree (MD, DDS, lawyer, minister) -- ⑥
- Doctorate (Ph.D., or Ed.D.) -- ⑦
- I don't know -- ⑧

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

*Fill in **one** oval only.*

- Less than high school -- ①
- Some high school -- ②
- High school graduate -- ③
- Associate's degree (2-year college program) -- ④
- Bachelor's degree (4-year college program) -- ⑤
- Master's degree or professional degree (MD, DDS, lawyer, minister) -- ⑥
- Doctorate (Ph.D., or Ed.D.) -- ⑦
- I don't know -- ⑧

# 10

**What kind of work do your father (or stepfather or male legal guardian) and mother (or stepmother or female legal guardian) do for their main jobs?**

For each, fill in the oval for the job category that best describes what he/she does. Each category has a few examples to help you decide the correct category. If your father or mother is not working now, think about the last job he/she had.

Fill in only **one** oval for each column.

	Your father	Your mother
a) Has never worked for pay -----	①	②
b) Small Business Owner ----- Includes owners of small businesses (fewer than 25 employees) such as retail shops, services, restaurants	①	②
c) Clerk ----- Includes office clerks; secretaries; typists; data entry operators; customer service clerks	①	②
d) Service or Sales Worker ----- Includes travel attendants; restaurant service workers; personal care workers; protective service workers; junior military and police; salespersons; street vendors	①	②
e) Skilled Agricultural or Fishery Worker ----- Includes farmers; forestry workers; fishery workers; hunters and trappers	①	②
f) Craft or Trade Worker ----- Includes builders, carpenters, plumbers, electricians, metal workers; machine mechanics; handicraft workers	①	②

Continued on next page →



## 10 (continued)

	Your father	Your mother
g) Plant or Machine Operator -----	①	②
Includes plant and machine operators; assembly-line operators; motor-vehicle drivers		
h) General Laborers -----	①	②
Includes domestic helpers and cleaners; building caretakers; messengers, porters, and doorkeepers; farm, fishery, agricultural, and construction workers		
i) Corporate Manager or Senior Official -----	①	②
Includes corporate managers such as managers of large companies (25 or more employees) or managers of departments within large companies; legislators or senior government officials; senior officials of special-interest organizations; military officers		
j) Professional -----	①	②
Includes scientists; mathematicians; computer scientists; architects; engineers; life science and health professionals; teachers; legal professionals; social scientists; writers and artists; religious professionals		
k) Technician or Associate Professional -----	①	②
Includes science, engineering, and computer associates and technicians; life science and health technicians and assistants; teacher aides; finance and sales associate professionals; business service agents; administrative assistants		
l) I don't know -----	①	②

**11**

---

**How far in your education do you expect to go?**

*Fill in **one** oval only.*

High school -- ①

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

Bachelor's degree  
(4-year college program) -- ③

Master's degree or professional degree  
(MD, DDS, lawyer, minister) -- ④

Doctorate (Ph.D., or Ed.D.) -- ⑤

## 12

---

**If you plan to continue your education, which area(s) do you intend to study?**

*Fill in ovals for **all** that apply.*

- a) Mathematics or Statistics ----- ①
- b) Physics----- ①
- c) Chemistry ----- ①
- d) Biological and Biomedical Sciences (e.g., dentistry, medicine, nursing, pharmacology, veterinary medicine)----- ①
- e) Engineering and Engineering Technologies (e.g., aerospace engineering, chemical engineering, civil engineering, electrical engineering, mechanical engineering) ----- ①
- f) Computer and Information Sciences----- ①
- g) Education ----- ①
- h) Business (e.g., accounting, marketing, administration, finance, management) ----- ①
- i) Law ----- ①
- j) Social Sciences (e.g., sociology, political science, economics, psychology) ----- ①
- k) Arts and Humanities (e.g., art, language, literature, history, philosophy) ----- ①
- l) Other Science Fields of Study----- ①
- m) Other Non-science Fields of Study----- ①

# 13

**In the future, do you want to work in any of the following professional fields?**

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

- |   | Yes<br>↓ | Maybe<br>↓ | No<br>↓ |
|---|----------|------------|---------|
| a) Education (e.g., teacher, university professor)-----   | ①        | ②          | ③       |
| b) Engineering and Engineering Technologies<br>(e.g., aerospace engineer, chemical engineer, civil engineer, electrical engineer, mechanical engineer)----- | ①        | ②          | ③       |
| c) Computer and Information Sciences<br>(e.g., database administrator, network administrator, software or application developer, systems analyst)-----      | ①        | ②          | ③       |
| d) Finance/Banking-----   | ①        | ②          | ③       |
| e) Biological and Biomedical Sciences<br>(e.g., biomedical engineer, biochemist, biophysicist, dentist, medical doctor, nurse, veterinarian)-----           | ①        | ②          | ③       |
| f) Environmental Sciences-----  | ①        | ②          | ③       |
| g) Agriculture and Agricultural Sciences-----   | ①        | ②          | ③       |
| h) Actuarial Sciences (i.e., uses mathematical and statistical methods to assess risk)-----   | ①        | ②          | ③       |
| i) Other Fields-----  | ①        | ②          | ③       |

**14**

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

*Fill in **one** oval only.*

Yes -- ①

No -- ②

I don't know -- ③

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

*Fill in **one** oval only.*

Yes -- ①

No -- ②

I don't know -- ③

**15**

**A. Were you born in the United States?**

*Fill in **one** oval only.*

Yes -- ① 

**(If Yes, go to question 16)**

No -- ②

**If No,**

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

*Fill in **one** oval only.*

Older than 15 years old -- ①

11 to 15 years old -- ②

5 to 10 years old -- ③

Younger than 5 years old -- ④

**16**

How much time do you spend in mathematics class each week?

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

Write in the number of **minutes** per week.

Please convert the number of classes/periods into minutes.

**17**

How much time do you spend on mathematics outside of class each week?

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

Write in the number of **minutes** per week.

Please convert the number of hours into minutes.

**18**

A. During the school year, do you work at a paid job on a regular basis?

Fill in **one** oval only.

Yes -- ①

No -- ② 

(If No, go to question 19)

**If Yes,**

B. How much time do you spend working at the paid job each week?

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

Write in the number of **minutes** per week.

Please convert the number of hours into minutes.

# 19

**A. During the last 12 months, have you attended extra lessons or tutoring not provided by the school in advanced mathematics?**

*Fill in **one** oval only.*

Yes -- ①

No -- ② 

**(If No, go to question 20)**

**If Yes,**

**B. Why did you attend these extra lessons or tutoring?**

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

- |                                       | Yes<br>↓ | No<br>↓ |
|---------------------------------------|----------|---------|
| a) To excel in class.....             | ① _____  | ② _____ |
| b) To keep up in class.....           | ① _____  | ② _____ |
| c) To do well on an examination ..... | ① _____  | ② _____ |

**C. For how many of the last 12 months have you attended extra lessons or tutoring in advanced mathematics?**

*Fill in **one** oval only.*

Less than 4 months -- ①

4-8 months -- ②

More than 8 months -- ③



## 20

How much do you agree with these statements about your advanced mathematics lessons?

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

- |  | Agree<br>a lot | Agree<br>a little | Disagree<br>a little | Disagree<br>a lot |
|--|----------------|-------------------|----------------------|-------------------|
| a) The teacher clearly communicates the purpose of each mathematics lesson ..... | ↓<br>①         | ↓<br>②            | ↓<br>③               | ↓<br>④            |
| b) I know what my teacher expects me to do .....                                 | ①              | ②                 | ③                    | ④                 |
| c) My teacher is easy to understand ..   | ①              | ②                 | ③                    | ④                 |
| d) I am interested in what my teacher says .....                                 | ①              | ②                 | ③                    | ④                 |
| e) My teacher gives me interesting things to do .....                            | ①              | ②                 | ③                    | ④                 |
| f) My teacher asks me thought provoking questions .....                          | ①              | ②                 | ③                    | ④                 |
| g) My teacher has clear answers to my questions .....                            | ①              | ②                 | ③                    | ④                 |
| h) My teacher links new content to what I already know .....                     | ①              | ②                 | ③                    | ④                 |

## 20 (continued)

How much do you agree with these statements about your advanced mathematics lessons?

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

- |   | Agree<br>a lot | Agree<br>a little | Disagree<br>a little | Disagree<br>a lot |
|---|----------------|-------------------|----------------------|-------------------|
| i) My teacher is good at explaining advanced mathematics .....  | ↓<br>①         | ↓<br>②            | ↓<br>③               | ↓<br>④            |
| j) My teacher provides the opportunity for me to show what I have learned .....                       | ①              | ②                 | ③                    | ④                 |
| k) My teacher encourages me to keep working on advanced mathematics problems until I solve them ..... | ①              | ②                 | ③                    | ④                 |
| l) My teacher provides helpful feedback on my schoolwork (including homework) .....                   | ①              | ②                 | ③                    | ④                 |
| m) My teacher uses a variety of teaching methods, tasks, and activities to help us learn .....        | ①              | ②                 | ③                    | ④                 |
| n) My teacher believes that I can learn difficult advanced mathematics material .....                 | ①              | ②                 | ③                    | ④                 |
| o) I like the way my teacher teaches mathematics .....  | ①              | ②                 | ③                    | ④                 |

# 21

**Do you use the Internet to do any of the following tasks for advanced mathematics schoolwork (including classroom tasks, homework, and studying outside of class)?**

*Fill in only one oval for each row.*

- |  | Yes | No |
|--|-----|----|
|  | ↓   | ↓  |
| a) Access the textbook or other course materials .....   | ①   | ②  |
| b) Access assignments posted online by my teacher .....  | ①   | ②  |
| c) Collaborate with classmates on mathematics assignments or projects .....                    | ①   | ②  |
| d) Communicate with the teacher .....  | ①   | ②  |
| e) Discuss mathematics topics with other students .....  | ①   | ②  |
| f) Find information, articles, or tutorials to aid in understanding mathematics concepts ..... | ①   | ②  |
| g) Find information, articles, or tutorials to aid in solving mathematics problems .....       | ①   | ②  |

## 22

**How much do you agree with these statements about the mathematics you are studying?**

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

- |  | Agree<br>a lot | Agree<br>a little | Disagree<br>a little | Disagree<br>a lot |
|--|----------------|-------------------|----------------------|-------------------|
| a) When I do mathematics problems, I sometimes get completely absorbed .....     | ↓<br>①         | ↓<br>②            | ↓<br>③               | ↓<br>④            |
| b) I get a sense of satisfaction when I solve mathematics problems .....         | ①              | ②                 | ③                    | ④                 |
| c) I feel bored when I do my mathematics schoolwork .....                        | ①              | ②                 | ③                    | ④                 |
| d) I like studying for my mathematics class outside of school .....              | ①              | ②                 | ③                    | ④                 |
| e) It is interesting to learn mathematics theory .....                           | ①              | ②                 | ③                    | ④                 |
| f) I dread my mathematics class .....  | ①              | ②                 | ③                    | ④                 |
| g) I am studying mathematics because I like to learn new things ..               | ①              | ②                 | ③                    | ④                 |
| h) I enjoy figuring out challenging mathematics .....                            | ①              | ②                 | ③                    | ④                 |
| i) Mathematics is one of my favorite subjects .....                              | ①              | ②                 | ③                    | ④                 |
| j) Jobs that require advanced mathematics skills seem interesting to me .....    | ①              | ②                 | ③                    | ④                 |
| k) I wish I did not have to study mathematics .....                              | ①              | ②                 | ③                    | ④                 |
| l) I enjoy thinking about the world in terms of mathematical relationships ..... | ①              | ②                 | ③                    | ④                 |

## 23

How much do you agree with these statements about the mathematics you are studying?

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

- |   | Agree<br>a lot | Agree<br>a little | Disagree<br>a little | Disagree<br>a lot |
|---|----------------|-------------------|----------------------|-------------------|
| a) Learning mathematics will help me get ahead in the world .....                               | ↓<br>①         | ↓<br>②            | ↓<br>③               | ↓<br>④            |
| b) It is important to do well in my mathematics class .....                                     | ①              | ②                 | ③                    | ④                 |
| c) The mathematics I am studying is not useful for my future .....                              | ①              | ②                 | ③                    | ④                 |
| d) My parents are pleased that I am taking advanced mathematics .....                           | ①              | ②                 | ③                    | ④                 |
| e) Doing well in mathematics will help me get into the college or university of my choice ..... | ①              | ②                 | ③                    | ④                 |
| f) Learning advanced mathematics does not seem to be a worthwhile exercise .....                | ①              | ②                 | ③                    | ④                 |
| g) My parents think that it is important that I do well in my mathematics class .....           | ①              | ②                 | ③                    | ④                 |
| h) I like telling people I am studying advanced mathematics .....                               | ①              | ②                 | ③                    | ④                 |
| i) Learning advanced mathematics will give me more job opportunities .....                      | ①              | ②                 | ③                    | ④                 |

**24**

**How hard was this test compared to most other tests you have taken this year in school?**

*Fill in **one** oval only.*

- Easier than other tests -- ①
- About as hard as other tests -- ②
- Harder than other tests -- ③
- Much harder than other tests -- ④

**25**

**How hard did you try on this test compared to how hard you tried on most other tests you have taken this year in school?**

*Fill in **one** oval only.*

- Not as hard as on other tests -- ①
- About as hard as on other tests -- ②
- Harder than on other tests -- ③
- Much harder than on other tests -- ④

**26**

**How important was it to you to do well on this test?**

*Fill in **one** oval only.*

- Not very important -- ①
- Somewhat important -- ②
- Important -- ③
- Very important -- ④

## 27

In what grade did you complete any of the courses listed below?

Fill in **one or more** ovals in each row.

	Never ↓	Grade 8 or earlier ↓	Grade 9 ↓	Grade 10 ↓	Grade 11 ↓	Grade 12 ↓
a) Algebra I course .....	①	①	①	①	①	①
b) Geometry course .....	①	①	①	①	①	①
c) Algebra II course, with or without trigonometry .....	①	①	①	①	①	①
d) Trigonometry (as a separate course) .....	①	①	①	①	①	①
e) Pre-calculus course (also called introductory analysis) .....	①	①	①	①	①	①
f) Calculus course .....	①	①	①	①	①	①
g) Probability or statistics course .....	①	①	①	①	①	①
h) Integrated mathematics 1 (first year of a multi-year course) .....	①	①	①	①	①	①
i) Integrated mathematics 2 (second year of a multi- year course) .....	①	①	①	①	①	①
j) Integrated mathematics 3 (third year of a multi-year course) .....	①	①	①	①	①	①
k) Integrated mathematics 4 (fourth year of a multi-year course) .....	①	①	①	①	①	①
l) Other advanced mathematics course .....	①	①	①	①	①	①

## 28

Please indicate if you have taken or are currently enrolled in any of the following Advanced (AP<sup>®</sup>) courses. Have taken or are enrolled in:

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

- |   | Yes | No |
|---|-----|----|
|   | ↓   | ↓  |
| a) Advanced Placement (AP)<br>Calculus AB-----  | ①   | ②  |
| b) Advanced Placement (AP)<br>Calculus BC ----- | ①   | ②  |
| c) Advanced Placement (AP)<br>Statistics-----   | ①   | ②  |

## 29

Are you currently enrolled in or have you taken any online mathematics courses?

Fill in **one** oval only.

- No -- ①
- Yes, but not for credit -- ②
- Yes, for high school credit -- ③
- Yes, for college credit -- ④
- Yes, for both high school  
and college credit -- ⑤



**30**

**Are you currently enrolled in or have you taken an International Baccalaureate® (IB) mathematics course?**

*Fill in **one** oval only.*

Yes -- ①

No -- ②

**31**

**During this school year, which of the following have you done?**

*Fill in ovals for **all** that apply.*

Taken the SAT or ACT College  
Entrance Exams -- ①

Submitted the Free Application for  
Federal Student Aid (FAFSA) -- ①

Applied to a 2-year college -- ①

Been accepted to a 2-year college -- ①

Applied to a 4-year college -- ①

Been accepted to a 4-year college -- ①

Talked with a military recruiter or  
contacted a ROTC program -- ①

Enlisted in the military or enrolled  
in a ROTC program -- ①

Applied for a full-time job -- ①

Been interviewed for a full-time job -- ①

None of the above -- ①

## 32

What do you think about your school? Tell how much you agree with these statements.

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

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
	↓	↓	↓	↓
a) I enjoy school .....	①	②	③	④
b) I feel safe when I am at school .....	①	②	③	④
c) I feel like I belong at this school .....	①	②	③	④
d) I like to see my classmates at school .....	①	②	③	④
e) Teachers at my school are fair to me .....	①	②	③	④
f) I am proud to go to this school .....	①	②	③	④
g) I learn a lot in school .....	①	②	③	④
h) My classmates respect students who excel in school subjects .....	①	②	③	④
i) My classmates respect students who struggle learning school subjects .....	①	②	③	④

# 33

**During this school year, how often have other students from your school done any of the following things to you (including through texting or the Internet)?**

*Fill in only one oval for each row.*

	At least once a week	Once or twice a month	A few times a year	Never
a) Made fun of me or called me names .....	①	②	③	④
b) Excluded me from their activities --	①	②	③	④
c) Spread lies about me .....	①	②	③	④
d) Stole something from me .....	①	②	③	④
e) Hit or hurt me (e.g., shoving, hitting, kicking) .....	①	②	③	④
f) Made me do things I didn't want to do .....	①	②	③	④
g) Posted embarrassing things about me online .....	①	②	③	④
h) Threatened me .....	①	②	③	④

**34**

**During this school year, did you participate in any of these extracurricular activities?**

*Fill in ovals for **all** that apply.*

Sports -- ①

Performing arts -- ①

Academic clubs -- ①

Vocational/professional clubs -- ①

Honor societies -- ①

Publications -- ①

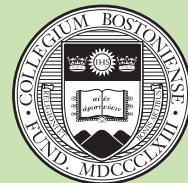
Student government -- ①

Service clubs -- ①

Hobby clubs -- ①

**Thank You!**

**Thank you for filling out the questionnaire!**



BOSTON  
COLLEGE

**TIMSS**  
*Advanced*  
**2015**

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

# Student Questionnaire Advanced Mathematics



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Instructed To Do So.**



**TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY**

# **Student Questionnaire Physics**

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



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

*U.S. participation in this study is sponsored by the National Center for Education Statistics (NCES), U.S. Department of Education, and authorized by the Education Science Reform Act of 2002 (20 U.S.C., § 9543). Your responses are protected by federal statute (20 U.S.C., § 9573). 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.*

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**THIS PAGE LEFT BLANK ON PURPOSE**

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

Each question is followed by a number of answers. Fill in the oval next to or under the answer of your choice as shown in the example below.

## Example

How often do you do these things?

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

	Every day or almost every day	Once or twice a week	Once or twice a month	Never or almost never
a) I talk with my friends .....	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) I play sports .....	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) I listen to music .....	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

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



## 1

---

### A. Are you female or male?

*Fill in **one** oval only.*

Female -- ①

Male -- ②

### B. Are you Hispanic or Latino?

*Fill in **one** oval 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 ovals for **all** that apply.*

White -- ①

Black or African American -- ①

Asian -- ①

American Indian or Alaska Native -- ①

Native Hawaiian or other  
Pacific Islander -- ①

**2****When were you born?**

*Fill in the ovals next to the month and year you were born.*

**a) Month**

- January -- (A)  
February -- (B)  
March -- (C)  
April -- (D)  
May -- (E)  
June -- (f)  
July -- (g)  
August -- (h)  
September -- (i)  
October -- (j)  
November -- (k)  
December -- (l)

**b) Year**

- 1993 -- (1)  
1994 -- (2)  
1995 -- (3)  
1996 -- (4)  
1997 -- (5)  
1998 -- (6)  
1999 -- (7)  
2000 -- (8)  
2001 -- (9)  
Other -- (0)

**3****A. How often do you speak English at home?**

*Fill in **one** oval only.*

Always -- ① If **Always**, please go to question 4 

Almost always -- ②

Sometimes -- ③

Never -- ④

If **Almost always, Sometimes, Never**,  
please go to question 3B 

**B. What language do you speak at home (other than English)?**

*Fill in **one** oval only.*

Spanish -- ①

Other -- ② Please specify \_\_\_\_\_

**4**

**How many days were you absent from school in the last month?**

*Fill in **one** oval only.*

None -- ①

1 or 2 days -- ②

3 or 4 days -- ③

5 to 10 days -- ④

More than 10 days -- ⑤

**5**

**Have you ever repeated a grade?**

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

Yes

No



a) In elementary school..... ① ————— ②

b) In middle or junior high school ..... ① ————— ②

c) In high school ..... ① ————— ②

**6**

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

*Fill in **one** oval 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) -- ⑤

**7**

**How many digital information devices are there in your home? Count computers, tablets, smartphones, smart TVs, and e-readers. (Do not count other devices.)**

*Fill in **one** oval only.*

None -- ①

1-3 devices -- ②

4-6 devices -- ③

7-10 devices -- ④

More than 10 devices -- ⑤

# 8

---

Do you have any of these things?

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

- |   | Yes                   | No                    |
|---|-----------------------|-----------------------|
| a) Your own computer .....                                | <input type="radio"/> | <input type="radio"/> |
| b) Your own tablet .....                                  | <input type="radio"/> | <input type="radio"/> |
| c) Your own smartphone .....                              | <input type="radio"/> | <input type="radio"/> |
| d) Your own graphing calculator.....                      | <input type="radio"/> | <input type="radio"/> |
| e) A gaming system<br>(e.g., PlayStation®, Wii®, XBox®)-- | <input type="radio"/> | <input type="radio"/> |
| f) Study desk/table for your use .....                    | <input type="radio"/> | <input type="radio"/> |
| g) Your own room .....                                    | <input type="radio"/> | <input type="radio"/> |
| h) Your own car.....                                      | <input type="radio"/> | <input type="radio"/> |

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

*Fill in **one** oval only.*

- Less than high school -- ①
- Some high school -- ②
- High school graduate -- ③
- Associate's degree (2-year college program) -- ④
- Bachelor's degree (4-year college program) -- ⑤
- Master's degree or professional degree (MD, DDS, lawyer, minister) -- ⑥
- Doctorate (Ph.D., or Ed.D.) -- ⑦
- I don't know -- ⑧

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

*Fill in **one** oval only.*

- Less than high school -- ①
- Some high school -- ②
- High school graduate -- ③
- Associate's degree (2-year college program) -- ④
- Bachelor's degree (4-year college program) -- ⑤
- Master's degree or professional degree (MD, DDS, lawyer, minister) -- ⑥
- Doctorate (Ph.D., or Ed.D.) -- ⑦
- I don't know -- ⑧

# 10

**What kind of work do your father (or stepfather or male legal guardian) and mother (or stepmother or female legal guardian) do for their main jobs?**

**For each, fill in the oval for the job category that best describes what he/she does. Each category has a few examples to help you decide the correct category. If your father or mother is not working now, think about the last job he/she had.**

*Fill in only **one** oval for each column.*

	Your father	Your mother
a) Has never worked for pay -----	①	②
b) Small Business Owner ----- Includes owners of small businesses (fewer than 25 employees) such as retail shops, services, restaurants	①	②
c) Clerk ----- Includes office clerks; secretaries; typists; data entry operators; customer service clerks	①	②
d) Service or Sales Worker ----- Includes travel attendants; restaurant service workers; personal care workers; protective service workers; junior military and police; salespersons; street vendors	①	②
e) Skilled Agricultural or Fishery Worker ----- Includes farmers; forestry workers; fishery workers; hunters and trappers	①	②
f) Craft or Trade Worker ----- Includes builders, carpenters, plumbers, electricians, metal workers; machine mechanics; handicraft workers	①	②

Continued on next page →



## 10 (continued)

	Your father	Your mother
g) Plant or Machine Operator ----- Includes plant and machine operators; assembly-line operators; motor-vehicle drivers	①	②
h) General Laborers ----- Includes domestic helpers and cleaners; building caretakers; messengers, porters, and doorkeepers; farm, fishery, agricultural, and construction workers	①	②
i) Corporate Manager or Senior Official ----- Includes corporate managers such as managers of large companies (25 or more employees) or managers of departments within large companies; legislators or senior government officials; senior officials of special-interest organizations; military officers	①	②
j) Professional ----- Includes scientists; mathematicians; computer scientists; architects; engineers; life science and health professionals; teachers; legal professionals; social scientists; writers and artists; religious professionals	①	②
k) Technician or Associate Professional ----- Includes science, engineering, and computer associates and technicians; life science and health technicians and assistants; teacher aides; finance and sales associate professionals; business service agents; administrative assistants	①	②
l) I don't know -----	①	②

**11**

---

**How far in your education do you expect to go?**

*Fill in **one** oval only.*

High school -- ①

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

Bachelor's degree  
(4-year college program) -- ③

Master's degree or professional degree  
(MD, DDS, lawyer, minister) -- ④

Doctorate (Ph.D., or Ed.D.) -- ⑤

## 12

---

**If you plan to continue your education, which area(s) do you intend to study?**

*Fill in ovals for **all** that apply.*

- a) Mathematics or Statistics ----- ①
- b) Physics----- ①
- c) Chemistry ----- ①
- d) Biological and Biomedical Sciences (e.g.,  
dentistry, medicine, nursing, pharmacology,  
veterinary medicine)----- ①
- e) Engineering and Engineering Technologies  
(e.g., aerospace engineering, chemical  
engineering, civil engineering, electrical  
engineering, mechanical engineering) ----- ①
- f) Computer and Information Sciences ----- ①
- g) Education ----- ①
- h) Business (e.g., accounting, marketing,  
administration, finance, management) ----- ①
- i) Law ----- ①
- j) Social Sciences (e.g., sociology, political  
science, economics, psychology) ----- ①
- k) Arts and Humanities (e.g., art, language,  
literature, history, philosophy) ----- ①
- l) Other Science Fields of Study ----- ①
- m) Other Non-science Fields of Study ----- ①

# 13

**In the future, do you want to work in any of the following professional fields?**

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

- |   | Yes<br>↓ | Maybe<br>↓ | No<br>↓ |
|---|----------|------------|---------|
| a) Education (e.g., teacher, university professor)-----   | ①        | ②          | ③       |
| b) Engineering and Engineering Technologies<br>(e.g., aerospace engineer, chemical engineer, civil engineer, electrical engineer, mechanical engineer)----- | ①        | ②          | ③       |
| c) Computer and Information Sciences<br>(e.g., database administrator, network administrator, software or application developer, systems analyst)-----      | ①        | ②          | ③       |
| d) Finance/Banking-----   | ①        | ②          | ③       |
| e) Biological and Biomedical Sciences<br>(e.g., biomedical engineer, biochemist, biophysicist, dentist, medical doctor, nurse, veterinarian)-----           | ①        | ②          | ③       |
| f) Environmental Sciences-----  | ①        | ②          | ③       |
| g) Agriculture and Agricultural Sciences-----   | ①        | ②          | ③       |
| h) Actuarial Sciences (i.e., uses mathematical and statistical methods to assess risk)-----   | ①        | ②          | ③       |
| i) Other Fields-----  | ①        | ②          | ③       |

**14**

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

*Fill in **one** oval only.*

Yes -- ①

No -- ②

I don't know -- ③

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

*Fill in **one** oval only.*

Yes -- ①

No -- ②

I don't know -- ③

**15**

**A. Were you born in the United States?**

*Fill in **one** oval only.*

Yes -- ① 

**(If Yes, go to question 16)**

No -- ②

**If No,**

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

*Fill in **one** oval only.*

Older than 15 years old -- ①

11 to 15 years old -- ②

5 to 10 years old -- ③

Younger than 5 years old -- ④

**16**

How much time do you spend in physics class each week?

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

Write in the number of **minutes** per week.

Please convert the number of classes/periods into minutes.

**17**

How much time do you spend on physics outside of class each week?

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

Write in the number of **minutes** per week.

Please convert the number of hours into minutes.

**18**

A. During the school year, do you work at a paid job on a regular basis?

Fill in **one** oval only.

Yes -- ①

No -- ② 

(If No, go to question 19)

**If Yes,**

B. How much time do you spend working at the paid job each week?

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

Write in the number of **minutes** per week.

Please convert the number of hours into minutes.

# 19

**A. During the last 12 months, have you attended extra lessons or tutoring not provided by the school in physics?**

*Fill in **one** oval only.*

Yes -- ①




No -- ② 

**(If No, go to question 20)**

**If Yes,**

**B. Why did you attend these extra lessons or tutoring?**

*Fill in only **one** oval for each row*

- |                                       | Yes<br>↓  | No<br>↓ |
|---------------------------------------|---|---------|
| a) To excel in class-----             | ①  | ②       |
| b) To keep up in class-----           | ①  | ②       |
| c) To do well on an examination ----- | ①  | ②       |

**C. For how many of the last 12 months have you attended extra lessons or tutoring in physics?**

*Fill in **one** oval only.*

Less than 4 months -- ①

4-8 months -- ②

More than 8 months -- ③



# 20

**How much do you agree with these statements about your physics lessons?**

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

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
a) The teacher clearly communicates the purpose of each physics lesson .....	↓ ①	↓ ②	↓ ③	↓ ④
b) I know what my teacher expects me to do .....	①	②	③	④
c) My teacher is easy to understand ..	①	②	③	④
d) I am interested in what my teacher says .....	①	②	③	④
e) My teacher gives me interesting things to do .....	①	②	③	④
f) My teacher asks me thought provoking questions .....	①	②	③	④
g) My teacher has clear answers to my questions .....	①	②	③	④
h) My teacher links new content to what I already know .....	①	②	③	④

## 20 (continued)

How much do you agree with these statements about your physics lessons?

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

- |  | Agree<br>a lot | Agree<br>a little | Disagree<br>a little | Disagree<br>a lot |
|--|----------------|-------------------|----------------------|-------------------|
| i) My teacher is good at explaining physics .....  | ↓<br>①         | ↓<br>②            | ↓<br>③               | ↓<br>④            |
| j) My teacher provides the opportunity for me to show what I have learned .....                | ①              | ②                 | ③                    | ④                 |
| k) My teacher encourages me to keep working on physics problems until I solve them .....       | ①              | ②                 | ③                    | ④                 |
| l) My teacher provides helpful feedback on my schoolwork (including homework) .....            | ①              | ②                 | ③                    | ④                 |
| m) My teacher uses a variety of teaching methods, tasks, and activities to help us learn ..... | ①              | ②                 | ③                    | ④                 |
| n) My teacher believes that I can learn difficult physics material .....                       | ①              | ②                 | ③                    | ④                 |
| o) I like the way my teacher teaches physics .....   | ①              | ②                 | ③                    | ④                 |

# 21

**Do you use the Internet to do any of the following tasks for physics schoolwork (including classroom tasks, homework, and studying outside of class)?**

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

- |  | Yes | No |
|--|-----|----|
|  | ↓   | ↓  |
| a) Access the textbook or other course materials .....                                     | ①   | ②  |
| b) Access assignments posted online by my teacher .....                                    | ①   | ②  |
| c) Collaborate with classmates on physics assignments or projects .....                    | ①   | ②  |
| d) Communicate with the teacher .....  | ①   | ②  |
| e) Discuss physics topics with other students .....  | ①   | ②  |
| f) Find information, articles, or tutorials to aid in understanding physics concepts ..... | ①   | ②  |
| g) Find information, articles, or tutorials to aid in solving physics problems .....       | ①   | ②  |

## 22

**How much do you agree with these statements about the physics you are studying?**

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

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
a) I enjoy conducting experiments or investigations in physics .....	↓ ①	↓ ②	↓ ③	↓ ④
b) I get a sense of satisfaction when I solve physics problems .....	①	②	③	④
c) I feel bored when I do my physics schoolwork .....	①	②	③	④
d) I like studying for my physics class outside of school .....	①	②	③	④
e) It is interesting to learn physics laws and principles .....	①	②	③	④
f) I dread my physics class .....	①	②	③	④
g) I am studying physics because I like to learn new things .....	①	②	③	④
h) I enjoy figuring out challenging physics .....	①	②	③	④
i) Physics is one of my favorite subjects .....	①	②	③	④
j) Jobs that require physics skills seem interesting to me .....	①	②	③	④
k) I wish I did not have to study physics .....	①	②	③	④
l) I enjoy thinking about the world in terms of laws of physics .....	①	②	③	④

## 23

How much do you agree with these statements about the physics you are studying?

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

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
a) Learning physics will help me get ahead in the world .....	↓ ①	↓ ②	↓ ③	↓ ④
b) It is important to do well in my physics class .....	①	②	③	④
c) The physics I am studying is not useful for my future .....	①	②	③	④
d) My parents are pleased that I am taking physics .....	①	②	③	④
e) Doing well in physics will help me get into the college or university of my choice .....	①	②	③	④
f) Learning physics does not seem to be a worthwhile exercise .....	①	②	③	④
g) My parents think that it is important that I do well in my physics class .....	①	②	③	④
h) I like telling people I am studying physics .....	①	②	③	④
i) Learning physics will give me more job opportunities .....	①	②	③	④

**24**

**How hard was this test compared to most other tests you have taken this year in school?**

*Fill in **one** oval only.*

- Easier than other tests -- ①
- About as hard as other tests -- ②
- Harder than other tests -- ③
- Much harder than other tests -- ④

**25**

**How hard did you try on this test compared to how hard you tried on most other tests you have taken this year in school?**

*Fill in **one** oval only.*

- Not as hard as on other tests -- ①
- About as hard as on other tests -- ②
- Harder than on other tests -- ③
- Much harder than on other tests -- ④

**26**

**How important was it to you to do well on this test?**

*Fill in **one** oval only.*

- Not very important -- ①
- Somewhat important -- ②
- Important -- ③
- Very important -- ④

## 27

In what grade did you complete any of the courses listed below?

*Fill in one or more ovals in each row.*

	Never	Grade 8 or earlier	Grade 9	Grade 10	Grade 11	Grade 12
	↓	↓	↓	↓	↓	↓
a) General or unified science	(1)	(1)	(1)	(1)	(1)	(1)
b) Earth and space science	(1)	(1)	(1)	(1)	(1)	(1)
c) Life science (other than biology)	(1)	(1)	(1)	(1)	(1)	(1)
d) Physical science (other than chemistry or physics)	(1)	(1)	(1)	(1)	(1)	(1)
e) First-year biology	(1)	(1)	(1)	(1)	(1)	(1)
f) Second-year biology	(1)	(1)	(1)	(1)	(1)	(1)
g) First-year chemistry	(1)	(1)	(1)	(1)	(1)	(1)
h) Second-year chemistry	(1)	(1)	(1)	(1)	(1)	(1)
i) First-year physics	(1)	(1)	(1)	(1)	(1)	(1)
j) Second-year physics	(1)	(1)	(1)	(1)	(1)	(1)
k) Engineering and technology	(1)	(1)	(1)	(1)	(1)	(1)
l) Other advanced science course	(1)	(1)	(1)	(1)	(1)	(1)

## 28

Please indicate if you have taken or are currently enrolled in any of the following Advanced (AP<sup>®</sup>) courses. Have taken or are enrolled in:

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

- |  | Yes | No |
|--|-----|----|
|  | ↓   | ↓  |
| a) Advanced Placement (AP)<br>Biology .....                  | ①   | ②  |
| b) Advanced Placement (AP)<br>Environmental Science.....     | ①   | ②  |
| c) Advanced Placement (AP)<br>Chemistry .....                | ①   | ②  |
| d) Advanced Placement (AP)<br>Physics B or C.....            | ①   | ②  |
| e) Advanced Placement (AP)<br>Computer Science A or AB ..... | ①   | ②  |

## 29

Are you currently enrolled in or have you taken any online science courses?

Fill in **one** oval only.

- No -- ①
- Yes, but not for credit -- ②
- Yes, for high school credit -- ③
- Yes, for college credit -- ④
- Yes, for both high school  
and college credit -- ⑤



**30**

**Are you currently enrolled in or have you taken an International Baccalaureate® (IB) physics course?**

*Fill in **one** oval only.*

Yes -- ①

No -- ②

**31**

**During this school year, which of the following have you done?**

*Fill in ovals for **all** that apply.*

Taken the SAT or ACT College  
Entrance Exams -- ①

Submitted the Free Application for  
Federal Student Aid (FAFSA) -- ①

Applied to a 2-year college -- ①

Been accepted to a 2-year college -- ①

Applied to a 4-year college -- ①

Been accepted to a 4-year college -- ①

Talked with a military recruiter or  
contacted a ROTC program -- ①

Enlisted in the military or enrolled  
in a ROTC program -- ①

Applied for a full-time job -- ①

Been interviewed for a full-time job -- ①

None of the above -- ①

## 32

What do you think about your school? Tell how much you agree with these statements.

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

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
a) I enjoy school .....	①	②	③	④
b) I feel safe when I am at school .....	①	②	③	④
c) I feel like I belong at this school .....	①	②	③	④
d) I like to see my classmates at school .....	①	②	③	④
e) Teachers at my school are fair to me .....	①	②	③	④
f) I am proud to go to this school .....	①	②	③	④
g) I learn a lot in school .....	①	②	③	④
h) My classmates respect students who excel in school subjects .....	①	②	③	④
i) My classmates respect students who struggle learning school subjects .....	①	②	③	④

# 33

During this school year, how often have other students from your school done any of the following things to you (including through texting or the Internet)?

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

	At least once a week	Once or twice a month	A few times a year	Never
a) Made fun of me or called me names .....	↓ ①	↓ ②	↓ ③	↓ ④
b) Excluded me from their activities --	①	②	③	④
c) Spread lies about me .....	①	②	③	④
d) Stole something from me .....	①	②	③	④
e) Hit or hurt me ( <i>e.g., shoving, hitting, kicking</i> ) .....	①	②	③	④
f) Made me do things I didn't want to do .....	①	②	③	④
g) Posted embarrassing things about me online .....	①	②	③	④
h) Threatened me .....	①	②	③	④

**34**

**During this school year, did you participate in any of these extracurricular activities?**

*Fill in ovals for **all** that apply.*

Sports -- ①

Performing arts -- ①

Academic clubs -- ①

Vocational/professional clubs -- ①

Honor societies -- ①

Publications -- ①

Student government -- ①

Service clubs -- ①

Hobby clubs -- ①

**Thank You!**

**Thank you for filling out the questionnaire!**



BOSTON  
COLLEGE

**TIMSS**  
*Advanced*  
**2015**

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

# Student Questionnaire

## Physics



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[timss.bc.edu](http://timss.bc.edu)



Place Label Here

School ID: \_\_\_\_\_

Class ID: \_\_\_\_\_

Teacher ID: \_\_\_\_\_

Link #: \_\_\_\_\_ Subject: \_\_\_\_\_

Checksum: \_\_\_\_\_

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

# Teacher Questionnaire

## Advanced Mathematics

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



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

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*U.S. participation in this study is sponsored by the National Center for Education Statistics (NCES), U.S. Department of Education, and authorized by the Education Science Reform Act of 2002 (20 U.S.C., § 9543). Your responses are protected by federal statute (20 U.S.C., § 9573). 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.*

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless such collection displays a valid OMB control number. The valid OMB control number for this voluntary information collection is 1850-0695. The time required to complete this information collection is estimated to average 30 minutes per respondent, including the time to review instructions, search existing data resources, gather the data needed, and complete and review the information collection. **If you have any comments concerning the accuracy of the time estimate(s), suggestions for improving the form, or comments or concerns regarding the status of your individual submission of this form, write directly to:** Trends in International Mathematics and Science Study (TIMSS), National Center for Education Statistics, U.S. Department of Education, 1990 K Street N.W., Washington, D.C. 20006. OMB No. 1850-0695, Approval Expires 9/30/2017.

Your school has agreed to participate in TIMSS Advanced 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 Advanced measures trends in student achievement in advanced mathematics and physics and studies differences in national education systems in order to help improve teaching and learning worldwide.

This questionnaire is addressed to teachers of twelfth-grade students who have taken or are taking a calculus course. It 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 the school system 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 which will be tested as part of TIMSS Advanced 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.

Since TIMSS Advanced 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 place it in the accompanying envelope and return it to the TIMSS school coordinator.

NCES is authorized to collect information from the questionnaire 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 ADVANCED 2015

**1** \_\_\_\_\_

**A. What year did you start teaching?**

\_\_\_\_\_ *Please write in a year.*

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

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

**2** \_\_\_\_\_

**Are you female or male?**

*Fill in **one** circle only.*

Female --- (1)

Male --- (2)

**3** \_\_\_\_\_

**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)

**4** \_\_\_\_\_

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

*Fill in **one** circle only.*

Did not complete high school --- (1)

**(If you have not completed more than high school, go to question 6)**

Associate’s degree (2-year college program) --- (2)

Bachelor’s degree (4-year college program) --- (3)

Master’s degree or professional degree (MD, DDS, lawyer, minister) --- (4)

Doctorate (Ph.D., or Ed.D.) --- (5)

**5** \_\_\_\_\_

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

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

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



**6**

**How much do you agree with these statements about advanced mathematics and physics education within your school?**

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

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
a) The school encourages students to study advanced mathematics and physics -----	①	②	③	④
b) The school promotes professional development for teachers of advanced mathematics and physics -----	①	②	③	④
c) The school provides students with information about career options in advanced mathematics and physics -----	①	②	③	④
d) Advanced mathematics and physics teachers are admired by other teachers in the school -----	①	②	③	④
e) Teachers have high expectations for student achievement in advanced mathematics and physics -----	①	②	③	④
f) Students at this school respect students who excel in advanced mathematics and physics -----	①	②	③	④
g) Parents expect their children to study advanced mathematics and physics -----	①	②	③	④

**7**

**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.

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
a) This school is located in a safe neighborhood -----	①	②	③	④
b) I feel safe at this school -----	①	②	③	④
c) This school's security policies and practices are sufficient -----	①	②	③	④
d) The students behave in an orderly manner -----	①	②	③	④
e) The students are respectful of the teachers -----	①	②	③	④
f) The students respect school property -----	①	②	③	④
g) This school has clear rules about student conduct -----	①	②	③	④
h) This school's rules are enforced in a fair and consistent manner -----	①	②	③	④

8

In your current school, how severe is each problem?

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

	Not a problem	Minor problem	Moderate problem	Serious problem
a) The school building needs significant repair -----	①	②	③	④
b) Teachers do not have adequate workspace (e.g., for preparation, collaboration, or meeting with students) ----	①	②	③	④
c) Teachers do not have adequate instructional materials and supplies -----	①	②	③	④
d) The school classrooms are not cleaned often enough -----	①	②	③	④
e) The school classrooms need maintenance work -----	①	②	③	④
f) Teachers do not have adequate technological resources -----	①	②	③	④
g) Teachers do not have adequate support for using technology -----	①	②	③	④

9

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

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

	Very often	Often	Sometimes	Never or almost never
a) Discuss how to teach a particular topic -----	①	②	③	④
b) Collaborate in planning and preparing instructional materials -----	①	②	③	④
c) Share what I have learned about my teaching experiences -----	①	②	③	④
d) Visit another classroom to learn more about teaching ----	①	②	③	④
e) Work together to try out new ideas -----	①	②	③	④
f) Work as a group on implementing the curriculum -----	①	②	③	④
g) Work with teachers from other grades to ensure continuity in learning -----	①	②	③	④

10

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

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

	Very often	Often	Sometimes	Never or almost never
a) I am content with my profession as a teacher -----	①	②	③	④
b) I am satisfied with being a teacher at this school -----	①	②	③	④
c) I find my work full of meaning and purpose -----	①	②	③	④
d) I am enthusiastic about my job -----	①	②	③	④
e) My work inspires me -----	①	②	③	④
f) I am proud of the work I do ---	①	②	③	④
g) I am going to continue teaching for as long as I can ---	①	②	③	④

11

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

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

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
a) There are too many students in the classes -----	①	②	③	④
b) I have too much material to cover in class -----	①	②	③	④
c) I have too many teaching hours -----	①	②	③	④
d) I need more time to prepare for class -----	①	②	③	④
e) I need more time to assist individual students -----	①	②	③	④
f) I feel too much pressure from parents -----	①	②	③	④
g) I have difficulty keeping up with all of the changes to the curriculum -----	①	②	③	④
h) I have too many administrative tasks -----	①	②	③	④

If you teach more than one advanced mathematics or physics class, select one of your classes and keep it in mind as you answer questions 12 through 15.

**12**

How many students are in this class?

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

**13**

How many students in this class experience difficulties understanding spoken English?

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

**14**

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

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

- Every or almost every lesson  
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)

**15**

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

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

- Not at all  
Some  
A lot
- a) Students lacking prerequisite mathematics knowledge or skills ----- (1) — (2) — (3)
- b) Students suffering from lack of basic nutrition ----- (1) — (2) — (3)
- c) Students suffering from not enough sleep ----- (1) — (2) — (3)
- d) Students with physical disabilities ----- (1) — (2) — (3)
- e) Students with mental, emotional, or psychological disabilities ----- (1) — (2) — (3)

If you teach more than one advanced mathematics class, select one of your classes and keep it in mind as you answer questions 16 through 19.

**16**

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

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

Write in the number of minutes per week.

Please convert the number of instructional hours or periods into minutes.

**17**

How many minutes per week do you usually spend preparing to teach this class?

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

Write in the number of minutes per week.

Please convert the number of hours into minutes.

**18**

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

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



- a) Inspiring students to learn advanced mathematics ----- (1) — (2) — (3) — (4)
- 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 advanced mathematics ----- (1) — (2) — (3) — (4)
- f) Assessing student comprehension of advanced mathematics ----- (1) — (2) — (3) — (4)
- g) Improving the understanding of struggling students ----- (1) — (2) — (3) — (4)
- h) Making advanced mathematics relevant to students ----- (1) — (2) — (3) — (4)
- i) Developing students' higher-order thinking skills --- (1) — (2) — (3) — (4)

19

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

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

- |  |       |                              |                        |              |
|--|-------|------------------------------|------------------------|--------------|
|  |       | Every or almost every lesson |                        |              |
|  |       |                              | About half the lessons |              |
|  |       |                              |                        | Some lessons |
|  |       |                              |                        | Never        |
| a) Listen to me explain new mathematics content                                  | ----  | ①                            | — ② —                  | ③ — ④        |
| b) Listen to me explain how to solve problems                                    | ----- | ①                            | — ② —                  | ③ — ④        |
| c) Memorize rules, formulas, procedures, and facts                               | ----- | ①                            | — ② —                  | ③ — ④        |
| d) Work problems (individually or with peers) with my guidance                   | ----- | ①                            | — ② —                  | ③ — ④        |
| e) Work problems together in the whole class with direct guidance from me        | ----- | ①                            | — ② —                  | ③ — ④        |
| f) Work problems (individually or with peers) while I am occupied by other tasks | ----- | ①                            | — ② —                  | ③ — ④        |
| g) Solve problems like the examples in their textbooks                           | --    | ①                            | — ② —                  | ③ — ④        |
| h) Discuss problem solving strategies  | ----- | ①                            | — ② —                  | ③ — ④        |
| i) Work on problems for which there is no immediately obvious method of solution | ---   | ①                            | — ② —                  | ③ — ④        |
| j) Communicate their arguments   | ----- | ①                            | — ② —                  | ③ — ④        |
| k) Take a written test or quiz   | ----  | ①                            | — ② —                  | ③ — ④        |

20

Question 20 asks about resources for teaching mathematics to the students in the TIMSS class. If you teach more than one advanced mathematics class, select **one** of your classes and keep it in mind as you answer question 20.

A. Do the students in this class have computers, tablets, calculators, or smartphones available to use during their advanced mathematics lessons?

Fill in **one** circle only.

Yes --- ①

No --- ②

(If No, go to question 21)

If Yes,

B. How often do you have the students do the following activities on computers, tablets, calculators, or smartphones during advanced mathematics lessons?

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

- |  |       |                           |                      |                       |
|--|-------|---------------------------|----------------------|-----------------------|
|  |       | Every or almost every day |                      |                       |
|  |       |                           | Once or twice a week |                       |
|  |       |                           |                      | Once or twice a month |
|  |       |                           |                      | Never or almost never |
| a) Read the textbook or course materials in digital format | ----- | ①                         | — ② —                | ③ — ④                 |
| b) Look up ideas and information                           | ----- | ①                         | — ② —                | ③ — ④                 |
| c) Process and analyze data                                | ----- | ①                         | — ② —                | ③ — ④                 |
| d) Draw graphs of functions                                | ----- | ①                         | — ② —                | ③ — ④                 |
| e) Solve equations   | ----- | ①                         | — ② —                | ③ — ④                 |
| f) Manipulate algebraic expressions                        | ----- | ①                         | — ② —                | ③ — ④                 |
| g) Conduct modeling and simulations                        | ----- | ①                         | — ② —                | ③ — ④                 |
| h) Perform numerical integration                           | ----- | ①                         | — ② —                | ③ — ④                 |

21

The following list includes the main topics addressed by the TIMSS Advanced 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 this year, 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.



**A. Algebra**

- a) Operations with exponential, logarithmic, polynomial, rational, and radical expressions----- (1) — (2) — (3)
- b) Operations with complex numbers----- (1) — (2) — (3)
- c) Evaluating algebraic expressions (e.g., exponential, logarithmic, polynomial, rational, and radical)----- (1) — (2) — (3)
- d) The *n*th term of arithmetic and geometric sequences and the sums of finite and infinite series----- (1) — (2) — (3)
- e) Linear, simultaneous, and quadratic equations and inequalities; radical equations, logarithmic, and exponential equations ----- (1) — (2) — (3)
- f) Slopes, *y*-axis intercepts, and points of intersection of straight lines ----- (1) — (2) — (3)
- g) Equivalent representations of functions, including composite functions, as ordered pairs, tables, graphs, formulas, or words ----- (1) — (2) — (3)
- h) Properties of functions including domain and range ----- (1) — (2) — (3)

**B. Calculus**

- a) Limits of functions ----- (1) — (2) — (3)
- b) Conditions for continuity and differentiability of functions ----- (1) — (2) — (3)
- c) Differentiation of functions (including polynomial, exponential, logarithmic, trigonometric, rational, and radical functions); differentiation of products, quotients, and composite functions----- (1) — (2) — (3)
- d) Using derivatives to solve problems (e.g., in optimization and rates of change)----- (1) — (2) — (3)
- e) Using first and second derivatives to determine slope and local extrema of functions ----- (1) — (2) — (3)
- f) Using derivatives to determine points of inflection of functions ----- (1) — (2) — (3)
- g) Integrating functions (including polynomial, exponential, trigonometric, and rational functions); evaluating definite integrals, including calculation of areas ----- (1) — (2) — (3)

**C. Geometry**

- a) Properties of geometric figures in two and three dimensions----- (1) — (2) — (3)
- b) Properties of vectors and their sums and differences----- (1) — (2) — (3)
- c) Trigonometric properties of triangles (sine, cosine, and tangent)----- (1) — (2) — (3)
- d) Trigonometric functions and their graphs----- (1) — (2) — (3)

Question 22 asks about mathematics homework for the students in the TIMSS class. If you teach more than one advanced mathematics class, select one of your classes and keep it in mind as you answer question 22.

22

A. Do you assign mathematics homework to this class?

Fill in **one** circle only.

Yes --- ①

No --- ② 

(If No, go to question 23)

If Yes,

B. How often do you assign the following kinds of mathematics homework to this class?

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



- a) Doing problem/question sets-- ① — ② — ③
- b) Reading the textbook ----- ① — ② — ③
- c) Memorizing formulas and procedures ----- ① — ② — ③
- d) Gathering, analyzing, and reporting data ----- ① — ② — ③
- e) Finding one or more applications of the content covered ----- ① — ② — ③
- f) Working on projects ----- ① — ② — ③

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

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



- a) Correct assignments and give feedback to students ----- ① — ② — ③
- b) Have students correct 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



23

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  |

24

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

25

By the end of this school year, how many years will you have taught mathematics at the advanced level?

\_\_\_\_\_ years  
Number of years taught advanced mathematics

26

A. Are you a member of the National Council of Teachers of Mathematics (NCTM) or the Mathematics Association of America (MAA)?

Fill in **one** circle only.

- Yes --- ①
- No --- ②

B. In the past two years, have you regularly participated in activities sponsored by the National Council of Teachers of Mathematics (NCTM) or the Mathematics Association of America (MAA)?

Fill in **one** circle only.

- Yes --- ①
- No --- ②

27

In the past two years, have you taken part in any of the following activities in mathematics?

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

- |  | Yes | No |
|--|-----|----|
| a) I attended a workshop or conference -----                                 | ①   | ②  |
| b) I gave a presentation at a workshop or conference -----                   | ①   | ②  |
| c) I took part in an innovative project for curriculum and instruction ----- | ①   | ②  |

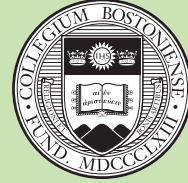
# Thank You

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

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BOSTON  
COLLEGE

**TIMSS**  
*Advanced*  
**2015**

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

# Teacher Questionnaire Advanced Mathematics



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for the Evaluation of  
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Place Label Here

School ID: \_\_\_\_\_

Class ID: \_\_\_\_\_

Teacher ID: \_\_\_\_\_

Link #: \_\_\_\_\_ Subject: \_\_\_\_\_

Checksum: \_\_\_\_\_

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

# Teacher Questionnaire

## Physics

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



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

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*U.S. participation in this study is sponsored by the National Center for Education Statistics (NCES), U.S. Department of Education, and authorized by the Education Science Reform Act of 2002 (20 U.S.C., § 9543). Your responses are protected by federal statute (20 U.S.C., § 9573). 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.*

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless such collection displays a valid OMB control number. The valid OMB control number for this voluntary information collection is 1850-0695. The time required to complete this information collection is estimated to average 30 minutes per respondent, including the time to review instructions, search existing data resources, gather the data needed, and complete and review the information collection. **If you have any comments concerning the accuracy of the time estimate(s), suggestions for improving the form, or comments or concerns regarding the status of your individual submission of this form, write directly to:** Trends in International Mathematics and Science Study (TIMSS), National Center for Education Statistics, U.S. Department of Education, 1990 K Street N.W., Washington, D.C. 20006. OMB No. 1850-0695, Approval Expires 9/30/2017.

Your school has agreed to participate in TIMSS Advanced 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 Advanced measures trends in student achievement in advanced mathematics and physics and studies differences in national education systems in order to help improve teaching and learning worldwide.

This questionnaire is addressed to teachers of twelfth-grade students who have taken or are taking a course in physics. It 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 the school system 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 which will be tested as part of TIMSS Advanced 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.

Since TIMSS Advanced 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 place it in the accompanying envelope and return it to the TIMSS school coordinator.

NCES is authorized to collect information from the questionnaire 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.

**1** \_\_\_\_\_

**A. What year did you start teaching?**

\_\_\_\_\_ *Please write in a year.*

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

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

**2** \_\_\_\_\_

**Are you female or male?**

*Fill in **one** circle only.*

Female --- (1)

Male --- (2)

**3** \_\_\_\_\_

**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)

**4** \_\_\_\_\_

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

*Fill in **one** circle only.*

Did not complete high school --- (1) 

**(If you have not completed more than high school, go to question 6)**

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

Bachelor's degree (4-year college program) --- (3)

Master's degree or professional degree (MD, DDS, lawyer, minister) --- (4)

Doctorate (Ph.D., or Ed.D.) --- (5)

**5** \_\_\_\_\_

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

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

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



**6**

How much do you agree with these statements about advanced mathematics and physics education within your school?

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

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
a) The school encourages students to study advanced mathematics and physics -----	①	②	③	④
b) The school promotes professional development for teachers of advanced mathematics and physics -----	①	②	③	④
c) The school provides students with information about career options in advanced mathematics and physics -----	①	②	③	④
d) Advanced mathematics and physics teachers are admired by other teachers in the school -----	①	②	③	④
e) Teachers have high expectations for student achievement in advanced mathematics and physics -----	①	②	③	④
f) Students at this school respect students who excel in advanced mathematics and physics -----	①	②	③	④
g) Parents expect their children to study advanced mathematics and physics -----	①	②	③	④

**7**

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.

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
a) This school is located in a safe neighborhood -----	①	②	③	④
b) I feel safe at this school -----	①	②	③	④
c) This school's security policies and practices are sufficient -----	①	②	③	④
d) The students behave in an orderly manner -----	①	②	③	④
e) The students are respectful of the teachers -----	①	②	③	④
f) The students respect school property -----	①	②	③	④
g) This school has clear rules about student conduct -----	①	②	③	④
h) This school's rules are enforced in a fair and consistent manner -----	①	②	③	④

8

In your current school, how severe is each problem?

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

	Not a problem	Minor problem	Moderate problem	Serious problem
a) The school building needs significant repair -----	①	②	③	④
b) Teachers do not have adequate workspace (e.g., for preparation, collaboration, or meeting with students) ----	①	②	③	④
c) Teachers do not have adequate instructional materials and supplies -----	①	②	③	④
d) The school classrooms are not cleaned often enough -----	①	②	③	④
e) The school classrooms need maintenance work -----	①	②	③	④
f) Teachers do not have adequate technological resources -----	①	②	③	④
g) Teachers do not have adequate support for using technology -----	①	②	③	④

9

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

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

	Very often	Often	Sometimes	Never or almost never
a) Discuss how to teach a particular topic -----	①	②	③	④
b) Collaborate in planning and preparing instructional materials -----	①	②	③	④
c) Share what I have learned about my teaching experiences -----	①	②	③	④
d) Visit another classroom to learn more about teaching ----	①	②	③	④
e) Work together to try out new ideas -----	①	②	③	④
f) Work as a group on implementing the curriculum -----	①	②	③	④
g) Work with teachers from other grades to ensure continuity in learning -----	①	②	③	④

10

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

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

- |   | Very often | Often | Sometimes | Never or almost never |
|---|------------|-------|-----------|-----------------------|
| a) I am content with my profession as a teacher -----       | ①          | ②     | ③         | ④                     |
| b) I am satisfied with being a teacher at this school ----- | ①          | ②     | ③         | ④                     |
| c) I find my work full of meaning and purpose -----         | ①          | ②     | ③         | ④                     |
| d) I am enthusiastic about my job -----                     | ①          | ②     | ③         | ④                     |
| e) My work inspires me -----                                | ①          | ②     | ③         | ④                     |
| f) I am proud of the work I do ---                          | ①          | ②     | ③         | ④                     |
| g) I am going to continue teaching for as long as I can --- | ①          | ②     | ③         | ④                     |

11

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

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

- |   | Agree a lot | Agree a little | Disagree a little | Disagree a lot |
|---|-------------|----------------|-------------------|----------------|
| a) There are too many students in the classes -----                             | ①           | ②              | ③                 | ④              |
| b) I have too much material to cover in class -----                             | ①           | ②              | ③                 | ④              |
| c) I have too many teaching hours -----   | ①           | ②              | ③                 | ④              |
| d) I need more time to prepare for class -----                                  | ①           | ②              | ③                 | ④              |
| e) I need more time to assist individual students -----                         | ①           | ②              | ③                 | ④              |
| f) I feel too much pressure from parents -----                                  | ①           | ②              | ③                 | ④              |
| g) I have difficulty keeping up with all of the changes to the curriculum ----- | ①           | ②              | ③                 | ④              |
| h) I have too many administrative tasks -----                                   | ①           | ②              | ③                 | ④              |

If you teach more than one advanced mathematics or physics class, select one of your classes and keep it in mind as you answer questions 12 through 15.

**12**

How many students are in this class?

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

**13**

How many students in this class experience difficulties understanding spoken English?

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

**14**

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

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

- Every or almost every lesson  
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)

**15**

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

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

- Not at all  
Some  
A lot
- a) Students lacking prerequisite mathematics knowledge or skills ----- (1) — (2) — (3)
- b) Students suffering from lack of basic nutrition ----- (1) — (2) — (3)
- c) Students suffering from not enough sleep ----- (1) — (2) — (3)
- d) Students with physical disabilities ----- (1) — (2) — (3)
- e) Students with mental, emotional, or psychological disabilities ----- (1) — (2) — (3)

If you teach more than one physics class, select one of your classes and keep it in mind as you answer questions 16 through 19.

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

\_\_\_\_\_ minutes per week  
 Write in the number of minutes per week.  
 Please convert the number of instructional hours or periods into minutes.

**17** How many minutes per week do you usually spend preparing to teach this class?

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

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

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

- 
- a) Inspiring students to learn physics ----- (1) — (2) — (3) — (4)
  - b) Explaining physics concepts or principles by doing physics experiments ----- (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 physics -- (1) — (2) — (3) — (4)
  - f) Assessing student comprehension of physics ----- (1) — (2) — (3) — (4)
  - g) Improving the understanding of struggling students ----- (1) — (2) — (3) — (4)
  - h) Making physics relevant to students ----- (1) — (2) — (3) — (4)
  - i) Developing students' higher-order thinking skills --- (1) — (2) — (3) — (4)
  - j) Teaching physics using inquiry methods ----- (1) — (2) — (3) — (4)

## 19

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

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

	Every or almost every lesson	About half the lessons	Some lessons	Never
a) Listen to me explain new physics content -----	①	②	③	④
b) Observe natural phenomena and describe what they see ---	①	②	③	④
c) Watch me demonstrate an experiment, investigation, or simulation -----	①	②	③	④
d) Design or plan experiments, investigations, or simulations -----	①	②	③	④
e) Conduct experiments, investigations, or simulations -----	①	②	③	④
f) Present data from experiments, investigations, or simulations -----	①	②	③	④
g) Interpret data from experiments, investigations, or simulations -----	①	②	③	④
h) Use evidence from experiments, investigations, or simulations to support conclusions -----	①	②	③	④
i) Read their textbooks or other resource materials -----	①	②	③	④
j) Have students memorize facts and principles -----	①	②	③	④
k) Use scientific formulas and laws to solve routine problems -----	①	②	③	④
l) Do field work outside of class -	①	②	③	④
m) Take a written test or quiz -----	①	②	③	④

Questions 20 - 21 ask about resources for teaching physics to the students in the TIMSS class. If you teach more than one physics class, select one of your classes and keep it in mind as you answer question 20 through 21.

**20**

**A. Do the students in this class have computers, tablets, calculators, or smartphones available to use during their physics lessons?**

Fill in **one** circle only.

Yes --- (1)

No --- (2) 

(If No, go to question 21)

**If Yes,**

**B. How often do you have the students do the following activities on computers, tablets, calculators, or smartphones during physics lessons?**

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

Every or almost every day

Once or twice a week

Once or twice a month

Never or almost never

- a) Read the textbook or course materials in digital format ----- (1) --- (2) --- (3) --- (4)
- b) Look up ideas and information ----- (1) --- (2) --- (3) --- (4)
- c) Process and analyze data ----- (1) --- (2) --- (3) --- (4)
- d) Draw graphs of functions ----- (1) --- (2) --- (3) --- (4)
- e) Solve equations ----- (1) --- (2) --- (3) --- (4)
- f) Manipulate algebraic expressions ----- (1) --- (2) --- (3) --- (4)
- g) Conduct modeling and simulations ----- (1) --- (2) --- (3) --- (4)
- h) Perform numerical integration ----- (1) --- (2) --- (3) --- (4)
- i) Do scientific procedures or experiments ----- (1) --- (2) --- (3) --- (4)

**21**

**A. Does your school have a physics laboratory?**

Fill in **one** circle only.

Yes --- (1)

No --- (2)

**B. Do teachers usually have assistance available when students are conducting physics experiments?**

Fill in **one** circle only.

Yes --- (1)

No --- (2)

Question 22 asks about the topics taught and the content covered in teaching physics to the students in the TIMSS class. If you teach more than one physics class, select one of your classes and keep it in mind as you answer question 22.

**22**

The following list includes the main topics addressed by the TIMSS Advanced physics 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 this year, 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.



**A. Mechanics and Thermodynamics**

- a) Applying Newton's laws and laws of motion ----- ① — ② — ③
- b) Forces, including frictional force, acting on a body ----- ① — ② — ③
- c) Forces acting on a body moving in a circular path; the body's centripetal acceleration, speed, and circling time ----- ① — ② — ③
- d) The law of gravitation in relation to the movement of celestial objects ----- ① — ② — ③
- e) Kinetic and potential energy; conservation of mechanical energy ----- ① — ② — ③
- f) The law of conservation of momentum; elastic and inelastic collisions ----- ① — ② — ③
- g) The first law of thermodynamics ----- ① — ② — ③
- h) Heat transfer and specific heat capacities ----- ① — ② — ③
- i) The law of ideal gases; expansion of solids and liquids in relation to temperature change ----- ① — ② — ③

**B. Electricity and Magnetism**

- a) Electrostatic attraction or repulsion between isolated charged particles – Coulomb's law ----- ① — ② — ③
- b) Charged particles in an electric field ----- ① — ② — ③
- c) Electrical circuits; using Ohm's law and Joule's law ----- ① — ② — ③
- d) Charged particles in a magnetic field ----- ① — ② — ③
- e) Relationship between magnetism and electricity; magnetic fields around electric conductors; electromagnetic induction ----- ① — ② — ③
- f) Faraday's and Lenz's laws of induction ----- ① — ② — ③

**C. Wave Phenomena and Atomic/Nuclear Physics**

- a) Mechanical waves; the relationship between speed, frequency, and wavelength ----- ① — ② — ③
- b) Electromagnetic radiation; wavelength and frequency of various types of waves (radio, infrared, visible light, x-rays, gamma rays) ----- ① — ② — ③
- c) Thermal radiation, temperature, and wavelength ----- ① — ② — ③
- d) Reflection, refraction, interference, and diffraction ----- ① — ② — ③
- e) The structure of the atom and its nucleus; atomic number and atomic mass; electromagnetic emission and absorption and the behavior of electrons ----- ① — ② — ③
- f) Wave-particle duality and the photoelectric effect; types of nuclear reactions and their role in nature (e.g., in stars) and society; radioactive isotopes ----- ① — ② — ③
- g) Mass-energy equivalence in nuclear reactions and particle transformations ----- ① — ② — ③



Question 23 asks about physics homework for the students in the TIMSS class. If you teach more than one physics class, select one of your classes and keep it in mind as you answer question 23.

23

A. Do you assign physics homework to this class?

Fill in **one** circle only.

Yes --- (1)

No --- (2) 

(If No, go to question 24)

If Yes,

B. How often do you assign the following kinds of physics homework to this class?

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



- a) Doing problem/question sets - (1) — (2) — (3)
- b) Reading the textbook ----- (1) — (2) — (3)
- c) Memorizing formulas and procedures ----- (1) — (2) — (3)
- d) Gathering, analyzing, and reporting data ----- (1) — (2) — (3)
- e) Finding one or more applications of the content covered ----- (1) — (2) — (3)
- f) Working on projects ----- (1) — (2) — (3)

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

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



- a) Correct assignments and give feedback to students ----- (1) — (2) — (3)
- b) Have students correct 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)

24

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) Physics content -----   | ①   | ②  |
| b) Physics pedagogy/instruction -----                            | ①   | ②  |
| c) Physics curriculum -----                                      | ①   | ②  |
| d) Integrating information technology into physics -----         | ①   | ②  |
| e) Improving students' critical thinking or inquiry skills ----- | ①   | ②  |
| f) Physics assessment -----                                      | ①   | ②  |
| g) Addressing individual students' needs -----                   | ①   | ②  |

25

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

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

26

By the end of this school year, how many years will you have taught physics at the advanced level?

\_\_\_\_\_ years  
Number of years taught physics

27

A. Are you a member of the National Science Teachers Association (NSTA) or the American Association of Physics Teachers (AAPT)?

Fill in **one** circle only.

- Yes --- ①
- No --- ②

B. In the past two years, have you regularly participated in activities sponsored by the National Science Teachers Association (NSTA) or the American Association of Physics Teachers (AAPT)?

Fill in **one** circle only.

- Yes --- ①
- No --- ②

28

In the past two years, have you taken part in any of the following activities in physics?

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

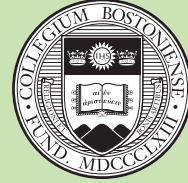
- |  | Yes | No |
|--|-----|----|
| a) I attended a workshop or conference -----                                 | ①   | ②  |
| b) I gave a presentation at a workshop or conference -----                   | ①   | ②  |
| c) I took part in an innovative project for curriculum and instruction ----- | ①   | ②  |

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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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BOSTON  
COLLEGE

**TIMSS**  
*Advanced*  
**2015**

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

# Teacher Questionnaire

## Physics



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Place Label Here

School ID \_\_\_\_\_

Checksum \_\_\_\_\_

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

# School Questionnaire

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



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

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*U.S. participation in this study is sponsored by the National Center for Education Statistics (NCES), U.S. Department of Education, and authorized by the Education Science Reform Act of 2002 (20 U.S.C., § 9543). Your responses are protected by federal statute (20 U.S.C., § 9573). 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.*

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless such collection displays a valid OMB control number. The valid OMB control number for this voluntary information collection is 1850-0695. The time required to complete this information collection is estimated to average 30 minutes per respondent, including the time to review instructions, search existing data resources, gather the data needed, and complete and review the information collection. **If you have any comments concerning the accuracy of the time estimate(s), suggestions for improving the form, or comments or concerns regarding the status of your individual submission of this form, write directly to:** Trends in International Mathematics and Science Study (TIMSS), National Center for Education Statistics, U.S. Department of Education, 1990 K Street N.W., Washington, D.C. 20006. OMB No. 1850-0695, Approval Expires 9/30/2017.

Your school has agreed to participate in TIMSS Advanced 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 Advanced measures trends in student achievement in advanced mathematics and physics and studies differences in national education systems in order to help improve teaching and learning 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.

Since TIMSS Advanced 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 study.

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 place it in the accompanying envelope and return it to the TIMSS school coordinator.

NCES is authorized to collect information from the questionnaire 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 ADVANCED 2015

**1** \_\_\_\_\_

What is the total enrollment of students in your school as of March 1, 2015?

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

**2** \_\_\_\_\_

What is the total enrollment of twelfth-grade students in your school as of March 1, 2015?

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

**3** \_\_\_\_\_

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

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

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

**4** \_\_\_\_\_

Around the first of October 2014, what percentage of students at this school were eligible to receive free or reduced-price lunches through the National School Lunch Program?

\_\_\_\_\_ percentage of students  
Write in the number.

**5** \_\_\_\_\_

A. 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
- 51 to 75% --- ③
- 26 to 50% --- ④
- 25% or less --- ⑤

B. Of the students currently enrolled in your school, what percentage has been identified as limited-English proficient (LEP)/English language learners (ELL)?

Fill in **one** circle only.

- 0% -- ①
- 1 - 5% -- ②
- 6 - 10% -- ③
- 11 - 25% -- ④
- 26 - 50% -- ⑤
- 51 - 75% -- ⑥
- 76 - 90% -- ⑦
- Over 90% -- ⑧



**6****What type of school is this?***Fill in **one** circle only.*

Regular public school -- ①

A regular public school with  
a magnet program -- ②A magnet school or school with a  
special program emphasis (e.g.,  
Montessori, science/math school,  
performing arts school, talented/  
gifted school, foreign language  
immersion school, etc.) -- ③Special education: a school that  
primarily serves students with  
disabilities -- ④Alternative: a school designed to  
address the needs of students,  
typically at risk of educational  
failure, which cannot be met in  
regular schools -- ⑤

Vocational -- ⑥

Charter School -- ⑦

Private (independent) -- ⑧

Private (religiously affiliated) -- ⑨

Other -- ⑩

**7****A. 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

30,001 to 50,000 people --- ④

15,001 to 30,000 people --- ⑤

3,001 to 15,000 people --- ⑥

3,000 people or fewer --- ⑦

**B. Which best describes the immediate area in which your school is located?***Fill in **one** circle only.*

Urban—Densely populated --- ①

Suburban—On fringe or  
outskirts of urban area --- ②

Medium size city or large town --- ③

Small town or village --- ④

Remote rural --- ⑤

**8****What percentage of twelfth-grade students in your school are taking each of the following?***Write in the percent.*a) Advanced Mathematics, such  
as calculus courses ----- %b) Physics, i.e., advanced physics  
such as college preparatory  
physics or AP Physics ----- %**9****Does your school have a special program or track to prepare students for courses such as calculus or advanced physics?***Fill in **one** circle only.*

Yes --- ①

No --- ②

10

For the twelfth-grade students in your school:

A. How many days per year is your school open for instruction?

\_\_\_\_\_ days  
Write in the number.

B. What is the total instructional time, excluding breaks, in a typical day?

\_\_\_\_\_ hours \_\_\_\_\_ minutes  
Write in the number of hours and minutes per day.

C. In one calendar week, how many days is the school open for instruction?

Fill in **one** circle only.

- 6 days--- ①
- 5 1/2 days--- ②
- 5 days--- ③
- 4 1/2 days--- ④
- 4 days--- ⑤
- Other--- ⑥

11

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

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

	Not at all	A little	Some	A lot
<b>A. General School Resources</b>				
a) Instructional materials (e.g., textbooks) -----	①	②	③	④
b) Supplies (e.g., papers, pencils, materials) -----	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) Technologically competent staff -----	①	②	③	④
g) Audio-visual resources for delivery of instruction (e.g., interactive white boards, digital projectors) -----	①	②	③	④
h) Computer technology for teaching and learning (e.g., computers or tablets for student use) -----	①	②	③	④
i) Resources for students with disabilities -----	①	②	③	④

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

	Not at all	A little	Some	A lot
<b>B. Resources for Advanced Mathematics Instruction</b>				
a) Teachers with a specialization in advanced mathematics -----	①	②	③	④
b) Computer software/ applications for advanced mathematics instruction -----	①	②	③	④
c) Library resources relevant to advanced mathematics instruction -----	①	②	③	④
d) Calculators for advanced mathematics instruction -----	①	②	③	④
<b>C. Resources for Physics Instruction</b>				
a) Teachers with a specialization in physics -----	①	②	③	④
b) Computer software/ applications for physics instruction -----	①	②	③	④
c) Library resources relevant to physics instruction -----	①	②	③	④
d) Calculators for physics instruction -----	①	②	③	④
e) Physics equipment and materials for experiments -----	①	②	③	④

**12**

How much do you agree with these statements about advanced mathematics and physics education within your school?

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

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
a) The school encourages students to study advanced mathematics and physics -----	①	②	③	④
b) The school promotes professional development for teachers of advanced mathematics and physics -----	①	②	③	④
c) The school provides students with information about career options in advanced mathematics and physics -----	①	②	③	④
d) The school has initiatives to promote student interest in advanced mathematics and physics (e.g., student clubs, competitions) -----	①	②	③	④
e) The school has partnership initiatives with industry/businesses in advanced mathematics and physics -----	①	②	③	④
f) Advanced mathematics and physics teachers are admired by other teachers in the school -----	①	②	③	④
g) Students at this school respect students who excel in advanced mathematics and physics -----	①	②	③	④

**13**

To what degree is each of the following a problem among twelfth-grade students in your school?

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

	Not a problem	Minor problem	Moderate problem	Serious problem
a) Arriving late at school -----	①	②	③	④
b) Absenteeism (i.e., unjustified absences) -----	①	②	③	④
c) Classroom disturbance -----	①	②	③	④
d) Cheating -----	①	②	③	④
e) Profanity -----	①	②	③	④
f) Vandalism -----	①	②	③	④
g) Theft -----	①	②	③	④
h) Intimidation or verbal abuse among students (including texting, emailing, etc.) -----	①	②	③	④
i) Physical injury to other students -----	①	②	③	④
j) Intimidation or verbal abuse of teachers or staff (including texting, emailing, etc.) -----	①	②	③	④
k) Physical injury to teachers or staff -----	①	②	③	④

14

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

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

Were no vacancies in this subject  
Easy to fill vacancies  
Somewhat difficult  
Very difficult

a) Advanced mathematics, such as calculus ----- (1) — (2) — (3) — (4)

b) Advance physics, such as college preparatory physics or AP Physics ----- (1) — (2) — (3) — (4)

c) Computer science/information technology ----- (1) — (2) — (3) — (4)

d) Other ----- (1) — (2) — (3) — (4)

15

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

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

Yes  
No

a) Advanced mathematics, such as calculus ----- (1) — (2)

b) Advance physics, such as college preparatory physics or AP Physics ----- (1) — (2)

c) Computer science/information technology ----- (1) — (2)

d) Other ----- (1) — (2)

16

To what degree is each of the following a problem among teachers in your school?

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

Not a problem  
Minor problem  
Moderate problem  
Serious problem

a) Arriving late or leaving early -- (1) — (2) — (3) — (4)

b) Absenteeism ----- (1) — (2) — (3) — (4)

17

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

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

18

By the end of this school year, how many years will you have been a principal at this school?

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

19

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

Fill in only **one** circle only.

Did not complete Bachelor's degree (4-year college program) --- (1)

Bachelor's degree (4-year college program) --- (2)

Master's degree or professional degree (MD, DDS, lawyer, minister) --- (3)

Doctorate (Ph.D., or Ed.D.) --- (4)

20

Do you hold the following degrees in educational leadership?

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

Yes  
No

a) Master's degree or professional degree (MD, DDS, lawyer, minister) ----- (1) — (2)

b) Doctorate (Ph.D., or Ed.D.) ----- (1) — (2)

# Thank You

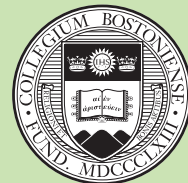
**Thank you for the thought, time, and effort you have put into completing this questionnaire.**

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BOSTON  
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# TIMSS *Advanced* 2015

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

# School Questionnaire



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