

Appendix C1: TIMSS and TIMSS Advanced 2015 Main Study Questionnaires

The United States did not participate in the TIMSS 2015 field test at grades 4 and 8; therefore, the final international versions of TIMSS 2015 field test questionnaires are included here for review. The TIMSS 2015 main study questionnaires will be subsets of these final field test questionnaires, with possible edits and the addition of the U.S. adaptations described in Appendix C2 and a small set of questions that were added during the international meeting of TIMSS national research coordinators in mid-August, 2014, described in Appendix C3.

The final U.S.-adapted TIMSS Advanced Field Test background questionnaires were submitted on January 31, 2014, as *TIMSS:2015 Field Test and Recruitment for Field Test and Main Study – Final Questionnaire Versions Change Request* (OMB# 1850-0695 v.4). These U.S. national versions reflect all U.S. adaptations that have been made to the final international field test versions of the TIMSS Advanced instruments. The student background questionnaires appear in the back of each student’s test booklet. Because the cognitive items must be kept secure, the two versions that appear here include a blank page after the cover of the student test booklet. This blank page replaces the entirety of the cognitive instrument.

The international versions of the TIMSS and TIMSS Advanced 2015 main study questionnaires will be finalized in late September 2014. At that time, NCES will propose to the International Association for the Evaluation of Educational Achievement (IEA) adaptations to the U.S. context (e.g., U.S. spelling and other conventions). The final (approved by IEA) TIMSS and TIMSS Advanced 2015 main study questionnaires including the U.S. adaptations will become available in October 2014, when NCES will submit them to OMB as a change request (83C).

The following statements will appear on the front cover of each questionnaire (the phrase “*search existing data resources, gather the data needed*” will not be included on the student questionnaire):

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 Sciences Reform Act of 2002 (20 U.S.C., § 9543). Your responses are protected by federal statute (20 U.S.C., § 9573) and 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 XX 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 xx/xx/2017.

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Identification Label

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

Student Questionnaire

<Grade 4>

<TIMSS National Research Center Name>

<Address>

Field Test Version



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 **one** circle only.*

Yes --

No --

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

Example 2

How often do you do these things?

*Fill **one** circle for each line.*

- | | 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 type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b) I play sports | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c) I ride a skateboard | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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 **one** circle for each line.

| | Agree a lot | Agree a little | Disagree a little | Disagree a lot |
|--|----------------|-------------------|----------------------|-------------------|
| a) Watching movies is fun | ↓ ○ | ↓ ○ | ↓ ○ | ↓ ○ |
| b) I like eating ice cream | ○ | ○ | ○ | ○ |
| c) I do not like waking up early | ○ | ○ | ○ | ○ |
| d) I enjoy doing chores | ○ | ○ | ○ | ○ |

- Read each question carefully, and pick the answer you think is best.
- Fill in the circle next to or under your answer.
- If you decide to change your answer, draw an **X** through your first answer, like this: ~~○~~. Then, fill in the circle next to or under your new answer.
- Ask for help if you do not understand something or are not sure how to answer.

G1 _____

Are you a girl or a boy?

*Fill **one** circle only.*

Girl --

Boy --

G2 _____

When were you born?

Fill the circles next to the month and year you were born.

a) Month

January --

February --

March --

April --

May --

June --

July --

August --

September --

October --

November --

December --

b) Year

2002 --

2003 --

2004 --

2005 --

2006 --

2007 --

2008 --

Other --

G3

How often do you speak <language of test> at home?

Fill one circle only.

I always speak
<language of test> at home --

I almost always speak
<language of test> at home --

I sometimes speak <language
of test> and sometimes speak
another language at home --

I never speak <language
of test> at home --

G4

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

Fill **one** circle only.

None or very few (0–10 books) --

This shows 10 books



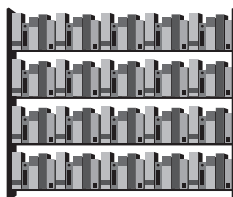
Enough to fill one shelf (11–25 books) --

This shows 25 books



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

This shows 100 books



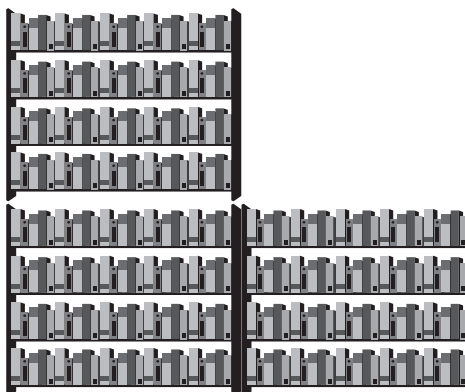
Enough to fill two bookcases
(101–200 books) --

This shows 200 books



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

This shows more than 200 books



G5

Do you have any of these things at your home?

Fill **one** circle for each line.

- | | Yes | No |
|--|-----------------------|-----------------------|
| | ↓ | ↓ |
| a) A computer or tablet (such as iPad) of your own | <input type="radio"/> | <input type="radio"/> |
| b) A computer or tablet (such as iPad) that is shared with other people at home..... | <input type="radio"/> | <input type="radio"/> |
| c) Study desk/table for your use | <input type="radio"/> | <input type="radio"/> |
| d) Your own room..... | <input type="radio"/> | <input type="radio"/> |
| e) Internet connection..... | <input type="radio"/> | <input type="radio"/> |
| f) Your own mobile phone | <input type="radio"/> | <input type="radio"/> |
| g) A gaming system (e.g., PlayStation®, Wii®, XBox®)..... | <input type="radio"/> | <input type="radio"/> |
| h) <country-specific indicator of wealth> | <input type="radio"/> | <input type="radio"/> |
| i) <country-specific indicator of wealth> | <input type="radio"/> | <input type="radio"/> |
| j) <country-specific indicator of wealth> | <input type="radio"/> | <input type="radio"/> |
| k) <country-specific indicator of wealth> | <input type="radio"/> | <input type="radio"/> |

G6

How often do you use a computer or tablet (such as iPad) in each of these places?

Fill **one** circle for each line.

| | Every day or almost every day | Once or twice a week | Once or twice a month | Never or almost never |
|---------------------------|-------------------------------------|----------------------------|-----------------------------|-----------------------------|
| a) At home | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b) At school | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c) Some other place | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

G7

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

Fill **one** circle for each line.

| | Agree a lot | Agree a little | Disagree a little | Disagree a lot |
|--|-----------------------|-----------------------|-----------------------|-----------------------|
| a) I like being in school | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b) I feel safe when I am at school | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c) I feel like I belong at this school | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| d) I like to see my classmates at school | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| e) I like to go to school to see my friends | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| f) Teachers at my school are fair to me | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| g) My teachers respect my ideas | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| h) I am proud to go to this school | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| i) I learn a lot in school | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

G8

During this year, how often have other students from your school done any of the following things to you (in person or through text messages, e-mails, or the Internet)?

Fill **one** circle for each line.

| | 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 | ↓ ○ | ↓ ○ | ↓ ○ | ↓ ○ |
| b) Left me out of their games or activities | ○ | ○ | ○ | ○ |
| c) Spread lies about me | ○ | ○ | ○ | ○ |
| d) Stole something from me | ○ | ○ | ○ | ○ |
| e) Hit or hurt me (e.g., shoving, hitting, kicking) | ○ | ○ | ○ | ○ |
| f) Made me do things I didn't want to do | ○ | ○ | ○ | ○ |
| g) Shared embarrassing information about me..... | ○ | ○ | ○ | ○ |
| h) Threatened me..... | ○ | ○ | ○ | ○ |

MS1

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

Fill **one** circle for each line.

| | Agree a lot | Agree a little | Disagree a little | Disagree a lot |
|---|-----------------------|-----------------------|-----------------------|-----------------------|
| a) I enjoy learning mathematics | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b) I wish I did not have to study mathematics | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c) Mathematics is boring | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| d) I learn many interesting things in mathematics | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| e) I like mathematics | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| f) It is important to do well in mathematics | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| g) I like any schoolwork that involves numbers | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| h) I like to solve mathematics problems | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| i) I look forward to mathematics lessons | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| j) Mathematics is one of my favorite subjects | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| k) Learning mathematics is important for my future | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

MS2

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

Fill **one** circle for each line.

| | Agree a lot | Agree a little | Disagree a little | Disagree a lot |
|--|----------------|-------------------|----------------------|-------------------|
| a) I know what my teacher expects me to do | ↓ ○ | ↓ ○ | ↓ ○ | ↓ ○ |
| b) My teacher is easy to understand -- | ○ | ○ | ○ | ○ |
| c) I am interested in what my teacher says | ○ | ○ | ○ | ○ |
| d) My teacher gives me interesting things to do | ○ | ○ | ○ | ○ |
| e) My teacher asks questions that make me think | ○ | ○ | ○ | ○ |
| f) My teacher has clear answers to my questions | ○ | ○ | ○ | ○ |
| g) My teacher links new lessons to what I already know | ○ | ○ | ○ | ○ |
| h) My teacher is good at explaining mathematics | ○ | ○ | ○ | ○ |

MS2 (continued)

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

Fill **one** circle for each line.

- | | Agree
a lot | Agree
a little | Disagree
a little | Disagree
a lot |
|---|----------------|-------------------|----------------------|-------------------|
| i) My teacher expects me to succeed in mathematics | ↓ ○ | ↓ ○ | ↓ ○ | ↓ ○ |
| j) My teacher lets me show what I have learned | ○ | ○ | ○ | ○ |
| k) My teacher wants me to keep working on mathematics problems until I solve them | ○ | ○ | ○ | ○ |
| l) My teacher does a variety of things to help us learn | ○ | ○ | ○ | ○ |
| m) My teacher tells me how to do better when I make a mistake | ○ | ○ | ○ | ○ |
| n) My teacher notices when I do not understand something | ○ | ○ | ○ | ○ |
| o) My teacher listens to what I have to say | ○ | ○ | ○ | ○ |

MS3

How much do you agree with these statements about mathematics?

Fill **one** circle for each line.

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

MS4

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

*Fill **one** circle for each line.*

| | Agree a lot | Agree a little | Disagree a little | Disagree a lot |
|--|----------------|-------------------|----------------------|-------------------|
| a) I enjoy learning science | ↓ ○ | ↓ ○ | ↓ ○ | ↓ ○ |
| b) I wish I did not have to study science | ○ | ○ | ○ | ○ |
| c) I read about science in my spare time | ○ | ○ | ○ | ○ |
| d) Science is boring | ○ | ○ | ○ | ○ |
| e) I learn many interesting things in science | ○ | ○ | ○ | ○ |
| f) I like science | ○ | ○ | ○ | ○ |
| g) It is important to do well in science | ○ | ○ | ○ | ○ |
| h) I look forward to learning science in school | ○ | ○ | ○ | ○ |
| i) Science teaches me how things in the world work | ○ | ○ | ○ | ○ |
| j) I like to do science experiments | ○ | ○ | ○ | ○ |
| k) Science is one of my favorite subjects | ○ | ○ | ○ | ○ |
| l) Learning science is important for my future | ○ | ○ | ○ | ○ |

MS5

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

Fill **one** circle for each line.

| | Agree a lot | Agree a little | Disagree a little | Disagree a lot |
|--|-----------------------|-----------------------|-----------------------|-----------------------|
| a) I know what my teacher expects me to do | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b) My teacher is easy to understand .. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c) I am interested in what my teacher says | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| d) My teacher gives me interesting things to do | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| e) My teacher asks questions that make me think | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| f) My teacher has clear answers to my questions | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| g) My teacher links new lessons to what I already know | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| h) My teacher is good at explaining science | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

MS5 (continued)

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

Fill **one** circle for each line.

| | Agree a lot | Agree a little | Disagree a little | Disagree a lot |
|---|----------------|-------------------|----------------------|-------------------|
| i) My teacher expects me to succeed in science | ↓ ○ | ↓ ○ | ↓ ○ | ↓ ○ |
| j) My teacher lets me show what I have learned | ○ | ○ | ○ | ○ |
| k) My teacher wants me to keep working on science problems until I solve them | ○ | ○ | ○ | ○ |
| l) My teacher does a variety of things to help us learn | ○ | ○ | ○ | ○ |
| m) My teacher tells me how to do better when I make a mistake | ○ | ○ | ○ | ○ |
| n) My teacher notices when I do not understand something | ○ | ○ | ○ | ○ |
| o) My teacher listens to what I have to say | ○ | ○ | ○ | ○ |

MS6

How much do you agree with these statements about science?

Fill **one** circle for each line.

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



Thank You!

Thank you for filling out the questionnaire!



BOSTON
COLLEGE

TIMSS
2015

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

Student Questionnaire

<Grade 4>

Field Test Version



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International Association
for the Evaluation of
Educational Achievement

timssandpirls.bc.edu



Identification Label

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

Student Questionnaire

<Grade 8>

<TIMSS National Research Center Name>

<Address>

Field Test Version



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

© IEA, 2013

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. Shade in the circle 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 one circle only.

Yes --

No --

Example 2

How often do you do these things?

Fill one circle for each line.

| | 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 **one** circle for each line.

| | Agree a lot | Agree a little | Disagree a little | Disagree a lot |
|--|----------------|-------------------|----------------------|-------------------|
| a) Watching movies is fun | ○ | ● | ○ | ○ |
| b) I like eating ice cream | ● | ○ | ○ | ○ |
| c) I do not like waking up early | ○ | ○ | ● | ○ |
| d) I enjoy doing chores | ○ | ○ | ○ | ● |

- Read each question carefully, and pick the answer you think is best.
- Fill in the circle next to or under your answer.
- If you decide to change your answer, draw an **X** through your first answer, like this: ~~○~~. Then, fill in the circle next to or under your new answer.
- Ask for help if you do not understand something or are not sure how to answer.

1

Are you a girl or a boy?

*Fill **one** circle only.*

Girl --

Boy --

2

When were you born?

Fill the circles next to the month and year you were born.

a) Month

b) Year

January --

1997 --

February --

1998 --

March --

1999 --

April --

2000 --

May --

2001 --

June --

2002 --

July --

2003 --

August --

2004 --

September --

2005 --

October --

Other --

November --

December --

3

How often do you speak <language of test> at home?

Fill one circle only.

Always --

Almost always --

Sometimes --

Never --

4

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

Fill one circle only.

None or very few
(0–10 books) --

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

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

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

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

5

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 **one** circle only.*

None --

1-3 devices --

4-6 devices --

7-10 devices --

More than 10 devices --

6

Do you have any of these things at your home?

*Fill **one** circle for each line.*

- | | Yes | No |
|--|-----------------------|-----------------------|
| | ↓ | ↓ |
| a) A computer or tablet (such as iPad) of your own | <input type="radio"/> | <input type="radio"/> |
| b) A computer or tablet (such as iPad) that is shared with other people at home..... | <input type="radio"/> | <input type="radio"/> |
| c) Study desk/table for your use | <input type="radio"/> | <input type="radio"/> |
| d) Your own room..... | <input type="radio"/> | <input type="radio"/> |
| e) Internet connection..... | <input type="radio"/> | <input type="radio"/> |
| f) Your own mobile phone | <input type="radio"/> | <input type="radio"/> |
| g) A gaming system (e.g., PlayStation®, Wii®, Xbox®)..... | <input type="radio"/> | <input type="radio"/> |
| h) <country-specific indicator of wealth>..... | <input type="radio"/> | <input type="radio"/> |
| i) <country-specific indicator of wealth> | <input type="radio"/> | <input type="radio"/> |
| j) <country-specific indicator of wealth> | <input type="radio"/> | <input type="radio"/> |
| k) <country-specific indicator of wealth> | <input type="radio"/> | <input type="radio"/> |

7

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

*Fill **one** circle only.*

- Some <Primary education— ISCED Level 1 or
Lower secondary education—ISCED Level 2>
or did not go to school---
- <Lower secondary education—ISCED Level 2>---
- <Upper secondary education—ISCED Level 3>---
- <Post-secondary, non-tertiary
education—ISCED Level 4>---
- <Short-cycle tertiary education—ISCED Level 5>---
- <Bachelor's or equivalent level—ISCED Level 6>---
- <Master's or equivalent level—ISCED Level 7>---
- <Doctor or equivalent level—ISCED Level 8>---
- I don't know---

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

*Fill **one** circle only.*

- Some <Primary education— ISCED Level 1 or
Lower secondary education—ISCED Level 2>
or did not go to school---
- <Lower secondary education—ISCED Level 2>---
- <Upper secondary education—ISCED Level 3>---
- <Post-secondary, non-tertiary
education—ISCED Level 4>---
- <Short-cycle tertiary education—ISCED Level 5>---
- <Bachelor's or equivalent level—ISCED Level 6>---
- <Master's or equivalent level—ISCED Level 7>---
- <Doctor or equivalent level—ISCED Level 8>---
- I don't know---

8

How far in your education do you expect to go?

Fill one circle only.

Finish <Lower secondary
education—ISCED Level 2>

Finish <Upper secondary
education—ISCED Level 3>

Finish <Post-secondary, non-tertiary
education—ISCED Level 4>

Finish <Short-cycle tertiary
education—ISCED Level 5>

Finish <Bachelor's or equivalent
level—ISCED Level 6>

Finish <Master's or equivalent
level—ISCED Level 7>

Finish <Doctor or equivalent
level—ISCED Level 8>

9

**A. Was your mother <or stepmother or female guardian>
born in <country>?**

Fill one circle only.

Yes --

No --

**B. Was your father <or stepfather or male guardian> born in
<country>?**

Fill one circle only.

Yes --

No --

10

A. Were you born in <country>?

Fill one circle only.

Yes -- 

(If Yes, go to #11)

No --

If No,

B. If you were not born in <country>, how old were you when you came to <country>?

Fill one circle only.

Older than 10 years old --

5 to 10 years old --

Younger than 5 years old --

11

How often do you use a computer or tablet (such as iPad) in each of these places?

Fill one circle for each line.

| | Every day or almost every day | Once or twice a week | Once or twice a month | Never or almost never |
|---------------------------|-------------------------------------|----------------------------|-----------------------------|-----------------------------|
| a) At home | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b) At school | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c) Some other place | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

12

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

*Fill **one** circle for each line.*

- | | Yes | No |
|--|-----------------------|-----------------------|
| | ↓ | ↓ |
| a) Access the textbook or other course materials----- | <input type="radio"/> | <input type="radio"/> |
| b) Access assignments posted online by my teacher----- | <input type="radio"/> | <input type="radio"/> |
| c) Collaborate with classmates on assignments or projects----- | <input type="radio"/> | <input type="radio"/> |
| d) Communicate with the teacher----- | <input type="radio"/> | <input type="radio"/> |
| e) Find information, articles, or tutorials to aid in understanding mathematics----- | <input type="radio"/> | <input type="radio"/> |
| f) Find information, articles, or tutorials to aid in understanding science----- | <input type="radio"/> | <input type="radio"/> |

13

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

Fill **one** circle for each line.

| | Agree a lot | Agree a little | Disagree a little | Disagree a lot |
|--|-----------------------|-----------------------|-----------------------|-----------------------|
| a) I like being in school | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b) I feel safe when I am at school | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c) I feel like I belong at this school | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| d) I like to see my classmates at school | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| e) I like to go to school to see my friends | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| f) Teachers at my school are fair to me | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| g) My teachers respect my ideas | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| h) I am proud to go to this school | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| i) I learn a lot in school | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

14

During this year, how often have other students from your school done any of the following things to you (in person or through text messages, e-mails, or the Internet)?

Fill one circle for each line.

| | 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 | ↓ ○ | ↓ ○ | ↓ ○ | ↓ ○ |
| b) Left me out of their games or activities | ○ | ○ | ○ | ○ |
| c) Spread lies about me | ○ | ○ | ○ | ○ |
| d) Stole something from me | ○ | ○ | ○ | ○ |
| e) Hit or hurt me (<i>e.g., shoving, hitting, kicking</i>) | ○ | ○ | ○ | ○ |
| f) Made me do things I didn't want to do | ○ | ○ | ○ | ○ |
| g) Shared embarrassing information about me | ○ | ○ | ○ | ○ |
| h) Posted embarrassing things about me online | ○ | ○ | ○ | ○ |
| i) Threatened me..... | ○ | ○ | ○ | ○ |

15

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

Fill **one** circle for each line.

| | Agree a lot | Agree a little | Disagree a little | Disagree a lot |
|--|-----------------------|-----------------------|-----------------------|-----------------------|
| a) I enjoy learning mathematics ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b) I wish I did not have to study mathematics ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c) Mathematics is boring ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| d) I learn many interesting things in mathematics ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| e) I like mathematics ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| f) It is important to do well in mathematics ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| g) I like any schoolwork that involves numbers ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| h) I like to solve mathematics problems ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| i) I look forward to mathematics class ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| j) Mathematics is one of my favorite subjects ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

16

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

Fill **one** circle for each line.

| | Agree a lot | Agree a little | Disagree a little | Disagree a lot |
|--|----------------|-------------------|----------------------|-------------------|
| a) I know what my teacher expects me to do | ↓ ○ | ↓ ○ | ↓ ○ | ↓ ○ |
| b) My teacher is easy to understand -- | ○ | ○ | ○ | ○ |
| c) I am interested in what my teacher says | ○ | ○ | ○ | ○ |
| d) My teacher gives me interesting things to do | ○ | ○ | ○ | ○ |
| e) My teacher asks questions that make me think | ○ | ○ | ○ | ○ |
| f) My teacher has clear answers to my questions | ○ | ○ | ○ | ○ |
| g) My teacher links new lessons to what I already know | ○ | ○ | ○ | ○ |
| h) My teacher is good at explaining mathematics | ○ | ○ | ○ | ○ |

16 (continued)

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

Fill **one** circle for each line.

- | | Agree
a lot | Agree
a little | Disagree
a little | Disagree
a lot |
|---|----------------|-------------------|----------------------|-------------------|
| i) My teacher expects me to succeed in mathematics | ○ | ○ | ○ | ○ |
| j) My teacher lets me show what I have learned | ○ | ○ | ○ | ○ |
| k) My teacher wants me to keep working on mathematics problems until I solve them | ○ | ○ | ○ | ○ |
| l) My teacher does a variety of things to help us learn | ○ | ○ | ○ | ○ |
| m) My teacher tells me how to do better when I make a mistake | ○ | ○ | ○ | ○ |
| n) My teacher notices when I do not understand something | ○ | ○ | ○ | ○ |
| o) My teacher listens to what I have to say | ○ | ○ | ○ | ○ |

17

How much do you agree with these statements about mathematics?

Fill **one** circle for each line.

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

18

How much do you agree with these statements about mathematics?

Fill **one** circle for each line.

| | Agree a lot | Agree a little | Disagree a little | Disagree a lot |
|--|----------------|-------------------|----------------------|-------------------|
| a) I think learning mathematics will help me in my daily life | ↓ ○ | ↓ ○ | ↓ ○ | ↓ ○ |
| b) I need mathematics to learn other school subjects | ○ | ○ | ○ | ○ |
| c) I need to do well in mathematics to get into the <university> of my choice | ○ | ○ | ○ | ○ |
| d) I need to do well in mathematics to get the job I want | ○ | ○ | ○ | ○ |
| e) I would like a job that involves using mathematics | ○ | ○ | ○ | ○ |
| f) It is important to learn about mathematics to get ahead in the world | ○ | ○ | ○ | ○ |
| g) Learning mathematics will give me more job opportunities when I am an adult | ○ | ○ | ○ | ○ |
| h) My parents think that it is important that I do well in mathematics | ○ | ○ | ○ | ○ |
| i) It is important to do well in my mathematics class | ○ | ○ | ○ | ○ |

19

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

Fill **one** circle for each line.

| | Agree a lot | Agree a little | Disagree a little | Disagree a lot |
|---|-----------------------|-----------------------|-----------------------|-----------------------|
| a) I enjoy learning science | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b) I wish I did not have to study science | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c) I read about science in my spare time | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| d) Science is boring | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| e) I learn many interesting things in science | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| f) I like science | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| g) It is important to do well in science | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| h) I look forward to learning science in school | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| i) Science teaches me how things in the world work | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| j) I like to conduct science experiments | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| k) Science is one of my favorite subjects | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

20

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

Fill **one** circle for each line.

| | Agree a lot | Agree a little | Disagree a little | Disagree a lot |
|--|----------------|-------------------|----------------------|-------------------|
| a) I know what my teacher expects me to do | ○ | ○ | ○ | ○ |
| b) My teacher is easy to understand .. | ○ | ○ | ○ | ○ |
| c) I am interested in what my teacher says | ○ | ○ | ○ | ○ |
| d) My teacher gives me interesting things to do | ○ | ○ | ○ | ○ |
| e) My teacher asks questions that make me think | ○ | ○ | ○ | ○ |
| f) My teacher has clear answers to my questions | ○ | ○ | ○ | ○ |
| g) My teacher links new lessons to what I already know | ○ | ○ | ○ | ○ |
| h) My teacher is good at explaining science | ○ | ○ | ○ | ○ |

20 (continued)

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

Fill **one** circle for each line.

| | Agree a lot | Agree a little | Disagree a little | Disagree a lot |
|---|----------------|-------------------|----------------------|-------------------|
| i) My teacher expects me to succeed in science | ↓ ○ | ↓ ○ | ↓ ○ | ↓ ○ |
| j) My teacher lets me show what I have learned | ○ | ○ | ○ | ○ |
| k) My teacher wants me to keep working on science problems until I solve them | ○ | ○ | ○ | ○ |
| l) My teacher does a variety of things to help us learn | ○ | ○ | ○ | ○ |
| m) My teacher tells me how to do better when I make a mistake | ○ | ○ | ○ | ○ |
| n) My teacher notices when I do not understand something | ○ | ○ | ○ | ○ |
| o) My teacher listens to what I have to say | ○ | ○ | ○ | ○ |

21

How much do you agree with these statements about science?

*Fill **one** circle for each line.*

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

22

How much do you agree with these statements about science?

Fill **one** circle for each line.

- | | Agree
a lot | Agree
a little | Disagree
a little | Disagree
a lot |
|--|----------------|-------------------|----------------------|-------------------|
| a) I think learning science will help me in my daily life | ↓ ○ | ○ | ○ | ○ |
| b) I need science to learn other school subjects | ○ | ○ | ○ | ○ |
| c) I need to do well in science to get into the <university> of my choice - | ○ | ○ | ○ | ○ |
| d) I need to do well in science to get the job I want | ○ | ○ | ○ | ○ |
| e) I would like a job that involves using science | ○ | ○ | ○ | ○ |
| f) It is important to learn about science to get ahead in the world | ○ | ○ | ○ | ○ |
| g) Learning science will give me more job opportunities when I am an adult | ○ | ○ | ○ | ○ |
| h) My parents think that it is important that I do well in science | ○ | ○ | ○ | ○ |
| i) It is important to do well in my science class | ○ | ○ | ○ | ○ |

23

A. How often does your teacher give you homework in mathematics?

Fill one circle only.

Every day --

3 or 4 times a week --

1 or 2 times a week --

Less than once a week --

Never --

B. When your teacher gives you mathematics homework, about how many minutes do you usually spend on your homework?

Fill one circle only.

My teacher never gives me homework in mathematics --

1–15 minutes --

16–30 minutes --

31–60 minutes --

61–90 minutes --

More than 90 minutes --

24

A. How often does your teacher give you homework in science?

Fill one circle only.

- Every day --
- 3 or 4 times a week --
- 1 or 2 times a week --
- Less than once a week --
- Never --

B. When your teacher gives you science homework, about how many minutes do you usually spend on your homework?

Fill one circle only.

- My teacher never gives me homework in science --
- 1–15 minutes --
- 16–30 minutes --
- 31–60 minutes --
- 61–90 minutes --
- More than 90 minutes --

25

Do you attend extra lessons outside of school in the following subjects?

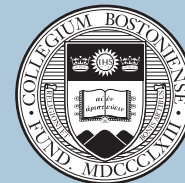
Fill **one** circle for each line.

| | Yes, to excel in school | Yes, to not fall behind | No |
|----------------------|-------------------------------|-------------------------------|-----------------------|
| a) Mathematics | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b) Science | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |



Thank You!

Thank you for filling out the questionnaire!



BOSTON
COLLEGE

TIMSS
2015

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

Student Questionnaire

<Grade 8>

Field Test Version



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International Association
for the Evaluation of
Educational Achievement

timssandpirls.bc.edu



Identification Label

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

Teacher Questionnaire

<Grade 4>

<TIMSS National Research Center Name>

<Address>

Field Test Version



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

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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 more than 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 primary/elementary education in <country>.

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 <country>. 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 35 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:

<Insert country-specific information here>.

Thank you.

G1

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

_____ years
Please **round** to the nearest whole number.

G2

Are you female or male?

Check **one** circle only.

Female --

Male --

G3

How old are you?

Check **one** circle only.

Under 25 --

25–29 --

30–39 --

40–49 --

50–59 --

60 or more --

G4

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

Check **one** circle only.

Did not complete <Upper secondary education—ISCED Level 3> ---

<Upper secondary education—ISCED Level 3> ---

<Post-secondary, non-tertiary education—ISCED Level 4> ---

<Short-cycle tertiary education—ISCED Level 5> ---

<Bachelor’s or equivalent level—ISCED Level 6> ---

<Master’s or equivalent level—ISCED Level 7> ---

<Doctor or equivalent level—ISCED Level 8> ---

G5

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

Check **one** circle for each line.

- | | Yes | No |
|---------------------------------------|-----------------------|-----------------------|
| a) Education—Primary/Elementary ----- | <input type="radio"/> | <input type="radio"/> |
| b) Education—Secondary ----- | <input type="radio"/> | <input type="radio"/> |
| c) Mathematics ----- | <input type="radio"/> | <input type="radio"/> |
| d) Science ----- | <input type="radio"/> | <input type="radio"/> |
| e) <language of test> ----- | <input type="radio"/> | <input type="radio"/> |
| f) Other ----- | <input type="radio"/> | <input type="radio"/> |

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

Check **one** circle for each line.

- | | Yes | No |
|---------------------------|-----------------------|-----------------------|
| a) Mathematics ----- | <input type="radio"/> | <input type="radio"/> |
| b) Science ----- | <input type="radio"/> | <input type="radio"/> |
| c) Language/reading ----- | <input type="radio"/> | <input type="radio"/> |
| d) Other subject ----- | <input type="radio"/> | <input type="radio"/> |

G6

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

Check **one** circle for each line.

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

Check **one** circle for each line.

| | | | | | |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | Very high | High | Medium | Low | Very low |
| k) Students' desire to do well in school | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| l) Students' ability to reach school's academic goals | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| m) Students' respect for classmates who excel in school | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| n) Clarity of the school's educational objectives | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| o) Collaboration between school leadership and teachers to plan instruction | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| p) Amount of instructional support provided to teachers by school leadership | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| q) School leadership's support for teachers' professional development | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| r) Teachers' job satisfaction | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

G7

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

Check **one** circle for each line.

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

G8

In your current school, how severe is each problem?

Check **one** circle for each line.

- Not a problem**
Minor problem
Moderate problem
Serious problem
- a) The school building needs significant repair ----- ○ — ○ — ○ — ○
- b) Teachers do not have adequate workspace (e.g., for preparation, collaboration, or meeting with students) ----- ○ — ○ — ○ — ○
- c) Teachers do not have adequate instructional materials and supplies ----- ○ — ○ — ○ — ○
- d) The school classrooms are not cleaned often enough ----- ○ — ○ — ○ — ○
- e) The school classrooms need maintenance work ----- ○ — ○ — ○ — ○
- f) Teachers do not have adequate technological resources ----- ○ — ○ — ○ — ○
- g) Teachers do not have adequate support for using technology ----- ○ — ○ — ○ — ○
- h) There are too many students in the classes ----- ○ — ○ — ○ — ○
- i) Teachers have too many teaching hours ----- ○ — ○ — ○ — ○
- j) Teachers have too much material to cover in classes ----- ○ — ○ — ○ — ○

G9

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

Check **one** circle for each line.

| | Very Often | Often | Sometimes | Never or almost never |
|--|-----------------------|-----------------------|-----------------------|-----------------------|
| a) Discuss how to teach a particular topic ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b) Collaborate in planning and preparing instructional materials ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c) Share what I have learned about my teaching experiences ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| d) Visit another classroom to learn more about teaching ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| e) Work together to try out new ideas ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| f) Go to other teachers for help ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| g) Work as a group on implementing the curriculum ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| h) Work with teachers from other grades to ensure continuity in learning ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| i) Participate in teacher mentoring ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

G10

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

Check **one** circle for each line.

| | Very Often | Often | Sometimes | Never or almost never |
|---|-----------------------|-----------------------|-----------------------|-----------------------|
| a) I am content with my profession as a teacher ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b) I am satisfied with being a teacher at this school ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c) I find my work full of meaning and purpose ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| d) I am enthusiastic about my job ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| e) My work inspires me ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| f) I am proud of the work I do ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| g) I am frustrated as a teacher ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| h) I am supported by the teachers at my school ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| i) I am going to continue teaching for as long as I can ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

G11

A. How many students are in this class?

_____ students
Write in a number.

B. How many of the students in #G11A are in <fourth grade>?

_____ <fourth-grade> students
Write in a number.

G12

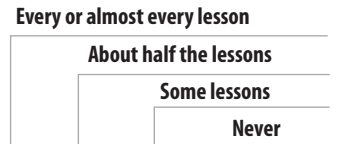
How many <fourth-grade> students experience difficulties understanding spoken <language of test>?

_____ students in this class
Write in a number.

G13

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

*Check **one** circle for each line.*



- a) Summarize what students should have learned from the lesson ----- — — —
- b) Relate the lesson to students' daily lives ----- — — —
- c) Ask questions to elicit reasons and explanations ----- — — —
- d) Ask questions to check that students understand what I am teaching ----- — — —
- e) Encourage all students to improve their performance --- — — —
- f) Praise students for good performance ----- — — —
- g) Bring interesting materials to class ----- — — —
- h) Ask students to complete challenging exercises that require them to go beyond the instruction ----- — — —
- i) Encourage classroom discussions among students ----- — — —
- j) Link new content to students' prior knowledge ----- — — —
- k) Ask students to decide their own problem solving procedures ----- — — —
- l) Encourage students to express their ideas in class ----- — — —

G14

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

Check **one** circle for each line.

| | Not at all | Some | A lot |
|---|-----------------------|-----------------------|-----------------------|
| a) Students lacking prerequisite knowledge or skills ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b) Students suffering from lack of basic nutrition ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c) Students suffering from not enough sleep ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| d) Students with special needs (e.g., physical disabilities, mental or emotional/psychological impairment) ---- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| e) Disruptive students ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| f) Uninterested students ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Questions M1–M3 ask about mathematics instruction for the <fourth-grade> students in the TIMSS class.

M1

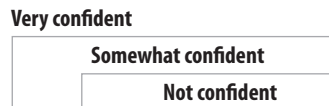
In a typical week, how much time do you spend teaching mathematics to the students in this class?

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

M2

In teaching mathematics to this class, how confident do you feel to do the following?

Check **one** circle for each line.



- a) Answer students' questions about mathematics ----- ○ — ○ — ○
- b) Show students a variety of problem solving strategies ---- ○ — ○ — ○
- c) Provide challenging tasks for the highest achieving students ----- ○ — ○ — ○
- d) Adapt my teaching to engage students' interest ---- ○ — ○ — ○
- e) Help students appreciate the value of learning mathematics ----- ○ — ○ — ○
- f) Inspire students who are unmotivated to learn mathematics ----- ○ — ○ — ○
- g) Assess student comprehension of mathematics ----- ○ — ○ — ○
- h) Improve the understanding of struggling students ----- ○ — ○ — ○
- i) Build supportive relationships with students ----- ○ — ○ — ○
- j) Manage the classroom to avoid disruptions ----- ○ — ○ — ○
- k) Make mathematics relevant to students ----- ○ — ○ — ○
- l) Challenge students into developing higher order thinking skills ----- ○ — ○ — ○

M3

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

Check **one** circle for each line.



- a) Listen to me explain new mathematics content ----- ○ — ○ — ○ — ○
- b) Listen to me explain how to solve problems ----- ○ — ○ — ○ — ○
- c) Memorize rules, procedures, and facts ----- ○ — ○ — ○ — ○
- d) Work problems (individually or with peers) with my guidance ○ — ○ — ○ — ○
- e) Work problems together in the whole class with direct guidance from me ----- ○ — ○ — ○ — ○
- f) Work problems (individually or with peers) while I am occupied by other tasks ----- ○ — ○ — ○ — ○
- g) Explain their answers ----- ○ — ○ — ○ — ○
- h) Relate what they are learning in mathematics to their daily lives ----- ○ — ○ — ○ — ○
- i) Take a written test or quiz ---- ○ — ○ — ○ — ○
- j) Work in mixed ability groups -- ○ — ○ — ○ — ○
- k) Work in same ability groups -- ○ — ○ — ○ — ○

Questions M4–M6 ask about resources for teaching mathematics to the <fourth-grade> students in the TIMSS class.

M4

When you teach mathematics to this class, how do you use the following resources?

Check **one** circle for each line.

| | Basis for instruction | Supplement | Not used |
|---|-----------------------|-----------------------|-----------------------|
| a) Textbooks ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b) Workbooks or worksheets ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c) Concrete objects or materials that help students understand quantities or procedures ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| d) Computer software/ applications (apps) for mathematics instruction ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| e) Internet resources ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

M5

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

Check **one** circle only.

Yes, with unrestricted use ---

Yes, with restricted use ---

No, calculators are not permitted -

M6

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

Check **one** circle only.

Yes ---

No ---

(If No, go to #M7)

If Yes,

B. How many of the computers have access to the Internet?

Check **one** circle only.

All ---

Most ---

Some ---

None ---

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

Check **one** circle for each line.

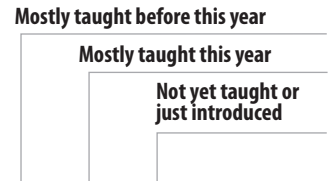
| | Every or almost every day | Once or twice a week | Once or twice a month | Never or almost never |
|--|---------------------------|-----------------------|-----------------------|-----------------------|
| a) Explore mathematics principles and concepts ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b) Practice skills and procedures - | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c) Look up ideas and information ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Question M7 asks about the topics taught and the content covered in teaching mathematics to the <fourth-grade> students in the TIMSS class.

M7

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.”

Check **one** circle for each line.



A. Number

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

B. Geometric Shapes and Measures

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

C. Data Display

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


Question M8 asks about mathematics homework for the <fourth-grade> students in the TIMSS class.

Question M9 asks about mathematics assessment for the <fourth-grade> students in the TIMSS class.

M8

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

Check **one** circle only.

I do not assign mathematics homework --- 
 (Go to #M9)

Less than once a week ---

1 or 2 times a week ---

3 or 4 times a week ---

Every day ---

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.)

Check **one** circle only.

15 minutes or less ---

16–30 minutes ---

31–60 minutes ---

more than 60 minutes ---

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

Check **one** circle for each line.

Always or almost always

Sometimes

Never or almost never

a) Correct assignments and give feedback to students ----- — —

b) Discuss the homework in class ----- — —

c) Monitor whether or not the homework was completed ----- — —

M9

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

Check **one** circle for each line.

Major emphasis

Some emphasis

Little or no emphasis

a) Evaluation of students' ongoing work ----- — —

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

c) National or regional achievement tests ----- — —

M10

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

Check **one** circle for each line.

- | | Yes | No |
|---|-----------------------|-----------------------|
| a) Mathematics content ----- | <input type="radio"/> | <input type="radio"/> |
| b) Mathematics pedagogy/instruction ----- | <input type="radio"/> | <input type="radio"/> |
| c) Mathematics curriculum ----- | <input type="radio"/> | <input type="radio"/> |
| d) Integrating information technology into mathematics ----- | <input type="radio"/> | <input type="radio"/> |
| e) Mathematics assessment ----- | <input type="radio"/> | <input type="radio"/> |
| f) Addressing individual students' needs ----- | <input type="radio"/> | <input type="radio"/> |

M11

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?

Check **one** circle only.

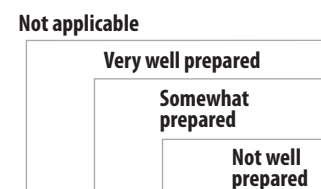
- None ---
- Less than 6 hours ---
- 6–15 hours ---
- 16–35 hours ---
- More than 35 hours ---

M12

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."

Check **one** circle for each line.

**A. Number**

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

B. Geometric Shapes and Measures

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

C. Data Display

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

Questions S1–S3 ask about science instruction for the <fourth-grade> students in the TIMSS class.

S1

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

Check **one** circle only.

Yes ---

No ---

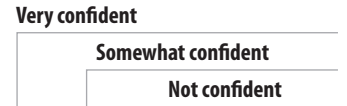
B. Please estimate the time that you spend on science topics with students in this class.

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

S2

In teaching science to this class, how confident do you feel to do the following?

Check **one** circle for each line.

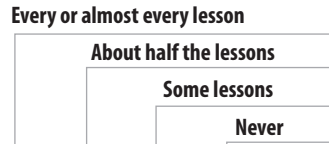


- a) Answer students' questions about science ----- — —
- b) Explain science concepts or principles by doing science experiments ----- — —
- c) Provide challenging tasks for the highest achieving students ----- — —
- d) Adapt my teaching to engage students' interest ----- — —
- e) Help students appreciate the value of learning science ----- — —
- f) Inspire students who are unmotivated to learn science ----- — —
- g) Assess student comprehension of science ----- — —
- h) Improve the understanding of struggling students ----- — —
- i) Build supportive relationships with students ----- — —
- j) Manage the classroom to avoid disruptions ----- — —
- k) Make science relevant to students ----- — —
- l) Challenge students into developing higher order thinking skills ----- — —
- m) Teach science using inquiry methods ----- — —

S3

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

Check **one** circle for each line.



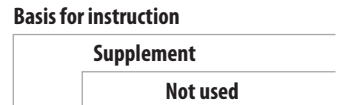
- a) Listen to me explain new science content ----- - - -
- b) Observe natural phenomena such as the weather or a plant growing and describe what they see ----- - - -
- c) Watch me demonstrate an experiment or investigation --- - - -
- d) Design or plan experiments or investigations ----- - - -
- e) Conduct experiments or investigations ----- - - -
- f) Present data from experiments or investigations ----- - - -
- g) Interpret data from experiments or investigations ----- - - -
- h) Use evidence from experiments or investigations to support conclusions ----- - - -
- i) Read their textbooks or other resource materials ----- - - -
- j) Have students memorize facts and principles ----- - - -
- k) Give explanations about something they are studying ----- - - -
- l) Relate what they are learning in science to their daily lives ----- - - -
- m) Do field work outside the class - - -
- n) Take a written test or quiz ----- - - -
- o) Work in mixed ability groups -- - - -
- p) Work in same ability groups -- - - -

Questions S4–S5 ask about resources for teaching science to the <fourth-grade> students in the TIMSS class.

S4

When you teach science to this class, how do you use the following resources?

Check **one** circle for each line.



- a) Textbooks ----- - -
- b) Workbooks or worksheets ----- - -
- c) Science equipment and materials ----- - -
- d) Computer software/ applications (apps) for science instruction ----- - -
- e) Internet resources ----- - -

S5

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

Check **one** circle only.

Yes---

No--- 

(If No, go to #56)

If Yes,

B. How many of the computers have access to the Internet?

Check **one** circle only.

All---

Most---

Some---

None---

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

Check **one** circle for each line.

Every or almost every day

Once or twice a week

Once or twice a month

Never or almost never

a) Practice skills and procedures -

b) Look up ideas and information -----

c) Do scientific procedures or experiments -----

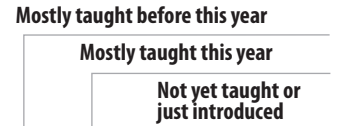
d) Study natural phenomena through simulations -----

Question S6 asks about the topics taught and the content covered in teaching science to the <fourth-grade> students in the TIMSS class.

S6

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."

Check **one** circle for each line.



A. Life Science

- a) Major body structures and their functions in humans and other organisms (plants and animals) ----- — —
- b) Life cycles and reproduction in plants and animals ----- — —
- c) Physical features, behavior, and survival of organisms living in different environments ----- — —
- d) Relationships in a given community (e.g., simple food chains, predator-prey relationships), human impact on the environment ----- — —
- e) Human health (e.g., transmission/prevention of communicable diseases, signs of health/illness, diet, exercise) ----- — —

B. Physical Science

- a) States of matter (solids, liquids, gases) and differences in their physical properties (shape, volume), including changes in state of matter by heating and cooling ----- — —
- b) Classification of objects/materials based on physical properties (e.g., weight/mass, volume, magnetic attraction) ----- — —
- c) Forming and separating mixtures ----- — —
- d) Familiar chemical changes in materials (e.g., decaying, burning, rusting, cooking) ----- — —
- e) Common energy sources/forms and their practical uses (e.g., the Sun, electricity, water, wind/electricity, heat) ----- — —
- f) Light (e.g., sources, behavior) ----- — —
- g) Electricity and simple electrical systems ----- — —
- h) Magnetic attraction and repulsion ----- — —
- i) Forces that cause objects to move (e.g., gravity, push/pull forces) ----- — —

C. Earth Science

- a) Common features of Earth's landscape (e.g., mountains, plains, rivers, deserts) and relationship to human use (e.g., farming, irrigation, land development) ----- — —
- b) Water on Earth (location, types, and movement) and air (composition, proof of its existence, uses) ----- — —
- c) Weather conditions from day to day or over the seasons ----- — —
- d) Fossils of animals and plants (age, location, formation) ----- — —
- e) Earth's solar system (planets, Sun, Moon) ----- — —
- f) Day, night, and shadows due to Earth's rotation and its relationship to the Sun ----- — —
- g) Seasons related to Earth's movement around the Sun ----- — —

Question S7 asks about science homework for the <fourth-grade> students in the TIMSS class.

Question S8 asks about science assessment for the <fourth-grade> students in the TIMSS class.

S7

S8

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?

Check **one** circle only.

Check **one** circle for each line.

- I do not assign science homework --- (Go to #S8)
- Less than once a week ---
- 1 or 2 times a week ---
- 3 or 4 times a week ---
- Every day ---

- Major emphasis
 - Some emphasis
 - Little or no emphasis
- a) Evaluation of students' ongoing work ----- - -
- b) Classroom tests (for example, teacher-made or textbook tests) ----- - -
- c) National or regional achievement tests ----- - -

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.)

Check **one** circle only.

- 15 minutes or less ---
- 16–30 minutes ---
- 31–60 minutes ---
- more than 60 minutes ---

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

Check **one** circle for each line.

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

S9

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

Check **one** circle for each line.

- | | Yes | No |
|--|-----------------------|-----------------------|
| a) Science content ----- | <input type="radio"/> | <input type="radio"/> |
| b) Science pedagogy/instruction ----- | <input type="radio"/> | <input type="radio"/> |
| c) Science curriculum ----- | <input type="radio"/> | <input type="radio"/> |
| d) Integrating information technology into science ----- | <input type="radio"/> | <input type="radio"/> |
| e) Science assessment ----- | <input type="radio"/> | <input type="radio"/> |
| f) Addressing individual students' needs ----- | <input type="radio"/> | <input type="radio"/> |
| g) Integrating science with other subjects (e.g. mathematics, technology) ----- | <input type="radio"/> | <input type="radio"/> |

S10

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?

Check **one** circle only.

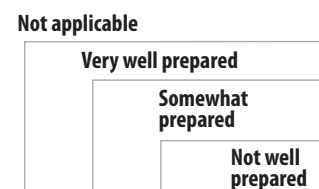
- None ---
- Less than 6 hours ---
- 6–15 hours ---
- 16–35 hours ---
- More than 35 hours ---

S11

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."

Check **one** circle for each line.



A. Life Science

- a) Major body structures and their functions in humans and other organisms (plants and animals) ----- — — —
- b) Life cycles and reproduction in plants and animals ----- — — —
- c) Physical features, behavior, and survival of organisms living in different environments ----- — — —
- d) Relationships in a given community (e.g., simple food chains, predator-prey relationships), human impact on the environment ----- — — —
- e) Human health (e.g., transmission/prevention of communicable diseases, signs of health/illness, diet, exercise) ----- — — —

B. Physical Science

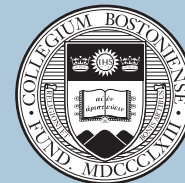
- a) States of matter (solids, liquids, gases) and differences in their physical properties (shape, volume), including changes in state of matter by heating and cooling ----- — — —
- b) Classification of objects/materials based on physical properties (e.g., weight/mass, volume, magnetic attraction) ----- — — —
- c) Forming and separating mixtures ----- — — —
- d) Familiar chemical changes in materials (e.g., decaying, burning, rusting, cooking) ----- — — —
- e) Common energy sources/forms and their practical uses (e.g., the Sun, electricity, water, wind/electricity, heat) ----- — — —
- f) Light (e.g., sources, behavior) ----- — — —
- g) Electricity and simple electrical systems ----- — — —
- h) Magnetic attraction and repulsion ----- — — —
- i) Forces that cause objects to move (e.g., gravity, push/pull forces) ----- — — —

C. Earth Science

- a) Common features of Earth's landscape (e.g., mountains, plains, rivers, deserts) and relationship to human use (e.g., farming, irrigation, land development) ----- — — —
- b) Water on Earth (location, types, and movement) and air (composition, proof of its existence, uses) ----- — — —
- c) Weather conditions from day to day or over the seasons ----- — — —
- d) Fossils of animals and plants (age, location, formation) ----- — — —
- e) Earth's solar system (planets, Sun, Moon) ----- — — —
- f) Day, night, and shadows due to Earth's rotation and its relationship to the Sun ----- — — —
- g) Seasons related to Earth's movement around the Sun ----- — — —

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>

Field Test Version



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International Association
for the Evaluation of
Educational Achievement

timssandpirls.bc.edu



Identification Label

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

Teacher Questionnaire Mathematics

<Grade 8>

<TIMSS National Research Center Name>

<Address>

Field Test Version



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

© IEA, 2013

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 more than 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 secondary education in <country>.

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 <country>. 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 35 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:

<Insert country-specific information here>.

Thank you.

1 _____

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

_____ years
Please **round** to the nearest whole number.

2 _____

Are you female or male?

Check **one** circle only.

Female ---

Male ---

3 _____

How old are you?

Check **one** circle only.

Under 25 ---

25–29 ---

30–39 ---

40–49 ---

50–59 ---

60 or more ---

4 _____

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

Check **one** circle only.

Did not complete <Upper secondary education—ISCED Level 3> ---

<Upper secondary education—ISCED Level 3> ---

<Post-secondary, non-tertiary education—ISCED Level 4> ---

<Short-cycle tertiary education—ISCED Level 5> ---

<Bachelor’s or equivalent level—ISCED Level 6> ---

<Master’s or equivalent level—ISCED Level 7> ---

<Doctor or equivalent level—ISCED Level 8> ---

5 _____

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

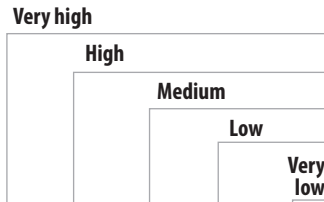
Check **one** circle for each line.

- | | Yes | No |
|--------------------------------|-----------------------|-----------------------|
| a) Mathematics ----- | <input type="radio"/> | <input type="radio"/> |
| b) Biology ----- | <input type="radio"/> | <input type="radio"/> |
| c) Physics ----- | <input type="radio"/> | <input type="radio"/> |
| d) Chemistry ----- | <input type="radio"/> | <input type="radio"/> |
| e) <Earth Science> ----- | <input type="radio"/> | <input type="radio"/> |
| f) Education–Mathematics ----- | <input type="radio"/> | <input type="radio"/> |
| g) Education–Science ----- | <input type="radio"/> | <input type="radio"/> |
| h) Education–General ----- | <input type="radio"/> | <input type="radio"/> |
| i) Other ----- | <input type="radio"/> | <input type="radio"/> |

6

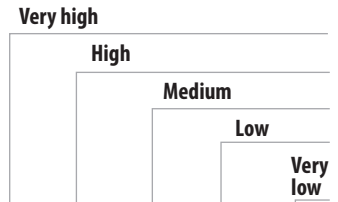
How would you characterize each of the following within your school?

Check **one** circle for each line.



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

Check **one** circle for each line.



- k) Students' desire to do well in school----- — — — —
- l) Students' ability to reach school's academic goals----- — — — —
- m) Students' respect for classmates who excel in school ----- — — — —
- n) Clarity of the school's educational objectives ----- — — — —
- o) Collaboration between school leadership and teachers to plan instruction --- — — — —
- p) Amount of instructional support provided to teachers by school leadership ----- — — — —
- q) School leadership's support for teachers' professional development ----- — — — —
- r) Teachers' job satisfaction----- — — — —

7

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

Check **one** circle for each line.

| | | | | | | | | |
|---|-----------------------|-------------|-----------------------|----------------|-----------------------|-------------------|-----------------------|----------------|
| | | Agree a lot | | Agree a little | | Disagree a little | | Disagree a lot |
| a) This school is located in a safe neighborhood ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- |
| b) I feel safe at this school ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- |
| c) This school's security policies and practices are sufficient ---- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- |
| d) The students behave in an orderly manner ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- |
| e) The students are respectful of the teachers ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- |
| f) The students respect school property ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- |
| g) This school has clear rules about student conduct ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- |
| h) This school's rules are enforced in a fair and consistent manner ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- |

8

In your current school, how severe is each problem?

Check **one** circle for each line.

| | | | | | | | | |
|--|-----------------------|---------------|-----------------------|---------------|-----------------------|------------------|-----------------------|-----------------|
| | | Not a problem | | Minor problem | | Moderate problem | | Serious problem |
| a) The school building needs significant repair ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- |
| b) Teachers do not have adequate workspace (e.g., for preparation, collaboration, or meeting with students) ---- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- |
| c) Teachers do not have adequate instructional materials and supplies ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- |
| d) The school classrooms are not cleaned often enough ---- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- |
| e) The school classrooms need maintenance work ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- |
| f) Teachers do not have adequate technological resources ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- |
| g) Teachers do not have adequate support for using technology ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- |
| h) There are too many students in the classes ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- |
| i) Teachers have too many teaching hours ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- |
| j) Teachers have too much material to cover in classes ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- |

9

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

Check **one** circle for each line.

| | Very Often | Often | Sometimes | Never or almost never |
|--|-----------------------|-----------------------|-----------------------|-----------------------|
| a) Discuss how to teach a particular topic ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b) Collaborate in planning and preparing instructional materials ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c) Share what I have learned about my teaching experiences ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| d) Visit another classroom to learn more about teaching - | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| e) Work together to try out new ideas ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| f) Go to other teachers for help ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| g) Work as a group on implementing the curriculum ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| h) Work with teachers from other grades to ensure continuity in learning ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| i) Participate in teacher mentoring ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

10

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

Check **one** circle for each line.

| | Very Often | Often | Sometimes | Never or almost never |
|---|-----------------------|-----------------------|-----------------------|-----------------------|
| a) I am content with my profession as a teacher ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b) I am satisfied with being a teacher at this school ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c) I find my work full of meaning and purpose ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| d) I am enthusiastic about my job ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| e) My work inspires me ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| f) I am proud of the work I do ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| g) I am frustrated as a teacher----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| h) I am supported by the teachers at my school ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| i) I am going to continue teaching for as long as I can --- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

11

How many students are in this class?

_____ students
Write in a number.

12

How many <eighth-grade> students experience difficulties understanding spoken <language of test>?

_____ students in this class
Write in a number.

13

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

Check **one** circle for each line.

Every or almost every lesson
About half the lessons
Some lessons
Never

- a) Summarize what students should have learned from the lesson ----- — — —
- b) Ask questions to elicit reasons and explanations ---- — — —
- c) Ask questions to check that students understand what I am teaching ----- — — —
- d) Encourage all students to improve their performance --- — — —
- e) Praise students for good performance ----- — — —
- f) Ask students to complete challenging exercises that require them to go beyond the instruction ---- — — —
- g) Encourage classroom discussions among students ----- — — —
- h) Link new content to students' prior knowledge ---- — — —
- i) Ask students to decide their own problem solving procedures ----- — — —
- j) Encourage students to express their ideas in class ---- — — —

Questions 15-17 ask about mathematics instruction for the <eighth-grade> students in the TIMSS class.

15

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.

16

In teaching mathematics to this class, how confident do you feel to do the following?

Check **one** circle for each line.



- a) Answer students' questions about mathematics ----- — —
- b) Show students a variety of problem solving strategies ---- — —
- c) Provide challenging tasks for the highest achieving students ----- — —
- d) Adapt my teaching to engage students' interest ---- — —
- e) Help students appreciate the value of learning mathematics ----- — —
- f) Inspire students who are unmotivated to learn mathematics ----- — —
- g) Assess student comprehension of mathematics ----- — —
- h) Improve the understanding of struggling students ----- — —
- i) Build supportive relationships with students ----- — —
- j) Manage the classroom to avoid disruptions ----- — —
- k) Make mathematics relevant to students ----- — —
- l) Challenge students into developing higher order thinking skills ----- — —

17

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

Check **one** circle for each line.

| | Every or almost every lesson | About half the lessons | Some lessons | Never |
|--|------------------------------|------------------------|-----------------------|-----------------------|
| a) Listen to me explain new mathematics content ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b) Listen to me explain how to solve problems ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c) Memorize rules, procedures, and facts ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| d) Work problems (individually or with peers) with my guidance ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| e) Work problems together in the whole class with direct guidance from me ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| f) Work problems (individually or with peers) while I am occupied by other tasks ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| g) Explain their answers ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| h) Relate what they are learning in mathematics to their daily lives ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| i) Decide on their own procedures for solving complex problems ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| j) Work on problems for which there is no immediately obvious method of solution ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| k) Take a written test or quiz ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| l) Work in mixed ability groups -- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| m) Work in same ability groups -- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Questions 18–20 ask about resources for teaching mathematics to the <eighth-grade> students in the TIMSS class.

18

When you teach mathematics to this class, how do you use the following resources?

Check **one** circle for each line.

| | Basis for instruction | Supplement | Not used |
|---|-----------------------|-----------------------|-----------------------|
| a) Textbooks ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b) Workbooks or worksheets ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c) Concrete objects or materials that help students understand quantities or procedures ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| d) Computer software/ applications (apps) for mathematics instruction ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| e) Internet resources ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

19

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

Check **one** circle only.

Yes, with unrestricted use ---

Yes, with restricted use ---

No, calculators are not permitted -

(If No, go to #20)

If Yes,

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

Check **one** circle for each line.

| | Every or almost every lesson | About half the lessons | Some lessons | Never |
|----------------------------------|------------------------------|------------------------|-----------------------|-----------------------|
| a) Check answers ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b) Do routine computations ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c) Solve complex problems ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| d) Explore number concepts ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

20

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

Check **one** circle only.

Yes---

No--- 

(If No, go to #21)

If Yes,

- B. How many of the computers have access to the Internet?**

Check **one** circle only.

All---

Most---

Some---

None---

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

Check **one** circle for each line.

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 ----- — — —
- b) Practice skills and procedures - — — —
- c) Look up ideas and information ----- — — —
- d) Process and analyze data ----- — — —

Question 21 asks about the topics taught and the content covered in teaching mathematics to the <eighth-grade> students in the TIMSS class.

21

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.”

Check **one** circle for each line.

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

A. Number

- a) Computing with whole numbers ----- — —
- b) Comparing and ordering rational numbers ----- — —
- c) Computing with rational numbers (fractions, decimals, and integers) ----- — —
- d) Concepts of irrational numbers ----- — —
- e) Problem solving involving percents or proportions ----- — —

B. Algebra

- a) Simplifying and evaluating algebraic expressions ----- — —
- b) Simple linear equations and inequalities ----- — —
- c) Simultaneous (two variables) equations ----- — —
- d) Numeric, algebraic, and geometric patterns or sequences (extension, missing terms, generalization of patterns) ----- — —
- e) Representation of functions as ordered pairs, tables, graphs, words, or equations ----- — —
- f) Properties of functions (slopes, intercepts, etc.) ----- — —

C. Geometry

- a) Geometric properties of angles and geometric shapes (triangles, quadrilaterals, and other common polygons) ----- — —
- b) Congruent figures and similar triangles ----- — —
- c) Relationship between three-dimensional shapes and their two-dimensional representations ----- — —
- d) Using appropriate measurement formulas for perimeters, circumferences, areas, surface areas, and volumes ----- — —
- e) Points on the Cartesian plane ----- — —
- f) Translation, reflection, and rotation ----- — —

D. Data and Chance

- a) Characteristics of data sets (mean, median, mode, and shape of distributions) ----- — —
- b) Interpreting data sets (e.g., draw conclusions, make predictions, and estimate values between and beyond given data points) ----- — —
- c) Judging, predicting, and determining the chances of possible outcomes ----- — —

Question 22 asks about mathematics homework for the <eighth-grade> students in the TIMSS class.

22

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

Check **one** circle only.

I do not assign mathematics homework ---

(Go to #23)

Less than once a week ---

1 or 2 times a week ---

3 or 4 times a week ---

Every day ---

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.)

Check **one** circle only.

15 minutes or less ---

16–30 minutes ---

31–60 minutes ---

61–90 minutes ---

More than 90 minutes ---

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

Check **one** circle for each line.



a) Correct assignments and give feedback to students ----- — —

b) Have students correct their own homework ----- — —

c) Discuss the homework in class ----- — —

d) Monitor whether or not the homework was completed ----- — —

e) Use the homework to contribute towards students' grades or marks ----- — —

Questions 23–25 ask about mathematics assessment for the <eighth-grade> students in the TIMSS class.

23

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

Check **one** circle for each line.

- Major emphasis
 Some emphasis
 Little or no emphasis
- a) Evaluation of students' ongoing work ----- — —
- b) Classroom tests (for example, teacher-made or textbook tests) ----- — —
- c) National or regional achievement tests ----- — —

24

How often do you give a mathematics test or examination to this class?

Check **one** circle only.

- About once a week ---
- About every two weeks ---
- About once a month ---
- A few times a year ---
- Never ---

25

How often do you include the following types of questions in your mathematics tests or examinations?

Check **one** circle for each line.

- Always or almost always
 Sometimes
 Never or almost never
- a) Questions based on recall of facts and procedures ----- — —
- b) Questions involving application of mathematical procedures ----- — —
- c) Questions requiring explanations or justifications ----- — —

26

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

Check **one** circle for each line.

- | | Yes | No |
|---|-----------------------|-----------------------|
| a) Mathematics content ----- | <input type="radio"/> | <input type="radio"/> |
| b) Mathematics pedagogy/instruction ----- | <input type="radio"/> | <input type="radio"/> |
| c) Mathematics curriculum ----- | <input type="radio"/> | <input type="radio"/> |
| d) Integrating information technology into mathematics ----- | <input type="radio"/> | <input type="radio"/> |
| e) Improving students' critical thinking or problem solving skills ----- | <input type="radio"/> | <input type="radio"/> |
| f) Mathematics assessment ----- | <input type="radio"/> | <input type="radio"/> |
| g) Addressing individual students' needs ----- | <input type="radio"/> | <input type="radio"/> |

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?

Check **one** circle only.

- None ---
- Less than 6 hours ---
- 6–15 hours ---
- 16–35 hours ---
- More than 35 hours ---

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."

Check **one** circle for each line.

Not applicable
Very well prepared
Somewhat prepared
Not well prepared

A. Number

- a) Computing with whole numbers ----- — — —
- b) Comparing and ordering rational numbers ----- — — —
- c) Computing with rational numbers (fractions, decimals, and integers) ----- — — —
- d) Concepts of irrational numbers ----- — — —
- e) Problem solving involving percents or proportions ----- — — —

B. Algebra

- a) Simplifying and evaluating algebraic expressions ----- — — —
- b) Simple linear equations and inequalities ----- — — —
- c) Simultaneous (two variables) equations ----- — — —
- d) Numeric, algebraic, and geometric patterns or sequences (extension, missing terms, generalization of patterns) ----- — — —
- e) Representation of functions as ordered pairs, tables, graphs, words, or equations ----- — — —
- f) Properties of functions (slopes, intercepts, etc.) ----- — — —

C. Geometry

- a) Geometric properties of angles and geometric shapes (triangles, quadrilaterals, and other common polygons) ----- — — —
- b) Congruent figures and similar triangles ----- — — —
- c) Relationship between three-dimensional shapes and their two-dimensional representations ----- — — —
- d) Using appropriate measurement formulas for perimeters, circumferences, areas, surface areas, and volumes ----- — — —
- e) Points on the Cartesian plane ----- — — —
- f) Translation, reflection, and rotation ----- — — —

D. Data and Chance

- a) Characteristics of data sets (mean, median, mode, and shape of distributions) ----- — — —
- b) Interpreting data sets (e.g., draw conclusions, make predictions, and estimate values between and beyond given data points) ----- — — —
- c) Judging, predicting, and determining the chances of possible outcomes ----- — — —

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>

Field Test Version



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International Association
for the Evaluation of
Educational Achievement

timssandpirls.bc.edu



Identification Label

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

Teacher Questionnaire Science

<Grade 8>

<TIMSS National Research Center Name>

<Address>

Field Test Version



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

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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 more than 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 secondary education in <country>.

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 <country>. 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 35 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:

<Insert country-specific information here>.

Thank you.

1 _____

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

_____ years
Please **round** to the nearest whole number.

2 _____

Are you female or male?

Check **one** circle only.

- Female ---
- Male ---

3 _____

How old are you?

Check **one** circle only.

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

4 _____

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

Check **one** circle only.

- Did not complete <Upper secondary education—ISCED Level 3> ---
- <Upper secondary education—ISCED Level 3> ---
- <Post-secondary, non-tertiary education—ISCED Level 4> ---
- <Short-cycle tertiary education—ISCED Level 5> ---
- <Bachelor’s or equivalent level—ISCED Level 6> ---
- <Master’s or equivalent level—ISCED Level 7> ---
- <Doctor or equivalent level—ISCED Level 8> ---

5 _____

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

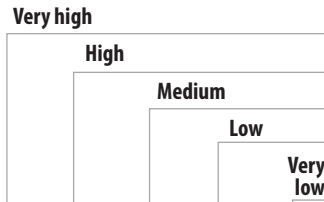
Check **one** circle for each line.

- | | Yes | No |
|--------------------------------|-----------------------|-----------------------|
| a) Mathematics ----- | <input type="radio"/> | <input type="radio"/> |
| b) Biology ----- | <input type="radio"/> | <input type="radio"/> |
| c) Physics ----- | <input type="radio"/> | <input type="radio"/> |
| d) Chemistry ----- | <input type="radio"/> | <input type="radio"/> |
| e) <Earth Science> ----- | <input type="radio"/> | <input type="radio"/> |
| f) Education–Mathematics ----- | <input type="radio"/> | <input type="radio"/> |
| g) Education–Science ----- | <input type="radio"/> | <input type="radio"/> |
| h) Education–General ----- | <input type="radio"/> | <input type="radio"/> |
| i) Other ----- | <input type="radio"/> | <input type="radio"/> |

6

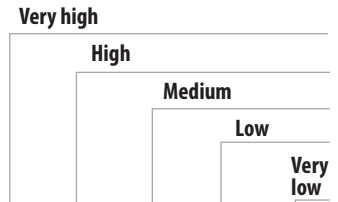
How would you characterize each of the following within your school?

Check **one** circle for each line.



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

Check **one** circle for each line.



- k) Students' desire to do well in school----- — — — —
- l) Students' ability to reach school's academic goals----- — — — —
- m) Students' respect for classmates who excel in school----- — — — —
- n) Clarity of the school's educational objectives ----- — — — —
- o) Collaboration between school leadership and teachers to plan instruction --- — — — —
- p) Amount of instructional support provided to teachers by school leadership ----- — — — —
- q) School leadership's support for teachers' professional development ----- — — — —
- r) Teachers' job satisfaction----- — — — —

7

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

Check **one** circle for each line.

| | | | | | | | | |
|---|-----------------------|-------------|-----------------------|----------------|-----------------------|-------------------|-----------------------|----------------|
| | | Agree a lot | | Agree a little | | Disagree a little | | Disagree a lot |
| a) This school is located in a safe neighborhood ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- |
| b) I feel safe at this school ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- |
| c) This school's security policies and practices are sufficient ---- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- |
| d) The students behave in an orderly manner ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- |
| e) The students are respectful of the teachers ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- |
| f) The students respect school property ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- |
| g) This school has clear rules about student conduct ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- |
| h) This school's rules are enforced in a fair and consistent manner ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- |

8

In your current school, how severe is each problem?

Check **one** circle for each line.

| | | | | | | | | |
|--|-----------------------|---------------|-----------------------|---------------|-----------------------|------------------|-----------------------|-----------------|
| | | Not a problem | | Minor problem | | Moderate problem | | Serious problem |
| a) The school building needs significant repair ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- |
| b) Teachers do not have adequate workspace (e.g., for preparation, collaboration, or meeting with students) ---- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- |
| c) Teachers do not have adequate instructional materials and supplies ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- |
| d) The school classrooms are not cleaned often enough ---- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- |
| e) The school classrooms need maintenance work ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- |
| f) Teachers do not have adequate technological resources ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- |
| g) Teachers do not have adequate support for using technology ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- |
| h) There are too many students in the classes ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- |
| i) Teachers have too many teaching hours ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- |
| j) Teachers have too much material to cover in classes ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- | <input type="radio"/> | ----- |

9

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

Check **one** circle for each line.

| | Very Often | Often | Sometimes | Never or almost never |
|--|-----------------------|-----------------------|-----------------------|-----------------------|
| a) Discuss how to teach a particular topic ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b) Collaborate in planning and preparing instructional materials ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c) Share what I have learned about my teaching experiences ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| d) Visit another classroom to learn more about teaching ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| e) Work together to try out new ideas ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| f) Go to other teachers for help ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| g) Work as a group on implementing the curriculum ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| h) Work with teachers from other grades to ensure continuity in learning ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| i) Participate in teacher mentoring ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

10

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

Check **one** circle for each line.

| | Very Often | Often | Sometimes | Never or almost never |
|---|-----------------------|-----------------------|-----------------------|-----------------------|
| a) I am content with my profession as a teacher ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b) I am satisfied with being a teacher at this school ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c) I find my work full of meaning and purpose ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| d) I am enthusiastic about my job ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| e) My work inspires me ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| f) I am proud of the work I do ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| g) I am frustrated as a teacher ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| h) I am supported by the teachers at my school ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| i) I am going to continue teaching for as long as I can ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

11

How many students are in this class?

_____ students
Write in a number.

12

How many <eighth-grade> students experience difficulties understanding spoken <language of test>?

_____ students in this class
Write in a number.

13

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

Check **one** circle for each line.

Every or almost every lesson
About half the lessons
Some lessons
Never

- a) Summarize what students should have learned from the lesson ----- - - -
- b) Ask questions to elicit reasons and explanations ---- - - -
- c) Ask questions to check that students understand what I am teaching ----- - - -
- d) Encourage all students to improve their performance --- - - -
- e) Praise students for good performance ----- - - -
- f) Ask students to complete challenging exercises that require them to go beyond the instruction ---- - - -
- g) Encourage classroom discussions among students ----- - - -
- h) Link new content to students' prior knowledge ---- - - -
- i) Ask students to decide their own problem solving procedures ----- - - -
- j) Encourage students to express their ideas in class ---- - - -

14

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

Check **one** circle for each line.

| | Not at all | Some | A lot |
|---|-----------------------|-----------------------|-----------------------|
| a) Students lacking prerequisite knowledge or skills ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b) Students suffering from lack of basic nutrition ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c) Students suffering from not enough sleep ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| d) Students with special needs (e.g., physical disabilities, mental or emotional/psychological impairment) ---- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| e) Disruptive students ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| f) Uninterested students ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Questions 15–17 ask about science instruction for the <eighth-grade> students in the <TIMSS class/class with the TIMSS students>.

15

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.

16

In teaching science to this class, how confident do you feel to do the following?

Check **one** circle for each line.



- a) Answer students' questions about science ----- — —
- b) Explain science concepts or principles by doing science experiments ----- — —
- c) Provide challenging tasks for the highest achieving students ----- — —
- d) Adapt my teaching to engage students' interest ----- — —
- e) Help students appreciate the value of learning science ----- — —
- f) Inspire students who are unmotivated to learn science ----- — —
- g) Assess student comprehension of science ----- — —
- h) Improve the understanding of struggling students ----- — —
- i) Build supportive relationships with students ----- — —
- j) Manage the classroom to avoid disruptions ----- — —
- k) Make science relevant to students ----- — —
- l) Challenge students into developing higher order thinking skills ----- — —
- m) Teach science using inquiry methods ----- — —

17

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

Check **one** circle for each line.

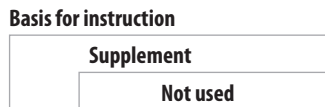
| | Every or almost every lesson | About half the lessons | Some lessons | Never |
|---|------------------------------|------------------------|-----------------------|-----------------------|
| a) Listen to me explain new science content ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b) Observe natural phenomena and describe what they see --- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c) Watch me demonstrate an experiment or investigation ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| d) Design or plan experiments or investigations ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| e) Conduct experiments or investigations ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| f) Present data from experiments or investigations ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| g) Interpret data from experiments or investigations ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| h) Use evidence from experiments or investigations to support conclusions ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| i) Read their textbooks or other resource materials ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| j) Have students memorize facts and principles ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| k) Use scientific formulas and laws to solve routine problems ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| l) Give explanations about something they are studying ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| m) Relate what they are learning in science to their daily lives ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| n) Do field work outside of class - | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| o) Take a written test or quiz ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| p) Work in mixed ability groups -- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| q) Work in same ability groups --- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Questions 18–19 ask about resources for teaching science to the <eighth-grade> students in the <TIMSS class/class with the TIMSS students>.

18

When you teach science to this class, how do you use the following resources?

Check **one** circle for each line.



- a) Textbooks ----- — —
- b) Workbooks or worksheets ----- — —
- c) Science equipment and materials ----- — —
- d) Computer software/ applications (apps) for science instruction ----- — —
- e) Internet resources ----- — —

19

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

Check **one** circle only.

Yes ---

No ---

(If No, go to #20)

If Yes,

B. How many of the computers have access to the Internet?

Check **one** circle only.

All ---

Most ---

Some ---

None ---

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

Check **one** circle for each line.

Every or almost every day

Once or twice a week

Once or twice a month

Never or almost never

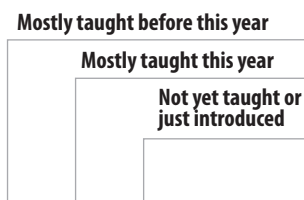
- a) Practice skills and procedures ----- — — —
- b) Look up ideas and information ----- — — —
- c) Do scientific procedures or experiments ----- — — —
- d) Study natural phenomena through simulations ----- — — —
- e) Process and analyze data ----- — — —

Question 20 asks about the topics taught and the content covered in teaching science to the <eighth-grade> students in the <TIMSS class/class with the TIMSS students>.

20

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.”

Check **one** circle for each line.



A. Biology

- a) Differences among major taxonomic groups of organisms (plants, animals, fungi, mammals, birds, reptiles, fish, amphibians) ----- — —
- b) Major organs and organ systems in humans and other organisms (structure/function, life processes that maintain stable bodily conditions) ----- — —
- c) Cells, their structure and functions, including respiration and photosynthesis as cellular processes ----- — —
- d) Life cycles, sexual reproduction, and heredity (passing on of traits, inherited versus acquired/learned characteristics) ----- — —
- 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) ----- — —
- 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 ----- — —
- g) Human health (causes of infectious diseases, methods of infection, prevention, immunity) and the importance of diet and exercise in maintaining health ----- — —

B. Chemistry

- a) Classification, composition, and particulate structure of matter (elements, compounds, mixtures, molecules, atoms, protons, neutrons, electrons) ----- — —
- b) Physical and chemical properties of matter ----- — —
- c) Mixtures and solutions (solvent, solute, concentration/dilution, effect of temperature on solubility) ----- — —
- d) Properties and uses of common acids and bases ----- — —
- e) Chemical change (transformation of reactants, evidence of chemical change, conservation of matter, common oxidation reactions – combustion, rusting, tarnishing) ----- — —
- f) The role of electrons in chemical bonds ----- — —

20 (continued)

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."

Check **one** circle for each line.

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

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) ----- — —
- b) Energy forms, transformations, heat, and temperature ----- — —
- c) Basic properties/behaviors of light (reflection, refraction, light and color, simple ray diagrams) and sound (transmission through media, loudness, pitch, amplitude, frequency) ----- — —
- d) Electric circuits (flow of current; types of circuits - parallel/series) and properties and uses of permanent magnets and electromagnets ----- — —
- e) Forces and motion (types of forces, basic description of motion, effects of density and pressure) ----- — —

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) ----- — —
- b) Earth's processes, cycles and history (rock cycle; water cycle; weather versus climate; major geological events; formation of fossils and fossil fuels) ----- — —
- c) Earth's resources, their use and conservation (e.g., renewable/nonrenewable resources, human use of land/soil, water resources) ----- — —
- 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) ----- — —

Question 21 asks about science homework for the <eighth-grade> students in the <TIMSS class/class with the TIMSS students>.

21

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

Check **one** circle only.

- I do not assign science homework ---
- Less than once a week ---
- 1 or 2 times a week ---
- 3 or 4 times a week ---
- Every day ---

(Go to #22)

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.)

Check **one** circle only.

- 15 minutes or less ---
- 16–30 minutes ---
- 31–60 minutes ---
- 61–90 minutes ---
- More than 90 minutes ---

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

Check **one** circle for each line.



- a) Correct assignments and give feedback to students ----- — —
- b) Have students correct their own homework ----- — —
- c) Discuss the homework in class ----- — —
- d) Monitor whether or not the homework was completed ----- — —
- e) Use the homework to contribute towards students' grades or marks ----- — —

Questions 22–24 ask about science assessment for the <eighth-grade> students in the <TIMSS class/class with the TIMSS students>.

22

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

Check **one** circle for each line.

- Major emphasis
Some emphasis
Little or no emphasis
- a) Evaluation of students' ongoing work ----- ○ — ○ — ○
 - b) Classroom tests (for example, teacher-made or textbook tests) ----- ○ — ○ — ○
 - c) National or regional achievement tests ----- ○ — ○ — ○

23

How often do you give a science test or examination to this class?

Check **one** circle only.

- About once a week --- ○
- About every two weeks --- ○
- About once a month --- ○
- A few times a year --- ○
- Never --- ○

24

How often do you include the following types of questions in your science tests or examinations?

Check **one** circle for each line.

- Always or almost always
Sometimes
Never or almost never
- a) Questions based on knowing facts and concepts --- ○ — ○ — ○
 - b) Questions based on the application of knowledge and understanding ----- ○ — ○ — ○
 - c) Questions requiring explanations or justifications ----- ○ — ○ — ○

25

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

Check **one** circle for each line.

- | | Yes | No |
|---|-----------------------|-----------------------|
| a) Science content ----- | <input type="radio"/> | <input type="radio"/> |
| b) Science pedagogy/instruction ----- | <input type="radio"/> | <input type="radio"/> |
| c) Science curriculum ----- | <input type="radio"/> | <input type="radio"/> |
| d) Integrating information technology into science ----- | <input type="radio"/> | <input type="radio"/> |
| e) Improving students' critical thinking or inquiry skills ----- | <input type="radio"/> | <input type="radio"/> |
| f) Science assessment ----- | <input type="radio"/> | <input type="radio"/> |
| g) Addressing individual students' needs ----- | <input type="radio"/> | <input type="radio"/> |

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?

Check **one** circle only.

- None ---
- Less than 6 hours ---
- 6–15 hours ---
- 16–35 hours ---
- More than 35 hours ---

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."

Check **one** circle for each line.

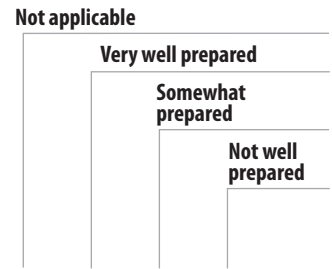
| | Not applicable | Very well prepared | Somewhat prepared | Not well prepared |
|---|-----------------------|-----------------------|-----------------------|-----------------------|
| A. Biology | | | | |
| a) Differences among major taxonomic groups of organisms (plants, animals, fungi, mammals, birds, reptiles, fish, amphibians) ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b) Major organs and organ systems in humans and other organisms (structure/function, life processes that maintain stable bodily conditions) ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c) Cells, their structure and functions, including respiration and photosynthesis as cellular processes ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| d) Life cycles, sexual reproduction, and heredity (passing on of traits, inherited versus acquired/learned characteristics) ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 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) ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 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 ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| g) Human health (causes of infectious diseases, methods of infection, prevention, immunity) and the importance of diet and exercise in maintaining health ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| B. Chemistry | | | | |
| a) Classification, composition, and particulate structure of matter (elements, compounds, mixtures, molecules, atoms, protons, neutrons, electrons) ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b) Physical and chemical properties of matter ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c) Mixtures and solutions (solvent, solute, concentration/dilution, effect of temperature on solubility) ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| d) Properties and uses of common acids and bases ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| e) Chemical change (transformation of reactants, evidence of chemical change, conservation of matter, common oxidation reactions – combustion, rusting, tarnishing) ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| f) The role of electrons in chemical bonds ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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."

Check **one** circle for each line.



C. Physics

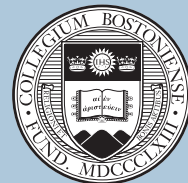
- a) Physical states and changes in matter (explanations of properties in terms of movement and distance between particles; phase change, thermal expansion, and changes in volume and/or pressure) ----- — — —
- b) Energy forms, transformations, heat, and temperature ----- — — —
- c) Basic properties/behaviors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

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) ----- — — —
- b) Earth's processes, cycles and history (rock cycle; water cycle; weather versus climate; major geological events; formation of fossils and fossil fuels) ----- — — —
- c) Earth's resources, their use and conservation (e.g., renewable/nonrenewable resources, human use of land/soil, water resources) ----- — — —
- 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) ----- — — —

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 Science

<Grade 8>

Field Test Version



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International Association
for the Evaluation of
Educational Achievement

timssandpirls.bc.edu



Identification Label

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

School Questionnaire

<Grade 4>

<TIMSS National Research Center Name>

<Address>

Field Test Version



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

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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 more than 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 primary/elementary education in <country>.

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 <country>. 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:

<Insert country-specific information here>.

Thank you.

1 _____

What is the total enrollment of students in your school as of <first day of month TIMSS testing begins, 2014>?

_____ students
Write in a number.

2 _____

What is the total enrollment of <fourth-grade> students in your school as of <first day of month TIMSS testing begins, 2014>?

_____ students
Write in a number.

3 _____

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

Check **one** circle for each line.

| | | | | |
|---|-----------------------|-----------------------|-----------------------|-----------------------|
| | 0 to 10% | 11 to 25% | 26 to 50% | More than 50% |
| a) Come from economically disadvantaged homes ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b) Come from economically affluent homes ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

4 _____

Approximately what percentage of students in your school have <language of test> as their native language?

Check **one** circle only.

- More than 90% ---
- 76 to 90% ---
- 51 to 75% ---
- 26 to 50% ---
- 25% or less ---

5 _____

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

Check **one** circle only.

- More than 500,000 people --
- 100,001 to 500,000 people --
- 50,001 to 100,000 people --
- 30,001 to 50,000 people --
- 15,001 to 30,000 people --
- 3,001 to 15,000 people --
- 3,000 people or fewer --

B. Which best describes the immediate area in which your school is located?

Check **one** circle only.

- Urban—Densely populated ---
- Suburban—On fringe or outskirts of urban area ---
- Medium size city or large town ---
- Small town or village ---
- Remote rural ---

6

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?

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

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

Check **one** circle only.

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

7

Is student achievement used to assign students to classes (e.g., streaming, tracking)?

Check **one** circle only.

- Yes---
- No---

8

How many computers does your school have for use by <fourth grade> students? Include tablets such as iPads.

_____ computers
Write in the number.

9

Does your school have a science laboratory that can be used by <fourth-grade> students?

Check **one** circle only.

- Yes---
- No---

10**Does your school have a school library?***Check **one** circle only.*Yes--- No--- **(If No, go to #11)****If Yes,****A. Approximately how many books (print and digital) with different titles does your school library have (exclude magazines and periodicals)?***Check **one** circle in each column.*

| | <u>Print</u> | | <u>Digital</u> |
|---------------------|-----------------------|-----|-----------------------|
| 250 or fewer--- | <input type="radio"/> | --- | <input type="radio"/> |
| 251–500--- | <input type="radio"/> | --- | <input type="radio"/> |
| 501–2,000--- | <input type="radio"/> | --- | <input type="radio"/> |
| 2,001–5,000--- | <input type="radio"/> | --- | <input type="radio"/> |
| 5,001–10,000--- | <input type="radio"/> | --- | <input type="radio"/> |
| More than 10,000--- | <input type="radio"/> | --- | <input type="radio"/> |

B. Approximately how many titles of magazines and other periodicals (print and digital) does your school library have?*Check **one** circle in each column.*

| | <u>Print</u> | | <u>Digital</u> |
|---------------|-----------------------|-----|-----------------------|
| 0--- | <input type="radio"/> | --- | <input type="radio"/> |
| 1–5--- | <input type="radio"/> | --- | <input type="radio"/> |
| 6–10--- | <input type="radio"/> | --- | <input type="radio"/> |
| 11–30--- | <input type="radio"/> | --- | <input type="radio"/> |
| 31 or more--- | <input type="radio"/> | --- | <input type="radio"/> |

11

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

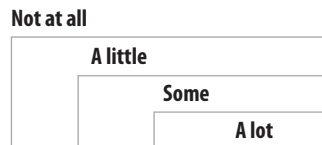
Check **one** circle for each line.



A. General School Resources

- a) Instructional materials (e.g., textbooks) ----- ○ — ○ — ○ — ○
- b) Supplies (e.g., papers, pencils, materials) ----- ○ — ○ — ○ — ○
- c) School buildings and grounds ----- ○ — ○ — ○ — ○
- d) Heating/cooling and lighting systems ----- ○ — ○ — ○ — ○
- e) Instructional space (e.g., classrooms) ----- ○ — ○ — ○ — ○
- f) Technologically competent staff ----- ○ — ○ — ○ — ○
- g) Audio-visual resources for delivery of instruction (e.g. interactive white boards, digital projectors) ----- ○ — ○ — ○ — ○
- h) Computer technology for teaching and learning (e.g. computers or tablets such as iPads for student use) ----- ○ — ○ — ○ — ○
- i) Resources for disabled students ----- ○ — ○ — ○ — ○

Check **one** circle for each line.



B. Resources for Mathematics Instruction

- a) Teachers with a specialization in mathematics ----- ○ — ○ — ○ — ○
- b) Computer software/ applications for mathematics instruction ----- ○ — ○ — ○ — ○
- c) Library resources relevant to mathematics instruction ----- ○ — ○ — ○ — ○
- d) Calculators for mathematics instruction ----- ○ — ○ — ○ — ○
- e) Concrete objects or materials to help students understand quantities or procedures ----- ○ — ○ — ○ — ○

C. Resources for Science Instruction

- a) Teachers with a specialization in science ----- ○ — ○ — ○ — ○
- b) Computer software/ applications for science instruction ----- ○ — ○ — ○ — ○
- c) Library resources relevant to science instruction ----- ○ — ○ — ○ — ○
- d) Science equipment and materials for experiments ----- ○ — ○ — ○ — ○

12

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

Check **one** circle for each line.

| | |
|---|---|
| | Very high High Medium Low Very low |
| a) Teachers' understanding of the school's curricular goals | <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> |
| b) Teachers' degree of success in implementing the school's curriculum | <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> |
| c) Teachers' expectations for student achievement | <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> |
| d) Teachers working together to improve student achievement | <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> |
| e) Teachers' ability to inspire students | <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> |
| f) Parental involvement in school activities | <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> |
| g) Parental commitment to ensure that students are ready to learn | <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> |
| h) Parental expectations for student achievement | <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> |
| i) Parental support for student achievement | <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> |
| j) Parental pressure for the school to maintain high academic standards | <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> |
| k) Students' desire to do well in school | <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> |
| l) Students' ability to reach school's academic goals | <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> |
| m) Students' respect for classmates who excel in school | <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> |

13

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

Check **one** circle for each line.

| | |
|--|---|
| | Not a problem Minor problem Moderate problem Serious problem |
| a) Arriving late at school | <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> |
| b) Absenteeism (i.e., unjustified absences) | <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> |
| c) Classroom disturbance | <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> |
| d) Cheating | <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> |
| e) Profanity | <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> |
| f) Vandalism | <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> |
| g) Theft | <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> |
| h) Intimidation or verbal abuse among students (including texting, emailing, etc.) | <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> |
| i) Physical fights among students | <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> |
| j) Intimidation or verbal abuse of teachers or staff (including texting, emailing, etc.) | <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> |

14

During the past year, approximately how much time have you spent on the following school leadership activities in your role as a school principal?

Check **one** circle for each line.

| | | | | |
|---|-----------------------|-----------------------|-----------------------|-----------------------|
| | No time | A little time | Some time | A lot of time |
| a) Promoting the school's educational vision or goals ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b) Developing the school's curricular and educational goals ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c) Monitoring teachers' implementation of the school's educational goals in their teaching ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| d) Monitoring students' learning progress to ensure that the school's educational goals are reached ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| e) Keeping an orderly atmosphere in the school ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| f) Addressing disruptive student behavior ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| g) Advising teachers who have questions or problems with their teaching ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| h) Initiating educational projects or improvements ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| i) Participating in professional development activities specifically for school principals ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

15

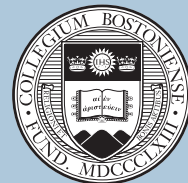
About how many of the students in your school can do the following when they begin the <first grade> of primary/elementary school?

Check **one** circle for each line.

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

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>

Field Test Version



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for the Evaluation of
Educational Achievement

timssandpirls.bc.edu



Identification Label

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

School Questionnaire

<Grade 8>

<TIMSS National Research Center Name>

<Address>

Field Test Version



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

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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 more than 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 secondary education in <country>.

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 <country>. 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:

<Insert country-specific information here>.

Thank you.

1 _____

What is the total enrollment of students in your school as of <first day of month TIMSS testing begins, 2014>?

_____ students
Write in a number.

2 _____

What is the total enrollment of <eighth-grade> students in your school as of <first day of month TIMSS testing begins, 2014>?

_____ students
Write in a number.

3 _____

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

*Check **one** circle for each line.*

| | | | | |
|---|----------|-----------|-----------|---------------|
| | 0 to 10% | 11 to 25% | 26 to 50% | More than 50% |
| a) Come from economically disadvantaged homes ----- | ○ | ○ | ○ | ○ |
| b) Come from economically affluent homes ----- | ○ | ○ | ○ | ○ |

4 _____

Approximately what percentage of students in your school have <language of test> as their native language?

*Check **one** circle only.*

- More than 90% -- ○
- 76 to 90% -- ○
- 51 to 75% -- ○
- 26 to 50% -- ○
- 25% or less -- ○

5 _____

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

*Check **one** circle only.*

- More than 500,000 people -- ○
- 100,001 to 500,000 people -- ○
- 50,001 to 100,000 people -- ○
- 30,001 to 50,000 people -- ○
- 15,001 to 30,000 people -- ○
- 3,001 to 15,000 people -- ○
- 3,000 people or fewer -- ○

B. Which best describes the immediate area in which your school is located?

*Check **one** circle only.*

- Urban—Densely populated -- ○
- Suburban—On fringe or outskirts of urban area -- ○
- Medium size city or large town -- ○
- Small town or village -- ○
- Remote rural -- ○

6

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?

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

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

Check **one** circle only.

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

7

Is student achievement used to assign students to classes (e.g., streaming, tracking)?

Check **one** circle only.

- Yes---
- No---

8

How many computers does your school have for use by <eighth grade> students? Include tablets such as iPads.

_____ computers
Write in the number.

9

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

Check **one** circle only.

- Yes---
- No---

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

Check **one** circle only.

- Yes---
- No---

10**Does your school have a school library?***Check **one** circle only.*Yes--- No--- **(If No, go to #11)****If Yes,****A. Approximately how many books (print and digital) with different titles does your school library have (exclude magazines and periodicals)?***Check **one** circle in each column.*

| | <u>Print</u> | | <u>Digital</u> |
|---------------------|-----------------------|-----|-----------------------|
| 250 or fewer--- | <input type="radio"/> | --- | <input type="radio"/> |
| 251–500--- | <input type="radio"/> | --- | <input type="radio"/> |
| 501–2,000--- | <input type="radio"/> | --- | <input type="radio"/> |
| 2,001–5,000--- | <input type="radio"/> | --- | <input type="radio"/> |
| 5,001–10,000--- | <input type="radio"/> | --- | <input type="radio"/> |
| More than 10,000--- | <input type="radio"/> | --- | <input type="radio"/> |

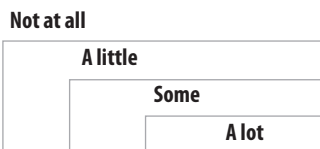
B. Approximately how many titles of magazines and other periodicals (print and digital) does your school library have?*Check **one** circle in each column.*

| | <u>Print</u> | | <u>Digital</u> |
|---------------|-----------------------|-----|-----------------------|
| 0--- | <input type="radio"/> | --- | <input type="radio"/> |
| 1–5--- | <input type="radio"/> | --- | <input type="radio"/> |
| 6–10--- | <input type="radio"/> | --- | <input type="radio"/> |
| 11–30--- | <input type="radio"/> | --- | <input type="radio"/> |
| 31 or more--- | <input type="radio"/> | --- | <input type="radio"/> |

11

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

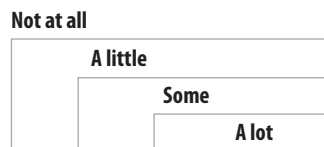
Check **one** circle for each line.



A. General School Resources

- a) Instructional materials (e.g., textbooks) ----- - - -
- b) Supplies (e.g., papers, pencils, materials) ----- - - -
- c) School buildings and grounds ----- - - -
- d) Heating/cooling and lighting systems ----- - - -
- e) Instructional space (e.g., classrooms) ----- - - -
- f) Technologically competent staff ----- - - -
- g) Audio-visual resources for delivery of instruction (e.g. interactive white boards, digital projectors) ----- - - -
- h) Computer technology for teaching and learning (e.g. computers or tablets such as iPads for student use) ----- - - -
- i) Resources for disabled students ----- - - -

Check **one** circle for each line.



B. Resources for Mathematics Instruction

- a) Teachers with a specialization in mathematics ----- - - -
- b) Computer software/ applications for mathematics instruction ----- - - -
- c) Library resources relevant to mathematics instruction ----- - - -
- d) Calculators for mathematics instruction ----- - - -
- e) Concrete objects or materials to help students understand quantities or procedures ----- - - -

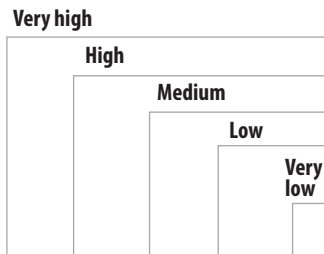
C. Resources for Science Instruction

- a) Teachers with a specialization in science ----- - - -
- b) Computer software/ applications for science instruction ----- - - -
- c) Library resources relevant to science instruction ----- - - -
- d) Calculators for science instruction ----- - - -
- e) Science equipment and materials for experiments ----- - - -

12

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

Check **one** circle for each line.

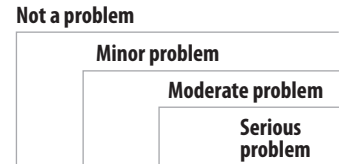


- a) Teachers' understanding of the school's curricular goals ----- ○ — ○ — ○ — ○ — ○
- b) Teachers' degree of success in implementing the school's curriculum ----- ○ — ○ — ○ — ○ — ○
- c) Teachers' expectations for student achievement ----- ○ — ○ — ○ — ○ — ○
- d) Teachers working together to improve student achievement ----- ○ — ○ — ○ — ○ — ○
- e) Teachers' ability to inspire students ----- ○ — ○ — ○ — ○ — ○
- f) Parental involvement in school activities ----- ○ — ○ — ○ — ○ — ○
- g) Parental commitment to ensure that students are ready to learn ----- ○ — ○ — ○ — ○ — ○
- h) Parental expectations for student achievement ----- ○ — ○ — ○ — ○ — ○
- i) Parental support for student achievement ----- ○ — ○ — ○ — ○ — ○
- j) Parental pressure for the school to maintain high academic standards ----- ○ — ○ — ○ — ○ — ○
- k) Students' desire to do well in school ----- ○ — ○ — ○ — ○ — ○
- l) Students' ability to reach school's academic goals ----- ○ — ○ — ○ — ○ — ○
- m) Students' respect for classmates who excel in school ----- ○ — ○ — ○ — ○ — ○

13

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

Check **one** circle for each line.



- a) Arriving late at school ----- ○ — ○ — ○ — ○
- b) Absenteeism (i.e., unjustified absences) ----- ○ — ○ — ○ — ○
- c) Classroom disturbance ----- ○ — ○ — ○ — ○
- d) Cheating ----- ○ — ○ — ○ — ○
- e) Profanity ----- ○ — ○ — ○ — ○
- f) Vandalism ----- ○ — ○ — ○ — ○
- g) Theft ----- ○ — ○ — ○ — ○
- h) Intimidation or verbal abuse among students (including texting, emailing, etc.) ----- ○ — ○ — ○ — ○
- i) Physical injury to other students ----- ○ — ○ — ○ — ○
- j) Intimidation or verbal abuse of teachers or staff (including texting, emailing, etc.) ----- ○ — ○ — ○ — ○
- k) Physical injury to teachers or staff ----- ○ — ○ — ○ — ○

14

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

Check **one** circle for each line.

| | | | | |
|----------------|-------|-----------------------------------|-----------------------|-----------------------|
| | | Were no vacancies in this subject | | |
| | | Easy to fill vacancies | | |
| | | Somewhat difficult | | |
| | | Very difficult | | |
| a) Mathematics | ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b) Science | ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c) Other | ----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

15

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?

Check **one** circle for each line.

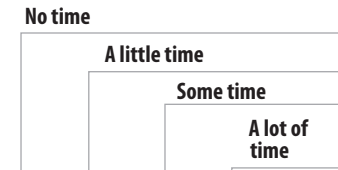
| | | | | |
|----------------|-------|-----------------------|---|-----------------------|
| | | Yes | | No |
| a) Mathematics | ----- | <input type="radio"/> | — | <input type="radio"/> |
| b) Science | ----- | <input type="radio"/> | — | <input type="radio"/> |
| c) Other | ----- | <input type="radio"/> | — | <input type="radio"/> |

16

During the past year, approximately how much time have you spent on the following school leadership activities in your role as a school principal?

Check **one** circle for each line.

Check **one** circle for each line.

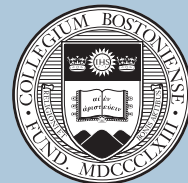


- a) Promoting the school's educational vision or goals ---- ○ — ○ — ○ — ○
- b) Developing the school's curricular and educational goals ----- ○ — ○ — ○ — ○
- c) Monitoring teachers' implementation of the school's educational goals in their teaching ----- ○ — ○ — ○ — ○
- d) Monitoring students' learning progress to ensure that the school's educational goals are reached ----- ○ — ○ — ○ — ○
- e) Keeping an orderly atmosphere in the school ----- ○ — ○ — ○ — ○

- f) Addressing disruptive student behavior ----- ○ — ○ — ○ — ○
- g) Advising teachers who have questions or problems with their teaching ----- ○ — ○ — ○ — ○
- h) Initiating educational projects or improvements ---- ○ — ○ — ○ — ○
- i) Participating in professional development activities specifically for school principals ----- ○ — ○ — ○ — ○

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>

Field Test Version



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for the Evaluation of
Educational Achievement

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Place Label Here

Student ID: _____

Participation Status: TB _____ STQ _____

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

Booklet



Mathematics

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

Field Test



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. 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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OMB No. 1850-0695, Approval Expires 11/30/2016.

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Instructed To Do So.**



TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

Student Questionnaire Advanced Mathematics

Field Test Version



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

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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 circle next to or under the answer of your choice as shown in the Example.

Example

How often do you do these things?

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

| | 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 circle next to or under your answer.
- If you decide to change your answer, completely erase your first choice. Then, fill in the circle next to or under your new answer.
- Ask for help if you do not understand something or are not sure how to answer.

1

A. Are you female or male?

*Fill in **one** circle only.*

Female -- ①

Male -- ②

B. Are you Hispanic or Latino?

*Fill in **one** circle only.*

Yes, I am Hispanic or Latino -- ①

No, I am not Hispanic or Latino -- ②

C. Which of the following best describes you?

*Fill in **one or more** circles.*

White -- ①

Black or African American -- ①

Asian -- ①

American Indian or Alaska Native -- ①

Native Hawaiian or Pacific Islander -- ①

2**When were you born?**

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

a) Month

- January --
- February --
- March --
- April --
- May --
- June --
- July --
- August --
- September --
- October --
- November --
- December --

b) Year

- 1993 --
- 1994 --
- 1995 --
- 1996 --
- 1997 --
- 1998 --
- 1999 --
- 2000 --
- 2001 --
- Other --

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

*Fill in **one** circle 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** circle only.*

Spanish -- ①

Other -- ② Please specify _____

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

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

- | | 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** circle only.*

- None or very few
(0–10 books) -- ①
- Enough to fill one shelf
(11–25 books) -- ②
- Enough to fill one bookcase
(26–100 books) -- ③
- Enough to fill two bookcases
(101–200 books) -- ④
- Enough to fill three or more bookcases
(more than 200) -- 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** circle 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 **one** circle for each line.

- | | Yes
↓ | No
↓ |
|--|----------|---------|
| 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 (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 guardian)?**

*Fill in **one** circle 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 EdD) --- ⑦

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

*Fill in **one** circle 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 EdD) --- ⑦

10

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

For each, fill in the circle 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 **one** circle in 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) Not applicable ----- | ① | ② |

11

How far in your education do you expect to go?

*Fill in **one** circle only.*

Complete high school ----- ①

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

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

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

Complete Doctorate (Ph.D., EdD) --- ⑤

12

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

Fill in the circle(s) that apply.

- Mathematics or Statistics ----- ①
- Physics ----- ①
- Chemistry ----- ①
- Biological and Biomedical Sciences
(e.g., dentistry, medicine, nursing,
pharmacology, veterinary medicine) ----- ①
- Engineering and Engineering Technologies
(e.g., aerospace engineering, chemical
engineering, civil engineering, electrical
engineering, mechanical engineering) ----- ①
- Computer and Information Sciences ----- ①
- Education ----- ①
- Business (e.g., accounting, marketing,
administration, finance, management) ----- ①
- Law ----- ①
- Social Sciences (e.g., sociology, political science,
economics, psychology) ----- ①
- Arts and Humanities (e.g., art, language,
literature, history, philosophy) ----- ①
- Other Science Fields of Study ----- ①
- 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 **one** circle for each line.*

- | | Yes
↓ | Maybe
↓ | No
↓ |
|---|----------|------------|---------|
| a) Education (e.g., teacher, university professor) .. | ① | ② | ③ |
| b) Engineering and Engineering Technologies (e.g., aerospace engineer, chemical engineer, civil engineer, electrical engineer, mechanical engineer)----- | ① | ② | ③ |
| c) Computer and Information Sciences (e.g., database administrator, network administrator, software or application developer, systems analyst)----- | ① | ② | ③ |
| c) Finance/Banking ----- | ① | ② | ③ |
| e) Biological and Biomedical Sciences (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 guardian) born in the United States?

*Fill in **one** circle only.*

Yes -- ①

No -- ②

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

*Fill in **one** circle only.*

Yes -- ①

No -- ②

15

A. Were you born in the United States?

*Fill in **one** circle 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** circle 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. Do you have a paid job?

*Fill in **one** circle 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. Do you attend extra lessons or tutoring outside of school in advanced mathematics?

*Fill in **one** circle only.*

Yes -- ①

No -- ② 

(If No, go to question 20)

If Yes,

B. Why do you attend extra lessons or tutoring?

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

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

20

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

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

- | | Agree
a lot | Agree
a little | Disagree
a little | Disagree
a lot |
|--|----------------|-------------------|----------------------|-------------------|
| a) The teacher clearly communicates the purpose of each mathematics 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 advanced mathematics lessons?

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

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

- | | 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 **one** circle for each line.

- | | Agree
a lot | Agree
a little | Disagree
a little | Disagree
a lot |
|--|----------------|-------------------|----------------------|-------------------|
| a) When I do mathematics problems, I sometimes get completely absorbed | ↓ ① | ↓ ② | ↓ ③ | ↓ 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) I like the way mathematics is taught in my class | ① | ② | ③ | ④ |
| j) Mathematics is one of my favorite subjects | ① | ② | ③ | ④ |
| k) Jobs that require advanced mathematics skills seem interesting to me | ① | ② | ③ | ④ |
| l) I wish I did not have to study mathematics | ① | ② | ③ | ④ |
| m) 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 **one** circle for each line.

- | | Agree
a lot | Agree
a little | Disagree
a little | Disagree
a lot |
|---|----------------|-------------------|----------------------|-------------------|
| a) Learning mathematics will help me get ahead in the world | ① | ② | ③ | ④ |
| b) It is important to do well in my mathematics class | ① | ② | ③ | ④ |
| c) I am studying mathematics because my friends are studying this subject | ① | ② | ③ | ④ |
| d) The mathematics I am studying is not useful for my future | ① | ② | ③ | ④ |
| e) My parents are pleased that I am taking advanced mathematics | ① | ② | ③ | ④ |
| f) It is important for me to show that I am better in mathematics than other students | ① | ② | ③ | ④ |
| g) Doing well in mathematics will help me get into the college or university of my choice | ① | ② | ③ | ④ |
| h) I am studying mathematics because a teacher advised me to take this subject | ① | ② | ③ | ④ |
| i) Learning advanced mathematics does not seem to be a worthwhile exercise | ① | ② | ③ | ④ |
| j) My parents think that it is important that I do well in my mathematics class | ① | ② | ③ | ④ |
| k) I like telling people I am studying advanced mathematics | ① | ② | ③ | ④ |
| l) 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** circle 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** circle 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** circle 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 circles for each line.

| | 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[®]) courses. Have taken or are enrolled in:

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

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

29

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

Fill in **one** circle 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** circle only.*

Yes -- ①

No -- ②

31

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

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

- | | 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) I like to go to school to see my friends | ① | ② | ③ | ④ |
| f) Teachers at my school are fair to me | ① | ② | ③ | ④ |
| g) My teachers respect my ideas | ① | ② | ③ | ④ |
| h) I am proud to go to this school | ① | ② | ③ | ④ |
| i) I learn a lot in school | ① | ② | ③ | ④ |
| j) My classmates respect students who excel in school subjects | ① | ② | ③ | ④ |
| k) My classmates respect students who struggle learning school subjects | ① | ② | ③ | ④ |

33

During this year, how often have other students from your school done any of the following things to you (in person or through text messages, e-mails, or the Internet)?

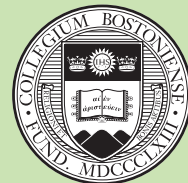
Fill in **one** circle for each line.

| | 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 |



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

Field Test Version



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International Association
for the Evaluation of
Educational Achievement

timssandpirls.bc.edu



Place Label Here

Student ID: _____

Participation Status: TB _____ STQ _____

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

Physics

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

Booklet

Field Test



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

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Instructed To Do So.**



TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

Student Questionnaire Physics

Field Test Version



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

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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 circle next to or under the answer of your choice as shown in the Example.

Example

How often do you do these things?

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

| | 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 circle next to or under your answer.
- If you decide to change your answer, completely erase your first choice. Then, fill in the circle next to or under your new answer.
- Ask for help if you do not understand something or are not sure how to answer.

1

A. Are you female or male?

*Fill in **one** circle only.*

Female -- ①

Male -- ②

B. Are you Hispanic or Latino?

*Fill in **one** circle only.*

Yes, I am Hispanic or Latino -- ①

No, I am not Hispanic or Latino -- ②

C. Which of the following best describes you?

*Fill in **one or more** circles.*

White -- ①

Black or African American -- ①

Asian -- ①

American Indian or Alaska Native -- ①

Native Hawaiian or Pacific Islander -- ①

2**When were you born?**

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

a) Month

- January --
- February --
- March --
- April --
- May --
- June --
- July --
- August --
- September --
- October --
- November --
- December --

b) Year

- 1993 --
- 1994 --
- 1995 --
- 1996 --
- 1997 --
- 1998 --
- 1999 --
- 2000 --
- 2001 --
- Other --

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

*Fill in **one** circle 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** circle only.*

Spanish -- ①

Other -- ② Please specify _____

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

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

- | | 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** circle only.*

- None or very few
(0–10 books) -- ①
- Enough to fill one shelf
(11–25 books) -- ②
- Enough to fill one bookcase
(26–100 books) -- ③
- Enough to fill two bookcases
(101–200 books) -- ④
- Enough to fill three or more bookcases
(more than 200) -- 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** circle 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 **one** circle for each line.

- | | Yes
↓ | No
↓ |
|--|----------|---------|
| 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 (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 guardian)?**

*Fill in **one** circle 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 EdD) --- ⑦

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

*Fill in **one** circle 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 EdD) --- ⑦

10

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

For each, fill in the circle 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 **one** circle in 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) Not applicable ----- | ① | ② |

11

How far in your education do you expect to go?

*Fill in **one** circle only.*

Complete high school ----- ①

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

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

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

Complete Doctorate (Ph.D., EdD) --- ⑤

12

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

Fill in the circle(s) that apply.

- Mathematics or Statistics ----- ①
- Physics ----- ①
- Chemistry ----- ①
- Biological and Biomedical Sciences
(e.g., dentistry, medicine, nursing,
pharmacology, veterinary medicine) ----- ①
- Engineering and Engineering Technologies
(e.g., aerospace engineering, chemical
engineering, civil engineering, electrical
engineering, mechanical engineering) ----- ①
- Computer and Information Sciences ----- ①
- Education ----- ①
- Business (e.g., accounting, marketing,
administration, finance, management) ----- ①
- Law ----- ①
- Social Sciences (e.g., sociology, political science,
economics, psychology) ----- ①
- Arts and Humanities (e.g., art, language,
literature, history, philosophy) ----- ①
- Other Science Fields of Study ----- ①
- 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 **one** circle for each line.*

- | | Yes
↓ | Maybe
↓ | No
↓ |
|---|----------|------------|---------|
| a) Education (e.g., teacher, university professor) .. | ① | ② | ③ |
| b) Engineering and Engineering Technologies (e.g., aerospace engineer, chemical engineer, civil engineer, electrical engineer, mechanical engineer)----- | ① | ② | ③ |
| c) Computer and Information Sciences (e.g., database administrator, network administrator, software or application developer, systems analyst)----- | ① | ② | ③ |
| c) Finance/Banking ----- | ① | ② | ③ |
| e) Biological and Biomedical Sciences (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 guardian) born in the United States?

*Fill in **one** circle only.*

Yes -- ①

No -- ②

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

*Fill in **one** circle only.*

Yes -- ①

No -- ②

15

A. Were you born in the United States?

*Fill in **one** circle 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** circle 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. Do you have a paid job?

*Fill in **one** circle 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. Do you attend extra lessons or tutoring outside of school in physics?

*Fill in **one** circle only.*

Yes -- ①

No -- ② 

(If No, go to question 20)

If Yes,

B. Why do you attend extra lessons or tutoring?

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

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

20

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

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

- | | 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 **one** circle for each line.

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

- | | 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 **one** circle for each line.

| | 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) I like the way physics is taught in my class | ① | ② | ③ | ④ |
| j) Physics is one of my favorite subjects | ① | ② | ③ | ④ |
| k) Jobs that require physics skills seem interesting to me | ① | ② | ③ | ④ |
| l) I wish I did not have to study physics | ① | ② | ③ | ④ |
| m) 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 **one** circle for each line.

- | | 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) I am studying physics because my friends are studying this subject --- | ① | ② | ③ | ④ |
| d) The physics I am studying is not useful for my future | ① | ② | ③ | ④ |
| e) My parents are pleased that I am taking physics | ① | ② | ③ | ④ |
| f) It is important for me to show that I am better in physics than other students | ① | ② | ③ | ④ |
| g) Doing well in physics will help me get into the college or university of my choice | ① | ② | ③ | ④ |
| h) I am studying physics because a teacher advised me to take this subject | ① | ② | ③ | ④ |
| i) Learning physics does not seem to be a worthwhile exercise | ① | ② | ③ | ④ |
| j) My parents think that it is important that I do well in my physics class | ① | ② | ③ | ④ |
| k) I like telling people I am studying physics | ① | ② | ③ | ④ |
| l) 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** circle 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** circle 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** circle 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** circles for each line.

| | 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®) courses. Have taken or are enrolled in:

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

- | | Yes | No |
|--|-----|----|
| | ↓ | ↓ |
| a) Advanced Placement (AP) Biology | ① | ② |
| b) Advanced Placement (AP) Environmental Science..... | ① | ② |
| c) Advanced Placement (AP) Chemistry | ① | ② |
| d) Advanced Placement (AP) Physics B or C..... | ① | ② |
| e) Advanced Placement (AP) Computer Science A or AB | ① | ② |

29

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

Fill in **one** circle 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** circle only.

Yes -- ①

No -- ②

31

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

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

- | | 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) I like to go to school to see my friends | ① | ② | ③ | ④ |
| f) Teachers at my school are fair to me | ① | ② | ③ | ④ |
| g) My teachers respect my ideas | ① | ② | ③ | ④ |
| h) I am proud to go to this school | ① | ② | ③ | ④ |
| i) I learn a lot in school | ① | ② | ③ | ④ |
| j) My classmates respect students who excel in school subjects | ① | ② | ③ | ④ |
| k) My classmates respect students who struggle learning school subjects | ① | ② | ③ | ④ |

33

During this year, how often have other students from your school done any of the following things to you (in person or through text messages, e-mails, or the Internet)?

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

| | 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 |



Thank You!

Thank you for filling out the questionnaire!



BOSTON
COLLEGE

TIMSS
Advanced
2015

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

Student Questionnaire

Physics

Field Test Version



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International Association
for the Evaluation of
Educational Achievement

timssandpirls.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

Field Test Version



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

© IEA, 2013

U.S. participation in this study is sponsored by the National Center for Education Statistics (NCES), U.S. Department of Education. 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 35 minutes per response, 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) or suggestions for improving the form, please write to:** U.S. Department of Education, Washington, D.C. 20202-4537. **If you have 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. 20006-5650. OMB No. 1850-0695, Approval Expires 11/30/2016.

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 35 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 35 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 this 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)

High school graduate ----- (2)

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 EdD) ----- (6)

5 _____

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

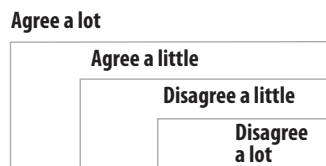
*Fill in **one** circle for each line.*

| | 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 **one** circle for each line.

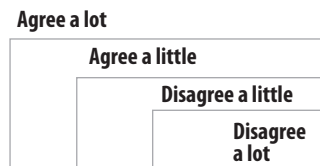


- a) The school encourages students to study advanced mathematics and physics ----- ① — ② — ③ — ④
- b) The school has teachers qualified to teach advanced mathematics and physics ----- ① — ② — ③ — ④
- c) The school has the technological resources necessary to teach advanced mathematics and physics ----- ① — ② — ③ — ④
- d) The school promotes professional development for teachers of advanced mathematics and physics ----- ① — ② — ③ — ④
- e) The school provides students with information about career options 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) Teachers have high expectations for student achievement in advanced mathematics and physics ----- ① — ② — ③ — ④
- h) Students at this school respect students who excel in advanced mathematics and physics ----- ① — ② — ③ — ④
- i) Students desire to do well in advanced mathematics and physics ----- ① — ② — ③ — ④
- j) 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 **one** circle for each line.



- 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 **one** circle for each line.

| | | |
|--|---|--|
| | 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 | |
| h) There are too many students in the classes ----- | ① — ② — ③ — ④ | |
| i) Teachers have too many teaching hours ----- | ① — ② — ③ — ④ | |
| j) Teachers have too much material to cover in classes ---- | ① — ② — ③ — ④ | |

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

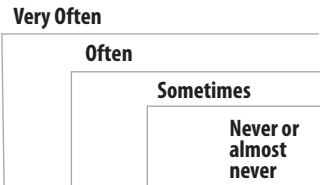
Fill in **one** circle for each line.

| | | |
|--|---|--|
| | 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) Go to other teachers for help -- | ① — ② — ③ — ④ | |
| g) Work as a group on implementing the curriculum ----- | ① — ② — ③ — ④ | |
| h) Work with teachers from other grades to ensure continuity in learning ----- | ① — ② — ③ — ④ | |
| i) Participate in teacher mentoring ----- | ① — ② — ③ — ④ | |

10

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

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



- 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 frustrated as a teacher---- ① — ② — ③ — ④
- h) I am supported by the teachers at my school ----- ① — ② — ③ — ④
- i) I am going to continue teaching for as long as I can --- ① — ② — ③ — ④

If you teach more than one advanced mathematics class, select one of your classes and keep it in mind as you answer questions 11 through 14.

11

How many students are in this class?

_____ students
Write in a number.

12

How many students in this class experience difficulties understanding spoken English?

_____ students in this class
Write in a number.

13

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

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

- Every or almost every lesson**
About half the lessons
Some lessons
Never
- a) Summarize what students should have learned from the lesson ----- ① — ② — ③ — ④
- b) Ask questions to elicit reasons and explanations ----- ① — ② — ③ — ④
- c) Ask questions to check that students understand what I am teaching ----- ① — ② — ③ — ④
- d) Encourage all students to improve their performance --- ① — ② — ③ — ④
- e) Praise students for good performance ----- ① — ② — ③ — ④
- f) Ask students to complete challenging exercises that require them to go beyond the instruction ----- ① — ② — ③ — ④
- g) Encourage classroom discussions among students -- ① — ② — ③ — ④
- h) Link new content to students' prior knowledge ---- ① — ② — ③ — ④
- i) Ask students to decide their own problem solving procedures ----- ① — ② — ③ — ④
- j) Encourage students to express their ideas in class ----- ① — ② — ③ — ④

14

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

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

- 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 special needs (e.g., physical disabilities, mental or emotional/psychological impairment) ---- 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 15 through 18.

15

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.

16

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.

17

In teaching advanced mathematics to this class, how confident do you feel to do the following?

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

- Very confident**

Somewhat confident

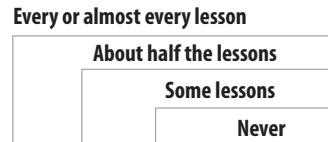
Not confident

- a) Answer students' questions about advanced mathematics ----- (1) — (2) — (3)
 - b) Show students a variety of problem solving strategies ----- (1) — (2) — (3)
 - c) Provide challenging tasks for the highest achieving students ----- (1) — (2) — (3)
 - d) Adapt my teaching to engage students' interest ----- (1) — (2) — (3)
 - e) Help students appreciate the value of learning advanced mathematics ----- (1) — (2) — (3)
 - f) Inspire students who are unmotivated to learn advanced mathematics ----- (1) — (2) — (3)
 - g) Assess student comprehension of advanced mathematics ----- (1) — (2) — (3)
 - h) Improve the understanding of struggling students ----- (1) — (2) — (3)
 - i) Build supportive relationships with students ----- (1) — (2) — (3)
 - j) Manage the classroom to avoid disruptions ----- (1) — (2) — (3)
 - k) Make advanced mathematics relevant to students ----- (1) — (2) — (3)
 - l) Challenge students into developing higher order thinking skills ----- (1) — (2) — (3)

18

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

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



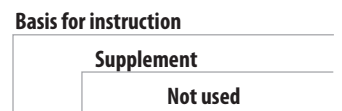
- a) Listen to me explain new mathematics content ----- ① — ② — ③ — ④
- b) Listen to me explain how to solve problems ----- ① — ② — ③ — ④
- c) Memorize rules, formulas, procedures, and facts ----- ① — ② — ③ — ④
- d) Work problems (individually or with peers) with my guidance ----- ① — ② — ③ — ④
- e) 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) Explain their answers ----- ① — ② — ③ — ④
- i) Discuss problem solving strategies ----- ① — ② — ③ — ④
- j) Relate what they are learning in mathematics to their daily lives ----- ① — ② — ③ — ④
- k) Decide on their own procedures for solving complex problems ----- ① — ② — ③ — ④
- l) Work on problems for which there is no immediately obvious method of solution --- ① — ② — ③ — ④
- m) Communicate their arguments ① — ② — ③ — ④
- n) Take a written test or quiz ----- ① — ② — ③ — ④

Questions 19-20 ask 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 questions 19 and 20.

19

A. When you teach advanced mathematics to this class, how do you use the following resources?

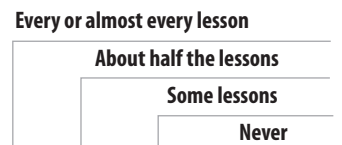
Fill in **one** circle for each line.



- a) Textbooks ----- ① — ② — ③
- b) Workbooks or worksheets ----- ① — ② — ③
- c) Computer software/ applications (apps) for mathematics instruction----- ① — ② — ③
- d) Internet resources ----- ① — ② — ③

B. How often do you require students to do the following?

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



- a) Do problems or exercises ----- ① — ② — ③ — ④
- b) Read examples of how to do problems or exercises ----- ① — ② — ③ — ④
- c) Read about mathematical theory ----- ① — ② — ③ — ④

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 **one** circle for each line.

Every or almost every day

Once or twice a week

Once or twice a month

Never or almost never

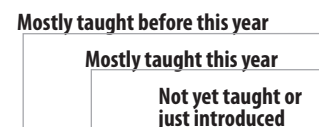
- | | | | | |
|--|-----|-----|-----|-----|
| a) Read the textbook or course materials in digital format ----- | (1) | (2) | (3) | (4) |
| b) Look up ideas and information ----- | (1) | (2) | (3) | (4) |
| c) Process and analyze data ----- | (1) | (2) | (3) | (4) |
| d) Draw graphs of functions ----- | (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) |

Question 21 asks about the topics taught and the content covered in teaching advanced 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 21.

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 **one** circle for each line.



A. Algebra

- a) Operations with exponential, logarithmic, polynomial, rational, and radical expressions; complex numbers ----- ① — ② — ③
- b) Evaluate algebraic expressions (e.g., exponential, logarithmic, polynomial, rational, and radical) ----- ① — ② — ③
- c) The nth term of numeric and algebraic series and the sums to n terms or infinity of series ----- ① — ② — ③
- d) Linear, simultaneous, and quadratic equations and inequalities; surd (radical) equations, logarithmic, and exponential equations ----- ① — ② — ③
- e) Equivalent representations of functions as ordered pairs, tables, graphs, formulas, or words ----- ① — ② — ③
- f) Values of functions, including rational functions, for given values and ranges of the variable; function of a function ----- ① — ② — ③

B. Calculus

- a) Limits of functions including rational functions; conditions for continuity and differentiability of functions ----- ① — ② — ③
- b) Differentiation of functions (including polynomial, exponential, logarithmic, trigonometric, rational, radical, composite, and parametric functions); differentiation of products and quotients ----- ① — ② — ③
- c) Using derivatives to solve problems (e.g., in kinematics, optimization, and rates of change) ----- ① — ② — ③
- d) Using first and second derivatives to determine gradient, turning points, and points of inflection of functions ----- ① — ② — ③
- e) Integrating functions (including polynomial, exponential, trigonometric, and rational functions); evaluating definite integrals ----- ① — ② — ③

C. Geometry


- a) Properties of geometric figures; proving geometric propositions in two and three dimensions ----- ① — ② — ③
- b) Gradients, y-axis intercepts, and points of intersection of straight lines in the Cartesian plane ----- ① — ② — ③
- c) Equations and properties of circles in the Cartesian plane; tangents and normals to given points on a circle ----- ① — ② — ③
- d) Properties of vectors and their sums and differences ----- ① — ② — ③
- e) Trigonometric properties of triangles (sine, cosine, and tangent); solving equations involving trigonometric functions ----- ① — ② — ③
- f) Graphs of sine, cosine, and tangent functions ----- 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)

B. How often do you assign the following kinds of mathematics homework to this class?

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

- | | | | |
|--|-------------------------|-----------|-----------------------|
| | Always or almost always | Sometimes | Never or almost never |
| | (1) | (2) | (3) |
| 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 **one** circle for each line.

- | | | | |
|---|-------------------------|-----------|-----------------------|
| | Always or almost always | Sometimes | Never or almost never |
| | (1) | (2) | (3) |
| 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 **one** circle for each line.

- | | | |
|--|-----|----|
| | 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 --- ①

27

In the past two years, have you taken part in any of the following activities in mathematics?

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

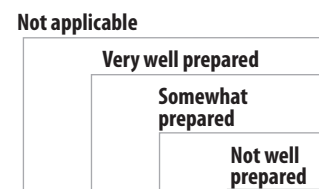
- | | | |
|---|-----|----|
| | Yes | No |
| | | |
| | | |
| a) I attended a workshop or conference ----- | ① | ② |
| b) I gave a presentation at a workshop or conference ----- | ① | ② |
| c) I published an article in a journal or magazine for teachers (print or online) ----- | ① | ② |
| d) I took part in an innovative project for curriculum and instruction ----- | ① | ② |

If you teach more than one advanced mathematics class, select one of your classes and keep it in mind as you answer question 28.

28

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

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



A. Algebra

- a) Operations with exponential, logarithmic, polynomial, rational, and radical expressions; complex numbers ----- ① — ② — ③ — ④
- b) Evaluate algebraic expressions (e.g., exponential, logarithmic, polynomial, rational, and radical) ----- ① — ② — ③ — ④
- c) The nth term of numeric and algebraic series and the sums to n terms or infinity of series ----- ① — ② — ③ — ④
- d) Linear, simultaneous, and quadratic equations and inequalities; surd (radical) equations, logarithmic, and exponential equations ----- ① — ② — ③ — ④
- e) Equivalent representations of functions as ordered pairs, tables, graphs, formulas, or words ----- ① — ② — ③ — ④
- f) Values of functions, including rational functions, for given values and ranges of the variable; function of a function ---- ① — ② — ③ — ④

B. Calculus

- a) Limits of functions including rational functions; conditions for continuity and differentiability of functions ----- ① — ② — ③ — ④
- b) Differentiation of functions (including polynomial, exponential, logarithmic, trigonometric, rational, radical, composite, and parametric functions); differentiation of products and quotients ----- ① — ② — ③ — ④
- c) Using derivatives to solve problems (e.g., in kinematics, optimization, and rates of change) ----- ① — ② — ③ — ④
- d) Using first and second derivatives to determine gradient, turning points, and points of inflection of functions ----- ① — ② — ③ — ④
- e) Integrating functions (including polynomial, exponential, trigonometric, and rational functions); evaluating definite integrals ----- ① — ② — ③ — ④

C. Geometry

- a) Properties of geometric figures; proving geometric propositions in two and three dimensions ----- ① — ② — ③ — ④
- b) Gradients, y-axis intercepts, and points of intersection of straight lines in the Cartesian plane ----- ① — ② — ③ — ④
- c) Equations and properties of circles in the Cartesian plane; tangents and normals to given points on a circle ----- ① — ② — ③ — ④
- d) Properties of vectors and their sums and differences ----- ① — ② — ③ — ④
- e) Trigonometric properties of triangles (sine, cosine, and tangent); solving equations involving trigonometric functions ----- ① — ② — ③ — ④
- f) Graphs of sine, cosine, and tangent functions ----- ① — ② — ③ — ④

Thank You

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



BOSTON
COLLEGE

TIMSS
Advanced
2015

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

Teacher Questionnaire Advanced Mathematics

Field Test Version



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International Association
for the Evaluation of
Educational Achievement

timssandpirls.bc.edu

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

Field Test Version



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. 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 35 minutes per response, 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) or suggestions for improving the form, please write to:** U.S. Department of Education, Washington, D.C. 20202-4537. **If you have 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. 20006-5650. OMB No. 1850-0695, Approval Expires 11/30/2016.

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 35 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 35 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 this 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)

High school graduate ----- (2)

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 EdD) ----- (6)

5 _____

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

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

| | Yes | No |
|---------------------------------|-----|-----|
| | (1) | (2) |
| 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 **one** circle for each line.

-
- a) The school encourages students to study advanced mathematics and physics ----- ① — ② — ③ — ④
 - b) The school has teachers qualified to teach advanced mathematics and physics ----- ① — ② — ③ — ④
 - c) The school has the technological resources necessary to teach advanced mathematics and physics ----- ① — ② — ③ — ④
 - d) The school promotes professional development for teachers of advanced mathematics and physics ----- ① — ② — ③ — ④
 - e) The school provides students with information about career options 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) Teachers have high expectations for student achievement in advanced mathematics and physics ----- ① — ② — ③ — ④
 - h) Students at this school respect students who excel in advanced mathematics and physics ----- ① — ② — ③ — ④
 - i) Students desire to do well in advanced mathematics and physics ----- ① — ② — ③ — ④
 - j) 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 **one** circle for each line.

-
- 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 **one** circle for each line.

-
- 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
 - h) There are too many students in the classes ----- ① — ② — ③ — ④
 - i) Teachers have too many teaching hours ----- ① — ② — ③ — ④
 - j) Teachers have too much material to cover in classes ---- ① — ② — ③ — ④

9

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

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

-
- 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) Go to other teachers for help -- ① — ② — ③ — ④
 - g) Work as a group on implementing the curriculum ----- ① — ② — ③ — ④
 - h) Work with teachers from other grades to ensure continuity in learning ----- ① — ② — ③ — ④
 - i) Participate in teacher mentoring ----- ① — ② — ③ — ④

10

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

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

-
- 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 frustrated as a teacher---- ① — ② — ③ — ④
 - h) I am supported by the teachers at my school ----- ① — ② — ③ — ④
 - i) I am going to continue teaching for as long as I can --- ① — ② — ③ — ④

If you teach more than one physics class, select **one** of your classes and keep it in mind as you answer questions 11 through 14.

11

How many students are in this class?

_____ students
Write in a number.

12

How many students in this class experience difficulties understanding spoken English?

_____ students in this class
Write in a number.

13

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

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

- Every or almost every lesson
About half the lessons
Some lessons
Never
- a) Summarize what students should have learned from the lesson ----- ① — ② — ③ — ④
- b) Ask questions to elicit reasons and explanations ----- ① — ② — ③ — ④
- c) Ask questions to check that students understand what I am teaching ----- ① — ② — ③ — ④
- d) Encourage all students to improve their performance --- ① — ② — ③ — ④
- e) Praise students for good performance ----- ① — ② — ③ — ④
- f) Ask students to complete challenging exercises that require them to go beyond the instruction ----- ① — ② — ③ — ④
- g) Encourage classroom discussions among students -- ① — ② — ③ — ④
- h) Link new content to students' prior knowledge ---- ① — ② — ③ — ④
- i) Ask students to decide their own problem solving procedures ----- ① — ② — ③ — ④
- j) Encourage students to express their ideas in class ----- ① — ② — ③ — ④

14

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

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

- 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 special needs (e.g., physical disabilities, mental or emotional/psychological impairment) ---- 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 15 through 18.

15

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.

16

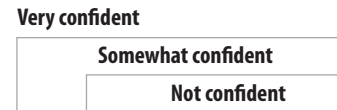
How many minutes per week do you usually spend preparing to teach this class?

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

17

In teaching physics to this class, how confident do you feel to do the following?

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



- a) Answer students' questions about physics ----- (1) — (2) — (3)
- b) Explain physics concepts or principles by doing physics experiments ----- (1) — (2) — (3)
- c) Provide challenging tasks for the highest achieving students ----- (1) — (2) — (3)
- d) Adapt my teaching to engage students' interest ----- (1) — (2) — (3)
- e) Help students appreciate the value of learning physics ----- (1) — (2) — (3)
- f) Inspire students who are unmotivated to learn physics ----- (1) — (2) — (3)
- g) Assess student comprehension of physics ----- (1) — (2) — (3)
- h) Improve the understanding of struggling students ----- (1) — (2) — (3)
- i) Build supportive relationships with students ----- (1) — (2) — (3)
- j) Manage the classroom to avoid disruptions ----- (1) — (2) — (3)
- k) Make physics relevant to students ----- (1) — (2) — (3)
- l) Challenge students into developing higher order thinking skills ----- (1) — (2) — (3)
- m) Teach physics using inquiry methods ----- (1) — (2) — (3)

18

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

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

- 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) Give explanations about something they are studying - ① — ② — ③ — ④
- m) Relate what they are learning in physics to their daily lives -- ① — ② — ③ — ④
- n) Do field work outside of class - ① — ② — ③ — ④
- o) Take a written test or quiz ----- ① — ② — ③ — ④

Questions 19-21 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 questions 19 through 21.

19

A. When you teach physics to this class, how do you use the following resources?

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

- Basis for instruction
Supplement
Not used
- a) Textbooks ----- ① — ② — ③
- b) Workbooks or worksheets ----- ① — ② — ③
- c) Computer software/ applications (apps) for physics instruction ----- ① — ② — ③
- d) Internet resources ----- ① — ② — ③

B. How often do you require students to do the following?

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

- Every or almost every lesson
About half the lessons
Some lessons
Never
- a) Do problems or exercises ----- ① — ② — ③ — ④
- b) Read examples of how to do problems or exercises ----- ① — ② — ③ — ④
- c) Read about physics theory ----- ① — ② — ③ — ④

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 **one** circle for each line.

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 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 **one** circle for each line.



A. Mechanics and Thermodynamics

- a) The dynamics of different types of movement, including Newton’s laws of motion ----- ① – ② – ③
- b) Forces, including frictional force, acting on a moving 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) Elastic and inelastic collision; the law of conservation of momentum ----- ① – ② – ③
- g) The first law of thermodynamics ----- ① – ② – ③
- h) Heat transfer and specific heat capacities ----- ① – ② – ③
- i) Expansion of solids and liquids in relation to temperature change; the law of ideal gases ----- 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 – Ohm’s law and Joule’s law for complex electrical circuits ----- ① – ② – ③
- d) Charged particles in a magnetic field ----- ① – ② – ③
- e) Relationship between magnetism and electricity; electromagnetic induction; Faraday’s and Lenz’ 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 (e.g., radio, infrared, x-rays, light) ----- 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 in terms of electrons, protons, and neutrons; atomic number and atomic mass number; Light emission and absorption and the behavior of electrons ----- ① – ② – ③
- f) Wave-particle quality and the photoelectric effect; types of nuclear reactions (i.e., fission, fusion, and radioactive decay) and their role in nature (e.g., in stars) and society (e.g., reactors, bombs); radioactive isotopes ----- ① – ② – ③
- g) Mass-energy equivalence ----- 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)

B. How often do you assign the following kinds of physics homework to this class?

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



- 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 **one** circle for each line.



- 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 **one** circle for each line.

- | | 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 problem solving 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 **one** circle for each line.

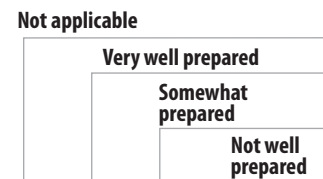
- | | Yes | No |
|---|-----|----|
| a) I attended a workshop or conference ----- | ① | ② |
| b) I gave a presentation at a workshop or conference ----- | ① | ② |
| c) I published an article in a journal or magazine for teachers (print or online) ----- | ① | ② |
| d) I took part in an innovative project for curriculum and instruction ----- | ① | ② |

If you teach more than one physics class, select one of your classes and keep it in mind as you answer question 29.

29

How well prepared do you feel you are to teach the following physics topics?
If a topic is not in the curriculum for this class or you are not responsible for teaching this topic, please choose "Not applicable."

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



A. Mechanics and Thermodynamics

- a) The dynamics of different types of movement, including Newton's laws of motion ----- ① — ② — ③ — ④
- b) Forces, including frictional force, acting on a moving body ----- ① — ② — ③ — ④
- c) Forces acting on a body moving in a circular path; the body's centripetal acceleration, speed, and circling time ----- ① — ② — ③ — ④
- d) The law of gravitation in relation to the movement of celestial object ----- ① — ② — ③ — ④
- e) Kinetic and potential energy; conservation of mechanical energy ----- ① — ② — ③ — ④
- f) Elastic and inelastic collision; the law of conservation of momentum ----- ① — ② — ③ — ④
- g) The first law of thermodynamics ----- ① — ② — ③ — ④
- h) Heat transfer and specific heat capacities ----- ① — ② — ③ — ④
- i) Expansion of solids and liquids in relation to temperature change; the law of ideal gases ----- ① — ② — ③ — ④

B. Electricity and Magnetism

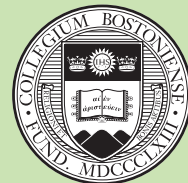
- a) Electrostatic attraction or repulsion between isolated charged particles – Coulomb's law ----- ① — ② — ③ — ④
- b) Charged particles in an electric field ----- ① — ② — ③ — ④
- c) Electrical circuits – Ohm's law and Joule's law for complex electrical circuits ----- ① — ② — ③ — ④
- d) Charged particles in a magnetic field ----- ① — ② — ③ — ④
- e) Relationship between magnetism and electricity; electromagnetic induction; Faraday's and Lenz' laws of induction ---- ① — ② — ③ — ④

C. Wave Phenomena and Atomic/Nuclear Physics

- a) Mechanical waves; the relationship between speed, frequency, and wavelength ----- ① — ② — ③ — ④
- b) Electromagnetic radiation; wavelength and frequency of various types of waves (e.g., radio, infrared, x-rays, light) ---- ① — ② — ③ — ④
- c) Thermal radiation, temperature, and wavelength ----- ① — ② — ③ — ④
- d) Reflection, refraction, interference, and diffraction ----- ① — ② — ③ — ④
- e) The structure of the atom and its nucleus in terms of electrons, protons, and neutrons; atomic number and atomic mass number; Light emission and absorption and the behavior of electrons ----- ① — ② — ③ — ④
- f) Wave-particle quality and the photoelectric effect; types of nuclear reactions (i.e., fission, fusion, and radioactive decay) and their role in nature (e.g., in stars) and society (e.g., reactors, bombs); radioactive isotopes ----- ① — ② — ③ — ④
- g) Mass-energy equivalence ----- ① — ② — ③ — ④

Thank You

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



BOSTON
COLLEGE

TIMSS
Advanced
2015

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

Teacher Questionnaire

Physics

Field Test Version



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International Association
for the Evaluation of
Educational Achievement

timssandpirls.bc.edu



Place Label Here

School ID ____ ____ ____ ____

Check Sum ____ ____ ____ ____

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

Field Test Version



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. 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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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 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 this 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, 2014?

_____ students
Write in a number.

2 _____

What is the total enrollment of twelfth-grade students in your school as of March 1, 2014?

_____ students
Write in a number.

3 _____

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

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

| | | | | |
|---|---|----------|-----------|---------------|
| | | 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 |

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

4 _____

Around the first of October 2013, 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 a number.

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, such as advanced physics
or 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?

_____ minutes

Write in the number of minutes per day.

Please convert the number of hours into minutes.

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

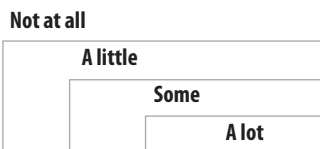
4 days --- ⑤

Other --- ⑥

11

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

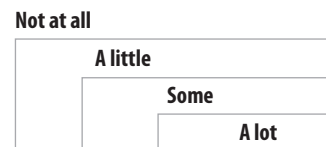
Fill in **one** circle for each line.



A. General School Resources

- 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 such as iPads for student use) ----- ① — ② — ③ — ④
- i) Resources for disabled students ----- ① — ② — ③ — ④

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



B. Resources for Advanced Mathematics Instruction

- 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

C. Resources for Physics Instruction

- 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 **one** circle for each line.

-
- a) The school encourages students to study advanced mathematics and physics ----- ① — ② — ③ — ④
 - b) The school has teachers qualified to teach advanced mathematics and physics ----- ① — ② — ③ — ④
 - c) The school has the technological resources necessary to teach advanced mathematics and physics ----- ① — ② — ③ — ④
 - d) The school promotes professional development for teachers of advanced mathematics and physics ----- ① — ② — ③ — ④
 - e) The school provides students with information about career options in advanced mathematics and physics ----- ① — ② — ③ — ④
 - f) The school has initiatives to promote student interest in advanced mathematics and physics (e.g., student clubs, competitions) ----- ① — ② — ③ — ④
 - g) The school has partnership initiatives with industry/businesses in advanced mathematics and physics ----- ① — ② — ③ — ④
 - h) Advanced mathematics and physics teachers are admired by other teachers in the school --- ① — ② — ③ — ④
 - i) Students at this school respect students who excel in advanced mathematics and physics ----- ① — ② — ③ — ④
 - j) Parents expect their children to study 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 **one** circle for each line.

-
- 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 the teaching vacancies for this school year for the following subjects?

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

| | | | | |
|--|-----------------------------------|------------------------|--------------------|----------------|
| | 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) Physics, i.e., advanced 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 **one** circle for each line.

| | | |
|--|-----|----|
| | Yes | No |
| | | |
| a) Advanced mathematics, such as calculus ----- | ① | ② |
| b) Physics, i.e., advanced physics such as college preparatory physics or AP Physics ----- | ① | ② |
| c) Computer science/information technology ----- | ① | ② |
| d) Other ----- | ① | ② |

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During the past year, approximately how much time have you spent on the following school leadership activities in your role as a school principal?

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

| | | | | |
|---|---------|---------------|-----------|---------------|
| | No time | A little time | Some time | A lot of time |
| | | | | |
| a) Promoting the school's educational vision or goals ----- | ① | ② | ③ | ④ |
| b) Developing the school's curricular and educational goals ----- | ① | ② | ③ | ④ |
| c) Monitoring teachers' implementation of the school's educational goals in their teaching ----- | ① | ② | ③ | ④ |
| d) Monitoring students' learning progress to ensure that the school's educational goals are reached ----- | ① | ② | ③ | ④ |
| e) Keeping an orderly atmosphere in the school ----- | ① | ② | ③ | ④ |
| f) Addressing disruptive student behavior ----- | ① | ② | ③ | ④ |
| g) Advising teachers who have questions or problems with their teaching ----- | ① | ② | ③ | ④ |
| h) Initiating educational projects or improvements ----- | ① | ② | ③ | ④ |
| i) Participating in professional development activities specifically for school principals ----- | 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 *Advanced* 2015

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

School Questionnaire

Field Test



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