TIMSS

Supplement 2

International Versions of the Background Questionnares Population 2

TIMSS International Database USER GUIDE

Primary and Middle School Years

Third International Mathematics and Science Study

Supplement 2
International Versions of the Background Questionnaires – Population 2

Overview

This supplement contains the international versions of the Population 2 background questionnaires in the following five sections:

Section 1: Student Background Questionnaire - Non-Specialized Version (SQ2)

Section 2: Student Background Questionnaire - Specialized Version (SQ2(s))

Section 3: Mathematics Teacher Background Questionnaire (TQM2)

Section 4: Science Teacher Background Questionnaire (TQS2)

Section 5: School Background Questionnaire (SCQ2)

Tables S2.1 through S2.4 list all of the international background variables corresponding to each of the student, mathematics teacher, science teacher, and school background questionnaire items.

The international versions of the questionnaires were designed to provide an opportunity for individual countries to make modifications to some questions or response options in order include the appropriate wording or options most consistent with their own national systems. In the international versions of the questionnaires, such questions contain instructions to NRCs to substitute the appropriate wording for their country and/or to modify or delete any inappropriate questions or options. These instructions were indicated in two ways in the questionnaires:

1) NRC NOTE:
2) <International Option> (indicating that the NRC was to substitute, if necessary, an appropriate national option that would retain the same basic interpretation as the international version)

Documentation of any national adaptations of the student, teacher, and school background questionnaire items is included in Supplement 3 to provide the user with information required to evaluate the availability of internationally-comparable data for use in secondary analyses involving the TIMSS contextual variables.

Table S2.1

Index of International Background Variables for the Population 2 Student Questionnaire Items

Questionnaire Location	Variable Name	Description
SQ2-2	BSBGSEX	Are you a boy or a girl?
SQ2-3A	BSBGBRN1	Were you born in <country>?
SQ2-3B	BSBGBRN2	How old were you when you came to <country>?
SQ2-4	BSBGLANG	How often do you speak <language of test> at home?
SQ2-5A	BSBMEXTR	Outside school, how much time do you spend taking extra lessons in mathematics?
SQ2-5B	BSBSEXTR	Outside school, how much time do you spend taking extra lessons in science?
SQ2-5C	BSBGCLUB	Outside school, how much time do you spend participating in science or mathematics clubs?
SQ2-5D	BSBGPAID	Outside school, how much time do you spend at a paid job?
SQ2-6A	BSBGDAY1	Outside school, how much time do you spend watching television and videos?
SQ2-6B	BSBGDAY2	Outside school, how much time do you spend playing computer games?
SQ2-6C	BSBGDAY3	Outside school, how much time do you spend playing/talking with friends?
SQ2-6D	BSBGDAY4	Outside school, how much time do you spend doing jobs at home?
SQ2-6E	BSBGDAY5	Outside school, how much time per day do you spend playing sports?
SQ2-6F	BSBGDAY6	Outside school, how much time per day do you spend reading a book for enjoyment?
SQ2-6G	BSBMDAY7	Outside school, how much time per day do you spend studying or doing homework in mathematics?
SQ2-6H	BSBSDAY8	Outside school, how much time do you spend side school, how much time per5Sle35s?

Table S2.1
Index of International Background Variables for the Population 2 Student Questionnaire Items (Continued)

Questionnaire Location	Variable Name	Description
SQ2-12N	BSBGPS14	Do you have a <country specific> at your home?
SQ2-12O	BSBGPS15	Do you have a <country specific> at your home?
SQ2-12P	BSBGPS16	Do you have a <country specific> at your home?
SQ2-13A	BSBSMIP1	My mother thinks it is important for me to do well in science at school
SQ2-13B	BSBMMIP2	My mother thinks it is important for me to do well in mathematics at school
SQ2-13C	BSBGMIP3	My mother thinks it is important for me to do well in <language of test> at school
SQ2-13D	BSBGMIP4	My mother thinks it is important for me to be good at sports
SQ2-13E	BSBGMIP5	My mother thinks it is important for me to have time to have fun
SQ2-13F	BSBGMIP6	My mother thinks it is important for me to be placed in the high achieving class
SQ2-14A	BSBMCLS1	In my mathematics class, students often neglect their school work
SQ2-14B	BSBMCLS2	In my mathematics class, students are orderly and quiet during lessons
SQ2-14C	BSBMCLS3	Outside school, how much time do you spend doing jobs at home?
SQ2-15A	BSBSFIP1	My friends think it is important for me to do well in science at school
SQ2-15B	BSBMFIP2	My friends think it is important for me to do well in mathematics at school
SQ2-15C	BSBGFIP3	My friends think it is important for me to do well in <language of test> at school
SQ2-15D	BSBGFIP4	My friends think it is important for me to have time to have fun
SQ2-15E	BSBGFIP5	My friends think it is important for me to be good at sports
SQ2-15F	BSBGFIP6	My friends think it is important for me to be placed in the high achieving class
SQ2-16A	BSBSSIP1	I think it is important to do well in science at school
SQ2-16B	BSBMSIP2	I think it is important to do well in mathematics at school
SQ2-16C	BSBGSIP3	I think it is important to do well in <language of test> at school
SQ2-16D	BSBGSIP4	I think it is important to have time to have fun
SQ2-16E	BSBGSIP5	I think it is important to be good at sports
SQ2-16F	BSBGSIP6	I think it is important to be placed in the high achieving class
SQ2-17A	BSBMGOOD	I usually do well in mathematics
SQ2G-17B	BSBSGOOD	I usually do well in science
SQ2-18A	BSBGSSKP	How often did you skip a class last month in school?
SQ2-18B	BSBGSSTL	How often was something of yours stolen last month in school?
SQ2-18C	BSBGSHRT	How far did your father go in school?
SQ2-18D	BSBGFSKP	How often did some of your friends skip a class last month in school?
SQ2-18E	BSBGFSTL	Was your mother born in <country>?
SQ2-18F	BSBGFHRT	How often did your friends think another student might hurt them last month in school?
SQ2-19A	BSBMDOW1	To do well in mathematics, you need lots of natural ability
SQ2-19B	BSBMDOW2	To do well in mathematics, you need good luck
SQ2-19C	BSBMDOW3	To do well in mathematics, you need lots of hard work studying at home
SQ2-19D	BSBMDOW4	To do well in mathematics, you need to memorize the textbook or notes
SQ2-20A	BSBSDOW1	To do well in science you need lots of natural ability
SQ2-20B	BSBSDOW2	To do well in science you need good luck
SQ2-20C	BSBSDOW3	To do well in science you need lots of hard work studying at home
SQ2-20D	BSBSDOW4	To do well in science you need to memorize the textbook or notes
SQ2-21A	BSBMLIKE	How much do you like mathematics?
SQ2G-21B	BSBSLIKE	How much do you like science?
SQ2-22A	BSBMCMLK	How much do you like using computers in mathematics?
SQ2-22B	BSBSCMLK	How much do you like using computers in science?
SQ2-23A	BSBMENJY	Do you think that you enjoy learning mathematics?
SQ2-23B	BSBMBORE	Do you think that mathematics is boring?

Table S2.1

Index of International Background Variables for the Population 2 Student Questionnaire Items (Continued 2)

Questionnaire Location	Variable Name	Description

Table S2.1
Index of International Background Variables for the Population 2 Student Questionnaire Items (Continued 4)

Questionnaire Location	Variable Name	Description
SQ2S-29D	BSBBLIFE	Do you think that biology is important to everyone's life?
SQ2S-29E	BSBBWORK	Do you think that you would like a job that involved using biology?
SQ2S-30A	BSBBJOB	I need to do well in biology to get the job I want
SQ2S-30B	BSBBPRNT	I need to do well in biology to please my parents
SQ2S-30C	BSBBSCHL	I need to do well in biology to get into the school I prefer
SQ2S-30D	BSBBSELF	I need to do well in biology to please myself
SQ2S-31A	BSBBPROB	How often does the teacher show how to do biology problems in your biology lesson?
SQ2S-31B	BSBBNOTE	[illegible]

Table S2.1

Index of International Background Variables for the Population 2 Student Questionnaire Items (Continued 5)

Questionnaire

Table S2.1

Index of International Background Variables for the Population 2 Student Questionnaire Items (Continued 6)

Questionnaire Location	Variable Name	Description

Table S2.2

Index of International Background Variables for the Population 2 Mathematics Teacher Questionnaire Items

Questionnaire Location	Variable Name	Description
TQM2A1	BTBGAGE	Teacher age
TQM2A2	BTBGSEX	Teacher sex
TQM2A3	BTBGEDUC	Highest level of formal education
TQM2A4	BTBMTEAC	Do not teach mathematics this year.

Table S2.2
Index of International Background Variables for the Population 2 Mathematics Teacher Questionnaire Items (Continued 2)

Questionnaire Location	Variable Name	Description
TQM2A16F	BTBMAGR6	More than one representation should be used in teaching a mathematics topic.
TQM2A16G	BTBMAGR7	Mathematics should be learned as sets of algorithms that cover all possibilities.
TQM2A16H	BTBMAGR8	Basic computational skills are sufficient for teaching primary school mathematics.
TQM2A16I	BTBMAGR9	A liking for and understanding of students are essential for teaching science.
TQM2A17A	BTBMFAM1	How familiar are you with the <national curriculum guide for mathematics>?
TQM2A17B	BTBMFAM2	How familiar are you with the <regional curriculum guide for mathematics>?
TQM2A17C	BTBGFAM3	How familiar are you with the <school curriculum guide>?
TQM2A17D	BTBGFAM4	How familiar are you with the <national examination specifications>?
TQM2A17E	BTBGFAM5	How familiar are you with the <regional examination specifications>?
TQM2A17F	BTBMFAM6	How familiar are you with the <national pedagogy guide for mathematics>?
TQM2A17G		

Table S2.2

Index of International Background Variables for the Population 2 Mathematics Teacher Questionnaire Items (Continued 3)

Questionnaire Location	Variable Name	Description
TQM2B7B	BTBMLM02	Is your teaching limited by students from a wide range of backgrounds?
TQM2B7C	BTBMLM03	Is your teaching limited by students with special needs?
TQM2B7D	BTBMLM04	Is your teaching limited by uninterested students?
TQM2B7E	BTBMLM05	Is your teaching limited by disruptive students?
TQM2B7F	BTBMLM06	Is your teaching limited by parents interested in their children's progress?
TQM2B7G	BTBMLM07	Is your teaching limited by parents uninterested in their children's progress?
TQM2B7H	BTBMLM08	Is your teaching limited by shortage of computer hardware?
TQM2B7I	BTBMLM09	Is your teaching limited by shortage of computer software?
TQM2B7J	BTBMLM10	Is your teaching limited by shortage of other instructional equipment for student use?
TQM2B7K	BTBMLM11	Is your teaching limited by shortage of equipment for demonstrations?
TQM2B7L	BTBMLM12	Is your teaching limited by inadequate physical facilities?
TQM2B7M	BTBMLM13	Is your teaching limited by high student/teacher ratio?
TQM2B7N	BTBMLM14	Is your teaching limited by low morale among fellow teachers/administrators?
TQM2B7O	BTBMLM15	Is your teaching limited by low morale among students?
TQM2B7P	BTBMLM16	Is your teaching limited by threats to personal safety or students' safety?
TQM2B8	BTBMCALC	How many of your students have access to calculators during mathematics lessons?
TQM2B9A	BTBMCAL1	How often do your students use calculators for checking answers?
TQM2B9B	BTBMCAL2	How often do your students use calculators for tests?
TQM2B9C	BTBMCAL3	How often do your students use calculators for routine computation?
TQM2B9D	BTBMCAL4	

Table S2.2
Index of International Background Variables for the Population 2 Mathematics Teacher Questionnaire Items (Continued 4)

Questionnaire Location	Variable Name	Description
TQM2B12BB	BTBMTBB	Fractions are not taught this year.
TQM2B12BC	BTBMTBC	Fractions were taught in a previous year.
TQM2B12B1	BTBMTB1	How many periods have you spent teaching common fractions/meaning this year?
TQM2B12B1A	BTBMTB1A	Will teach common fractions/meaning later this year.
TQM2B12B1B	BTBMTB1B	Common fractions/meaning are not taught this year.
TQM2B12B1C	BTBMTB1C	Common fractions/meaning were taught in a previous year.
TQM2B12B2	BTBMTB2	How many periods have you spent teaching common fractions/properties this year?
TQM2B12B2A	BTBMTB2A	Will teach common fractions/properties later this year.
TQM2B12B2B	BTBMTB2B	Common fractions/properties are not taught this year.
TQM2B12B2C	BTBMTB2C	Common fractions/properties were taught in a previous year.
TQM2B12B3	BTBMTB3	How many periods have you spent teaching decimal fractions/meaning this year?
TQM2B12B3A	BTBMTB3A	Will teach decimal fractions/meaning later this year.
TQM2B12B3B	BTBMTB3B	Decimal fractions/meaning are not taught this year.
TQM2B12B3C	BTBMTB3C	Decimal fractions/meaning were taught in a previous year.
TQM2B12B4	BTBMTB4	How many periods have you spent teaching decimal fractions/properties this year?
TQM2B12B4A	BTBMTB4A	Will teach decimal fractions/properties later this year.
TQM2B12B4B	BTBMTB4B	Decimal fractions/properties are not taught this year.
TQM2B12B4C	BTBMTB4C	Decimal fractions/properties were taught in a previous year.
TQM2B12B5	BTBMTB5	How many periods have you spent teaching relat. bet. common & dec. fractions this year?
TQM2B12B5A	BTBMTB5A	Will teach relat. bet. common & dec. fractions later this year.
TQM2B12B5B	BTBMTB5B	Relationship bet. common & dec. fractions are not taught this year.
TQM2B12B5C	BTBMTB5C	Relationship bet. common & dec. fractions were taught in a previous year.
TQM2B12B6	BTBMTB6	How many periods have you spent teaching fractions/equivalence this year?
TQM2B12B6A	BTBMTB6A	Will teach fractions/equivalence later this year.
TQM2B12B6B	BTBMTB6B	Fractions/equivalence are not taught this year.
TQM2B12B6C	BTBMTB6C	Fractions/equivalence were taught in a previous year.
TQM2B12B7	BTBMTB7	How many periods have you spent teaching ordering of fractions this year?
TQM2B12B7A	BTBMTB7A	Will teach ordering of fractions later this year.
TQM2B12B7B	BTBMTB7B	Ordering of fractions is not taught this year.
TQM2B12B7C	BTBMTB7C	Ordering of fractions was taught in a previous year.
TQM2B12C	BTBMTC	How many periods have you spent teaching percentages this year?
TQM2B12CA	BTBMTCA	Will teach percentages later this year.
TQM2B12CB	BTBMTCB	Percentages are not taught this year.
TQM2B12CC	BTBMTCC	Percentages were taught in a previous year.
TQM2B12D	BTBMTD	How many periods have you spent teaching number sets this year?
TQM2B12DA	BTBMTDA	Will teach number sets later this year.
TQM2B12DB	BTBMTDB	Number sets are not taught this year.
TQM2B12DC	BTBMTDC	Number sets were taught in a previous year.
TQM2B12E	BTBMTE	How many periods have you spent teaching number theory this year?
TQM2B12EA	BTBMTEA	Will teach number theory later this year.
TQM2B12EB	BTBMTEB	Number theory is not taught this year.
TQM2B12EC	BTBMTEC	Number theory was taught in a previous year.
TQM2B12F	BTBMTF	How many periods have you spent teaching number sense this year?
TQM2B12FA	BTBMTFA	Will teach number sense later this year.
TQM2B12FB	BTBMTFB	Number sense are not taught this year.
TQM2B12FC	BTBMTFC	Number sense were taught in a previous year.

Table S2.2

Index of International Background Variables for the Population 2 Mathematics Teacher Questionnaire Items (Continued 5)

Questionnaire Location	Variable Name	Description
TQM2B12G	BTBMTG	How many periods have you spent teaching measurement units this year?
TQM2B12GA	BTBMTGA	Will teach measurement units later this year.
TQM2B12GB	BTBMTGB	Measurement units are not taught this year.
TQM2B12GC	BTBMTGC	Measurement units were taught in a previous year.
TQM2B12H	BTBMTH	How many periods have you spent teaching estimation of measurements this year?
TQM2B12HA	BTBMTHA	Will teach estimation of measurements later this year.
TQM2B12HB	BTBMTHB	Estimation of measurements are not taught this year.
TQM2B12HC	BTBMTHC	Estimation of measurements were taught in a previous year.
TQM2B12I	BTBMTI	How many periods have you spent teaching perimeter, area, & volume this year?
TQM2B12IA	BTBMTIA	Will teach perimeter, area, & volume later this year.
TQM2B12IB	BTBMTIB	Perimeter, area, & volume are not taught this year.
TQM2B12IC	BTBMTIC	Perimeter, area, & volume were taught in a previous year.
TQM2B12J	BTBMTJ	How many periods have you spent teaching geometry basics this year?
TQM2B12JA	BTBMTJA	Will teach geometry basics later this year.
TQM2B12JB	BTBMTJB	Geometry basics are not taught this year.
TQM2B12JC	BTBMTJC	Geometry basics were taught in a previous year.
TQM2B12K	BTBMTK	How many periods have you spent teaching congruence and similarity this year?
TQM2B12KA	BTBMTKA	Will teach congruence and similarity later this year.
TQM2B12KB	BTBMTKB	Congruence and similarity are not taught this year.
TQM2B12KC	BTBMTKC	Congruence and similarity were taught in a previous year.
TQM2B12L	BTBMTL	How many periods have you spent teaching transformations & symmetry this year?
TQM2B12LA	BTBMTLA	Will teach transformations & symmetry later this year.
TQM2B12LB	BTBMTLB	Transformations & symmetry are not taught this year.
TQM2B12LC	BTBMTLC	Transformations & symmetry were taught in a previous year.
TQM2B12M	BTBMTM	How many periods have you spent teaching 3D geometry this year?
TQM2B12MA	BTBMTMA	Will teach 3D geometry later this year.
TQM2B12MB	BTBMTMB	3D geometry is not taught this year.
TQM2B12MC.6nC007 Tc 2B1(Gaching cw [(TNQM2B1(L)-3408(BTBMTL)-2899(How many periods haverMTLCTKC)-proporTLC)-2eaching 3D geometer this year.)]T.8 T		
TNB2B12HC		
TNM2B12K6TN1.072LB	BTBMTL	How many periods haverMTLCT(A)cepmation of measurements this year?
TN1M2B1470	BTBMTrMTLCT(A)cepmatence and similarity later this year.	
TN1B A TN1M2B12IAA		

Table S2.2

Table S2.2
Index of International Background Variables for the Population 2 Mathematics Teacher Questionnaire Items (Continued 7)

Questionnaire Location	Variable Name	Description
TQM2B13B04	BTBMTO04	Were other number sets and concepts the subject of the lesson?
TQM2B13B05	BTBMTO05	Was number theory the subject of the lesson?
TQM2B13B06	BTBMTO06	Was estimation and number sense the subject of the lesson?
TQM2B13B07	BTBMTO07	Was measurement units and processes the subject of the lesson?
TQM2B13B08	BTBMTO08	Was estimation and measurement error the subject of the lesson?
TQM2B13B09	BTBMTO09	Was perimeter, area, and volume the subject of the lesson?
TQM2B13B10	BTBMTO10	Were basics of one and two dimensional geometry the subject of the lesson?
TQM2B13B11	BTBMTO11	Was geometric congruence and similarity the subject of the lesson?
TQM2B13B12	BTBMTO12	Was geometric transformation and symmetry the subject of the lesson?
TQM2B13B13	BTBMTO13	Was three dimensional geometry and constructions the subject of the lesson?
TQM2B13B14	BTBMTO14	Was ratio and proportion the subject of the lesson?
TQM2B13B15	BTBMTO15	Was proportionality: slope, trigonometry, and interpolation the subject of the lesson?
TQM2B13B16	BTBMTO16	Were functions, relations, and patterns the subject of the lesson?
TQM2B13B17	BTBMTO17	Were equations, inequalities, and algebraic formulas the subject of the lesson?
TQM2B13B18	BTBMTO18	Was statistics and data the subject of the lesson?
TQM2B13B19	BTBMTO19	Was probability and uncertainty the subject of the lesson?
TQM2B13B20	BTBMTO20	Were sets and logic the subject of the lesson?
TQM2B13B21	BTBMTO21	Were problem solving strategies the subject of the lesson?
TQM2B13B22	BTBMTO22	Was other mathematics content the subject of the lesson?
TQM2B13C1	BTBMTOP1	Was this lesson the introduction of a new topic?
TQM2B13C2	BTBMTOP2	Was this lesson the continuation of a previous lesson?
TQM2B13C3	BTBMTOP3	Was this lesson the end of coverage of this topic?
TQM2B13D	BTBMHMW1	Did you assign homework after the class <period>?
TQM2B13E	BTBMHWT1	How long would it take a typical student to complete this homework assignment?
TQM2B13F	BTBMCLCM	Was a computer used during this class period?
TQM2B14A01	BTBMOR01	In what order did you do a review of previous lessons?
TQM2B14A01	BTBMTM01	How long did you spend on reviewing previous lessons?
TQM2B14A02	BTBMOR02	In what order did you give a short quiz to review previous lesson?
TQM2B14A02	BTBMTM02	How long did you spend on a quiz reviewing previous lessons?
TQM2B14A03	BTBMOR03	In what order did you do an oral drill?
TQM2B14A03	BTBMTM03	How long did you spend on an oral drill?
TQM2B14A04	BTBMOR04	In what order did you do a review of previous homework?
TQM2B14A04	BTBMTM04	How long did you spend on reviewing previous homework?
TQM2B14A05	BTBMOR05	In what order did you do an introduction of a new topic?
TQM2B14A05	BTBMTM05	How long did you spend on a new topic introduction?
TQM2B14A06	BTBMOR06	In what order did you do a development of a topic?
TQM2B14A06	BTBMTM06	How long did you spend on developing a contuing topic?
TQM2B14A07	BTBMOR07	In what order did you do small group activities?
TQM2B14A07	BTBMTM07	How long did you spend on small group activities?
TQM2B14A08	BTBMOR08	In what order did you have students do paper-and-pencil exercises?
TQM2B14A08	BTBMTM08	How long did students spend on pencil-and-paper exercises?
TQM2B14A09	BTBMOR09	In what order did you assign homework?
TQM2B14A09	BTBMTM09	How long did you spend assigning homework?
TQM2B14A10	BTBMOR10	In what order did you allow students to work on homework in class?
TQM2B14A10	BTBMTM10	How long did students spend on homework in class?
TQM2B14A11	BTBMOR11	In what order did you have a student laboratory activity?

Table S2.2
Index of International Background Variables for the Population 2 Mathematics Teacher Questionnaire Items (Continued 8)

Questionnaire Location	Variable Name	Description
TQM2B14A11	BTBMTM11	How long did students spend on a laboratory activity?
TQM2B14B	BTBMSGRP	Did the students work in small groups?
TQM2B15A	BTBMASK1	How often do you ask students to explain reasoning behind an idea?
TQM2B15B	BTBMASK2	How often do you ask students to use tables, charts, or graphs?
TQM2B15C	BTBMASK3	How often do you ask students to work on problems with no obvious method of solution?
TQM2B15D	BTBMASK4	How often do you ask students to use computers?
TQM2B15E	BTBMASK5	How often do you ask students to write equations to represent relationships?
TQM2B15F	BTBMASK6	How often do you ask students to practice computational skills?
TQM2B16A	BTBMDO1	After a wrong answer, how often do you correct the student in front of the class?
TQM2B16B	BTBMDO2	After a wrong answer, how often do you ask another student to help?
TQM2B16C	BTBMDO3	After a wrong answer, how often do you call on a student likely to be correct?
TQM2B16D	BTBMDO4	After a wrong answer, how often do you get other responses and discuss?
TQM2B17A	BTBMLES1	In mathematics lessons, how often do students work individually without assistance?
TQM2B17B	BTBMLES2	In mathematics lessons, how often do students work individually with assistance?
TQM2B17C	BTBMLES3	In mathematics lessons, how often do students work as a class with teacher leading?
TQM2B17D	BTBMLES4	In mathematics lessons, how often do students work as a class with students responding to each other?
TQM2B17E	BTBMLES5	In mathematics lessons, how often do students work in pairs without assistance?
TQM2B17F	BTBMLES6	In mathematics lessons, how often do students work in pairs with assistance?
TQM2B18	BTBMHMW2	How often do you assign mathematics homework?
TQM2B19	BTBMHWT2	How many minutes of homework do you usually assign?
TQM2B20A	BTBMWKBK	How often do you assign worksheets for homework?
TQM2B20B	BTBMPROB	How often do you assign textbook problems for homework?
TQM2B20C	BTBMREAD	How often do you assign reading for homework?
TQM2B20D	BTBMWRIT	How often do you assign writing for homework?
TQM2B20E	BTBMDATA	How often do you assign small investigations for homework?
TQM2B20F	BTBMIEXP	How often do you assign long term individual projects for homework?
TQM2B20G	BTBMGEXP	How often do you assign long term small group projects for homework?
TQM2B20H	BTBMFIND	How often do you have students find uses of the content for homework?
TQM2B20I	BTBMORAL	How often do you have students prepare oral reports for homework?
TQM2B20J	BTBMJOUR	How often do you assign journals for homework?
TQM2B21A	BTBMWHW1	How often do you record whether or not homework was completed?
TQM2B21B	BTBMWHW2	How often do you collect, correct and keep homework assignments?
TQM2B21C	BTBMWHW3	How often do you collect, correct and return homework assignments?
TQM2B21D	BTBMWHW4	How often do you give feedback on homework to whole class?
TQM2B21E	BTBMWHW5	How often do you have students correct their own homework assignments in class?
TQM2B21F	BTBMWHW6	How often do you have students exchange homework assignments and correct them?
TQM2B21G	BTBMWHW7	How often do you use homework as a basis for class discussion?
TQM2B21H	BTBMWHW8	How often do you use homework to contribute towards students' grades?
TQM2B22A	BTBMWGT1	In assessment, how much weight do you give externally produced examinations?
TQM2B22B	BTBMWGT2	In assessment, how much weight do you give teacher-made open-ended tests?
TQM2B22C	BTBMWGT3	In assessment, how much weight do you give teacher-made multiple-choice tests?
TQM2B22D	BTBMWGT4	In assessment, how much weight do you give homework assignments?
TQM2B22E	BTBMWGT5	In assessment, how much weight do you give laboratory exercises?
TQM2B22F	BTBMWGT6	In assessment, how much weight do you give observations of students?
TQM2B22G	BTBMWGT7	In assessment, how much weight do you give responses of students in class?
TQM2B23A	BTBGASS1	How often do you use assessment information to provide grades for students?

Table S2.2

Index of International Background Variables for the Population 2 Mathematics Teacher Questionnaire Items (Continued 9)

Questionnaire Location	Variable Name	Description
TQM2B23B	BTBGASS2	How often do you use assessment information to provide feedback to students?
TQM2B23C	BTBGASS3	How often do you use assessment information to diagnose learning problems?
TQM2B23D	BTBGASS4	How often do you use assessment information to report to parents?
TQM2B23E	BTBGASS5	How often do you use assessment information to assign students to tracks?
TQM2B23F	BTBGASS6	How often do you use assessment information to plan for future lessons?
TQM2C011	BTBM011	Does anything in your mathematics class enable your students to answer questions on common fractions?
TQM2C011A	BTBM011A	Something was done earlier this year to enable students to answer questions on common fractions.
TQM2C011B	BTBM011B	Something is being done now to enable students to answer questions on common fractions.
TQM2C011C	BTBM011C	Something will be done later this year to enable students to answer questions on common fractions.
TQM2C011D	BTBM011D	Common fractions was covered in the curriculum for an earlier grade.
TQM2C011E	BTBM011E	Common fractions is covered in this years curriculum, but I will not cover it.
TQM2C011F	BTBM011F	Common fractions is covered in the curriculum for a later grade.
TQM2C011G	BTBM011G	Common fractions is not included in the curriculum.
TQM2C011H	BTBM011H	I do not know whether common fractions is covered in another grade.
TQM2C012A	BTBM012A	Would you consider the above common fractions item A appropriate on a test for your class?
TQM2C012B	BTBM012B	Would you consider the above common fractions item B appropriate on a test for your class?
TQM2C012C	BTBM012C	Would you consider the above common fractions item C appropriate on a test for your class?
TQM2C012D	BTBM012D	Would you consider the above common fractions item D appropriate on a test for your class?
TQM2C012N	BTBM012N	None of the above common fractions items would be appropriate on a test for my class.
TQM2C013	BTBM013	Are students likely to encounter the topic common fractions" outside of school this year?"
TQM2C021	BTBM021	Does anything in your mathematics class enable your students to answer questions on decimal fractions?
TQM2C021A	BTBM021A	Something was done earlier this year to enable students to answer questions on decimal fractions.
TQM2C021B	BTBM021B	Something is being done now to enable students to answer questions on decimal fractions.
TQM2C021C	BTBM021C	Something will be done later this year to enable students to answer questions on decimal fractions.
TQM2C021D	BTBM021D	Decimal fractions was covered in the curriculum for an earlier grade.
TQM2C021E	BTBM021E	Decimal fractions is covered in this years curriculum, but I will not cover it.
TQM2C021F	BTBM021F	Decimal fractions is covered in the curriculum for a later grade.
TQM2C021G	BTBM021G	Decimal fractions is not included in the curriculum.
TQM2C021H	BTBM021H	I do not know whether decimal fractions is covered in another grade.
TQM2C022A	BTBM022A	Would you consider the above decimal fractions item A appropriate on a test for your class?
TQM2C022B	BTBM022B	Would you consider the above decimal fractions item B appropriate on a test for your class?
TQM2C022N	BTBM022N	None of the above decimal fractions items would be appropriate on a test for my class.
TQM2C023	BTBM023	Does anything in 3our mathematics class enable your s3udents to answer questiovered in this yractions?
TQM2C021A	Something wa3 done earlier this year to enable s3udents to answer questicovered inimal fractions.	
TQM2C021B	Would y3hing is being done nowecimal fracthis years cu3nswer q9estions on decimal fractions.	
TQM2C021CTQM2C021G		

Table S2.2

Index of International Background Variables for the Population 2 Mathematics Teacher Questionnaire Items (Continued 10)

Questionnaire Location	Variable Name	Description
TQM2C032E	BTBM032E	Would you consider the above units of measurement item E appropriate on a test for your class?
TQM2C032N	BTBM032N	None of the above units of measurement items would be appropriate on a test for my class.
TQM2C033	BTBM033	Are students likely to encounter the topic units of measurement" outside of school this year?"
TQM2C041	BTBM041	Does anything in your mathematics class enable your students to answer questions on units of measurement?
TQM2C041A	BTBM041A	Something was done earlier this year to enable students to answer questions on units of measurement.
TQM2C041B	BTBM041B	Something is being done now to enable students to answer questions on units of measurement.
TQM2C041C	BTBM041C	Something will be done later this year to enable students to answer questions on units of measurement.
TQM2C041D	BTBM041D	Units of measurement was covered in the curriculum for an earlier grade.
TQM2C041E	BTBM041E	Units of measurement is covered in this years curriculum, but I will not cover it.
TQM2C041F	BTBM041F	Units of measurement is covered in the curriculum for a later grade.
TQM2C041G	BTBM041G	Units of measurement is not included in the curriculum.
TQM2C041H	BTBM041H	I do not know whether units of measurement is covered in another grade.
TQM2C042	BTBM042	Would you consider the above units of measurement item appropriate on a test for your class?
TQM2C043	BTBM043	Are students likely to encounter the topic units of measurement" outside of school this year?"
TQM2C051	BTBM051	Does anything in your mathematics class enable your students to answer questions on perimeter, area, volume?
TQM2C051A	BTBM051A	Something was done earlier this year to enable students to answer questions on perimeter, area, volume.

Table S2.2

Index of International Background Variables for the Population 2 Mathematics Teacher Questionnaire Items (Continued 11)

Questionnaire Location	Variable

Table S2.2

Table S2.2
Index of International Background Variables for the Population 2 Mathematics Teacher Questionnaire Items (Continued 13)

Questionnaire Location	Variable Name	Description
TQM2C132C	BTBM132C	Would you consider the above data analysis item C appropriate on a test for your class?
TQM2C132D	BTBM132D	Would you consider the above data analysis item D appropriate on a test for your class?
TQM2C132N	BTBM132N	None of the above data analysis items would be appropriate on a test for my class.
TQM2C133	BTBM133	Are students likely to encounter the topic data analysis" outside of school this year?"
TQM2C141	BTBM141	Does anything in your mathematics class enable your students to answer questions on data analysis?
TQM2C141A	BTBM141A	Something was done earlier this year to enable students to answer questions on data analysis.
TQM2C141B	BTBM141B	Something is being done now to enable students to answer questions on data analysis.
TQM2C141C	BTBM141C	Something will be done later this year to enable students to answer questions on data analysis.
TQM2C141D	BTBM141D	Data analysis was covered in the curriculum for an earlier grade.
TQM2C141E	BTBM141E	Data analysis is covered in this years curriculum, but I will not cover it.
TQM2C141F	BTBM141F	Data analysis is covered in the curriculum for a later grade.
TQM2C141G	BTBM141G	Data analysis is not included in the curriculum.
TQM2C141H	BTBM141H	I do not know whether data analysis is covered in another grade.
TQM2C142	BTBM142	Would you consider the above data analysis item A appropriate on a test for your class?
TQM2C143	BTBM143	Are students likely to encounter the topic data analysis outside of school this year?
TQM2D1A	BTBMPA1A	Solve problem by presenting general graph with constant ratio.
TQM2D1B	BTBMPA1B	Show proportional equations, then assign practice exercises.
TQM2D1C	BTBMPA1C	Use method suggested by the textbook.
TQM2D1D	BTBMPA1D	Work with students to develop a specific graph to show relationship.
TQM2D1E	BTBMPA1E	Have students use calculator to find pairs of numbers with this relationship.
TQM2D1F	BTBMPA1F	Divide into groups and have students work on discovering a method to solve problem.
TQM2D1G	BTBMPA1G	Which approach is least acceptable?
TQM2D2A	BTBMPA2A	Review section of the textbook that explains the concept.
TQM2D2B	BTBMPA2B	Make class roster for a class with two boys and three girls. "Have students find solution."
TQM2D2C	BTBMPA2C	Have a few students explain their thinking, then discuss.
TQM2D2D	BTBMPA2D	Present situations of this type, have students use calculators to find percents, add to 100%.
TQM2D2E	BTBMPA2E	Show diagram with sets of girls, boys, all.
TQM2D2F	BTBMPA2F	Relate to general idea of ratio, investigate possible fractions that could be made.
TQM2D2G	BTBMPA2G	Which approach is least acceptable?

Table S2.3

Index of International Background Variables for the Population 2 Science Teacher Questionnaire Items

Questionnaire Location	Variable

Table S2.3

Index of International Background Variables for the Population 2 Science Teacher Questionnaire Items (Continued 2)

Questionnaire Location	Variable Name	Description
TQS2A16F	BTBSAGR6	Focusing on rules gives students the impression that the sciences are a set of procedures.
TQS2A16G	BTBSAGR7	If students get into debates about ideas in sciences, it can harm their learning.
TQS2A16H	BTBSAGR8	Students see a science task as the same task when it is represented in two different ways.
TQS2A16I	BTBSAGR9	A liking for and understanding of students are essential for teaching science.
TQS2A17A	BTBSFAM1	How familiar are you with the <national curriculum guide for science>?
TQS2A17B	BTBSFAM2	How familiar are you with the <regional curriculum guide for science>?
TQS2A17C	BTBGFAM3	How familiar are you with the <school curriculum guide>?
TQS2A17D	BTBGFAM4	How familiar are you with the <national examination specifications>?
TQS2A17E	BTBGFAM5	How familiar are you with the <regional examination specifications>?
TQS2A17F	BTBSFAM6	How familiar are you with the <national pedagogy guide for science>?
TQS2A17G	BTBSFAM7	How familiar are you with the <regional pedagogy guide for science>?
TQS2A18A	BTBSPRP1	How well prepared are you to teach earth's features?
TQS2A18B	BTBSPRP2	How well prepared are you to teach energy?
TQS2A18C	BTBSPRP3	How well prepared are you to teach light?
TQS2A18D	BTBSPRP4	How well prepared are you to teach structure/function of human tissues/organs?
TQS2A18E	BTBSPRP5	How well prepared are you to teach human metabolism?
TQS2A18F	BTBSPRP6	How well prepared are you to teach human reproduction?
TQS2A18G	BTBSPRP7	How well prepared are you to teach human genetics?
TQS2A18H	BTBSPRP8	How well prepared are you to teach measurement?
TQS2A18I	BTBSPRP9	How well prepared are you to teach organizing data/making conclusions?
TQS2A19	BTBGCARE	Was teaching your first choice as a career when beginning university?
TQS2A20	BTBGCHNG	Would you change to another career if you had the opportunity?
TQS2A21	BTBGSOAP	Do you think that society appreciates your work?
TQS2A22	BTBGSTAP	Do you think your students appreciate your work?
TQS2A23	BTBGBOOK	Approximately how many books are in your home?
TQS2A24A	BTBGRNK1	Social status rank of accountant
TQS2A24B	BTBGRNK2	Social status rank of <medical doctor>
TQS2A24C	BTBGRNK3	Social status rank of lawyer
TQS2A24D	BTBGRNK4	Social status rank of engineer
TQS2A24E	BTBGRNK5	Social status rank of nurse
TQS2A24F	BTBGRNK6	Social status rank of senior <civil servant>
TQS2A24G	BTBGRNK7	Social status rank of teacher, primary school
TQS2A24H	BTBGRNK8	Social status rank of teacher, secondary school
TQS2A24I	BTBGRNK9	Social status rank of <unskilled worker>
TQS2B1/1	BTBSBOY	How many boys are in your class?
TQS2B1/2	BTBSGIRL	How many girls are in your class?
TQS2B2A	BTBSACH1	What percent of your students are in the top third nationally?
TQS2B2B	BTBSACH2	What percent of your students are in the middle third nationally?
TQS2B2C	BTBSACH3	What percent of your students are in the bottom third nationally?
TQS2B3	BTBSTIME	How many minutes per week do you teach science to your class?
TQS2B4	BTBSTXBK	Do you use a textbook in teaching science to your class?
TQS2B4/1A	BTBSTXB0	Do you use <text> in your class?
TQS2B4/1B	BTBSTXB1	Do you use <text> in your class?
TQS2B4/1C	BTBSTXB2	Do you use <text> in your class?
TQS2B4/1D	BTBSTXB3	Do you use <text> in your class?
TQS2B4/1E	BTBSTXB4	Do you use <text> in your class?

Table S2.3
Index of International Background Variables for the Population 2 Science Teacher Questionnaire Items (Continued 4)

Questionnaire Location	Variable Name	Description
TQS2B12A1A	BTBSTA1A	Will teach earth features/layers later this year.
TQS2B12A1B	BTBSTA1B	Earth features/layers are not taught this year.
TQS2B12A1C	BTBSTA1C	Earth features/layers were taught in a previous year.
TQS2B12A2	BTBSTA2	How many periods have you spent teaching earth features/landforms this year?
TQS2B12A2A	BTBSTA2A	Will teach earth features/landforms later this year.
TQS2B12A2B	BTBSTA2B	Earth features/landforms are not taught this year.
TQS2B12A2C	BTBSTA2C	Earth features/landforms were taught in a previous year.
TQS2B12A3	BTBSTA3	How many periods have you spent teaching earth features/bodies of water this year?
TQS2B12A3A	BTBSTA3A	Will teach earth features/bodies of water later this year.
TQS2B12A3B	BTBSTA3B	Earth features/bodies of water are not taught this year.
TQS2B12A3C	BTBSTA3C	Earth features/bodies of water were taught in a previous year.
TQS2B12A4	BTBSTA4	How many periods have you spent teaching earth features/atmosphere this year?
TQS2B12A4A	BTBSTA4A	Will teach earth features/atmosphere later this year.
TQS2B12A4B	BTBSTA4B	Earth features/atmosphere is not taught this year.
TQS2B12A4C	BTBSTA4C	Earth features/atmosphere was taught in a previous year.
TQS2B12A5	BTBSTA5	How many periods have you spent teaching earth features/rocks,soil this year?
TQS2B12A5A	BTBSTA5A	Will teach earth features/rocks,soil later this year.
TQS2B12A5B	BTBSTA5B	Earth features/rocks,soil are not taught this year.
TQS2B12A5C	BTBSTA5C	Earth features/rocks,soil were taught in a previous year.
TQS2B12A6	BTBSTA6	How many periods have you spent teaching earth features/iceforms this year?
TQS2B12A6A	BTBSTA6A	Will teach earth features/iceforms later this year.
TQS2B12A6B	BTBSTA6B	Earth features/iceforms are not taught this year.
TQS2B12A6C	BTBSTA6C	Earth features/iceforms were taught in a previous year.
TQS2B12B	BTBSTB	How many periods have you spent teaching earth processes this year?
TQS2B12BA	BTBSTBA	Will teach earth processes later this year.
TQS2B12BB	BTBSTBB	Earth processes are not taught this year.
TQS2B12BC	BTBSTBC	Earth processes were taught in a previous year.
TQS2B12C	BTBSTC	How many periods have you spent teaching about earth in the universe this year?
TQS2B12CA	BTBSTCA	Will teach earth in the universe later this year.
TQS2B12CB	BTBSTCB	Earth in the universe is not taught this year.
TQS2B12CC	BTBSTCC	Earth in the universe was taught in a previous year.
TQS2B12D	BTBSTD	How many periods have you spent teaching human biology this year?
TQS2B12DA	BTBSTDA	Will teach human biology later this year.
TQS2B12DB	BTBSTDB	Human biology is not taught this year.
TQS2B12DC	BTBSTDC	Human biology was taught in a previous year.
TQS2B12D1	BTBSTD1	How many periods have you spent teaching human biology/structures this year?
TQS2B12D1A	BTBSTD1A	Will teach human biology/structures later this year.
TQS2B12D1B	BTBSTD1B	Human biology/structures is not taught this year.
TQS2B12D1C	BTBSTD1C	Human biology/structures was taught in a previous year.
TQS2B12D2	BTBSTD2	How many periods have you spent teaching human biology/processes this year?
TQS2B12D2A	BTBSTD2A	Will teach human biology/processes later this year.
TQS2B12D2B	BTBSTD2B	Human biology/processes is not taught this year.
TQS2B12D2C	BTBSTD2C	Human biology/processes was taught in a previous year.
TQS2B12D3	BTBSTD3	How many periods have you spent teaching human biology/reproduction this year?
TQS2B12D3A	BTBSTD3A	Will teach human biology/reproduction later this year.
TQS2B12D3B	BTBSTD3B	Human biology/reproduction is not taught this year.

Table S2.3
Index of International Background Variables for the Population 2 Science Teacher Questionnaire Items (Continued 5)

Questionnaire Location	Variable Name	Description
TQS2B12D3C	BTBSTD3C	Human biology/reproduction was taught in a previous year.
TQS2B12D4	BTBSTD4	How many periods have you spent teaching human biology/genetics this year?
TQS2B12D4A	BTBSTD4A	Will teach human biology/genetics later this year.
TQS2B12D4B	BTBSTD4B	Human biology/genetics is not taught this year.
TQS2B12D4C	BTBSTD4C	Human biology/genetics was taught in a previous year.
TQS2B12E	BTBSTE	How many periods have you spent teaching diversity of living things this year?
TQS2B12EA	BTBSTEA	Will teach diversity of living things later this year.
TQS2B12EB	BTBSTEB	Diversity of living things is not taught this year.
TQS2B12EC	BTBSTEC	Diversity of living things was taught in a previous year.
TQS2B12F	BTBSTF	How many periods have you spent teaching life processes this year?
TQS2B12FA	BTBSTFA	Will teach life processes later this year.
TQS2B12FB	BTBSTFB	Life processes are not taught this year.
TQS2B12FC	BTBSTFC	Life processes were taught in a previous year.
TQS2B12G	BTBSTG	How many periods have you spent teaching life cycles and genetics this year?
TQS2B12GA	BTBSTGA	Will teach life cycles and genetics later this year.
TQS2B12GB	BTBSTGB	Life cycles and genetics are not taught this year.
TQS2B12GC	BTBSTGC	Life cycles and genetics were taught in a previous year.
TQS2B12H	BTBSTH	How many periods have you spent teaching interactions of living things this year?
TQS2B12HA	BTBSTHA	Will teach interactions of living things later this year.
TQS2B12HB	BTBSTHB	Interactions of living things are not taught this year.
TQS2B12HC	BTBSTHC	Interactions of living things were taught in a previous year.
TQS2B12I	BTBSTI	How many periods have you spent teaching about types/properties of matter this year?
TQS2B12IA	BTBSTIA	Will teach types/properties of matter later this year.
TQS2B12IB	BTBSTIB	Types/properties of matter is not taught this year.
TQS2B12IC	BTBSTIC	Types/properties of matter was taught in a previous year.
TQS2B12J	BTBSTJ	How many periods have you spent teaching about structure of matter this year?
TQS2B12JA	BTBSTJA	Will teach structure of matter later this year.
TQS2B12JB	BTBSTJB	Structure of matter is not taught this year.
TQS2B12JC	BTBSTJC	Structure of matter was taught in a previous year.
TQS2B12K	BTBSTK	How many periods have you spent teaching energy types this year?
TQS2B12KA	BTBSTKA	Will teach energy types later this year.
TQS2B12KB	BTBSTKB	Energy types are not taught this year.
TQS2B12KC	BTBSTKC	Energy types were taught in a previous year.
TQS2B12L	BTBSTL	How many periods have you spent teaching energy processes this year?
TQS2B12LA	BTBSTLA	Will teach energy processes later this year.
TQS2B12LB	BTBSTLB	Energy processes are not taught this year.
TQS2B12LC	BTBSTLC	Energy processes were taught in a previous year.
TQS2B12L1	BTBSTL1	How many periods have you spent teaching energy processes/light this year?
TQS2B12L1A	BTBSTL1A	Will teach energy processes/light later this year.
TQS2B12L1B	BTBSTL1B	Energy processes/light are not taught this year.
TQS2B12L1C	BTBSTL1C	Energy processes/light were taught in a previous year.
TQS2B12M	BTBSTM	How many periods have you spent teaching physical changes this year?
TQS2B12MA	BTBSTMA	Will teach physical changes later this year.
TQS2B12MB	BTBSTMB	Physical changes are not taught this year.
TQS2B12MC	BTBSTMC	Physical changes were taught in a previous year.
TQS2B12N	BTBSTN	How many periods have you spent teaching quantum theory this year?

Table S2.3

Index of International Background Variables for the Population 2 Science Teacher Questionnaire Items (Continued 6)

Questionnaire Location	Variable Name

Table S2.3
Index of International Background Variables for the Population 2 Science Teacher Questionnaire Items (Continued 9)

Questionnaire Location	Variable Name	Description
TQS2B20D	BTBSWRIT	How often do you assign writing for homework?
TQS2B20E	BTBSDATA	How often do you assign small investigations for homework?
TQS2B20F	BTBSIEXP	How often do you assign long term individual projects for homework?
TQS2B20G	BTBSGEXP	How often do you assign long term small group projects for homework?
TQS2B20H	BTBSFIND	How often do you have students find uses of the content for homework?
TQS2B20I	BTBSORAL	How often do you have students prepare oral reports for homework?
TQS2B20J	BTBSJOUR	How often do you assign journals for homework?
TQS2B21A	BTBSWHW1	How often do you record whether or not homework was completed?
TQS2B21B	BTBSWHW2	How often do you collect, correct and keep homework assignments?
TQS2B21C	BTBSWHW3	How often do you collect, correct and return homework assignments?
TQS2B21D	BTBSWHW4	How often do you give feedback on homework to whole class?
TQS2B21E	BTBSWHW5	How often do you have students correct their own homework assignments in class?
TQS2B21F	BTBSWHW6	How often do you have students exchange homework assignments and correct them?
TQS2B21G	BTBSWHW7	How often do you use homework as a basis for class discussion?
TQS2B21H	BTBSWHW8	How often do you use homework to contribute towards students' grades?
TQS2B22A	BTBSWGT1	In assessment, how much weight do you give externally produced examinations?
TQS2B22B	BTBSWGT2	In assessment, how much weight do you give teacher-made open-ended tests?
TQS2B22C	BTBSWGT3	In assessment, how much weight do you give teacher-made multiple-choice tests?
TQS2B22D	BTBSWGT4	In assessment, how much weight do you give homework assignments?
TQS2B22E	BTBSWGT5	In assessment, how much weight do you give laboratory exercises?
TQS2B22F	BTBSWGT6	In assessment, how much weight do you give observations of students?
TQS2B22G	BTBSWGT7	In assessment, how much weight do you give responses of students in class?
TQS2B23A	BTBGASS1	How often do you use assessment information to provide grades for students?
TQS2B23B	BTBGASS2	How often do you use assessment information to provide feedback to students?
TQS2B23C	BTBGASS3	How often do you use assessment information to diagnose learning problems?
TQS2B23D	BTBGASS4	How often do you use assessment information to report to parents?
TQS2B23E	BTBGASS5	How often do you use assessment information to assign students to tracks?
TQS2B23F	BTBGASS6	How often do you use assessment information to plan for future lessons?
TQS2C011	BTBS011	Does anything in your science class enable your students to answer questions on earth features/composition?
TQS2C011A	BTBS011A	Something was done earlier this year to enable students to answer questions on earth features/composition?
TQS2C011B	BTBS011B	Something is being done now to enable students to answer questions on earth features/composition.
TQS2C011C	BTBS011C	Something will be done later this year to enable students to answer questions on earth features/composition.
TQS2C011D	BTBS011D	Earth features/composition was covered in the curriculum for an earlier grade.
TQS2C011E	BTBS011E	Earth features/composition is covered in this years curriculum, but I will not cover it.
TQS2C011F	BTBS011F	Earth features/composition is covered in the curriculum for a later grade.
TQS2C011G	BTBS011G	Earth features/composition is not included in the curriculum.
TQS2C011H	BTBS011H	I do not know whether earth features/composition is covered in another grade.
TQS2C012	BTBS012	Would you consider the above earth features/composition item appropriate on a test for your class?
TQS2C013	BTBS013	Are students likely to encounter the topic 'earth features/composition' outside of school this year?
TQS2C021	BTBS021	Does anything in your science class enable your students to answer questions on landforms?
TQS2C021A	BTBS021A	Something was done earlier this year to enable students to answer questions on landforms.
TQS2C021B	BTBS021B	Something is being done now to enable students to answer questions on landforms.
TQS2C021C	BTBS021C	Something will be done later this year to enable students to answer questions on landforms.
TQS2C021D	BTBS021D	Landforms was covered in the curriculum for an earlier grade.
TQS2C021E	BTBS021E	Landforms is covered in this years curriculum, but I will not cover it.
TQS2C021F	BTBS021F	Landforms is covered in the curriculum for a later grade.

Table S2.3

Index of International Background Variables for the Population 2 Science Teacher Questionnaire Items (Continued 11)

Questionnaire Location	Variable Name	Description
TQS2C061D	BTBS061D	Rocks & soil was covered in the curriculum for an earlier grade.
TQS2C061E	BTBS061E	Rocks & soil is covered in this years curriculum, but I will not cover it.
TQS2C061F	BTBS061F	Rocks & soil is covered in the curriculum for a later grade.
TQS2C061G	BTBS061G	Rocks & soil is not included in the curriculum.
TQS2C061H	BTBS061H	I do not know whether rocks & soil is covered in another grade.
TQS2C062A	BTBS062A	Would you consider the above rocks & soil item A appropriate on a test for your class?

Table S2.3
Index of International Background Variables for the Population 2 Science Teacher Questionnaire Items (Continued 12)

Questionnaire Location	Variable Name	Description
TQS2C091H	BTBS091H	I do not know whether energy types is covered in another grade.
TQS2C092A	BTBS092A	Would you consider the above energy types item A appropriate on a test for your class?
TQS2C092B	BTBS092B	Would you consider the above energy types item B appropriate on a test for your class?
TQS2C092C	BTBS092C	Would you consider the above energy types item C appropriate on a test for your class?
TQS2C092D	BTBS092D	Would you consider the above energy types item D appropriate on a test for your class?
TQS2C092N	BTBS092N	None of the above energy types items would be appropriate on a test for my class.
TQS2C093	BTBS093	Are students likely to encounter the topic 'energy types' outside of school this year?
TQS2C101	BTBS101	Does anything in your science class enable your students to answer questions on energy types?
TQS2C101A	BTBS101A	Something was done earlier this year to enable students to answer questions on energy types.
TQS2C101B	BTBS101B	Something is being done now to enable students to answer questions on energy types.
TQS2C101C	BTBS101C	Something will be done later this year to enable students to answer questions on energy types.
TQS2C101D	BTBS101D	Energy types was covered in the curriculum for an earlier grade.
TQS2C101E	BTBS101E	Energy types is covered in this years curriculum, but I will not cover it.
TQS2C101F	BTBS101F	Energy types is covered in the curriculum for a later grade.
TQS2C101G	BTBS101G	Energy types is not included in the curriculum.
TQS2C101H	BTBS101H	I do not know whether energy types is covered in another grade.
TQS2C102	BTBS102	Would you consider the above energy types item appropriate on a test for your class?
TQS2C103	BTBS103	Are students likely to encounter the topic 'energy types' outside of school this year?
TQS2C111	BTBS111	Does anything in your science class enable your students to answer questions on energy types?
TQS2C111A	BTBS111A	Something was done earlier this year to enable students to answer questions on energy types.
TQS2C111B	BTBS111B	Something is being done now to enable students to answer questions on energy types.
TQS2C111C	BTBS111C	Something will be done later this year to enable students to answer questions on energy types.
TQS2C111D	BTBS111D	Energy types was covered in the curriculum for an earlier grade.
TQS2C111E	BTBS111E	Energy types is covered in this years curriculum, but I will not cover it.
TQS2C111F	BTBS111F	Energy types is covered in the curriculum for a later grade.
TQS2C111G	BTBS111G	Energy types is not included in the curriculum.
TQS2C111H	BTBS111H	I do not know whether energy types is covered in another grade.
TQS2C112	BTBS112	Would you consider the above energy types item appropriate on a test for your class?
TQS2C113	BTBS113	Are students likely to encounter the topic 'energy types' outside of school this year?
TQS2C121	BTBS121	Does anything in your science class enable your students to answer questions on light?
TQS2C121A	BTBS121A	Something was done earlier this year to enable students to answer questions on light.
TQS2C121B	BTBS121B	Something is being done now to enable students to answer questions on light.
TQS2C121C	BTBS121C	Something will be done later this year to enable students to answer questions on light.
TQS2C121D	BTBS121D	Light was covered in the curriculum for an earlier grade.
TQS2C121E	BTBS121E	Light is covered in this years curriculum, but I will not cover it.
TQS2C121F	BTBS121F	Light is covered in the curriculum for a later grade.
TQS2C121G	BTBS121G	Light is not included in the curriculum.
TQS2C121H	BTBS121H	I do not know whether light is covered in another grade.
TQS2C122A	BTBS122A	Would you consider the above light item A appropriate on a test for your class?
TQS2C122B	BTBS122B	Would you consider the above light item B appropriate on a test for your class?
TQS2C122C	BTBS122C	Would you consider the above light item C appropriate on a test for your class?
TQS2C122D	BTBS122D	Would you consider the above light item D appropriate on a test for your class?"
TQS2C122N	BTBS122N	None of the above light items would be appropriate on a test for my class.
TQS2C123	BTBS123	Are students likely to encounter the topic 'light' outside of school this year?
TQS2C131	BTBS131	

Table S2.3
Index of International Background Variables for the Population 2 Science Teacher Questionnaire Items (Continued 13)

Questionnaire Location	Variable Name	Description
TQS2C131B	BTBS131B	Something is being done now to enable students to answer questions on data analysis.
TQS2C131C	BTBS131C	Something will be done later this year to enable students to answer questions on data analysis.
TQS2C131D	BTBS131D	Data analysis was covered in the curriculum for an earlier grade.
TQS2C131E	BTBS131E	Data analysis is covered in this years curriculum, but I will not cover it.
TQS2C131F	BTBS131F	Data analysis is covered in the curriculum for a later grade.
TQS2C131G	BTBS131G	Data analysis is not included in the curriculum.
TQS2C131H	BTBS131H	I do not know whether data analysis is covered in another grade.
TQS2C132A	BTBS132A	Would you consider the above data analysis item A appropriate on a test for your class?
TQS2C132B	BTBS132B	Would you consider the above data analysis item B appropriate on a test for your class?
TQS2C132C	BTBS132C	Would you consider the above data analysis item C appropriate on a test for your class?
TQS2C132D	BTBS132D	Would you consider the above data analysis item D appropriate on a test for your class?
TQS2C132N	BTBS132N	None of the above data analysis items would be appropriate on a test for my class.
TQS2C133	BTBS133	Are students likely to encounter the topic 'data analysis' outside of school this year?
TQS2D1A	BTBSPA1A	'What is energy' approach should be avoided because students might get confused.
TQS2D1B	BTBSPA1B	Teacher should have begun by explaining what energy is.
TQS2D1C	BTBSPA1C	'What is energy' approach useful because teacher became aware of student ideas.
TQS2D1D	BTBSPA1D	Teacher should have begun with demonstration of effects of energy.
TQS2D2A	BTBSPA2A	Explain to students how water makes things appear larger.
TQS2D2B	BTBSPA2B	Ask questions about how objects appear in and out of water.
TQS2D2C	BTBSPA2C	Have students do experiment measuring size of objects in and out of water.
TQS2D2D	BTBSPA2D	Have students design an experiment that would determine whether idea is correct.
TQS2D2E	BTBSPA2E	Have students read relevant information from textbooks.
TQS2D2F	BTBSPA2F	Do demonstration showing how water affects the appearance of objects.
TQS2D2G	BTBSPA2G	Have students compare ideas about why objects would appear to be different sizes.
TQS2D2H	BTBSPA2H	Which of the approaches do you believe to be least acceptable?
TQS2D3A	BTBSPA3A	Give students more accurate explanation of how human inheritance works.
TQS2D3B	BTBSPA3B	Ask questions that lead students to understand that idea is inaccurate.
TQS2D3C	BTBSPA3C	Have students collect data about inheritance from classmates.
TQS2D3D	BTBSPA3D	Have students design investigation to decide whether or not idea is correct.
TQS2D3E	BTBSPA3E	Have students read relevant information from textbooks.
TQS2D3F	BTBSPA3F	Use data to demonstrate how inheritance works.
TQS2D3G	BTBSPA3G	Have students compare ideas about inheritance.
TQS2D3H	BTBSPA3H	Which of the approaches do you believe to be least acceptable?

Table S2.4
Index of International Background Variables for the Population 2 School Questionnaire Items

Questionnaire Location	Variable Name	Description
SCQ2-1	BCBGCOMM	In what type of community is your school located?
SCQ2-2A	BCBGGRPK	Does your school serve pre-kindergarten?
SCQ2-2B	BCBGGRK	Does your school serve kindergarten?
SCQ2-2C	BCBGGR1	Does your school serve 1st grade?
SCQ2-2D	BCBGGR2	Does your school serve 2nd grade?
SCQ2-2E	BCBGGR3	Does your school serve 3rd grade?
SCQ2-2F	BCBGGR4	Does your school serve 4th grade?
SCQ2-2G	BCBGGR5	Does your school serve 5th grade?
SCQ2-2H	BCBGGR6	Does your school serve 6th grade?
SCQ2-2I	BCBGGR7	Does your school serve 7th grade?
SCQ2-2J	BCBGGR8	Does your school serve 8th grade?
SCQ2-2K	BCBGGR9	Does your school serve 9th grade?
SCQ2-2L	BCBGGR10	Does your school serve 10th grade?
SCQ2-2M	BCBGGR11	Does your school serve 11th grade?
SCQ2-2N	BCBGGR12	Does your school serve 12th grade?
SCQ2-2O	BCBGGR13	Does your school serve 13th grade?
SCQ2-3ten? LTc TD staffd? in ET)2-2B	BCBGGRK	LTc TD staffd? in ET)2-2B 2K BCBGGR9Does your school sees your s4 TD 0.How manyDdep

Table S2.4
Index of International Background Variables for the Population 2 School Questionnaire Items (Continued 2)

Questionnaire Location	Variable Name	Description
SCQ2-16B	BCBGST02	Is your school's instructional capacity affected by inadequacy of budget for supplies?
SCQ2-16C	BCBGST03	Is your school's instructional capacity affected by inadequacy of school buildings and grounds?
SCQ2-16D	BCBGST04	Is your school's instructional capacity affected by inadequacy of heating/cooling and lighting system?
SCQ2-16E	BCBGST05	Is your school's instructional capacity affected by inadequacy of instructional space?
SCQ2-16F	BCBGST06	Is your school's instructional capacity affected by inadequacy of equipment for handicapped students?
SCQ2-16G	BCBMST07	Is your school's instructional capacity affected by inadequacy of computers for mathematics instruction?
SCQ2-16H	BCBMST08	Is your school's instructional capacity affected by inadequacy of computer software for mathematics instruction?
SCQ2-16I	BCBMST09	Is your school's instructional capacity affected by inadequacy of calculators for mathematics instruction?
SCQ2-16J	BCBMST10	Is your school's instructional capacity affected by inadequacy of library materials relevant to mathematics instruction?
SCQ2-16K	BCBMST11	Is your school's instructional capacity affected by inadequacy of A-V resources for mathematics instruction?
SCQ2-16L	BCBSST12	Is your school's instructional capacity affected by inadequacy of science laboratory equipment & materials?
SCQ2-16M	BCBSST13	Is your school's instructional capacity affected by inadequacy of computers for science instruction?
SCQ2-16N	BCBSST14	Is your school's instructional capacity affected by inadequacy of computer software for science instruction?
SCQ2-16O	BCBSST15	Is your school's instructional capacity affected by inadequacy of calculators for science instruction?
SCQ2-16P	BCBSST16	Is your school's instructional capacity affected by inadequacy of library materials relevant to science instruction?
SCQ2-16Q	BCBSST17	Is your school's instructional capacity affected by inadequacy of A-V resources for science instruction?
SCQ2-17A1	BCBGBENR	How many boys attend your school?
SCQ2-17A2	BCBGGENR	How many girls attend your school?
SCQ2-17B	BCBGABST	What percentage of students are absent on a typical day?
SCQ2-17C	BCBGENDY	What percentage of students who begin the year in your school also finish in your school?
SCQ2-17D	BCBGTNSF	What percentage of students in your school transfer in after the beginning of school year?
SCQ2-17E1	BCBGLBER	How many boys are in lower grade?
SCQ2-17E2	BCBGLGER	How many girls are in lower grade?
SCQ2-17F1	BCBGLBRT	How many boys in lower grade are repeating the grade?
SCQ2-17F2	BCBGLGRT	How many girls in lower grade are repeating the grade?
SCQ2-17G	BCBGLSIZ	What is the approximate average class size in lower grade?
SCQ2-17H	BCBGLMGR	How many lower grade students are in multi-grade classrooms?
SCQ2-17I1	BCBMLBER	How many boys in lower grade study mathematics?
SCQ2-17I2	BCBMLGER	How many girls in lower grade study mathematics?
SCQ2-17J1	BCBSLBER	How many boys in lower grade study science?
SCQ2-17J2	BCBSLGER	How many girls in lower grade study science?
SCQ2-17K1	BCBGUBER	How many boys are in upper grade?
SCQ2-17K2	BCBGUGER	How many girls are in upper grade?
SCQ2-17L1	BCBGUBRT	How many boys in upper grade are repeating the grade?
SCQ2-17L2	BCBGUGRT	How many girls in upper grade are repeating the grade?
SCQ2-17M	BCBGUSIZ	What is the approximate average class size in upper grade?
SCQ2-17N	BCBGUMGR	How many upper grade students are in multi-grade classrooms?
SCQ2-17O1	BCBMUBER	How many boys in upper grade study mathematics?
SCQ2-17O2	BCBMUGER	How many girls in upper grade study mathematics?
SCQ2-17P1	BCBSUBER	How many boys in upper grade study science?
SCQ2-17P2	BCBSUGER	How many girls in upper grade study science?
SCQ2-18A1	BCBGUO01	How often does school administration or staff have to deal with upper grade students arriving late at school?
SCQ2-18A2	BCBGUP01	What percentage of upper grade students arrive late at school?
SCQ2-18B1	BCBGUO02	How often does school administration or staff have to deal with upper grade students' unjustifiable absenteeism?
SCQ2-18B2	BCBGUP02	What percentage of upper grade students are absent without an excuse?
SCQ2-18C1	BCBGUO03	How often does school administration or staff have to deal with upper grade students skipping class periods?

Table S2.4
Index of International Background Variables for the Population 2 School Questionnaire Items (Continued 3)

Questionnaire Location	Variable Name	Description
SCQ2-18C2	BCBGUP03	What percentage of upper grade students skip classes?
SCQ2-18D1	BCBGUO04	How often does school administration or staff have to deal with upper grade students violating the dress code?
SCQ2-18D2	BCBGUP04	What percentage of upper grade students violate the dress code?
SCQ2-18E1	BCBGUO05	How often does school administration or staff have to deal with classroom disturbance by upper grade students?
SCQ2-18E2	BCBGUP05	What percentage of upper grade students disturb class?
SCQ2-18F1	BCBGUO06	How often does school administration or staff have to deal with cheating by upper grade students?
SCQ2-18F2	BCBGUP06	What percentage of upper grade students cheat?
SCQ2-18G1	BCBGUO07	How often does school administration or staff have to deal with use of profanity by upper grade students?
SCQ2-18G2	BCBGUP07	What percentage of upper grade students use profanity?
SCQ2-18H1	BCBGUO08	How often does school administration or staff have to deal with vandalism by upper grade students?
SCQ2-18H2	BCBGUP08	What percentage of upper grade students have been involved in vandalism?
SCQ2-18I1	BCBGUO09	How often does school administration or staff have to deal with theft by upper grade students?
SCQ2-18I2	BCBGUP09	What percentage of upper grade students have been involved with theft?
SCQ2-18J1	BCBGUO10	How often does school administration or staff have to deal with intimidation of students by upper grade students?
SCQ2-18J2	BCBGUP10	What percentage of upper grade students have been involved in intimidation of other students?
SCQ2-18K1	BCBGUO11	How often does administration or staff have to deal with physical injury to students caused by upper grade students?
SCQ2-18K2	BCBGUP11	What percentage of upper grade students have caused physical injury to another student?
SCQ2-18L1	BCBGUO12	How often does administration or staff have to deal with intimidation of teachers or staff by upper grade students?
SCQ2-18L2	BCBGUP12	What percentage of upper grade students been involved in intimidation of teachers or staff members?
SCQ2-18M1	BCBGUO13	How often does school administration or staff have to deal with physical injury of staff caused by upper grade students?
SCQ2-18M2	BCBGUP13	What percentage of upper grade students have caused physical injury to a teacher or staff member?
SCQ2-18N1	BCBGUO14	How often does school administration or staff have to deal with tobacco use/possession by upper grade students?
SCQ2-18N2	BCBGUP14	What percentage of upper grade students have been found to be involved in tobacco use?
SCQ2-18O1	BCBGUO15	How often does school administration or staff have to deal with alcohol use/possessionby upper grade students?
SCQ2-18O2	BCBGUP15	What percentage of upper grade students have been found to be involved in alcohol use?
SCQ2-18P1	BCBGUO16	How often does school administration or staff have to deal with illegal drug use/possession by upper grade students?
SCQ2-18P2	BCBGUP16	What percentage of upper grade students have been found to be involved in illegal drug use/possession?
SCQ2-18Q1	BCBGUO17	How often does school administration or staff have to deal with weapon use/possession by upper grade students?
SCQ2-18Q2	BCBGUP17	What percentage of upper grade students have been found in possession of weapons?
SCQ2-18R1	BCBGUO18	How often does school administration or staff have to deal with inappropriate sexual behavior by upper grade students?
SCQ2-18R2	BCBGUP18	What percentage of upper grade students have been found to be involved in inappropriate sexual behavior?
SCQ2-19	BCBGINST	Is instructional time the same for both lower and upper grade in your school?
SCQ2-19A1	BCBGLDYY	How many instructional days are in the school year for lower grade?
SCQ2-19A2	BCBGUDYY	How many instructional days are in the school year for upper grade?
SCQ2-19B1	BCBGLFLW	How many full instructional days are in the school week for lower grade?
SCQ2-19B2	BCBGUFLW	How many full instructional days are in the school week for upper grade?
SCQ2-19C1	BCBGLHFW	How many half instructional days are in the school week for lower grade?
SCQ2-19C2	BCBGUHFW	How many half instructional days are in the school week for upper grade?
SCQ2-19D1	BCBGLTHW	How many total hours are in the school week for lower grade?
SCQ2-19D2	BCBGUTHW	How many total hours are in the school week for upper grade?
SCQ2-19E1	BCBGLIHW	How many instructional hours are in the school week for lower grade?
SCQ2-19E2	BCBGUIHW	How many instructional hours are in the school week for upper grade?
SCQ2-20	BCBGDIVI	Is the school week divided into instructional periods?
SCQ2-20A1	BCBGLPDW	How many instructional periods are there in a week for lower grade?
SCQ2-20A2	BCBGUPDW	How many instructional periods are there in a week for upper grade?
SCQ2-20B1	BCBGLTMP	How many minutes is a typical instructional period for lower grade?

Table S2.4
Index of International Background Variables for the Population 2 School Questionnaire Items (Continued 4)

Questionnaire Location	Variable Name	Description
SCQ2-20B2	BCBGUTMP	How many minutes is a typical instructional period for upper grade?
SCQ2-21	BCBMRMDL	Does your school provide remedial teaching in mathematics?
SCQ2-21A	BCBMRMD1	For remedial mathematics teaching, are groups formed within regular mathematics classes?
SCQ2-21B	BCBMRMD2	For remedial mathematics teaching, are students withdrawn from regular mathematics classes?
SCQ2-21C	BCBMRMD3	For remedial mathematics teaching, do students receive extra <tuition> before/after school?
SCQ2-21D	BCBMRMD4	For remedial mathematics teaching, is some other method used?
SCQ2-22	BCBSRMDL	Does your school provide remedial teaching in science?
SCQ2-22A	BCBSRMD1	For remedial science teaching, are groups formed within regular science classes?
SCQ2-22B	BCBSRMD2	For remedial science teaching, are students withdrawn from regular science classes?
SCQ2-22C	BCBSRMD3	For remedial science teaching, do students receive extra <tuition> before/after school?
SCQ2-22D	BCBSRMD4	For remedial science teaching, is some other method used?
SCQ2-23	BCBMENRH	Does your school provide special enrichment activities in mathematics?
SCQ2-23A	BCBMENR1	For mathematics enrichment, are groups formed within regular mathematics classes?
SCQ2-23B	BCBMENR2	For mathematics enrichment, are students withdrawn from regular mathematics classes?
SCQ2-23C	BCBMENR3	For mathematics enrichment, do students receive extra <tuition> before/after school?
SCQ2-23D	BCBMENR4	For mathematics enrichment, is some other method used?
SCQ2-24	BCBSENRH	Does your school provide special enrichment activities in science?
SCQ2-24A	BCBSENR1	For science enrichment, are groups formed within regular science classes?
SCQ2-24B	BCBSENR2	For science enrichment, are students withdrawn from regular science classes?
SCQ2-24C	BCBSENR3	For science enrichment, do students receive extra <tuition> before/after school?
SCQ2-24D	BCBSENR4	For science enrichment, is some other method used?
SCQ2-25	BCBMUSCO	Do all students in upper grade follow the same course of study in mathematics?
SCQ2-25A	BCBMUC1	How many instructional minutes per week are students in upper grade required to spend in mathematics classes?
SCQ2-25B	BCBMUC2	How many instructional weeks per year are students in upper grade required to spend in mathematics classes?
SCQ2-25C	BCBMUC3	How many different courses of study in mathematics are available to upper grade students?
SCQ2-25D1	BCBMUC41	What percentage of upper grade students take the most advanced mathematics course of study?
SCQ2-25D2	BCBMUC42	What percentage of upper grade students take the least advanced mathematics course of study?
SCQ2-25E1	BCBMUC51	How many instructional minutes/week for students in most advanced mathematics course of study?
SCQ2-25E2	BCBMUC52	How many instructional minutes/week for students in least advanced mathematics course of study?
SCQ2-25F1	BCBMUC61	How many instructional weeks/year for students in most advanced mathematics course of study?
SCQ2-25F2	BCBMUC62	How many instructional weeks/year for students in least advanced mathematics course of study?
SCQ2-26A	BCBMUFC1	How important is academic performance in selecting mathematics course of study for student?
SCQ2-26B	BCBMUFC2	How important are standardized tests in selecting mathematics course of study for student?
SCQ2-26C	BCBMUFC3	How important is entrance exam in selecting mathematics course of study for student?
SCQ2-26D	BCBMUFC4	How important is oral exam in selecting mathematics course of study for student?
SCQ2-26E	BCBMUFC5	How important are teacher recommendations in selecting mathematics course of study for student?
SCQ2-26F	BCBMUFC6	How important are parental wishes in selecting mathematics course of study for student?
SCQ2-26G	BCBMUFC7	How important are student wishes in selecting mathematics course of study for student?
SCQ2-26H	BCBMUFC8	How important are curricular requirements in selecting mathematics course of study for student?
SCQ2-27	BCBSUSCO	Do all students in upper grade follow the same course of study in science?
SCQ2-27A	BCBSUC1	How many instructional minutes per week are students in upper grade required to spend in science classes?
SCQ2-27B	BCBSUC2	How many instructional weeks per year are students in upper grade required to spend in science classes?
SCQ2-27C	BCBSUC3	How many different courses of study in science are available to upper grade students?
SCQ2-27D1	BCBSUC41	What percentage of upper grade students take the most advanced science course of study?
SCQ2-27D2	BCBSUC42	What percentage of upper grade students take the least advanced science course of study?
SCQ2-27E1	BCBSUC51	How many instructional minutes/week for students in most advanced science course of study?

Table S2.4

Section 1

Student Background Questionnaire
Non-Specialized Version (SQ2)

Identification Label

School:

Class:

Student:

TIMSS Study Center
Boston College
Chestnut Hill, MA 02167
USA

Population 2

GENERAL DIRECTIONS

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

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

Some of the questions will be followed by a few possible choices indicated with a letter next to or below it. For these questions, circle the letter next to or below your choice as shown in Example 1.

Example 1

		Yes	*No*
1.	**I attend school**	(A)	B

The letter "A" has been circled because you attend school.

If you decide to change your response to a question, put an "X" over your first choice and then put a circle around your new choice as shown in Example 2.

Example 2

		strongly agree	*agree*	*disagree*	*strongly disagree*
1.	**I like ice cream**.	(A)	~~(B)~~	C	D

For other questions you will be asked to write a number or date in the space provided in your booklet. For these questions, you may use words and numbers in your answers. When you write, please be sure that your handwriting is clear.

1. On what date were you born?

Write in the day, month and year.

<_____day _____ month _____year>

<NRC NOTE: USE STYLE APPROPRIATE TO YOUR COUNTRY AND GRADE LEVEL.>

---

2. Are you a girl or a boy?

Circle either A or B.

girl ..... A

boy ..... B

3a. Were you born in <country> ?

Circle either A or B.

Yes ..... A

No ..... B

3b. If you were not born in <country>, how old were you when you came to <country>?

Write in your age at the time.

I was _____ years old when I came to <country>

---

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

Circle either A, B, or C.

always or almost always ..... A

sometimes ..... B

never C

5. During the week, how much time before or after school do you usually spend...

Circle one letter, A, B, C, D, or E, for each line.

	no time	*less than 1 hour*	*1-2 hours*	*3-5 hours*	*more than 5 hours*
a) taking <extra lessons/cramming school> in mathematics?	A	B	C	D	E
b) taking <extra lessons/cramming school> in science?	A	B	C	D	E
c) participating in science or mathematics clubs?	A	B	C	D	E
d) working at a paid job?	A	B	C	D	E

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

Circle one letter, A, B, C, D, or E, for each line.

	no time	*less than 1 hour*	*1-2 hours*	*3-5 hours*	*more than 5 hours*
a) watching television and videos	A	B	C	D	E
b) playing computer games	A	B	C	D	E
c) playing or talking with friends outside of school	A	B	C	D	E
d) doing jobs at home	A	B	C	D	E
e) playing sports	A	B	C	D	E
f) reading a book for enjoyment	A	B	C	D	E
g) studying mathematics or doing mathematics homework after school	A	B	C	D	E
h) studying science or doing science homework after school	A	B	C	D	E
i) studying or doing homework in school subjects other than mathematics and science	A	B	C	D	E

7. Do each of these people live at home with you most or all of the time?

Circle either A or B for each line.

		Yes	*No*
a)	mother	A	B
b)	father	A	B
c)	one or more brothers	A	B
d)	one or more sisters	A	B
e)	stepmother	A	B
f)	stepfather	A	B
g)	one or more grandparents	A	B
h)	another relative or relatives (uncle, aunt, cousin, etc.).....	A	B
i)	another person or persons (not relatives)	A	B

8. Altogether, how many people live in your home?

9. How far in school did your mother and father go? How far do you expect to go?

Circle ONE letter in each column.

		Mother	*Father*	*Yourself*
a)	<finished primary school>	A	A	A
b)	<finished some secondary school>	B	B	B
c)	<finished secondary school>	C	C	C
d)	<some vocational/technical education after secondary school>	D	D	D
e)	<some university>	E	E	E
f)	<finished university>	F	F	F
g)	I don't know	G	G	G

		Yes	*No*
10a.	**Was your mother born in <country>?**	A	B
	Circle either A or B.		
10b.	**Was your father born in <country>?**	A	B
	Circle either A or B.		

11. About how many books are there in your home?

(Do not count magazines, newspapers, or your school books.)

Circle one letter, A, B, C, D, or E.

none or very few (0 - 10 books)	A
enough to fill one shelf (11-25 books)	B
enough to fill one bookcase (26-100 books)	C
enough to fill two bookcases (101 - 200 books).....	D
enough to fill three or more bookcases (more than 200)	E

12. Do you have any of these items at your home?

Circle either A or B for each line.

		Yes	*No*
a)	calculator	A	B
b)	computer	A	B
c)	study desk/table for your use	A	B
d)	dictionary	A	B
e)	<country-specific>	A	B
f)	<country-specific>	A	B
g)	<country-specific>	A	B
h)	<country-specific>	A	B
i)	<country-specific>	A	B
j)	<country-specific>	A	B
k)	<country-specific>	A	B
l)	<country-specific>	A	B
m)	<country-specific>	A	B
n)	<country-specific>	A	B
o)	<country-specific>	A	B
p)	<country-specific>	A	B

13. My mother thinks it is important for me to...

Circle one letter, A, B, C, or D, for each line.

		strongly agree	*agree*	*disagree*	*strongly disagree*
a)	do well in science at school.	A	B	C	D
b)	do well in mathematics at school.	A	B	C	D
c)	do well in <language of test> at school.	A	B	C	D
d)	be good at sports.	A	B	C	D
e)	have time to have fun.	A	B	C	D
f)	be placed in <classes> with the high achieving students.	A	B	C	D

14. In my mathematics class...

Circle one letter, A, B, C, or D, for each line.

		strongly agree	*agree*	*disagree*	*strongly disagree*
a)	students often neglect their school work.	A	B	C	D
b)	students are orderly and quiet during <lessons> ...	A	B	C	D
c)	students do exactly as the teacher says.	A	B	C	D

15. Most of my friends think it is important to ...

Circle one letter, A, B, C, or D, for each line.

		strongly agree	*agree*	*disagree*	*strongly disagree*
a)	do well in science at school.	A	B	C	D
b)	do well in mathematics at school.	A	B	C	D
c)	do well in <language of test> at school.	A	B	C	D
d)	have time to have fun.	A	B	C	D
e)	be good at sports.	A	B	C	D
f)	be placed in <classes> with the high achieving students.	A	B	C	D

16. I think it is important to...

Circle one letter, A, B, C, or D, for each line.

		strongly agree	*agree*	*disagree*	*strongly disagree*
a)	do well in science at school.	A	B	C	D
b)	do well in mathematics at school.	A	B	C	D
c)	do well in <language of test> at school.	A	B	C	D
d)	have time to have fun.	A	B	C	D
e)	be good at sports.	A	B	C	D
f)	be placed in <classes> with the high achieving students.	A	B	C	D

17. How well do you usually do in mathematics and science at school?

Circle one letter, A, B, C, or D, for each line.

		strongly agree	*agree*	*disagree*	*strongly disagree*
a)	I usually do well in mathematics.	A	B	C	D
b)	I usually do well in science.	A	B	C	D

18. How often did any of these things happen last month in school?

Circle one letter, A, B, C, or D, for each line.

		never	*once or twice*	*3-4 times*	*5 or more*
a)	I skipped a class.	A	B	C	D
b)	Something of mine was stolen.	A	B	C	D
c)	I thought another student might hurt me.	A	B	C	D
d)	Some of my friends skipped classes.	A	B	C	D
e)	Some of my friends had things stolen.	A	B	C	D
f)	Some of my friends were hurt by other students. .	A	B	C	D

19. To do well in mathematics at school you need...

Circle one letter, A, B, C, or D, for each line.

		strongly agree	***agree***	***disagree***	***strongly disagree***
a)	lots of natural <talent/ability>.	A	B	C	D
b)	good luck.	A	B	C	D
c)	lots of hard work studying at home.	A	B	C	D
d)	to memorize the textbook or notes.	A	B	C	D

20. To do well in science at school you need...

Circle one letter, A, B, C, or D, for each line

		strongly agree	***agree***	***disagree***	***strongly disagree***
a)	lots of natural <talent/ability>.	A	B	C	D
b)	good luck.	A	B	C	D
c)	lots of hard work studying at home.	A	B	C	D
d)	to memorize the textbook or notes.	A	B	C	D

21. How much do you like...

Circle one letter, A, B, C, or D, for each line

		dislike a lot	***dislike***	***like***	***like a lot***
a)	mathematics?	A	B	C	D
b)	science?	A	B	C	D

23. What do you think about mathematics?

Circle one letter, A, B, C, or D, for each line.

		strongly agree	***agree***	***disagree***	***strongly disagree***
a)	I enjoy learning mathematics.	A	B	C	D
b)	Mathematics is boring.	A	B	C	D
c)	Mathematics is an easy subject.	A	B	C	D
d)	Mathematics is important to everyone's life.	A	B	C	D
e)	I would like a job that involved using mathematics	A	B	C	D

24. I need to do well in mathematics...

Circle one letter, A, B, C, or D, for each line.

		strongly agree	***agree***	***disagree***	***strongly disagree***
a)	to get the job I want.....	A	B	C	D
b)	to please my parent(s)	A	B	C	D
c)	to get into the <secondary school> or university				

25. How often does this happen in your mathematics lessons?

Circle one letter, A, B, C, or D, for each line.

		almost always	***pretty often***	***once in a while***	***never***
a)	The teacher shows us how to do mathematics problems.	A	B	C	D
b)	We copy notes from the board.	A	B	C	D
c)	We have a quiz or test.	A	B	C	D
d)	We work from worksheets or textbooks on our own.	A	B	C	D
e)	We work on mathematics projects.	A	B	C	D
f)	We use calculators..	A	B	C	D
g)	We use computers.	A	B	C	D
h)	We work together in pairs or small groups.	A	B	C	D
i)	We use things from everyday life in solving mathematics problems.	A	B	C	D
j)	The teacher gives us homework.	A	B	C	D
k)	We can begin our homework in class.	A	B	C	D
l)	The teacher checks homework.	A	B	C	D
m)	We check each other's homework.	A	B	C	D
n)	We discuss our completed homework.	A	B	C	D

26. When we begin a new topic in mathematics, we begin by...

Circle one letter, A, B, C, or D, for each line.

		almost always	*pretty often*	*once in a while*	*never*
a)	having the teacher explain the rules and definitions	A	B	C	D
b)	discussing a practical or story problem related to everyday life	A	B	C	D
c)	working together in pairs or small groups on a problem or project	A	B	C	D
d)	having the teacher ask us what we know related to the new topic	A	B	C	D
e)	looking at the textbook while the teacher talks about it	A	B	C	D
f)	trying to solve an example related to the new topic	A	B	C	D

27a. Listed below are some of the world's environmental problems. How much do you think the application of science can help in addressing these problems?

Circle one letter, A, B, C, or D, for each line.

		not at all	*very little*	*some-what*	*a great deal*
a)	air pollution	A	B	C	D
b)	water pollution	A	B	C	D
c)	destruction of forests	A	B	C	D

28. What do you think about science?

Circle one letter, A, B, C, or D, for each line.

		strongly agree	***agree***	***disagree***	***strongly disagree***
a)	I enjoy learning science.	A	B	C	D
b)	Science is boring.	A	B	C	D
c)	Science is an easy subject.	A	B	C	D
d)	Science is important to everyone's life	A	B	C	D
e)	I would like a job that involved using science.	A	B	C	D

29. I need to do well in science...

Circle one letter, A, B, C, or D, for each line.

		strongly agree	***agree***	***disagree***	***strongly disagree***
a)	to get the job I want.	A	B	C	D
b)	to please my parents.	A	B	C	D
c)	to get into the <secondary school> or university I prefer.	A	B	C	D
d)	to please myself.	A	B	C	D

30. If you were going to choose a career that uses a science, which science would you prefer to use?

Circle one letter, A, B, C, or D.

Biology ..... A

Chemistry ..... B

Earth Science C

Physics ..... D

32. When we begin a new topic in science, we begin by...

Circle one letter, A, B, C, or D, for each line.

		almost always	*pretty often*	*once in a while*	*never*
a)	having the teacher explain the rules and definitions.	A	B	C	D
b)	discussing a practical or story problem related to everyday life.	A	B	C	D
c)	working together in small groups on a problem or project.	A	B	C	D
d)	having the teacher ask us what we know related to				

INTERNATIONAL OPTION

33 . Outside of school, how often do you do these activities?

Circle one letter, A, B, C, or D, for each line.

		about every day	*about once a week*	*about once a month*	*rarely*
a)	read a book or magazine	A	B	C	D
b)	visit a museum or art exhibition	A	B	C	D
c)	attend a concert	A	B	C	D
d)	go to the theatre	A	B	C	D
e)	go to the movies	A	B	C	D

34 . Outside of school, how often do you watch the following kinds of programs on television or video?

Circle one letter, A, B, C, or D, for each line.

		about every day	*about once a week*	*about once a month*	*rarely*
a)	news or documentaries	A	B	C	D
b)	opera, ballet or classical music	A	B	C	D
c)	nature, wildlife or history	A	B	C	D
d)	popular music	A	B	C	D
e)	sports	A	B	C	D
f)	video games	A	B	C	D
g)	cartoons	A	B	C	D
h)	comedy, adventure or suspense	A	B	C	D

Section 2

Student Background Questionnaire
Specialized Version (SQ2(S))

Identification Label

School:

Class:

Student:

TIMSS Study Center
Boston College
Chestnut Hill, MA 02167
USA

Population 2 (s)

GENERAL DIRECTIONS

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

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

Some of the questions will be followed by a few possible choices indicated with a letter next to or below it. For these questions, circle the letter next to or below your choice as shown in Example 1.

Example 1

		Yes	*No*
1.	**I attend school**	A	B

The letter ”A” has been circled because you attend school.

If you decide to change your response to a question, put an “X” over your first choice and then put a circle around your new choice as shown in Example 2.

Example 2

		strongly agree	*agree*	*disagree*	*strongly disagree*
1.	**I like ice cream**.	A	B	C	D

For other questions you will be asked to write a number or date in the space provided in your booklet. For these questions, you may use words and numbers in your answers. When you

1. On what date were you born?

Write in the day, month and year.

<_____day _____ month _____year>

<NRC NOTE: USE STYLE APPROPRIATE TO YOUR COUNTRY AND GRADE LEVEL.>

---

2. Are you a girl or a boy?

Circle either A or B.

girl ..... A

boy ..... B

3a. Were you born in <country> ?

Circle either A or B.

Yes ..... A

No ..... B

3b. If you were not born in <country>, how old were you when you came to <country>?

Write in your age at the time.

I was _____ years old when I came to <country>

---

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

Circle either A, B, or C.

always or almost always ..... A

sometimes ..... B

never C

5. During the week, how much time before or after school do you usually spend...

Circle one letter, A, B, C, D, or E, for each line.

	no time	*less than 1 hour*	*1-2 hours*	*3-5 hours*	*more than 5 hours*
a) taking <extra lessons/cramming school> in mathematics?	A	B	C	D	E
b) taking <extra lessons/cramming school> in science?	A	B	C	D	E
c) participating in science or mathematics clubs?	A	B	C	D	E
d) working at a paid job?	A	B	C	D	E

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

Circle one letter, A, B, C, D, or E, for each line.

	no time	*less than 1 hour*	*1-2 hours*	*3-5 hours*	*more than 5 hours*
a) watching television and videos	A	B	C	D	E
b) playing computer games	A	B	C	D	E
c) playing or talking with friends outside of school	A	B	C	D	E
d) doing jobs at home	A	B	C	D	E
e) playing sports	A	B	C	D	E
f) reading a book for enjoyment	A	B	C	D	E
g) studying mathematics or doing mathematics homework after school	A	B	C	D	E
h) studying science or doing science homework after school	A	B	C	D	E
i) studying or doing homework in school subjects other than mathematics and science	A	B	C	D	E

7. Do each of these people live at home with you most or all of the time?

Circle either A or B for each line.

		Yes	*No*
a)	mother	A	B
b)	father	A	B
c)	one or more brothers	A	B
d)	one or more sisters	A	B
e)	stepmother	A	B
f)	stepfather	A	B
g)	one or more grandparents	A	B
h)	another relative or relatives (uncle, aunt, cousin, etc.).....	A	B
i)	another person or persons (not relatives)	A	B

---

8. Altogether, how many people live in your home?

Write in the total number of people.

_____(Don't forget to include yourself.)

---

9. How far in school did your mother and father go? How far do you expect to go?

Circle ONE letter in each column.

		Mother	*Father*	*Yourself*
a)	<finished primary school>	A	A	A
b)	<finished some secondary school>	B	B	B
c)	<finished secondary school>	C	C	C
d)	<some vocational/technical education after secondary school>	D	D	D
e)	<some university>	E	E	E
f)	<finished university>	F	F	F
g)	I don't know	G	G	G

		Yes	*No*
10a.	**Was your mother born in <country>?**	A	B
	Circle either A or B.		
10b.	**Was your father born in <country>?**	A	B
	Circle either A or B.		

11. About how many books are there in your home?

(Do not count magazines, newspapers, or your school books.)

Circle one letter, A, B, C, D, or E.

none or very few (0 - 10 books)	A
enough to fill one shelf (11-25 books)	B
enough to fill one bookcase (26-100 books)	C
enough to fill two bookcases (101 - 200 books).....	D
enough to fill three or more bookcases (more than 200)	E

12. Do you have any of these items at your home?

Circle either A or B for each line.

		Yes	*No*
a)	calculator	A	B
b)	computer	A	B
c)	study desk/table for your use	A	B
d)	dictionary	A	B
e)	<country-specific>	A	B
f)	<country-specific>	A	B
g)	<country-specific>	A	B
h)	<country-specific>	A	B
i)	<country-specific>	A	B
j)	<country-specific>	A	B
k)	<country-specific>	A	B
l)	<country-specific>	A	B
m)	<country-specific>	A	B
n)	<country-specific>	A	B
o)	<country-specific>	A	B
p)	<country-specific>	A	B

13. My mother thinks it is important for me to...

Circle one letter, A, B, C, or D, for each line.

		strongly agree	*agree*	*disagree*	*strongly disagree*
a)	do well in science at school.	A	B	C	D
b)	do well in mathematics at school.	A	B	C	D
c)	do well in <language of test> at school.	A	B	C	D
d)	be good at sports.	A	B	C	D
e)	have time to have fun.	A	B	C	D
f)	be placed in <classes> with the high achieving students.	A	B	C	D

14. In my mathematics class...

Circle one letter, A, B, C, or D, for each line.

		strongly agree	*agree*	*disagree*	*strongly disagree*
a)	students often neglect their school work.	A	B	C	D
b)	students are orderly and quiet during <lessons> ...	A	B	C	D
c)	students do exactly as the teacher says.	A	B	C	D

15. Most of my friends think it is important to ...

Circle one letter, A, B, C, or D, for each line.

		strongly agree	*agree*	*disagree*	*strongly disagree*
a)	do well in science at school.	A	B	C	D
b)	do well in mathematics at school.	A	B	C	D
c)	do well in <language of test> at school.	A	B	C	D
d)	have time to have fun.	A	B	C	D
e)	be good at sports.	A	B	C	D
f)	be placed in <classes> with the high achieving students.	A	B	C	D

16. I think it is important to...

Circle one letter, A, B, C, or D, for each line.

		strongly agree	*agree*	*disagree*	*strongly disagree*
a)	do well in science at school.	A	B	C	D
b)	do well in mathematics at school.	A	B	C	D
c)	do well in <language of test> at school.	A	B	C	D
d)	have time to have fun.	A	B	C	D
e)	be good at sports.	A	B	C	D
f)	be placed in <classes> with the high achieving students.	A	B	C	D

17. How well do you usually do in mathematics and science at school?

Circle one letter, A, B, C, or D, for each line.

		strongly agree	*agree*	*disagree*	*strongly disagree*
a)	I usually do well in mathematics.	A	B	C	D
b)	I usually do well in biological science.	A	B	C	D
c)	I usually do well in earth science.	A	B	C	D
d)	I usually do well in physical science (chemistry/physics).	A	B	C	D

18. How often did any of these things happen last month in school?

Circle one letter, A, B, C, or D, for each line.

		never	*once or twice*	*3-4 times*	*5 or more*
a)	I skipped a class.	A	B	C	D
b)	Something of mine was stolen.	A	B	C	D
c)	I thought another student might hurt me.	A	B	C	D
d)	Some of my friends skipped classes.	A	B	C	D
e)	Some of my friends had things stolen.	A	B	C	D
f)	Some of my friends were hurt by other students. .	A	B	C	D

19. To do well in mathematics at school you need...

Circle one letter, A, B, C, or D, for each line.

	strongly agree	***agree***	***disagree***	***strongly disagree***

22. How much do you like using computers in...

Circle one letter, A, B, C, D, or E, for each line

		don't use computers	*dislike a lot*	*dislike*	*like*	*like a lot*
a)	mathematics classes?	A	B	C	D	E
b)	science classes?	A	B	C	D	E

23. What do you think about mathematics?

Circle one letter, A, B, C, or D, for each line.

		strongly agree	*agree*	*disagree*	*strongly disagree*
a)	I enjoy learning mathematics.	A	B	C	D
b)	Mathematics is boring.	A	B	C	D
c)	Mathematics is an easy subject.	A	B	C	D
d)	Mathematics is important to everyone's life.	A	B	C	D
e)	I would like a job that involved using mathematics	A	B	C	D

24. I need to do well in mathematics...

Circle one letter, A, B, C, or D, for each line.

		strongly agree	*agree*	*disagree*	*strongly disagree*
a)	to get the job I want	A	B	C	D
b)	to please my parent(s)	A	B	C	D
c)	to get into the <secondary school> or university I prefer	A	B	C	D
d)	to please myself	A	B	C	D

25. How often does this happen in your mathematics lessons?

Circle one letter, A, B, C, or D, for each line.

		almost always	*pretty often*	*once in a while*	*never*
a)	The teacher shows us how to do mathematics problems.	A	B	C	D
b)	We copy notes from the board.	A	B	C	D
c)	We have a quiz or test.	A	B	C	D
d)	We work from worksheets or textbooks on our own.	A	B	C	D
e)	We work on mathematics projects.	A	B	C	D
f)	We use calculators..	A	B	C	D
g)	We use computers.	A	B	C	D
h)	We work together in pairs or small groups.	A	B	C	D
i)	We use things from everyday life in solving mathematics problems.	A	B	C	D
j)	The teacher gives us homework.	A	B	C	D
k)	We can begin our homework in class.	A	B	C	D
l)	The teacher checks homework.	A	B	C	D
m)	We check each other's homework.	A	B	C	D
n)	We discuss our completed homework.	A	B	C	D

26. When we begin a new topic in mathematics, we begin by...

Circle one letter, A, B, C, or D, for each line.

		almost always	*pretty often*	*once in a while*	*never*
a)	having the teacher explain the rules and definitions	A	B	C	D
b)	discussing a practical or story problem related to everyday life	A	B	C	D
c)	working together in pairs or small groups on a problem or project	A	B	C	D
d)	having the teacher ask us what we know related to the new topic	A	B	C	D
e)	looking at the textbook while the teacher talks about it	A	B	C	D
f)	trying to solve an example related to the new topic	A	B	C	D

27a. Listed below are some of the world's environmental problems. How much do you think the application of science can help in addressing these problems?

Circle one letter, A, B, C, or D, for each line.

		not at all	*very little*	*some-what*	*a great deal*
a)	air pollution	A	B	C	D
b)	water pollution	A	B	C	D
c)	destruction of forests	A	B	C	D
d)	endangered species	A	B	C	D
e)	damage to the ozone layer	A	B	C	D
f)	problems from nuclear power plants	A	B	C	D

27b. Which one of the above problems concerns you most?

Write the letter here: _____

28. Which science(s) are you studying this year?

Circle the letter next to each science you are studying.

Biology	A	(Complete Questions #29 - 32)
Chemistry	B	(Complete Questions #33 - 36)
Earth Science	C	(Complete Questions #37 - 40)
Physics	D	(Complete Questions #41 - 44)

COMPLETE QUESTIONS ONLY FOR THOSE COURSES YOU ARE CURRENTLY TAKING.

FILL IN ONLY IF YOU ARE STUDYING BIOLOGY

29. What do you think about biology?

Circle one letter, A, B, C, or D, for each line.

		strongly agree	***agree***	***disagree***	***strongly disagree***
a)	I enjoy learning biology.	A	B	C	D
b)	Biology is boring.	A	B	C	D
c)	Biology is an easy subject.	A	B	C	D
d)	Biology is important to everyone's life.	A	B	C	D
e)	I would like a job that involved using biology.	A	B	C	D

30. I need to do well in biology...

Circle one letter, A, B, C, or D, for each line.

		strongly agree	***agree***	***disagree***	***strongly disagree***
a)	to get the job I want.	A	B	C	D
b)	to please my parents.	A	B	C	D
c)	to get into the <secondary school> or university I prefer.	A	B	C	D
d)	to please myself.	A	B	C	D

FILL IN ONLY IF YOU ARE STUDYING BIOLOGY

31. How often does this happen in your biology lessons?

Circle one letter, A, B, C, or D, for each line.

		almost always	*pretty often*	*once in a while*	*never*
a)	The teacher shows us how to do biology problems	A	B	C	D
b)	We copy notes from the board	A	B	C	D
c)	We have a quiz or test	A	B	C	D
d)	We work on biology projects	A	B	C	D
e)	We work from worksheets or textbooks on our own	A	B	C	D
f)	We use calculators	A	B	C	D
g)	We use computers	A	B	C	D
h)	We use things from every day life in solving biology problems	A	B	C	D
i)	We work together in pairs or small groups	A	B	C	D
j)	The teacher gives us homework	A	B	C	D
k)	We can begin our homework in class	A	B	C	D
l)	The teacher checks homework	A	B	C	D
m)	We check each other's homework	A	B	C	D
n)	We discuss our completed homework	A	B	C	D
o)	The teacher gives a demonstration of an experiment	A	B	C	D
p)	We ourselves do an experiment or practical investigation in class	A	B	C	D

FILL IN ONLY IF YOU ARE STUDYING BIOLOGY

32. When we begin a new topic in biology, we begin by...

Circle one letter, A, B, C, or D, for each line.

		almost always	*pretty often*	*once in a while*	*never*
a)	having the teacher explain the rules and definitions.	A	B	C	D
b)	discussing a practical or story problem related to everyday life.	A	B	C	D
c)	working together in small groups on a problem or project.	A	B	C	D
d)	having the teacher ask us what we know related to the new topic.	A	B	C	D
e)	looking at the textbook while the teacher talks about it.	A	B	C	D
f)	trying to solve an example related to the new topic.	A	B	C	D

FILL IN ONLY IF YOU ARE STUDYING CHEMISTRY

33. What do you think about chemistry?

Circle one letter, A, B, C, or D, for each line.

		strongly agree	*agree*	*disagree*	*strongly disagree*
a)	I enjoy learning chemistry.	A	B	C	D
b)	Chemistry is boring.	A	B	C	D
c)	Chemistry is an easy subject.	A	B	C	D
d)	Chemistry is important to everyone's life.	A	B	C	D
e)	I would like a job that involved using chemistry.	A	B	C	D

34. I need to do well in chemistry...

Circle one letter, A, B, C, or D, for each line.

		strongly agree	*agree*	*disagree*	*strongly disagree*
a)	to get the job I want.	A	B	C	D
b)	to please my parents.	A	B	C	D
c)	to get into the <secondary school> or university I prefer.	A	B	C	D
d)	to please myself.	A	B	C	D

FILL IN ONLY IF YOU ARE STUDYING CHEMISTRY

35. How often does this happen in chemistry lessons?

Circle one letter, A, B, C, or D, for each line.

		almost always	*pretty often*	*once in a while*	*never*
a)	The teacher shows us how to do chemistry problems	A	B	C	D
b)	We copy notes from the board	A	B	C	D
c)	We have a quiz or test	A	B	C	D
d)	We work on chemistry projects	A	B	C	D
e)	We work from worksheets or textbooks on our own	A	B	C	D
f)	We use calculators	A	B	C	D
g)	We use computers	A	B	C	D
h)	We use things from every day life in solving chemistry problems	A	B	C	D
i)	We work together in pairs or small groups	A	B	C	D
j)	The teacher gives us homework	A	B	C	D
k)	We can begin our homework in class	A	B	C	D
l)	The teacher checks homework	A	B	C	D
m)	We check each other's homework	A	B	C	D
n)	We discuss our completed homework	A	B	C	D
o)	The teacher gives a demonstration of an experiment	A	B	C	D
p)	We ourselves do an experiment or practical investigation in class	A	B	C	D

FILL IN ONLY IF YOU ARE STUDYING CHEMISTRY

36. When we begin a new topic in chemistry, we begin by...

Circle one letter, A, B, C, or D, for each line.

		almost always	*pretty often*	*once in a while*	*never*
a)	having the teacher explain the rules and definitions.	A	B	C	D
b)	discussing a practical or story problem related to everyday life.	A	B	C	D
c)	working together in small groups on a problem				

FILL IN ONLY IF YOU ARE STUDYING EARTH SCIENCE

37. What do you think about earth science?

Circle one letter, A, B, C, or D, for each line.

		strongly agree	***agree***	***disagree***	***strongly disagree***
a)	I enjoy learning earth science.	A	B	C	D
b)	Earth science is boring.	A	B	C	D
c)	Earth science is an easy subject.	A	B	C	D
d)	Earth science is important to everyone's life.	A	B	C	D
e)	I would like a job that involved using earth science.	A	B	C	D

38. I need to do well in earth science...

Circle one letter, A, B, C, or D, for each line.

		strongly agree	***agree***	***disagree***	***strongly disagree***
a)	to get the job I want.	A	B	C	D
b)	to please my parents.	A	B	C	D
c)	to get into the <secondary school> or university I prefer.	A	B	C	D
d)	to please myself.	A	B	C	D

39. How often does this happen in your earth science lessons?

Circle one letter, A, B, C, or D, for each line.

		almost always	*pretty often*	*once in a while*	*never*
a)	The teacher shows us how to do earth science problems	A	B	C	D
b)	We copy notes from the board	A	B	C	D
c)	We have a quiz or test	A	B	C	D
d)	We work on earth science projects	A	B	C	D
e)	We work from worksheets or textbooks on our own	A	B	C	D
f)	We use calculators	A	B	C	D
g)	We use computers	A	B	C	D
h)	We use things from every day life in solving earth science problems	A	B	C	D
i)	We work together in pairs or small groups	A	B	C	D
j)	The teacher gives us homework	A	B	C	D
k)	We can begin our homework in class	A	B	C	D
l)	The teacher checks homework	A	B	C	D
m)	We check each other's homework	A	B	C	D

h) W...experimenh li7-3053(D)]TJ T* [(d))-10333333333333333333333333333333333oks on our ow

FILL IN ONLY IF YOU ARE STUDYING EARTH SCIENCE

40. When we begin a new topic in earth science, we begin by...

Circle one letter, A, B, C, or D, for each line.

		almost always	*pretty often*	*once in a while*	*never*
a)	having the teacher explain the rules and definitions.	A	B	C	D
b)	starting with a practical or story problem related to everyday life.	A	B	C	D
c)	working together in small groups on a problem or project.	A	B	C	D
d)	having the teacher ask us what we know related to the new topic.	A	B	C	D
e)	looking at the textbook while the teacher talks about it.	A	B	C	D
f)	trying to solve an example related to the new topic.	A	B	C	D

FILL IN ONLY IF YOU ARE STUDYING PHYSICS

41. What do you think about physics?

Circle one letter, A, B, C, or D, for each line.

		strongly agree	*agree*	*disagree*	*strongly disagree*
a)	I enjoy learning physics.	A	B	C	D
b)	Physics is boring.	A	B	C	D
c)	Physics is an easy subject.	A	B	C	D
d)	Physics is important to everyone's life.	A	B	C	D
e)	I would like a job that involved using physics.	A	B	C	D

42. I need to do well in physics...

Circle one letter, A, B, C, or D, for each line.

		strongly agree	*agree*	*disagree*	*strongly disagree*
a)	to get the job I want.	A	B	C	D
b)	to please my parents.	A	B	C	D
c)	to get into the <secondary school> or university I prefer.	A	B	C	D
d)	to please myself.	A	B	C	D

FILL IN ONLY IF YOU ARE STUDYING PHYSICS

43. How often does this happen in your physics lessons?

Circle one letter, A, B, C, or D, for each line.

	almost always	***pretty often***	***once in a while***	***never***
a) The teacher shows us how to do physics				

FILL IN ONLY IF YOU ARE STUDYING PHYSICS

44. When we begin a new topic in physics, we begin by...

Circle one letter, A, B, C, or D, for each line.

		almost always	*pretty often*	*once in a while*	*never*
a)	having the teacher explain the rules and definitions.	A	B	C	D
b)	discussing a practical or story problem related to everyday life.	A	B	C	D
c)	working together in small groups on a problem or project.	A	B	C	D
d)	having the teacher ask us what we know related to the new topic.	A	B	C	D
e)	looking at the textbook while the teacher talks about it.	A	B	C	D
f)	trying to solve an example related to the new topic.	A	B	C	D

THANK YOU for the thought and effort you have put into answering these questions.

INTERNATIONAL OPTION

45. Outside of school, how often do you do these activities?

Section 3

Mathematics Teacher Background Questionnaire (TQM2)

Teacher Questionnaire (Mathematics)
Population 2

Your school has agreed to participate in the Third International Mathematics and Science Study (TIMSS), an educational research project sponsored by the International Association for the Evaluation of Educational Achievement (IEA). TIMSS is investigating mathematics and science achievement in over fifty educational systems around the world. It is designed to measure and interpret differences in national educational systems in order to help improve the teaching and learning of mathematics and science worldwide.

This questionnaire is addressed to teachers of mathematics, who are asked to supply information about their academic and professional backgrounds, instructional practices, and attitudes towards teaching mathematics. Since your class has been selected as part of a nationwide sample, your responses are very important in helping to describe mathematics classes in <country>.

Some of the questions in this questionnaire ask about **your mathematics class**. This is the class which is identified at the top of this page, and which will be tested as part of TIMSS in your school.

It is important that you answer each question carefully so that the information provided reflects your situation as accurately as possible. It is estimated that it will require approximately 60 minutes to complete this questionnaire.

Your cooperation in completing this questionnaire is greatly appreciated.

TIMSS Study Center
Boston College
Chestnut Hill, MA 02167
USA

(Institute Address)

Doc. Ref.: ICC880/NRC417

GENERAL DIRECTIONS:

1. Identify a place and a time when you will be able to complete this questionnaire without being interrupted. This questionnaire has been designed to be completed within 60 minutes by most teachers. However, the amount of time you will need may vary. To make it as easy as possible for you to respond, most items may be completed simply by checking the appropriate box.

2. There are no "right" or "wrong" answers to any of these items. The questionnaire is designed to provide information about teachers' professional experiences, opinions, and classroom activities.

3. Several items ask you to think of a recent class <hour/period> as you respond. In responding to these items, choose a recent class <hour/period> which you can recall in some detail and which was fairly iho] e9aost tni,-Ccurs in your classroom (i.e., a class <hour/period> which was not affected by special events such as assemblies, guests, student testing other than short quizzes, or any other unusual circumstances).

   Remember, "your mathematics class" is the class which is identified on the cover of this questionnaire, and which will be tested as part of TIMSS in your school.

4. More specific instructions to assist you in responding are found in *italics* for each item.

Section A

1. How old are you?

Check one box only.

- under 25 ..... ☐
- 25-29 ..... ☐
- 30-39 ..... ☐
- 40-49 ..... ☐
- 50-59 ..... ☐
- 60 or more ..... ☐

2. Are you female or male?

Check one box only.

- female ..... ☐
- male ..... ☐

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

Check one box only.

- <TEACHER TRAINING W/O COMPLETING SECONDARY> ..... ☐
- <SECONDARY ONLY> ..... ☐
- <SECONDARY + 1 OR 2 YEAR TEACHER TRAINING> ..... ☐
- <SECONDARY AND 3 OR 4 YEAR TEACHER TRAINING> ..... ☐
- <BA OR EQUIVALENT + NO TEACHER TRAINING> ..... ☐
- <BA OR EQUIVALENT + TEACHER TRAINING> ..... ☐
- <MA/PHD WITH NO TEACHER TRAINING> ..... ☐
- <MA/PHD + TEACHER TRAINING> ..... ☐

4. At which grade levels are you teaching <u>Mathematics</u> during this school year?

NRC Note: <List only country-specific grades and their appropriate designations.>

Check one box in each row.

☐ Do not teach mathematics this year

Yes ***No***

6. Do you teach part-time or full-time?

Check one.

Part-time ..... ☐

Full-time ..... ☐

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

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

8. At which of these grade levels have you taught in the past 5 years?

NRC Note: <List only country-specific grades and their appropriate designations.>

Check one box in each row.

		Yes	***No***
a)	<PRE-KINDERGARTEN>	☐	☐
b)	<KINDERGARTEN>	☐	☐
c)	<GRADE 1>	☐	☐
d)	<GRADE 2>	☐	☐
e)	<GRADE 3>	☐	☐
f)	<GRADE 4>	☐	☐
g)	<GRADE 5>	☐	☐
h)	<GRADE 6>	☐	☐
i)	<GRADE 7>	☐	☐
j)	<GRADE 8>	☐	☐
k)	<GRADE 9>	☐	☐
l)	<GRADE 10>	☐	☐
m)	<GRADE 11>	☐	☐
n)	<GRADE 12>	☐	☐
o)	<GRADE 13>	☐	☐

9. For how many single <hours/periods> are you formally <scheduled/time-tabled> to teach each of the following subjects during the school week?

NCR Note: <List only the generic science courses appropriate for your country>

Count a double <hour/period> as two single <hours/periods>.
Write zero if none.

		Number of Single <hours/periods>
a)	mathematics	_____
b)	<GENERAL/INTEGRATED SCIENCE>	_____
c)	<PHYSICAL SCIENCE>	_____
d)	<EARTH SCIENCE>	_____
e)	<LIFE SCIENCE>	_____
f)	<BIOLOGY>	_____
g)	<CHEMISTRY>	_____
h)	<PHYSICS>	_____
i)	other subjects	_____

10. For how many single <hours/periods> are you formally <scheduled/time-tabled> to perform each of the following tasks during the school week?

NCR Note: <List only the generic science courses appropriate for your country>

Count a double <hour/period> as two single <hours/periods>.
Write zero if none.

		Number of Single <hours/periods>
a)	student supervision	_____
b)	student counselling/appraisal	_____
c)	administrative duties	_____
d)	individual curriculum planning	_____
e)	cooperative curriculum planning	_____
f)	other non-student contact time (i.e., use not specified)	_____

11. For how many single <hours/periods> are you <scheduled/ time-tabled> in one school week altogether?

Write in number ..... _____ *<hours/periods>*

12. APPROXIMATELY how many hours per week do you normally spend on each of the following activities outside the formal school day?

Check one box in each row.

		none	*less than 1 hour*	*1 - 2 hours*	*3 - 4 hours*	*more than 4 hours*
a)	preparing or grading student tests or exams	☐	☐	☐	☐	☐
b)	reading and grading other student work	☐	☐	☐	☐	☐
c)	planning lessons by yourself	☐	☐	☐	☐	☐
d)	meeting with students outside of classroom time (e.g., tutoring, guidance)	☐	☐	☐	☐	☐
e)	meeting with parents	☐	☐	☐	☐	☐
f)	professional reading and development activity (e.g., seminars, conferences, etc.)	☐	☐	☐	☐	☐
g)	keeping students' records up to date	☐	☐	☐	☐	☐
h)	administrative tasks including staff meetings (e.g. photocopying, displaying students' work) .	☐	☐	☐	☐	☐

13. About how often do you have meetings with other teachers in your subject area to discuss and plan curriculum or teaching approaches?

Check one box only.

never ..... ☐

once or twice a year ..... ☐

every other month ..... ☐

once a month ..... ☐

once a week ..... ☐

two or three times a week ..... ☐

almost every day ..... ☐

14. How much influence do you have on each of the following...

Check one box in each row.

		none	*little*	*some*	*a lot*
a)	subject matter to be taught	☐	☐	☐	☐
b)	specific textbooks to be used	☐	☐	☐	☐
c)	the amount of money to be spent on supplies	☐	☐	☐	☐
d)	what supplies are purchased	☐	☐	☐	☐

15. To be good at mathematics at school, how important do you think it is for students to...

Check one box in each row.

		not important	*somewhat important*	*very important*
a)	remember formulas and procedures.....	☐	☐	☐
b)	think in a sequential and procedural manner.	☐	☐	☐
c)	understand mathematical concepts, principles, and strategies.	☐	☐	☐

17. Indicate your familiarity with each of the following documents:

NRC Note: <Include country-specific appropriate options only>

Check one box in each row.

		no such document	***not familiar***	***fairly familiar***	***very familiar***
a)	<THE NATIONAL CURRICULUM GUIDE FOR MATHEMATICS>	☐	☐	☐	☐
b)	<THE REGIONAL CURRICULUM GUIDE(S) FOR MATHEMATICS>	☐	☐	☐	☐
c)	<THE SCHOOL CURRICULUM GUIDE>	☐	☐	☐	☐
d)	<THE NATIONAL EXAMINATION SPECIFICATIONS>	☐	☐	☐	☐
e)	<THE REGIONAL EXAMINATION SPECIFICATIONS>	☐	☐	☐	☐
f)	<THE NATIONAL PEDAGOGY GUIDE FOR MATHEMATICS>	☐	☐	☐	☐
g)	<THE REGIONAL PEDAGOGY GUIDE FOR MATHEMATICS>	☐	☐	☐	☐

International Option

18. Was Teaching your first choice as a career when beginning university or teacher education college?

Check only one box ..... *Yes* ☐ *No* ☐

19. Would you change to another career if you had the opportunity?

Check only one box ..... *Yes* ☐ *No* ☐

20. Do you think that society appreciates your work?

Check only one box ..... *Yes* ☐ *No* ☐

21. Do you think your students appreciate your work?

Check only one box ..... *Yes* ☐ *No* ☐

22. Approximately how many books are in your home?

(Do not count magazines or newspapers.)

Check one box only.

none or very few (0-10) ..... ☐
enough to fill a shelf (11-25) ..... ☐
enough to fill a bookcase (26-100) ..... ☐
enough to fill two bookcases (101-200) ..... ☐
enough to fill three or more bookcases (more than 200) ..... ☐

23. Please rank the following professions in order of social status. Assign a rank of '1' to the profession with the highest social status, and ' 9' to the profession with the lowest status.

a) accountant ..... _____
b) <medical doctor> ..... _____
c) lawyer ..... _____
d) engineer ..... _____
e) nurse ..... _____
f) senior <civil servant> ..... _____
g) teacher, primary school ..... _____
h) teacher, secondary school ..... _____
i) <unskilled worker> ..... _____

THERE ARE NO QUESTIONS ON THIS PAGE

Section B

In this section, many of the questions refer to “your mathematics class.” Please remember that this is the class which is identified on the cover of this questionnaire, and which will be tested as part of TIMSS in your school.

1. How many students are in your mathematics class?

Write in a number for each. Write 0 (zero) if there are none.

boys _____ girls _____

2. Compared with other students in <country> at this grade level, estimate what percent of students in your class have:

Please write a number.

high achievement levels (i.e. in the top third nationally) ..... _____ %

middle achievement levels (middle third nationally) ..... _____ %

low achievement levels (bottom third nationally) ..... _____ %

TOTAL 100%

3. How many minutes per week do you teach mathematics to your mathematics class?

Minutes: _____

NRC Note: **TEXTBOOKS** <Insert the country specific textbook list used in the TIMSS document analysis. If the TIMSS document analysis list is not exhaustive of all texts used in your country, use the open-ended question (option 2). The open-ended option may be used alone or in conjunction with the TIMSS document analysis list.>

4. Do you use a textbook in teaching mathematics to your class?

Check one box.

Yes ☐ No ☐

Option 1

If YES, which of the following textbooks do you use most?

		Yes	***No***
a)	<COUNTRY SPECIFIC TEXT>	☐	☐
b)	<COUNTRY SPECIFIC TEXT>	☐	☐
c)	<COUNTRY SPECIFIC TEXT>	☐	☐
d)	<COUNTRY SPECIFIC TEXT>	☐	☐

Option 2

If YES, write in the title, author, etc. of the textbook you use most.

Title: _____

Author (Publisher): _____

Year: _____

Other: _____

7. In your view to what extent do the following limit how you teach your mathematics class?

Check one box in each row.

		not at all	*a little*	*quite a lot*	*a great deal*
a)	students with different academic abilities	☐	☐	☐	☐
b)	students who come from a wide range of backgrounds, (e.g., economic, language)	☐	☐	☐	☐
c)	students with special needs, (e.g., hearing, vision, speech impairment, physical disabilities, mental or emotional/psychological impairment)	☐	☐	☐	☐
d)	uninterested students	☐	☐	☐	☐
e)	disruptive students	☐	☐	☐	☐
f)	parents interested in their children's learning and progress	☐	☐	☐	☐
g)	parents uninterested in their children's learning and progress	☐	☐	☐	☐
h)	shortage of computer hardware	☐	☐	☐	☐
i)	shortage of computer software	☐	☐	☐	☐
j)	shortage of other instructional equipment for students' use	☐	☐	☐	☐
k)	shortage of equipment for your use in demonstrations and other exercises	☐	☐	☐	☐
l)	inadequate physical facilities	☐	☐	☐	☐
m)	high student/teacher ratio	☐	☐	☐	☐
n)	low morale among fellow teachers/administrators	☐	☐	☐	☐
o)	low morale among students	☐	☐	☐	☐
p)	threat(s) to personal safety or the safety of students	☐	☐	☐	☐

8. How many of your students have access to calculators during mathematics lessons?

Check one box.

Almost all ..... ☐
About three quarters ..... ☐
About half ..... ☐
About one quarter ..... ☐
None ..... ☐

9. How often do students in your mathematics class use calculators for the following activities?

Check one box for each row.

	almost every day	*once or twice a week*	*once or twice a month*	*never, or hardly ever*
a) Checking answers	☐	☐	☐	☐
b) Tests and exams	☐	☐	☐	☐
c) Routine computation	☐	☐	☐	☐
d) Solving complex problems	☐	☐	☐	☐
e) Exploring number concepts	☐	☐	☐	☐

10. When planning mathematics lessons, how much do you rely on...

Check one box in each row.

	never	*rarely*	*sometimes*	*always*
a) your own previously prepared lessons	☐	☐	☐	☐
b) a written plan compiled by teachers in the school	☐	☐	☐	☐
c) other teachers or math specialists in your school/department	☐	☐	☐	☐
d) student textbooks	☐	☐	☐	☐
e) other textbooks or resource books	☐	☐	☐	☐
f) teacher guides or teacher edition of textbook ...	☐	☐	☐	☐
g) external examinations or standardized tests	☐	☐	☐	☐

11. In planning mathematics lessons, what is your main source of written information when...

NRC Note: <List only country-specific appropriate options.>

Check one box in each row.

	<***National or Regional Examination Specifications***>	<***National or Regional Curriculum Guide***>	<***School Curriculum Guide***>	***Teacher Edition of Textbook***	***Student Edition of Textbook***	***Other Resource Books***
a) deciding which topics to teach (goals)	☐	☐	☐	☐	☐	☐
b) deciding how to present a topic	☐	☐	☐	☐	☐	☐
c) selecting problems and exercises for work in class and homework	☐	☐	☐	☐	☐	☐
d) selecting problems and applications for assessment and evaluation	☐	☐	☐	☐	☐	☐

Mathematics Topics

On the following pages there is a list of mathematics topics. Each topic is illustrated by a short list of subtopics. Not all topics are necessarily appropriate for your class. Nevertheless, please respond to the entire list so that we may obtain an indication of topics covered in your class that is as complete and accurate as possible.

- *Before marking anything, read quickly through the entire list to obtain an idea of where various topics may be found. Be sure to read the four examples on the next page.*
- *If you **have taught** a topic to your class, check the appropriate box indicating the total number of <periods> in which the topic was taught. Four choices are provided: 1-5 <periods>, 6-10 <periods>, 11-15 <periods>, and > 15 (i.e., more than 15) <periods>.*
- *If you **will continue to teach or begin teaching** a topic in future lessons this year, check the box in the "will teach later this year" column.*
- *If you have **not taught** a topic and will not teach it this year to your class, check the box in the "not taught this year" column.*
- *If you know that a topic was taught to your students in a **previous year,** check the box in the "taught in a previous year" column.*
- *If you have taught ANY of the subtopics listed under a major topic, indicate that you have taught that major topic area. Subtopics are listed for illustration purposes.*
- *For a few main topics, you are asked to indicate whether you have taught certain subtopics as well as the main topic, since these subtopics are of special interest in this study.*

EXAMPLES:

NRC Note: <Use country-specific appropriate designation for class <period/hour>.

How long did you spend teaching each of these topics to your class this year? Will you cover any of these topics in future <periods>?

Check as many boxes as apply for each topic listed.

	have taught this year <period> completed				*will teach later this year*	*not taught this year*	*taught a previous year*
	1-5	*6-10*	*11-15*	*> 15*			
Example 1. You have not taught this topic and will not teach it this year:							
a) Sets & Logic ..... Sets, set notation and set operations; classification; logic and truth tables	☐	☐	☐	☐	☐	☐	☐
Example 2. You've taught this topic in 2 class <periods> and know it was taught in a previous year:							
b) Problem Solving Strategies ..... Problem solving heuristics and strategies	☐	☐	☐	☐	☐	☐	☐

Example 3. You've taught this topic in 8 class <periods>

12. How long did you spend teaching each of these topics to your mathematics class this year? Will you cover any of these topics in future <periods>?

Check as many boxes as apply for each topic listed.

	have taught this year <period> completed				*will teach later this year*	*not taught this year*	*taught a previous year*
	1-5	*6-10*	*11-15*	*> 15*			
a) Whole Numbers	☐	☐	☐	☐	☐	☐	☐
Indicate your coverage both at the main topic level and for each of the following subtopics.							
1. Meaning of whole numbers; place value and numeration	☐	☐	☐	☐	☐	☐	☐
2. Operations with and properties of whole numbers	☐	☐	☐	☐	☐	☐	☐
b) Common & Decimal Fractions	☐	☐	☐	☐	☐	☐	☐
Indicate your coverage both at the main topic level and for each of the following subtopics.							
1. Meaning, Representation and Uses of Common Fractions	☐	☐	☐	☐	☐	☐	☐
2. Properties of Common Fractions	☐	☐	☐	☐	☐	☐	☐
3. Meaning, Representation and Uses of Decimal Fractions	☐	☐	☐	☐	☐	☐	☐
4. Properties of Decimal Fractions	☐	☐	☐	☐	☐	☐	☐
5. Relationships Between Common and Decimal Fractions	☐	☐	☐	☐	☐	☐	☐
6. Conversion of Equivalent Forms	☐	☐	☐	☐	☐	☐	☐
7. Ordering of Fractions (Common And Decimals)	☐	☐	☐	☐	☐	☐	☐
c) Percentages ..... Concepts of percentage; computations with percentage; types of percentage problems	☐	☐	☐	☐	☐	☐	☐
d) Number Sets & Concepts ..... Uses, properties, and computations with	☐	☐	☐	☐	☐	☐	☐

TOPIC	*have taught this year <period> completed* 1-5	6-10	11-15	> 15	*will teach later this year*	*not taught this year*	*taught a previous year*
n) Ratio & Proportion	☐	☐	☐	☐	☐	☐	☐
Indicate your coverage both at the main topic level and for each of the following subtopics.							
1. Concepts and Meaning	☐	☐	☐	☐	☐	☐	☐
2. Applications and Uses ..... Maps and models; solving practical problems based on proportionality; solving proportional equations	☐	☐	☐	☐	☐	☐	☐
o) Proportionality: Slope, Trigonometry & Interpolation	☐	☐	☐	☐	☐	☐	☐
Indicate your coverage both at the main topic level and for each of the following subtopics.							
1. Slope and Trigonometry ..... Slope; trigonometric ratios; solving triangles and problems involving triangles including the rules of sines and of cosines	☐	☐	☐	☐	☐	☐	☐
2. Linear Interpolation and Extrapolation .	☐	☐	☐	☐	☐	☐	☐
p) Functions, Relations, & Patterns ..... Number patterns; relations ,their properties and graphs; types of function (linear, quadratic, exponential, trigonometric, inverse, etc.); operations on functions; relations of functions and equations (roots, zeros, etc.); problems involving functions	☐	☐	☐	☐	☐	☐	☐
q) Equations, Inequalities, & Formulas	☐	☐	☐	☐	☐	☐	☐
Indicate your coverage both at the main topic level and for each of the following subtopics.							
1. Linear Equations and Formulas..... Representing situations algebraically; work with formulas other than measurement formulas; algebraic expressions & working with them (Factoring, polynomial operations, etc.); solving linear equations	☐	☐	☐	☐	☐	☐	☐
2. Other Equations and Formulas ..... Solving various types of equations (quadratic, radical, trigonometric, logarithmic, etc.); inequalities; systems of equations; systems of inequalities	☐	☐	☐	☐	☐	☐	☐

TOPIC	*have taught this year <period> completed* 1-5	6-10	11-15	> 15	*will teach later this year*	*not taught this year*	*taught a previous year*
r) Statistics & Data ..... Collecting data from experiments & surveys; representing & interpreting data in tables, charts, graphs, etc.; nominal, ordinal, etc., scales; means, medians & other measures of central tendency; variance, standard deviations & other measure of dispersion; sampling, randomness & bias; prediction & inferences from data; regression & fitting lines & curves to data; correlation's & other measures of relationship; use & misuse of statistics in analyzing data	☐	☐	☐	☐	☐	☐	☐
s) Probability & Uncertainty ..... Informal language of 'more likely,' 'less likely', etc.; probability models & numerical probability; all other aspects of probability & probability distributions for random variables; expectations, parameter estimation, hypothesis testing, confidence intervals, & related statistical topics	☐	☐	☐	☐	☐	☐	☐
t) Sets & Logic ..... Sets, set notation and set operations; classification; logic and truth tables	☐	☐	☐	☐	☐	☐	☐
u) Problem Solving Strategies ..... Problem solving heuristics and strategies	☐	☐	☐	☐	☐	☐	☐
v) Other Mathematics Content ..... Mark here for all content you covered that was not in one of the earlier categories. This includes advanced topics such as the following: Computers (operation of computers, flow charts, learning a programming language, programs, algorithms with applications to the computer); History and nature of mathematics; and Proofs.	☐	☐	☐	☐	☐	☐	☐

Think of the last <lesson> in which you taught mathematics to your mathematics class. (If this lesson was atypical, e.g. an examination period or a field trip, pick the previous one.)

13a. How many minutes was this class <hour/period>?

Please write in a number.

_____ *minutes*

13b. For each of the following mathematics topics, indicate whether or not it was the subject of the lesson.

(See 'Mathematics Topics' category descriptions in question 12.)

Check one box in each row.

		Yes	***No***
1.	Whole Numbers	☐	☐
2.	Common and Decimal Fractions	☐	☐
3.	Percentages	☐	☐
4.	Number Sets and Concepts	☐	☐
5.	Number Theory	☐	☐
6.	Estimation and Number Sense	☐	☐
7.	Measurement Units and Processes	☐	☐
8.	Estimation and Error of Measurements	☐	☐
9.	Perimeter, Area and Volume	☐	☐
10.	Basics of One and Two Dimensional Geometry	☐	☐
11.	Geometric Congruence and Similarity	☐	☐
12.	Geometric Transformations and Symmetry	☐	☐
13.	Constructions and Three Dimensional Geometry	☐	☐
14.	Ratio and Proportion	☐	☐
15.	Proportionality: Slope, trigonometry and interpolation	☐	☐
16.	Functions, Relations, and Patterns	☐	☐
17.	Equations, Inequalities, and Formulas	☐	☐
18.	Statistics and Data	☐	☐
19.	Probability and Uncertainty	☐	☐
20.	Sets and Logic	☐	☐
21.	Problem Solving S- 0 0 12hv8e9.....		

17. In mathematics lessons, how often do students...

20. If you assign mathematics homework, how often do you assign each of the following kinds of tasks?

Check one box in each row.

	never	*rarely*	*sometimes*	*always*	*I do not assign homework*
a) worksheets or workbook	☐	☐	☐	☐	☐
b) problem/question sets in textbook	☐	☐	☐	☐	☐
c) reading in a textbook or supplementary					

Section C

OPPORTUNITY TO LEARN (Mathematics)

In this section, a set of exercises on various mathematical topics are presented, and you are asked to indicate whether you have taught or will teach the topic to your mathematics class this year.

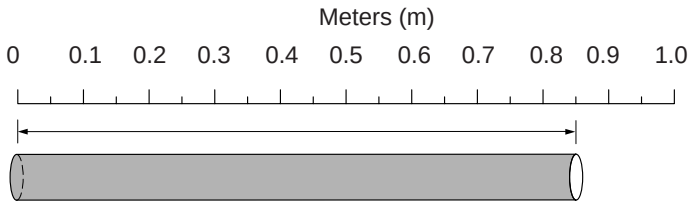
Please remember, “your mathematics class” refers to the class which is identified on the cover of this questionnaire, and which will be tested as part of TIMSS in your school.

II. DECIMAL FRACTIONS

The following exercises illustrate the above topic. These exercises, or ones like them, might be used to assess students' learning of this topic.

A. A runner ran 3000 m in exactly 8 minutes. What was his average speed in meters per second?

B. What is the length of the pipe being measured?



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1. Is anything done in your mathematics class that would enable your students to complete similar exercises that address this topic?

Check one: ☐ Yes ☐ No

If YES... *Check as many as apply.*

a) Something was done EARLIER this year. ..... ☐
b) Something is CURRENTLY in progress. ..... ☐
c) Something will be done LATER this year. ..... ☐

If NO... *Check as many as apply.*

d) The topic was covered in the curriculum for an EARLIER grade. ..... ☐
e) Although the topic is in the curriculum for THIS grade, I will not cover it. ☐
f) The topic is covered in the curriculum for a LATER grade. ..... ☐
g) To my knowledge, this topic is NOT INCLUDED in the curriculum. ..... ☐
h) I DO NOT KNOW whether this topic is covered in any other grade. ..... ☐

2. If you were to develop a test for your mathematics class that assesses this particular math topic, which of the above items would you consider appropriate for the test?

Check all that apply.

A ☐ B ☐ neither ☐

3. Are students likely to encounter this topic <u>outside</u> of school this year?

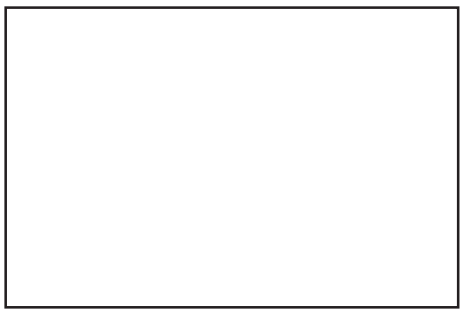
Check one: ☐ Yes ☐ No

III. UNITS OF MEASUREMENT

The following exercises illustrate the above topic. These exercises, or ones like them, might be used to assess students' learning of this topic.

IV. UNITS OF MEASUREMENT

The following exercise also illustrates the above topic. This exercise or ones like it, might be used to assess students' learning of this topic.



A. In the space above, draw a new rectangle whose length is one and one half times the length of the rectangle above, and whose width is half the width of the rectangle above. Show the length and width of the new rectangle in centimeters on the figure.

B. What is the ratio of the ar MENT

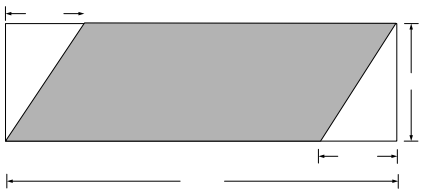
V. MEASUREMENT OF PERIMETER, AREA, AND VOLUME

The following exercises illustrate the above topic. These exercises, or ones like them, might be used to assess students' learning of this topic.

A. The length of a rectangle is 6 cm, and its perimeter is 16 cm. What is the area of the rectangle in square centimeters?

B. A thin wire 20 centimeters long is formed into a rectangle. If the width of this rectangle is 5 centimeters, what is its length?

C. The figure shows a shaded parallelogram inside a rectangle.



What is the area of the parallelogram in square centimeters?

D. The figure consists of 5 squares of equal size. The area of the whole figure is 405 sq cm. Find the area of one square. Find the length of the side of one square. Find the perimeter of the whole figure in centimeters.

1. Is anything done in your mathematics class that would enable your students to complete similar exercises that address this topic?

Check one: ☐ Yes ☐ No

If YES... *Check as many as apply.*

a) Something was done EARLIER this year. ..... ☐
b) Something is CURRENTLY in progress. ..... ☐
c) Something will be done LATER this year. ..... ☐

If NO... *Check as many as apply.*

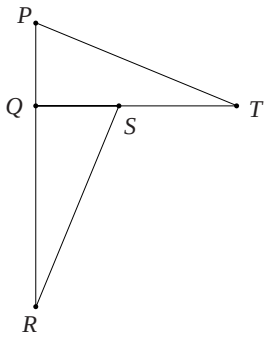
d) The topic was covered in the curriculum for an EARLIER grade. ..... ☐
e) Although191 Tfe-158ls175 Tm / 0 85(Although191 Tfe-158ls175 Tm / 0 8*85(Al90.89hlIyear.).886 3

VI. ESTIMATION AND ERRORS OF MEASUREMENT

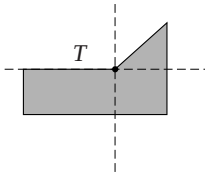
VII. GEOMETRIC TRANSFORMATIONS

The following exercises illustrate the above topic. These exercises, or ones like them, might be used to assess students' learning of this topic.

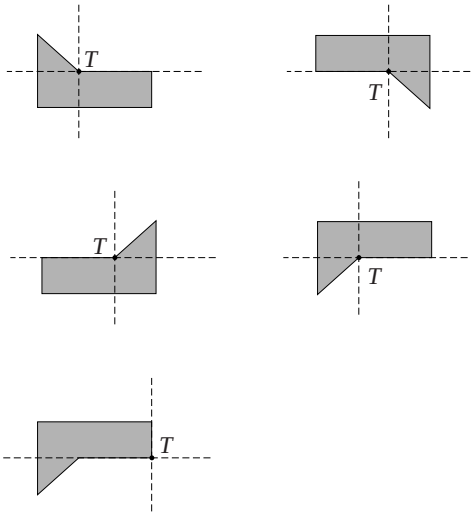
A. Triangle *PQT* can be rotated (turned) onto triangle *SQR*. What point is the center of rotation?



B. A half-turn about point *T* in the plane is applied to the shaded figure.



Which of these shows the result of the half-turn?



GEOMETRIC TRANSFORMATIONS (continued)

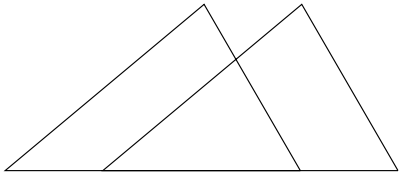
1. Is anything done in your mathematics class that would enable your students to complete similar exercises that address this topic?

Check one: ☐ Yes

VIII. GEOMETRIC CONGRUENCE AND SIMILARITY

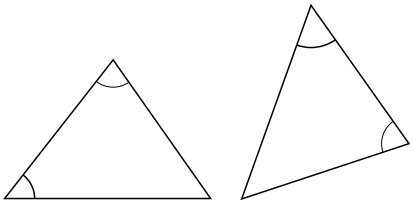
The following exercises illustrate the above topic. These exercises, or ones like them, might be used to assess students' learning of this topic.

A. In this figure, triangles *ABC* and *DEF* are congruent with *BC* = *EF*.



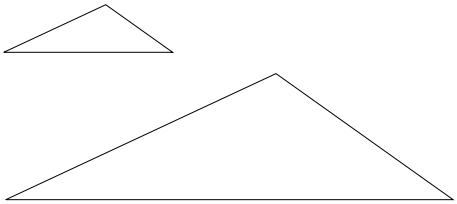
What is the measure of angle *EGC*?

B. These triangles are congruent. The measures of some of the sides and angles of the triangles are shown.



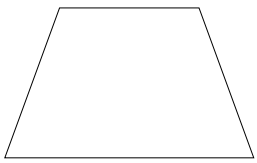
What is the value of *x*?

C. Triangle *ABC* and *DEF* are similar triangles.



What is the length of side *AC*?

D. *ABCD* is a trapezoid.



Another trapezoid, *GHIJ* (not shown), is congruent (the same size and shape) to *ABCD*. Angles *G* and *J* each measure 70º. Which of these could be true?

1. *GH = AB*
2. Angle *H* is a right angle.
3. All sides of *GHIJ* are the same length.
4. The perimeter of *GHIJ* is 3 times the perimeter of *5 0 TD 1 Tf 10.9s 3le or0 DGHIJ*

GEOMETRIC CONGRUENCE AND SIMILARITY (continued)

1. Is anything done in your mathematics class that would enable your students to complete similar exercises that address this topic?

Check one: ☐ Yes ☐ No

If YES... *Check as many as apply.*

a) Something was done EARLIER this year. ..... ☐
b) Something is CURRENTLY in progress. ..... ☐
c) Something will be done LATER this year. ..... ☐

If NO... *Check as many as apply.*

d) The topic was covered in the curriculum for an EARLIER grade. ..... ☐
e) Although the topic is in the curriculum for THIS grade, I will not cover it. ☐
f) The topic is covered in the curriculum for a LATER grade. ..... ☐
g) To my knowledge, this topic is NOT INCLUDED in the curriculum. ..... ☐
h) I DO NOT KNOW whether this topic is covered in any other grade. ..... ☐

2. If you were to develop a test for your mathematics class that assesses this particular math topic, which of the above items would you consider appropriate for the test?

Check all that apply.

A ☐ B ☐ C ☐ D ☐ none

IX. PROPORTIONALITY CONCEPTS

The following exercises illustrate the above topic. These exercises, or ones like them, might be used to assess students' learning of this topic.

A. To obtain a certain color of paint, Alana combines 5 liters of red paint, 2 liters of blue paint, and 2 liters of yellow paint. What is the ratio of red to the total amount of paint?

B. Three-fifths of the students in a class are girls. If 5 girls and 5 boys are added to the class, which statement is true of the class?

1. There are more girls than boys.
2. There are the same number of girls as there are boys.
3. There are more boys than girls.
4. You cannot tell whether there are more girls or boys from the information given.

C. A class has 28 students. The ratio of girls to boys is 4 : 3. How many girls are in the class?

D. Two boxes of square-shaped cardboard pieces are available to make a large pattern. There are 4 small squares in each piece.

All pieces in Box 1 look like  . All pieces in Box 2 look like  . In the required pattern, for every piece from Box 2 there are 2 pieces from Box 1.
If 60 pieces from Box 2 are used in the required pattern, how many pieces will be needed altogether? What fraction of the small squares in the required pattern will be black?

---

1. Is anything done in your mathematics class that would enable your students to complete similar exercises that address this topic?

Check one: ☐ Yes ☐ No

If YES... *Check as many as apply.*

a) Something was done EARLIER this year. ..... ☐
b) Something is CURRENTLY in progress. ..... ☐
c) Something will be done LATER this year. ..... ☐

If NO... *Check as many as apply.*

d) The topic was covered in the curriculum for an EARLIER grade. ..... ☐
e) Although the topic is in the curriculum for THIS grade, I will not cover it. ☐
f) The topic is covered in the curriculum for a LATER grade. ..... ☐
g) To my knowledge, this topic is NOT INCLUDED in the curriculum. ..... ☐
h) I DO NOT KNOW whether this topic is covered in any other grade. ..... ☐

2. If you were to develop a test for your mathematics class that assesses this particular math topic, which of the above items would you consider appropriate for the test?

Check all that apply.

A ☐ B ☐ C ☐ D ☐ none ☐

3. Are students likely to encounter this topic <u>outside</u> of school this year?

Check one: ☐ Yes ☐ No

X. PROPORTIONALITY PROBLEMS

The following exercises illustrate the above topic. These exercises, or ones like them, might be used to assess students' learning of this topic.

A. On a map 0.5 cm represents 50 kilometers. How far are two cities actually apart if they are shown as 9 centimeters apart on the map?

B. Peter bought 70 items and Sue bought 90 items. Each item cost the same and the items cost $800 altogether. How much did Sue pay?

C. If there are 300 calories in 100 g of a certain food, how many calories are there in a 30 g portion of this food?

D. The table show the values of x and y, where x is proportional to y.

x	3	6	P
y	7	Q	35

What are the values of P and Q?

---

1. Is anything done in your mathematics class that would enable your students to complete similar exercises that address this topic?

Check one: ☐ Yes ☐ No

If YES... *Check as many as apply.*

a) Something was done EARLIER this year. ..... ☐
b) Something is CURRENTLY in progress. ..... ☐
c) Something will be done LATER this year. ..... ☐

If NO... *Check as many as apply.*

d) The topic was covered in the curriculum for an EARLIER grade. ..... ☐
e) Although the topic is in the curriculum for THIS grade, I will not cover it. ☐
f) The topic is covered in the curriculum for a LATER grade. ..... ☐
g) To my knowledge, this topic is NOT INCLUDED in the curriculum. ..... ☐
h) I DO NOT KNOW whether this topic is covered in any other grade. ..... ☐

2. If you were to develop a test for your mathematics class that assesses this particular math topic, which of the above items would you consider appropriate for the test?

Check all that apply.

A ☐ B ☐ C ☐ D ☐ none ☐

3. Are students likely to encounter this topic

XI. LINEAR EQUATIONS

The following exercises illustrate the above topic. These exercises, or ones like them, might be used to assess students' learning of this topic.

A. n is a number. When n

XII. LINEAR EQUATIONS

The following exercise also illustrates the above topic. This exercise or ones like it, might be used to assess students' learning of this topic.

A. There are 54 kilograms of apples in two boxes. The second box of apples weighs 12 kilograms more than the first. How many kilograms of apples are in each box? Show your work.

---

1. Is anything done in your mathematics class that would enable your students to complete similar exercises that address this topic?

Check one: ☐ Yes ☐ No

If YES... *Check as many as apply.*

a) Something was done EARLIER this year. ..... ☐
b) Something is CURRENTLY in progress. ..... ☐
c) Something will be done LATER this year. ..... ☐

If NO... *Check as many as apply.*

d) The topic was covered in the curriculum for an EARLIER grade. ..... ☐
e) Although the topic is in the curriculum for THIS grade, I will not cover it. ☐
f) The topic is covered in the curriculum for a LATER grade. ..... ☐
g) To my knowledge, this topic is NOT INCLUDED in the curriculum. ..... ☐
h) I DO NOT KNOW whether this topic is covered in any other grade. ..... ☐

2. If you were to develop a test for your mathematics class that assesses this particular math topic, would you consider the above item appropriate for the test?

Check one: ☐ Yes ☐ No

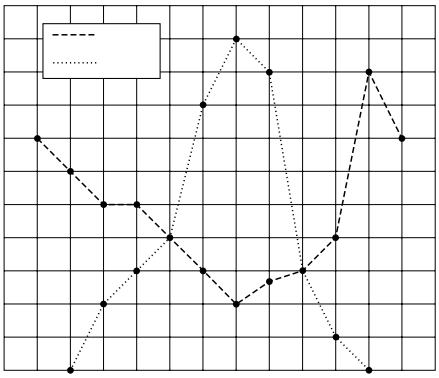
3. Are students likely to encounter this topic <u>outside</u> of school this year?

Check one: ☐

XIII. DATA REPRESENTATION AND ANALYSIS

The following exercises illustrate the above topic. These exercises, or ones like them, might be used to assess students' learning of this topic.

A. According to the information in the graph, during which two-month period does the greatest increase in coat sales occur?



DATA REPRESENTATION AND ANALYSIS (continued)

XIV. DATA REPRESENTATION AND ANALYSIS

The following exercise also illustrates the above topic. This exercise or ones like it, might be used to assess students' learning of this topic.

A. The following two advertisements appeared in a newspaper in a country where the units of currency are zeds.

If a company is interested in renting an office of 110 square meters in that country for a year, at which office building, A or B, should they rent the office in order to get the lower price? Show your work.

---

1. Is anything done in your mathematics class that would enable your students to complete similar exercises that address this topic?

Check one: ☐ Yes ☐ No

If YES... *Check as many as apply.*

a) Something was done EARLIER this year. ..... ☐
b) Something is CURRENTLY in progress. ..... ☐
c) Something will be done LATER this year. ..... ☐

If NO... *Check as many as apply.*

d) The topic was covered in the curriculum for an EARLIER grade. ..... ☐
e) Although the topic is in the curriculum for THIS grade, I will not cover it. ☐
f) The topic is covered in the curriculum for a LATER grade. ..... ☐
g) To my knowledge, this topic is NOT INCLUDED in the curriculum. ..... ☐
h) I DO NOT KNOW whether this topic is covered in any other grade. ..... ☐

2. If you were to develop a test for your mathematics class that assesses this particular math topic, would you consider the above item appropriate for the test?

Check one: ☐ Yes ☐ No

3. Are students likely to encounter this topic

Section D

Pedagogical Approach

To better understand what teachers believe about how mathematics is best taught, we are asking you to respond to two teaching situations. Several possible approaches are presented for each situation. The situations presented may or may not be likely to occur in your own classes. We are interested in what you believe would be the best approach or sequence of approaches to help students6i9r u9e

$$\frac{15}{5}=\frac{x}{12.5} \rightarrow 5x=(15)(12.5) \rightarrow x=18.75/5=3.75 \text{ km}$$

2. Many students have trouble relating ratios to fractions when they are asked to relate part of a set of objects to the whole set. For example, when asked *"There are 2 boys in a class for every 3 girls in the class. What fraction of the students are boys?"* Many students would answer 2/3 rather than 2/5. If you were working with a class in which many students had this kind of misunderstanding, what approach or sequence of approaches do you believe would best help students learn?

Place a '1' in the box in the right-hand margin next to the approach you believe to be the best. If you believe other approaches would also be acceptable, place a number in the box next to each one indicating the order in which you would consider using it. You need not choose more than one approach. Leave blank the box for any approach you do not consider acceptable.

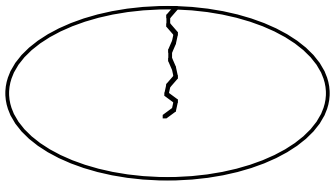
a) I would review with my students the section of the textbook that explains this concept. .....

b) I would make the situation more concrete by having the students help me make up the class roster for a class with two boys and three girls. From this class roster, I would then ask the students to work on finding a solution to the problem. .....

c) I would ask several students to explain their thinking about this problem and ask other students to comment on what seems helpful and not helpful with these explanations. If this did not clear up the difference in understandings, I would at least better understand my students' thinking and could choose activities to provide them with experiences that might lead them to the more conventional, useful idea.

d) I would present several situations of this sort and after getting students to answer what fraction of the class were boys and what fraction girls, I would ask the students to use calculators to find what percent of the class were boys and what percent girls. Then I would ask them if the percentages of boys and girls in each class added to 100 percent. .....

e) I would discuss which sets of objects that were involved in the situation with a diagram as the one shown at right and that the fraction needed is



Many students do not even realize that the set **A** ∪ **B** is involved as well as set A and set B. .....

f) I would relate this kind of situation to the general idea of ratio as represented by discrete objects such as 2:3 which is represented, for example, by the diagram at right. Then I would investigate with students all the various fractions that could be made in such a situation.

g) Which of the approaches do you believe to be the least acceptable approach?

Place the letter of that approach in the box. .....

Section 4

Science Teacher Background Questionnaire (TQS2)

Identification Label

School ID :
Stratum ID:
Teacher ID: **Link:**
Name:
Class ID:
Name of Class:
Subject: **Grade:**

IEA Third International Mathemati 65X -0and Science Study

Teacher Questionnaire (Science)
Population 2

Your school has agreed to participate in the Third International Mathematics and Science Study (TIMSS), an educational research project sponsored by the International Association for the Evaluation of Educational Achievement (IEA). TIMSS is investigating mathematics and science achievement in over fifty educational systems around the world. It is designed to measure and interpret differences in national educational systems in order to help improve the teaching and learning of mathematics and science worldwide.

This questionnaire is addressed to teachers of science, who are asked to supply information about their academic and professional backgrounds, instructional practices, and attitudes towards teaching science. Since your class has been selected as part of a nationwide sample, your responses are very important in helping to describe science classes in <country>.

Some of the questions in this questionnaire ask about **your science class**. This is the class which is identified at the top of this page, and which will be tested as part of TIMSS in your school.

It is important that you answer each question carefully so that the information provided reflects your situation as accurately as possible. It is estimated that it will require approximately 60 minutes to complete this questionnaire.

Your cooperation in completing this questionnaire is greatly appreciated.

TIMSS Study Center
Boston College
Chestnut Hill, MA 02167
USA

(Institute Address)

Doc. Ref.: ICC881/NRC418

GENERAL DIRECTIONS:

1. Identify a place and a time when you will be able to complete this questionnaire without being interrupted. This questionnaire has been designed to be completed within 60 minutes by most teachers. However, the amount of time you will need vary. To make it as easy as possible for you to respond, most items may be completed simply by checking the appropriate box.

2. There are no "right" or "wrong" answers to any of these items. The questionnaire is designed to provide information about teachers' professional experiences, opinions, and classroom activities.

3. Several items ask you to think of a recent class <hour/period> as you respond. In responding to these items, choose a recent class <hour/period> which you can recall in some detail and which was fairly typical of what occurs in your classroom (i.e., a class <hour/period> which was not affected by special events such as assemblies, guests, student testing other than short quizzes, or any other unusual circumstances).

   Remember, "your science class" is the class which is identified on the cover of this questionnaire, and which will be tested as part of TIMSS in your school.

4. More specific instructions to assist you in responding are found in *italics* for each item. Once you have completed the questionnaire, place it into the return envelope provided and return it to:

<Country Specific Information>

Again, thank you for your time, effort and thought in completing this questionnaire!

Section A

1. How old are you?

Check one box only.

- under 25 ..... ☐
- 25-29 ..... ☐
- 30-39 ..... ☐
- 40-49 ..... ☐
- 50-59 ..... ☐
- 60 or more ..... ☐

2. Are you female or male?

Check one box only.

- female ..... ☐
- male ..... ☐

3. What was the highest level of formal education you have completed?

Check one box only.

- <TEACHER TRAINING W/O COMPLETING SECONDARY> ..... ☐
- <SECONDARY ONLY> ..... ☐
- <SECONDARY + 1 OR 2 YEAR TEACHER TRAINING> ..... ☐
- <SECONDARY AND 3 OR 4 YEAR TEACHER TRAINING> ..... ☐
- <BA OR EQUIVALENT + NO TEACHER TRAINING> ..... ☐
- <BA OR EQUIVALENT + TEACHER TRAINING> ..... ☐
- <MA/PHD WITH NO TEACHER TRAINING> ..... ☐
- <MA/PHD + TEACHER TRAINING> ..... ☐

4a. At which grade levels are you teaching <u>Science</u> during this school year?

NRC Note: <List only country-specific grades and their appropriate designations.>

Check one box in each row.

☐ Do not teach science this year

		Yes	*No*
a)	<PRE-KINDERGARTEN>	☐	☐
b)	<KINDERGARTEN>	☐	☐
c)	<GRADE 1>	☐	☐
d)	<GRADE 2>	☐	☐
e)	<GRADE 3>	☐	☐
f)	<GRADE 4>	☐	☐
g)	<GRADE 5>	☐	☐
h)	<GRADE 6>	☐	☐
i)	<GRADE 7>	☐	☐
j)	<GRADE 8>	☐	☐
k)	<GRADE 9>	☐	☐
l)	<GRADE 10>	☐	☐
m)	<GRADE 11>	☐	☐
n)	<GRADE 12>	☐	☐
o)	<GRADE 13>	☐	☐

5. At which grade levels are you teaching <u>Mathematics</u> during this school year?

NRC Note: <List only country-specific grades and their appropriate designations.>

Check one box in each row.

☐ Do not teach mathematics this year

		Yes	*No*
a)	<PRE-KINDERGARTEN>	☐	☐
b)	<KINDERGARTEN>	☐	☐
c)	<GRADE 1>	☐	☐
d)	<GRADE 2>	☐	☐
e)	<GRADE 3>	☐	☐
f)	<GRADE 4>	☐	☐
g)	<GRADE 5>	☐	☐
h)	<GRADE 6>	☐	☐
i)	<GRADE 7>	☐	☐
j)	<GRADE 8>	☐	☐
k)	<GRADE 9>	☐	☐
l)	<GRADE 10>	☐	☐
m)	<GRADE 11>	☐	☐
n)	<GRADE 12>	☐	☐
o)	<GRADE 13>	☐	☐

6. Do you teach part-time or full-time?

Check one.

Part-time ..... ☐

Full-time ..... ☐

7. By the end of this school year how many years will you have

9. For how many single <hours/periods> are you formally <scheduled/time-tabled> to teach each of the following subjects during the school week?

NCR Note: <List only the generic science courses appropriate for your country>

Count a double <hour/period> as two single <hours/periods>.
Write zero if none.

Number of Single <hours/periods>agle

12. APPROXIMATELY how many hours per week do you normally spend on each of the following activities outside the formal school day?

Check one box in each row.

		none	*less than 1 hour*	*1 - 2 hours*	*3 - 4 hours*	*more than 4 hours*
a)	preparing or grading student tests or exams	☐	☐	☐	☐	☐
b)	reading and grading other student work	☐	☐	☐	☐	☐
c)	planning lessons by yourself	☐	☐	☐	☐	☐
d)	meeting with students outside of classroom time (e.g., tutoring, guidance)	☐	☐	☐	☐	☐
e)	meeting with parents	☐	☐	☐	☐	☐
f)	professional reading and development activity (e.g., seminars, conferences, etc.)	☐	☐	☐	☐	☐
g)	keeping students' records up to date	☐	☐	☐	☐	☐
h)	administrative tasks including staff meetings (e.g., photocopying, displaying students' work)	☐	☐	☐	☐	☐

13. About how often do you have meetings with other teachers in your subject area to discuss and plan curriculum or teaching approaches?

Check one box only.

- never ..... ☐
- once or twice a year ..... ☐
- every other month ..... ☐
- once a month ..... ☐
- once a week ..... ☐
- two or three times a week ..... ☐
- almost every day ..... ☐

14. How much influence do you have on each of the following...

Check one box in each row.

		none	*little*	*some*	*a lot*
a)	subject matter to be taught	☐	☐	☐	☐
b)	specific textbooks to be used	☐	☐	☐	☐
c)	the amount of money to be spent on supplies	☐	☐	☐	☐
d)	what supplies are purchased	☐	☐	☐	☐

15. To be good at science at school, how important do you think it is for students to...

Check one box in each row.

		not important	*somewhat important*	*very important*
a)	remember formulas and procedures.	☐	☐	☐
b)	think in a sequential and procedural manner.	☐	☐	☐
c)	understand scientific concepts, principles, and strategies.	☐	☐	☐
d)	be able to think creatively.	☐	☐	☐
e)	understand how science is used in the real world.	☐	☐	☐
f)	be able to provide reasons to support their conclusions.	☐	☐	☐

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

Check one box in each row.

		strongly disagree	*disagree*	*agree*	*strongly agree*
a)	Science is primarily an abstract subject.	☐	☐	☐	☐
b)	Science is primarily a formal way of representing the real world.	☐	☐	☐	☐
c)	Science is primarily a practical and structured guide for addressing real situations.	☐	☐	☐	☐
d)	Some students have a natural talent for science and others do not.	☐	☐	☐	☐
e)	It is important for teachers to give students prescriptive and sequential directions for doing science experiments	☐	☐	☐	☐
f)	Focusing on rules is a bad idea. It gives students the impression that the sciences (physics, chemistry, biology, and earth science) are a set of procedures to be memorized.	☐	☐	☐	☐
g)	If students get into debates in class about ideas or procedures covering the sciences, it can harm their learning.	☐	☐	☐	☐
h)	Students see a science task as the same task when it is represented in two different ways (picture, concrete material, symbol set, etc.).	☐	☐	☐	☐
i)	A liking for and understanding of students are essential for teaching science.	☐	☐	☐	☐

17. Indicate your familiarity with each of the following documents:

NRC Note: <Include country-specific appropriate options only>

Check one box in each row.

	no such document	*not familiar*	*fairly familiar*	*very familiar*
a) <THE NATIONAL CURRICULUM GUIDE FOR SCIENCE>	☐	☐	☐	☐
b) <THE REGIONAL CURRICULUM GUIDE(S) FOR SCIENCE>	☐	☐	☐	☐
c) <THE SCHOOL CURRICULUM GUIDE>	☐	☐	☐	☐
d) <THE NATIONAL EXAMINATION SPECIFICATIONS>	☐	☐	☐	☐
e) <THE REGIONAL EXAMINATION SPECIFICATIONS>	☐	☐	☐	☐
f) <THE NATIONAL PEDAGOGY GUIDE FOR SCIENCE>	☐	☐	☐	☐
g) <THE REGIONAL PEDAGOGY GUIDE FOR SCIENCE>	☐	☐	☐	☐

18. How well prepared do you feel you are to teach...

Check one box in each row.

	Sufficiently prepared - I would feel confident teaching this topic	***Somewhat prepared - it would depend on the instructional resources available***	***Not well prepared - it would be difficult for me to teach this topic***
a) Earth's features, landforms, bodies of water, atmosphere, etc.	☐	☐	☐
b) Types of energy, sources of energy, conversions between energy types	☐	☐	☐
c) Light	☐	☐	☐
d) Structure and function of human tissues, organs	☐	☐	☐
e) Human metabolism	☐	☐	☐
f) Human reproduction	☐	☐	☐
g) Human genetics	☐	☐	☐
h) Measurement	☐	☐	☐
i) Organizing, representing and interpreting data, making conclusions	☐	☐	☐

19. Was teaching your first choice as a career when beginning university or teacher education college?

Check only one box ..... *Yes* ☐ *No* ☐

20. Would you change to another career if you had the opportunity?

Check only one box ..... *Yes* ☐ *No* ☐

21. Do you think that society appreciates your work?

Check only one box ..... *Yes* ☐ *No* ☐

22. Do you think your students appreciate your work?

Check only one box ..... *Yes* ☐ *No* ☐

23. Approximately how many books are in your home?

(Do not count magazines or newspapers.)

Check one box only.

none or very few (0-10) ..... ☐

enough to fill a shelf (11-25) ..... ☐

enough to fill a bookcase (26-100) ..... ☐

enough to fill two bookcases (101-200) ..... ☐

enough to fill three or more bookcases (more than 200) ..... ☐

THERE ARE NO QUESTIONS ON THIS PAGE

Section B

1. How many students are in your science class?

Write in a number for each. Write 0 (zero) if there are none.

boys _____ girls _____

2. Compared with other students in <country> at this grade level, estimate what percent of students in your class have:

Please write a number.

high achievement levels (i.e. in the top third nationally) ..... _____ %

middle achievement levels (middle third nationally) ..... _____ %

low achievement levels (bottom third nationally) ..... _____ %

TOTAL 100%

3. How many minutes per week do you teach science to your science class?

Minutes: _____

NRC Note: **TEXTBOOKS** <Insert the country specific textbook list used in the TIMSS document analysis. If the TIMSS document analysis list is not exhaustive of all texts used in

5. Approximately what percentage of your weekly science teaching time is based on the text(s) indicated in the previous question?

Check one box.

- 0 - 25% ..... ☐
- 26 - 50% ..... ☐
- 51 - 75% ..... ☐
- 76 - 100% ..... ☐

6. What do you use in the place of or in addition to a textbook?

Write in.

_____

_____

_____

_____

_____

_____

7. In your view to what extent do the following limit how you teach your science class?

Check one box in each row.

		not at all	*a little*	*quite a lot*	*a great deal*
a)	students with different academic abilities	☐	☐	☐	☐
b)	students who come from a wide range of backgrounds, (e.g., economic, language)	☐	☐	☐	☐
c)	students with special needs, (e.g., hearing, vision, speech impairment, physical disabilities, mental or emotional/psychological impairment)	☐	☐	☐	☐
d)	uninterested students	☐	☐	☐	☐
e)	disruptive students	☐	☐	☐	☐
f)	parents interested in their children's learning and progress	☐	☐	☐	☐
g)	parents uninterested in their children's learning and progress	☐	☐	☐	☐
h)	shortage of computer hardware	☐	☐	☐	☐
i)	shortage of computer software	☐	☐	☐	☐
j)	shortage of other instructional equipment for students' use	☐	☐	☐	☐
k)	shortage of equipment for your use in demonstrations and other exercises	☐	☐	☐	☐
l)	inadequate physical facilities	☐	☐	☐	☐
m)	high student/teacher ratio	☐	☐	☐	☐
n)	low morale among fellow teachers/administrators	☐	☐	☐	☐
o)	low morale among students	☐	☐	☐	☐
p)	threat(s) to personal safety or the safety of students	☐	☐	☐	☐

11. In planning science lessons, what is your main source of written information when...

NRC Note: <List only country-specific appropriate options.>

Check one box in each row.

	<*National or Regional Examination Specifications*>	<*National or Regional Curriculum Guide*>	<*School Curriculum Guide*>	*Teacher Edition of Textbook*	*Student Edition of Textbook*	*Other Resource Books*
a) deciding which topics to teach (goals)	☐	☐	☐	☐	☐	☐
b) deciding how to present a topic	☐	☐	☐	☐	☐	☐
c) selecting problems and exercises for work in class and homework	☐	☐	☐	☐	☐	☐
d) selecting problems and applications for assessment and evaluation	☐	☐	☐	☐	☐	☐

Science Topics

On the following pages there is a list of science topics. Each topic is illustrated by a short list of subtopics. Not all topics are necessarily appropriate for your class. Nevertheless, please respond to the entire list so that we may obtain an indication of topics covered in your class that is as complete and accurate as possible.

- *Before marking anything, read quickly through the entire list to obtain an idea of where various topics may be found. Be sure to read the four examples on the next page.*

EXAMPLES:

NRC Note: <Use country-specific appropriate designation for class <period/hour>.

TOPIC	*have taught this year <period> completed* 1-5	6-10	11-15	> 15	*will teach later this year*	*not taught this year*	*taught a previous year*
h) Interactions of Living Things ..... Biomes and ecosystems, habitats and niches; the interdependence of life; animal behavior'	☐	☐	☐	☐	☐	☐	☐
i) Types and Properties of Matter ..... Classification of matter (e.g., mixtures, compounds); physical properties and chemical properties	☐	☐	☐	☐	☐	☐	☐
j) Structure of Matter ..... Atoms, ions, molecules, macromolecules, crystals	☐	☐	☐	☐	☐	☐	☐
k) Energy Types, Sources, and Conversions Types of energy (e.g., mechanical, chemical); sources of energy (food, oil, wood); conversions of energy; work and efficiency	☐	☐	☐	☐	☐	☐	☐
l) Energy Processes ..... Heat and temperature; wave phenomena, sound and vibration, electricity, and magnetism. *Indicate your coverage both for the above main topic and for the following subtopic.*	☐	☐	☐	☐	☐	☐	☐
1. Light	☐	☐	☐	☐	☐	☐	☐
m) Physical Changes ..... Physical changes and explanations of physical changes	☐	☐	☐	☐	☐	☐	☐
n) Kinetic & Quantum Theory ..... Kinetic theory and quantum theory and fundamental particles	☐	☐	☐	☐	☐	☐	☐
o) General Chemical Changes ..... Chemical changes, explanations of chemical changes; rate of change and equilibria; energy and chemical change	☐	☐	☐	☐	☐	☐	☐
p) Specialized Chemical Changes ..... Nuclear fusion and fission; radiation; electrochemistry; organic and biochemical changes	☐	☐	☐	☐	☐	☐	☐
q) Forces & Motion ..... Types of forces; speed, acceleration; dynamics of motion, fluid behavior	☐	☐	☐	☐	☐	☐	☐
r) Relativity Theory ..... Relativity theory	☐	☐	☐	☐	☐	☐	☐

Think of the last <lesson> in which you taught science to your science class. (If this lesson was atypical, e.g., an examination period or a field trip, pick the previous one.)

13a. How many minutes was this class <hour/period>?

Please write in a number.

_____ *minutes*

13b. For each of the following science topics, indicate whether or not it was the subject of the lesson.

(See "Science Topics" category descriptions in question 12.)

Check one box in each row.

		Yes	***No***
1.	Earth Features	☐	☐
2.	Earth Processes	☐	☐
3.	Earth in the Universe	☐	☐
4.	Human Biology and Health	☐	☐
5.	Diversity and Structure of Living Things	☐	☐
6.	Life Processes and Systems Enabling Life Function	☐	☐
7.	Life Cycles, Genetic Continuity, Diversity	☐	☐
8.	Interactions of Living Things	☐	☐
9.	Types and Properties of Matter	☐	☐
10.	Structure of Matter	☐	☐
11.	Energy Types, Sources, and Conversions	☐	☐
12.	Energy Processes	☐	☐
13.	Physical Changes	☐	☐
14.	Kinetic and Quantum Theory	☐	☐
15.	General Chemical Changes	☐	☐
16.	Specialized Chemical Changes	☐	☐
17.	Force and Motion	☐	☐
18.	Relativity Theory	☐	☐
19.	Science, Technology and Society	☐	☐
20.	History of Science and Technology	☐	☐
21.	Environmental and Resource Issues	☐	☐
22.	Nature of Science	☐	☐

13c. Was this lesson...

Check one box in each row.

		Yes	***No***
1.	the introduction of this topic	☐	☐
2.	a continuation of a previous lesson on the same topic	☐	☐
3.	the end of the coverage of this topic	☐	☐

13d. Did you assign homework after the class <hour/period>?

Check one box.

Yes ☐ No ☐

13e. If yes,
how long would it take a typical student to complete this homework?

Please write in a number.

_____ *minutes*

13f. Was a computer used during this class <hour/period>?

Check one box.

Yes ☐ No ☐

13g. Was there a separate laboratory <session/hour/period> associated with this class <hour/period>?

Check one box.

Yes ☐ No ☐

13h. If yes,
how many minutes were given to this laboratory <session/hour/period>?

Please write in a number.

_____ *minutes*

Think of the same science class <hour/period>.

14a. How did the lesson proceed?

The following presents a list of activities that may occur during a lesson. Although the list is not exhaustive of what happens in a classroom, most classroom activities may be considered as variations of those listed below. Using this list, indicate how your lesson developed. In the blanks on the right, write in the order in which the activities used in the lesson took place (1 = first, 2 = second, and so on) and estimate the amount of time you spent on each one. Ignore activities you used that do not fit into the descriptions listed. Write in the order and the approximate number of minutes for each activity. NOTE: If you did not do a certain activity write zero in the blank next to it.

	order	***minutes***
• review of previous lesson(s)	_____	_____
• a short quiz or test to review previous lesson	_____	_____
• oral recitation or drill (students responding aloud).....	_____	_____
• review or correction of previous lesson's homework	_____	_____
• **introduction** of a topic (class discussion, teacher explanation/demonstration, film, video, use of concrete materials etc.).....	_____	_____
• **development** of a topic (class discussion, teacher explanation/demonstration, group problem solving, film, video, etc.).....	_____	_____
• small group activities (with or without teacher)	_____	_____
• students do paper-and-pencil exercises related to topic (not the same as homework)	_____	_____
• assignment of student homework	_____	_____
• students work on homework in class	_____	_____
• student laboratory or data collection activity (not a separate laboratory hour) or hands-on session.....	_____	_____

14b. In this class <hour/period> did the students work in small groups?

Check one box.

none of the time ..... ☐

some of the time ..... ☐

all the time ..... ☐

15. In your science lessons, how often do you usually ask students to do the following?

Check one box in each row.

		never or almost never	*some lessons*	*most lessons*	*every lesson*
a)	explain the reasoning behind an idea.	☐	☐	☐	☐
b)	represent and analyze relationships using tables, charts, or graphs.	☐	☐	☐	☐
c)	work on problems for which there is no immediately obvious method of solution.	☐	☐	☐	☐
d)	use computers to solve exercises or problems. .	☐	☐	☐	☐
e)	write explanations about what was observed and why it happened.	☐	☐	☐	☐
f)	put events of objects in order and give a reason for the organization.	☐	☐	☐	☐

16. In your science lessons, how frequently do you do the following when a student gives an incorrect response during a class discussion?

Check one box in each row.

		never or almost never	*some lessons*	*most lessons*	*every lesson*
a)	correct the student's error in front of the class ..	☐	☐	☐	☐
b)	ask the student another question to help him or her get the correct response	☐	☐	☐	☐
c)	call on another student who's likely to give the correct response	☐	☐	☐	☐
d)	call on other students to get their responses and then discuss what is correct	☐	☐	☐	☐

17. In science lessons, how often do students...

Check one box in each row.

		never or almost never	*some lessons*	*most lessons*	*every lesson*
a)	work individually without assistance from the teacher	☐	☐	☐	☐
b)	work individually with assistance from the teacher	☐	☐	☐	☐
c)	work together as a class with the teacher teaching the whole class	☐	☐	☐	☐
d)	work together as a class with students responding to one another	☐	☐	☐	☐
e)	work in pairs or small groups without assistance from the teacher	☐	☐	☐	☐
f)	work in pairs or small groups with assistance from the teacher	☐	☐	☐	☐

18. How often do you usually assign science homework?

Check one box.

never ..... ☐

less than once a week ..... ☐

20. If you assign science homework, how often do you assign each of the following kinds of tasks?

Check one box in each row.

	never	*rarely*	*sometimes*	*always*	*I do not assign homework*
a) worksheets or workbook	☐	☐	☐	☐	☐
b) problem/question sets in textbook	☐	☐	☐	☐	☐
c) reading in a textbook or supplementary materials	☐	☐	☐	☐	☐
d) writing definitions or other short writing assignment	☐	☐	☐	☐	☐
e) small investigation(s) or gathering data	☐	☐	☐	☐	☐
f) working individually on long term projects or experiments	☐	☐	☐	☐	☐
g) working as a small group on long term projects or experiments	☐	☐	☐	☐	☐
h) finding one or more uses of the content covered	☐	☐	☐	☐	☐
i) preparing oral reports either individually or as a small group	☐	☐	☐	☐	☐
j) keeping a journal	☐	☐	☐	☐	☐

21. If students are assigned <u>written</u> science homework, how often do you do the following?

Check one box in each row.

	never	*rarely*	*sometimes*	*always*	*I do not assign homework*
a) record whether or not the homework was completed	☐	☐	☐	☐	☐
b) collect, correct and keep assignments	☐	☐	☐	☐	☐
c) collect, correct assignments and then return to students	☐	☐	☐	☐	☐
d) give feedback on homework to whole class	☐	☐	☐	☐	☐
e) have students correct their own assignments in class	☐	☐	☐	☐	☐
f) have students exchange assignments and correct them in class	☐	☐	☐	☐	☐
g) use it as a basis for class discussion	☐	☐	☐	☐	☐
h) use it to contribute towards students' grades or marks	☐	☐	☐	☐	☐

22. In assessing the work of the students in your science class, how much weight do you give each of the following types of assessment?

Check one box in each row.

		none	*little*	*quite a lot*	*a great deal*
a)	standardized tests produced outside the school	☐	☐	☐	☐
b)	teacher-made short answer or essay tests that require students to describe or explain their reasoning	☐	☐	☐	☐
c)	teacher made multiple choice, true-false and matching tests	☐	☐	☐	☐
d)	how well students do on homework assignments	☐	☐	☐	☐
e)	how well students do on projects or practical/laboratory exercises	☐	☐	☐	☐
f)	observations of students	☐	☐	☐	☐
g)	responses of students in class	☐	☐	☐	☐

23. How often do you use the assessment information you gather from students to...

Check one box in each row.

		none	*little*	*quite a lot*	*a great deal*
a)	provide students' grades or marks?	☐	☐	☐	☐
b)	provide feedback to students?	☐	☐	☐	☐
c)	diagnose students' learning problems?	☐	☐	☐	☐
d)	report to parents?	☐	☐	☐	☐
e)	assign students to different programs or tracks?	☐	☐	☐	☐
f)	plan for future lessons?	☐	☐	☐	☐

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

Section C

OPPORTUNITY TO LEARN (Science)

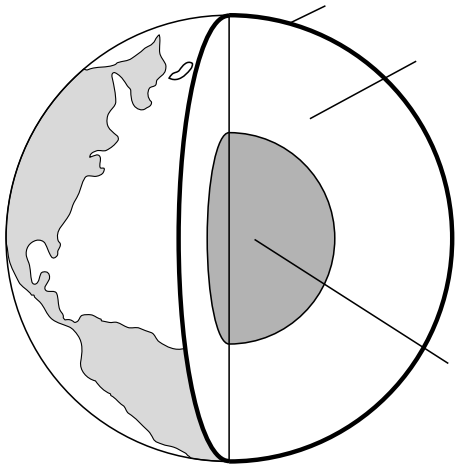
In this section, a set of exercises on various science topics are presented, and you are asked to indicate whether you have taught or will teach the topic to your science class this year.

Please remember, “your science class” refers to the class which is identified on the cover of this questionnaire, and which will be tested as part of TIMSS in your school.

I. EARTH FEATURES: COMPOSITION

The following exercise illustrates the above topic. This exercise, or ones like it, might be used to assess students' learning of this topic.

A. The picture shows the three main layers of the Earth.



Where is it hottest, A, B, or C?

---

1. Is anything done in your science class that would enable your students to complete similar exercises that address this topic?

Check one: ☐ Yes ☐ No

Yes

IV. EARTH FEATURES: BODIES OF WATER

The following exercise illustrates the above topic. This exercise, or ones like it, might be used to assess students' learning of this topic.

A. A small, fast-moving river is in a V-shaped valley on the slope of a mountain. If you follow the river to where it passes through a plain, what will the river most likely look like compared with how it looked on the mountain: much the same, deeper and faster, slower and wider, or straighter?

---

1. Is anything done in your science class that would enable your students to complete similar exercises that address this topic?

Check one: ☐ Yes ☐ No

If YES... *Check as many as apply.*

a) Something was done EARLIER this year. ..... ☐
b) Something is CURRENTLY in progress. ..... ☐
c) Something will be done LATER this year. ..... ☐

If NO... *Check as many as apply.*

d) The topic was covered in the curriculum for an EARLIER grade. ..... ☐
e) Although the topic is in the curriculum for THIS grade, I will not cover it. ☐
f) The topic is covered in the curriculum for a LATER grade. ..... ☐
g) To my knowledge, this topic is NOT INCLUDED in the curriculum. ..... ☐
h) I DO NOT KNOW whether this topic is covered in any other grade. ..... ☐

2. If you were to develop a test for your science class that assesses this particular science topic, would you consider the above item appropriate for the test?

Check one: ☐ Yes ☐ No

3. Are students likely to encounter this topic <u>outside</u> of school this year?

Check one: ☐ Yes ☐ No

V. EARTH FEATURES: ATMOSPHERE

The following exercises illustrate the above topic. These exercises, or ones like them, might be used to assess students' learning of this topic.

A. Air is made up of many gases. Which gas is found in the greatest amount?

B. Why do mountain climbers use oxygen at the top of the world's highest mountains?

C. Write down one reason why the ozone layer is important for all living things on Earth.

1. Is anything done in your science class that would enable your students to complete similar exercises that address this topic?

Check one: ☐ Yes ☐ No

If YES... *Check as many as apply.*

a) Something was done EARLIER this year. ..... ☐
b) Something is CURRENTLY in progress. ..... ☐
c) Something will be done LATER this year. ..... ☐

If NO... *Check as many as apply.*

d) The topic was covered in the curriculum for an EARLIER grade. ..... ☐
e) Although the topic is in the curriculum for THIS grade, I will not cover it. ☐
f) The topic is covered in the curriculum for a LATER grade. ..... ☐
g) To my knowledge, this topic is NOT INCLUDED in the curriculum. ..... ☐
h) I DO NOT KNOW whether this topic is covered in any other grade. ..... ☐

2. If you were to develop a test for your science class that assesses this particular science topic, which of the above items would you consider appropriate for the test?

Check all that apply.

A ☐ B ☐ C ☐ none ☐

VI. EARTH FEATURES: ROCKS AND SOILS

The following exercises illustrate the above topic. These exercises, or ones like them, might be used to assess students' learning of this topic.

A. Which layer in the diagram contains the most organic material?

B. The presence of igneous rock in an area would indicate that the area once had...?

C. Rock that is made of material that has settled to the bottom of lakes and oceans and been compressed and hardened is...?

1. Is anything done in your science class that would enable your students to complete similar exercises that address this topic?

Check one: ☐ Yes ☐ No

If YES... *Check as many as apply.*

a) Something was done EARLIER this year. ..... ☐
b) Something is CURRENTLY in progress. ..... ☐
c) Something will be done LATER this year. ..... ☐

If NO... *Check as many as apply.*

d) The topic was covered in the curriculum for an EARLIER grade. ..... ☐
e) Although the topic is in the curriculum for THIS grade, I will not cover it. ☐
f) The topic is covered in the curriculum for a LATER grade. ..... ☐
g) To my knowledge, this topic is NOT INCLUDED in the curriculum. ..... ☐
h) I DO NOT KNOW whether this topic is covered in any other grade. ..... ☐

2. If you were to develop a test for your science class that assesses this particular science topic, which of the above items would you consider appropriate for the test?

Check all that apply.

A ☐ B ☐ C ☐ none ☐

VII. HUMAN BIOLOGY

The following exercises illustrate the above topic. These exercises, or ones like them, might be used to assess students' learning of this topic.

A. Sensory messages are taken to the brain by...?

B. Write down the reason why we get thirsty on a hot day and have to drink a lot.

C. What is the advantage of having two eyes to see with rather than one eye?

D. What is the main function of red blood cells?

E. From whom can a son inherit his traits?

F. When you bend your arm at the elbow, the bones and muscles in your arm are acting as a system. What simple machine does this system represent?

1. Is anything done in your science class that would enable your students to complete similar exercises that address this topic?

Check one: ☐ Yes ☐ No

If YES...

VIII. HUMAN BIOLOGY

The following exercise also illustrates the above topic. This exercise, or ones like it, might be used to assess students' learning of this topic.

A. Suppose you want to investigate how the human heart rate changes with changes in activity. What materials would you use and what procedures would you follow?

---

1. Is anything done in your science class that would enable your students to complete similar exercises that address this topic?

Check one: ☐ Yes ☐ No

If YES... *Check as many as apply.*

a) Something was done EARLIER this year. ..... ☐
b) Something is CURRENTLY in progress. ..... ☐
c) Something will be done LATER this year. ..... ☐

If NO... *Check as many as apply.*

d) The topic was covered in the curriculum for an EARLIER grade. ..... ☐
e) Although the topic is in the curriculum for THIS grade, I will not cover it. ☐
f) The topic is covered in the curriculum for a LATER grade. ..... ☐

X. ENERGY TYPES, SOURCES, AND CONVERSIONS

The following exercise also illustrates the above topic. This exercise, or ones like it, might be used to assess students' learning of this topic.

A. Machine A and Machine B are each used to clear a field. The table show how large an area each cleared in 1 hour and how much gasoline each used.

XI. ENERGY TYPES, SOURCES, AND CONVERSIONS

The following exercise also illustrates the above topic. This exercise, or ones like it, might be used to assess students' learning of this topic.

A. Electrical energy is used to power a lamp. Is the amount of light energy produced more than, less than, or the same as the amount of electrical energy used? Give a reason to support your answer.

---

1. Is anything done in your science class that would enable your students to complete similar exercises that address this topic?

Check one: ☐ Yes ☐ No

If YES... *Check as many as apply.*

a) Something was done EARLIER this year. ..... ☐
b) Something is CURRENTLY in progress. ..... ☐
c) Something will be done LATER this year. ..... ☐

If NO... *Check as many as apply.*

d) The topic was covered in the curriculum for an EARLIER grade. ..... ☐
e) Although the topic is in the curriculum for THIS grade, I will not cover it. ☐
f) The topic is covered in the curriculum for a LATER grade. ..... ☐
g) To my knowledge, this topic is NOT INCLUDED in the curriculum. ..... ☐
h) I DO NOT KNOW whether this topic is covered in any other grade. ..... ☐

2. If you were to develop a test for your science class that assesses this particular science topic, would you consider the above item appropriate for the test?

Check one: ☐ Yes ☐ No

3. Are students likely to encounter this topic <u>outside</u> of school this year?

Check one: ☐ Yes ☐ No

XII. LIGHT

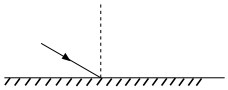
The following exercises illustrate the above topic. These exercises, or ones like them, might be used to assess students' learning of this topic.

A. The walls of a building are to be painted to reflect as much light as possible. What color should they be painted?

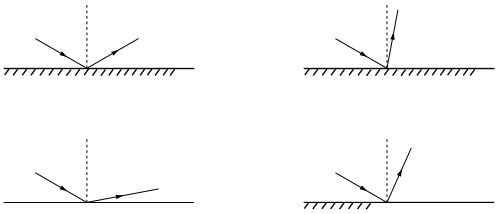
B. A flashlight close to a wall produces a small circle of light compared to the circle it makes when the flashlight is far from the wall. The same amount of light energy reaches the wall regardless of distance. Explain why.

C. A person in a dark room looking through a window can clearly see a person outside in the daylight. But a person outside cannot see the person inside. Why does this happen?

D. A beam of light strikes a mirror as shown.



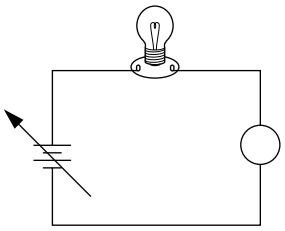
What picture would best show what the reflected light would look like?

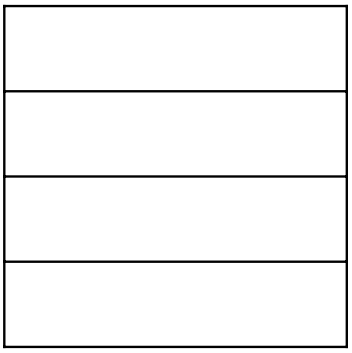


XIII. DATA ANALYSIS

The following exercises illustrate the above topic. These exercises, or ones like them, might be used to assess students' learning of this topic.

A. Some students used an ammeter *A* to measure the current in the circuit for different voltages.





DATA ANALYSIS
(continued)

D. Which statement is consistent with the data in the table?

1. More oxygen production occurs near the surface because there is more light there.
2. More oxygen production occurs near the bottom because there are more plants there.
3. The greater the water pressure, the more oxygen production occurs.
4. The rate of oxygen production is not related to depth.

THERE ARE NO QUESTIONS ON THIS PAGE

Section D

Pedagogical Approach

To better understand what teachers believe about how science is best taught, we are asking you to respond to two out of the three following hypothetical teaching situations. Several possible approaches are presented for each situation. Some of the situations may involve topics that are tangential to your current teaching field, and therefore, may or may not be likely to occur in your classes. Nevertheless, we are interested in what you believe would be the best approach or sequence of approaches to help students learn in these situations regardless of whether they may occur in your classes.

- Respond to the two situations with the science content most similar to your background and experience
- Imagine yourself in each situation.
- Assume that there are no time or equipment constraints.

For item 1:

- Indicate how strongly you agree or disagree with each of the four statements made about the teaching approach presented.

For items 2 and 3:

- Choose what you believe, based on your own principles and beliefs, to be the best approach or sequence of approaches to help students learn.
- Number the boxes next to each approach in the order in which you would consider using them. If you would use only one approach, place a '1' in that box only. Write zero in blank the box for any approach you would not consider using.

Remember, respond to only two of the next three items: 1, 2, and 3.

1. A teacher began instruction on a new topic in energy (e.g., chemical energy, mechanical energy, energy in life or earth processes). The first thing the teacher did was ask the students "What do you think energy is?" Student responses ranged from very accurate to quite incorrect. What is your opinion about this approach?

Check one box only in each line.

		strongly disagree	disagree	agree	strongly agree
a)	This approach should be avoided because some students might get confused by other students' inaccurate ideas about energy.	☐	☐	☐	☐
b)	The teacher should have begun instruction by first explaining what energy is.	☐	☐	☐	☐
c)	This approach was useful because the teacher became aware of the students' ideas about energy	☐	☐	☐	☐
d)	The teacher should have begun instruction with a demonstration of the effects of energy followed by a discussion of the concept of energy.	☐	☐	☐	☐

2. A student puts his hand in the water in the class aquarium and says, "Look! My hand swells up in the water. See how much bigger than normal it is?" Although the student's hand does appear to be larger than normal when in the water, the student's reasoning is not an accurate explanation of this phenomenon.

If you were working with a class in which you suspected many students shared the belief stated by the student above and if there were no time constraints on what you might do in responding to this, what approach or sequence of approaches do you believe would best help students learn?

Place a '1' in the box next to the approach you believe to be the best. If you believe other approaches would also be acceptable, place a number in the box next to each one indicating the order in which you would consider using it. You need not choose more than one approach. Write a zero in the box for any approach you do not consider acceptable.

a) I would explain to the students how water affects the angles of reflection making an object appear larger than it really is. ..... ☐

b) I would ask the class questions about how the different objects in the aquarium appear in and out of the water to lead them to understand that the above explanation is inaccurate. ..... ☐

c) I would give the students an experiment to do measuring the size of different objects both outside and in several different places inside the aquarium to generate data contrary to the above statement ..... ☐

d) I would ask the students to design and conduct an experiment on the size of objects outside and inside an aquarium that would help them decide whether the explanation above is correct. ..... ☐

e) I would have the students read relevant information from their textbooks. ..... ☐

f) I would demonstrate an experiment or show a filmstrip on how water affects the appearance of objects which would provide a basis for arriving at a more accurate explanation. ..... ☐

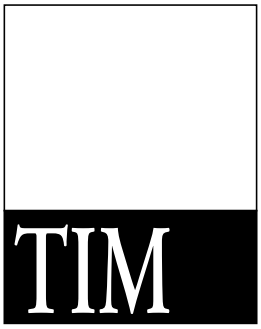
g) I would have the students compare their ideas about why objects would appear to be different sizes inside and outside of the aquarium in a discussion. ..... ☐

h) Which of the approaches listed above do you believe to be the least acceptable approach?

Place the letter (a - g) of that approach in the box. ..... ☐

Section 5

School Background Questionnaire (SCQ2)


TIM

1. In what type of community is your school located?

Check one box only.

- A geographically isolated area ..... ☐
- Village or rural (farm) area ..... ☐
- One on the outskirts of a town/city ..... ☐
- One close to the center of a town/city ..... ☐

2. Which of the following grade levels are found in your school?

<List only country-specific grades and their appropriate designations.>

Check one box in each line.

	Yes	***No***
a) <Pre-kindergarten>	☐	☐
b) <Kindergarten>	☐	☐
c) <Grade 1>	☐	☐
d) <Grade 2>	☐	☐
e) <Grade 3>	☐	☐
f) <Grade 4>	☐	☐
g) <Grade 5>	☐	☐
h) <Grade 6>	☐	☐
i) <Grade 7>	☐	☐
j) <Grade 8>	☐	☐
k) <Grade 9>	☐	☐
l) <Grade 10>	☐	☐
m) <Grade 11>	☐	☐
n) <Grade 12>	☐	☐
o) <Grade 13>	☐	☐

3. How many of the following are on the staff of your school?

For each type of position listed, provide the number of full-time equivalents (FTEs) present in your school. For example, one full-time (100% time) teacher represents 1 FTE; one part-time (50% time) teacher represents .5 FTE. A staff member who teaches 50% time and functions as an assistant principal for the remaining 50% represents .5 FTE teacher and .5 FTE assistant principal. Write in 0 (zero) if there are no such positions in your school.

		Number of FTEs
a)	Principals	_____
b)	Assistant principals	_____
c)	Department heads	_____
d)	<Classroom teachers>	_____
e)	Teacher aides	_____
f)	Laboratory technicians	_____
g)	Learning specialists	_____
h)	Other professional staff	_____

4a. How many individual full-time <classroom teachers> are there in your school?

Write in a number.

_____

4b. How many individual part-time <classroom teachers> are there in your school?

Write in a number.

_____

5. What percentage of the <classroom teachers> have been at your school for 5 or more years?

Please indicate a percentage. Write 0 (zero) if none.

_____*%*

6. What percentage of the <classroom teachers> teach...

10. Cooperation and Collaboration:

Check only one box for each.

		Yes	***No***
a)	Does your school have an official policy related to promoting cooperation and collaboration among teachers?	☐	☐
b)	Are teachers in your school encouraged to share and discuss instructional ideas and materials?	☐	☐
c)	Do teachers in your school meet regularly to discuss instructional goals and issues?	☐	☐

11. As principal of this school, about how many hours per month do you usually spend on each of the following activities?

*Please indicate the approximate **number** of hours for each item. Please write 0 (zero) if no time is spent on an activity.*

		hours per month
a)	Hiring teachers	_____
b)	Representing the school in the community	_____
c)	Representing the school at official meetings	_____
d)	Internal administrative tasks (e.g., regulations, school budget, timetable)	_____
e)	Teaching (including preparation)	_____
f)	Giving a demonstration lesson	_____
g)	Discussing educational objectives with teachers	_____
h)	Initiating curriculum revision and/or planning	_____
i)	Talking with parents	_____
j)	Counseling and disciplining of students	_____

13. How much influence do each of the following have in determining the curriculum that is taught in your school?

*Check **one** box in each line.*

		none	*a little*	*some*	*a lot*
a)	<National Curriculum Council>	☐	☐	☐	☐
b)	<National Subject Association>	☐	☐	☐	☐
c)	<educational region or district>	☐	☐	☐	☐
d)	<school governing board>	☐	☐	☐	☐
e)	Principal/head of school	☐	☐	☐	☐
f)	Teachers (collectively for the school)	☐	☐	☐	☐
g)	Teachers (of same subject) as a group	☐	☐	☐	☐
h)	Each teacher individually	☐	☐	☐	☐
i)	Parents	☐	☐	☐	☐
j)	Students	☐	☐	☐	☐
k)	Church/religious groups	☐	☐	☐	☐
l)	Business community	☐	☐	☐	☐
m)	Textbook publishers	☐	☐	☐	☐
n)	External examinations/standardized tests	☐	☐	☐	☐
o)	Teacher unions	☐	☐	☐	☐

14. Does your school have its own written statement of the curriculum content to be taught (i.e., other than the national or regional curriculum guides)?

*Check **one** box in each line.*

		Yes	*No*
a)	For mathematics	☐	☐
b)	For science	☐	☐

15. In your school, how many computers are...

Write in a number for each. Write 0 (zero) if there are none.

a) available for use by teachers or students ..... _____

b) used by teachers for administrative purposes (e.g., grade reports, attendance, etc.) ..... _____

c) used by teachers during instructional time ..... _____

d) used by students for educational purposes ..... _____

e) used by office staff for school record keeping. ..... _____

16. Is your school's capacity to provide instruction affected by a shortage or inadequacy of any of the following?

*Check **one** box in each line*

		none	***a little***	***some***	***a lot***
a)	Instructional materials (e.g., textbooks)	☐	☐	☐	☐
b)	Budget for supplies (e.g., paper, pencils)	☐	☐	☐	☐
c)	School buildings and grounds	☐	☐	☐	☐
d)	Heating/cooling and lighting systems	☐	☐	☐	☐
e)	Instructional space (e.g., classrooms)	☐	☐	☐	☐
f)	Special equipment for handicapped students	☐	☐	☐	☐
g)	Computers for mathematics instruction	☐	☐	☐	☐
h)	Computer software for mathematics instruction	☐	☐	☐	☐
i)	Calculators for mathematics instruction	☐	☐	☐	☐
j)	Library materials relevant to mathematics instruction	☐	☐	☐	☐
k)	Audio-visual resources for mathematics instruction .	☐	☐	☐	☐
l)	Science laboratory equipment and materials	☐	☐	☐	☐
m)	Computers for science instruction	☐	☐	☐	☐
n)	Computer software for science instruction	☐	☐	☐	☐
o)	Calculators for science instruction	☐	☐	☐	☐
p)	Library materials relevant to science instruction	☐	☐	☐	☐
q)	Audio-visual resources for science instruction	☐	☐	☐	☐

NRC Note:

Item 17 on the next page addresses the issue of INSTRUCTIONAL TIME in <L-GRADE> and <U-GRADE>. If these two grades do not occur in the same school, include only the relevant items/options in the questionnaire to be completed.

17. The students in your school:

Write in the answer for each of the following. Write 0 (zero) if there are none.

		boys	***girls***
a)	What is the total school enrollment (number of students)?	_____	_____
b)	On a typical school day, what percentage of students are absent from school for any reason?	_____ %	
c)	About what percentage of students who begin the year in your school also finish the year in your school?	_____ %	
d)	What percentage of the students in your school transfer into your school after the beginning of the school year?	_____ %	

Concerning <L-GRADE> students...

		boys	***girls***
e)	How many students are in <L-GRADE>?	_____	_____
f)	How many students in <L-GRADE> are repeating the grade?	_____	_____
g)	What is the approximate average class size in <L-GRADE>?	_____	
h)	How many <L-GRADE> students are in multi-grade classrooms?	_____	
i)	How many students in <L-GRADE> study mathematics?	_____	_____
j)	How many students in <L-GRADE> study science?	_____	_____

Concerning <U-GRADE> students...

		boys	***girls***
k)	How many students are in <U-GRADE>?	_____	_____
l)	How many students in <U-GRADE> are repeating the grade?	_____	_____
m)	What is the approximate average class size in <U-GRADE>?	_____	
n)	How many <U-GRADE> students are in multi-grade classrooms?	_____	
o)	How many students in <U-GRADE> study mathematics?	_____	_____
p)	How many students in <U-GRADE> study science?	_____	_____

18. About how often does the school administration or staff have to deal with the following behaviors among <U-GRADE> students?

NRC Note:	Item 19 on the next page addresses the issue of INSTRUCTIONAL TIME in <L-GRADE> and <U-GRADE>. If these two grades do not occur in the same school, include only the relevant items/options in the questionnaire to be completed.

19. In your school:

*If the instructional time is the same for both <L-GRADE> and <U-GRADE> students in your school, check the box to the right and **respond only** to questions under the column for the upper grade* ..... ☐

	<L-GRADE>	***<U-GRADE>***	
a) How many instructional days are in the school year?	_____	_____	*days*
b) How many ***full*** instructional days (over 4 hours) are there in the school week?	_____	_____	*days*
c) How many ***half*** instructional days (4 hours or less) are there in the school week?	_____	_____	*half days*
d) How many hours ***in total*** are there in the school week? *(include lunch breaks, study hall time, and after school activities)*	_____	_____	*hours*
e) How many ***instructional*** hours are there in the school week? (*exclude lunch breaks, study hall time, and after school activities)*.....	_____	_____	*hours*

20. Is the school week divided into instructional <hours/periods>?

Check one

Yes ☐ **No** ☐

If yes,

	<L-GRADE>	***<U-GRADE>***	
a) How many ***instructional*** periods are there in a week?	_____	_____	*periods*
b) How many minutes is a typical instructional period?	_____	_____	*minutes*

21. Does your school provide REMEDIAL TEACHING in MATHEMATICS?

Check one

Yes ☐ **No** ☐

If yes, how is this organized?

Yes ***No***

24. Does your school provide SPECIAL ENRICHMENT activities in SCIENCE?

Check one

Yes ☐ **No** ☐

If yes, how is it organized?

	Yes	***No***

26. If all students do not follow the same course of study in mathematics, how important are each of the following factors in deciding which courses of study in mathematics a <U-Grade> student takes?

Check one for each of the following.

	not important	***somewhat important***	***moderately important***	***very important***	***Not applicable***
a) academic performance	☐	☐	☐	☐	☐
b) performance on a standardized test	☐	☐	☐	☐	☐
c) performance on an entrance examination	☐	☐	☐	☐	☐
d) performance on an oral examination	☐	☐	☐	☐	☐
e) teacher recommendations	☐	☐	☐	☐	☐

28. If all students do not follow the same course of study in science, how important are each of the following factors in deciding which courses of study in science a <U-Grade> student takes?

Check one for each of the following.

	not important	*somewhat important*	*moderately important*	*very important*	*Not applicable*
a) academic performance	☐	☐	☐	☐	☐
b) performance on a standardized test	☐	☐	☐	☐	☐
c) performance on an entrance examination	☐	☐	☐	☐	☐
d) performance on an oral examination	☐	☐	☐	☐	☐
e) teacher recommendations	☐	☐	☐	☐	☐
f) parental wishes	☐	☐	☐	☐	☐
g) the student's own wishes	☐	☐	☐	☐	☐
h) curricular requirements	☐	☐	☐	☐	☐

International Option

29. Approximately what percentage of the students in your school...

Indicate a percentage for each of the following. Write 0 (zero) if there are none.

a) come from <disadvantaged economic backgrounds> ..... _____ %
b) come from homes where neither parent received more than primary education ..... _____ %
c) come from one-parent families ..... _____ %
d) attended preschool ..... _____ %
e) have a first language different from the language taught in the school ..... _____ %
f) have learning problems ..... _____ %
g) have health problems ..... _____ %
h) have nutrition problems ..... _____ %

NRC Note: <disadvantaged economic backgrounds> must be defined by NRCs in a way that is meaningful in their countries. It is understood that such a definition is not always possible.

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30. On what basis are pupils admitted to your school?

Check only one box in each line

		Yes	***No***
a)	Residence in a particular area	☐	☐
b)	Student's academic performance	☐	☐
c)	Interview with student	☐	☐
d)	Interview with parent(s)	☐	☐
e)	Preference given to students with older brothers or sisters in the school	☐	☐
f)	Preference given according to date of application	☐	☐
g)	Recommendation of previous teachers	☐	☐
h)	Preference given to students from a particular school	☐	☐
i)	Preference given to children of former students	☐	☐
j)	Performance on a standardized test	☐	☐
k)	Performance on an entrance examination	☐	☐
l)	Performance on an oral examination	☐	☐
m)	Other	☐	☐

THANK YOU for your thought, time, and effort in answering these questions.