**Memorandum United States Department of Education**

 **Institute of Education Sciences**

 **National Center for Education Statistics**

**DATE:** November 18, 2021

**TO:** Robert Sivinski, OMB

**THROUGH:** Carrie Clarady, NCES

**FROM:** Lydia Malley, NCES

**SUBJECT:** Trends in International Mathematics and Science Study (TIMSS) Field Test Data Collection and Main Study Sampling and Recruitment - FT International Questionnaire Update 30D Revision Change Memo (OMB# 1850-0695 v.18).

The Trends in International Mathematics and Science Study (TIMSS), conducted by the National Center for Education Statistics (NCES), within the U.S. Department of Education (ED), is an international assessment of fourth and eighth grade students’ achievement in mathematics and science. Since its inception in 1995, TIMSS has continued to assess students every 4 years (1995, 1999, 2003, 2007, 2011, 2015, and 2019), with the next TIMSS assessment, TIMSS 2023, being the eighth iteration of the study. In TIMSS 2023, approximately 65 countries or education systems will participate. The United States will participate in TIMSS 2023 to continue to monitor the progress of its students compared to that of other nations and to provide data on factors that may influence student achievement.

TIMSS is led by the International Association for the Evaluation of Educational Achievement (IEA), an international collective of research organizations and government agencies that create the frameworks used to develop the assessment, the survey instruments, and the study timeline. IEA decides and agrees upon a common set of standards, procedures, and timelines for collecting and reporting data, all of which must be followed by all participating countries. As a result, TIMSS is able to provide a reliable and comparable measure of student skills in participating countries. In the U.S., NCES conducts this study in collaboration with the IEA and a number of contractors (RTI International, AnLar, Measurement Incorportated, and Strategic Communications) to ensure proper implementation of the study and adoption of practices in adherence to the IEA’s standards. Participation in TIMSS is consistent with NCES’s mandate of acquiring and disseminating data on educational activities and student achievement in the United States compared with foreign nations [The Educational Sciences Reform Act of 2002 (ESRA 2002, 20 U.S.C. §9543)].

Because TIMSS is a collaborative effort among many parties, the United States must adhere to the international schedule set forth by the IEA, including the availability of final field test and main study plans as well as draft and final questionnaires. In order to meet the international data collection schedule, to align with recruitment for other NCES studies (e.g., the National Assessment of Education Progress, NAEP), and for schools to put the TIMSS 2023 field test assessment on their Spring 2022 calendars, recruitment activities for the field test were approved in May 2021 (OMB# 1850-0695 v16) and began in June of 2021. The field test data collection and the main study sampling, recruitment, and data collection were approved in October 2021 (OMB# 1850-0695 v17). The field test data collection will be conducted in March and April 2022. Recruitment for the main study will begin in March 2022 with data collection occurring in March through June 2023.

This submission is to request approval for the changes to the study questionnaires between 2019 and 2023, with a 30-day public comment period. The documents attached here are the final international versions of the TIMSS 2023 Field Test instruments, as provided by IEA. Adaptation activities to fit the field test questionnaire text into the U.S. education context are currently underway. The final internationally approved U.S. questionnaires for the field test and main study will be submitted via change memos in January 2022 and January 2023, respectively.

Changes to the Student, Teacher, and School Questionnaires are provided in the table below. The draft 2023 field test questionnaires and proposed national items are provided in Appendix C.

Tables of Questionnaire Changes

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| **TIMSS 2023 Student Questionnaire – Grade 4** |
| **Changes from TIMSS 2019 Data Collection**  |
| **COVERS AND DIRECTIONS** |
| **TIMSS 2023 Field Test Location** | **TIMSS 2019 Data Collection Location** | **Type of Change** | **TIMSS 2023 Field Test Text** | **TIMSS 2019 Data Collection Text** |
| Front cover | Front cover | Field Test Version' has been added | Field Test Version | - |
| Copyright year has been changed from '2018' to '2021' | IEA, 2021 | IEA, 2018 |
| Directions | Directions | No changes | - | - |
| Example 3b | Example 3b | Revised | Ice cream tastes good | I like ice cream |
| Example 3c | Example 3c | Revised | Waking up early is difficult | I do not like waking up early |
| Footers | Footers | Add 'Field Test' | Field Test <Grade 4> Student Questionnaire | <Grade 4> Student Questionnaire |
| Back cover | Back cover | Copyright year has been changed from '2018' to '2021' | IEA, 2021 | IEA, 2018 |
| **ITEMS** |
| **TIMSS 2023 Field Test Question #** | **TIMSS 2019 Data Collection Question #** | **Type of Change** | **TIMSS 2023 Field Test Question or Response Option** | **TIMSS 2019 Data Collection Question or Response Option** |
|   | 1A | Revised question wording and response options | Which of these describes you?Fill one circle only.- Girl- Boy- Other- Prefer not to say | Are you a girl or a boy?Fill one circle only.- Girl- Boy |
|   | 2b | Revised response options | - 2010- 2011- 2012- 2013- 2014- 2015- 2016- Other | - 2006- 2007- 2008- 2009- 2010- 2011- 2012- Other |
|   | 5a | Revised item wording | Your own computer or tablet | A computer or tablet |
|   | - | New item added | A shared computer or tablet you can use | - |
|   | 5e | Revised item wording | Your own smartphone | A mobile phone |
|   | - | New item added | A shared smartphone you can use | - |
|   | 5d | Revised item wording | Access to the internet | Internet connection |
|   | 5f | Revised item wording | A gaming system (e.g., PlayStation, Nintendo Switch, Xbox) | A gaming system (e.g., PlayStation, Wii, Xbox) |
|   | G5c | Item deleted | - | VCR, DVD, or Blu-ray player |
|   | 6 | Revised question wording | Were your parents/guardians born in the United States? | Were your parents/guardians born in the United States (“United States” includes the 50 states, its territories, the District of Columbia, and U.S. military bases abroad.) |
|   | - | New item added | How much do you agree with these statements?Fill one circle for each line.- Agree a lot- Agree a little- Disagree a little- Disagree a lota) I can write and edit text on a computerb) I can create school presenations using a computer, tablet, or smartphonec) I can creat tables, charts, and graphs using a computer, tablet, or smartphoned) I can find information that I need onlinee) I can tell if a website is trustworthyf) I can easily do new things on computer, laptops, or smartphonesg) I can help my friends or family members with their computer, laptops, or smartphones | - |
|   | 13b | Revised item wording | Teachers at this school care about me | Teachers at my school are fair to me |
|   | - | New item added | I have friends at this school | - |
|   | - | New item added | Students in this school respect me | - |
|   | - | New item added | Students at this school like me the way I am | - |
|   | 14 | Revised question wording | During this school year, how often have other students from your school done any of the following things to you in person, through messaging, or through social media? | During this school year, how often have other students from your school done any of the following things to you, including through textings or the Internet? |
|   | 16b | Revised item wording | I do not like doing mathematics | I wish I did not have to study mathematics |
|   | 17a | Revised item wording | My teacher makes it clear what we should learn in each lesson | I know what my teacher expects me to do |
|   | - | New item added | My teacher gives me helpful feedback on my work | - |
|   | - | New item added | My teacher lets me show what I have learned | - |
|   | - | New item added | My teacher asks me to explain my answers | - |
|   | 18b | Revised item wording | There is too much noise for student to work well | There is disruptive noise |
|   | 18c | Item deleted | - | It is too disorderly for students to work well |
|   | 18d | Revised item wording | My teacher has to wait a long time for students to be quiet | My teacher has to wait a long time for students to quiet down |
|   | 18f | Revised item wording | Students do not follow the classroom rules | My teacher has to keep telling us to follow the classroom rules |
|   | - | New item added | Other students' behavior makes it hard for me to concentrate | - |
|   | 19d | Revised item wording | Mathematics is easy for me | I learn things quickly in mathematics |
|   | 19e | Item deleted | - | Mathematics makes me nervous |
|   | 19g | Revised item wording | I am good at explaining mathematics to others | My teacher tells me I am good at mathematics |
|   | 21b | Revised item wording | I do not like doing science | I wish I did not have to study science |
|   | 22a | Revised item wording | My teacher makes it clear what we should learn in each lesson | I know what my teacher expects me to do |
|   | - | New item added | My teacher gives me helpful feedback on my work | - |
|   | - | New item added | My teacher lets me show what I have learned | - |
|   | - | New item added | My teacher asks me to explain my answers | - |
|   | - | New question added | How often do these things happen in your science lessons?Fill one circle for each line.- Every or almost every lesson- About half the lessons- Some lessons- Nevera) Students don't listen to what the teacher saysb) There is too much noise for students to work wellc) My teacher has to wait a long time for students to be quietd) Students interrupt the teachere) Students do not follow the classroom rulesf) Other students' behavior makes it hard for me to concentrate | - |
|   | 23d | Revised and renumbered | Science is easy for me | I learn things quickly in science |
|   | 23e | New item added | I am good at explaining science to others | My teacher tells me I am good at science |
|   | 24 | Question deleted |   | How hard was this test compared to most other tests you have taken this year in school?Fill in one oval only.Easier than other tests About as hard as other tests Harder than other tests Much harder than other tests  |
|   | 25 | Question deleted |   | How hard did you try on this test compared to how hard you tried on most other tests you have taken this year in school?Fill in one oval only.Not as hard as on other tests About as hard as on other tests Harder than on other tests Much harder than on other tests  |
|   | 26 | Question deleted |   | How important was it to you to do well on this test?Fill in one oval only.Not very important Somewhat important Important Very important  |

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| **TIMSS 2023 Student Questionnaire – Grade 8** |
| **Changes from TIMSS 2019 Data Collection**  |
| **COVERS AND DIRECTIONS** |
| **TIMSS 2023 Field Test Location** | **TIMSS 2019 Data Collection Location** | **Type of Change** | **TIMSS 2023 Field Test Text** | **TIMSS 2019 Data Collection Text** |
| Front cover | Front cover | Field Test Version' has been added | Field Test Version | - |
| Copyright year has been changed from '2018' to '2021' | IEA, 2021 | IEA, 2018 |
| Directions | Directions | No changes | - | - |
| Example 3b | Example 3b | Revised | Ice cream tastes good | I like ice cream |
| Example 3c | Example 3c | Revised | Waking up early is difficult | I do not like waking up early |
| Footers | Footers | Add 'Field Test' | Field Test Grade 8 Student Questionnaire | Grade 8 Student Questionnaire |
| Back cover | Back cover | Copyright year has been changed from '2018' to '2021' | IEA, 2021 | IEA, 2018 |
| **ITEMS** |
| **TIMSS 2023 Field Test Question #** | **TIMSS 2019 Data Collection Question #** | **Type of Change** | **TIMSS 2023 Field Test Question or Response Option** | **TIMSS 2019 Data Collection Question or Response Option** |
|   | 1A | Revised question wording and response options | Which of these describes you?Fill one circle only.- Girl- Boy- Other- Prefer not to say | Are you a girl or a boy?Fill one circle only.- Girl- Boy |
|   | 2b | Revised response options | - 2005- 2006- 2007- 2008- 2009- 2010- 2011- 2012- 2013- Other | -2001- 2002- 2003- 2004- 2005- 2006- 2007- 2008- 2009- Other |
|   | 5a | Revised item wording | Your own computer or tablet | A computer or tablet |
|   | - | New item added | A shared computer or tablet you can use | - |
|   | 5e | Revised item wording | Your own smartphone | A mobile phone |
|   | - | New item added | A shared smartphone you can use | - |
|   | 5d | Revised item wording | Access to the internet | Internet connection |
|   | 5f | Revised item wording | A gaming system (e.g., PlayStation, Nintendo Switch, Xbox) | A gaming system (e.g., PlayStation, Wii, Xbox) |
|   | G5c | Item deleted | - | VCR, DVD, or Blu-ray player |
|   | 8 | Revised question wording | Were your parents/guardians born in the United States? | Were your parents/guardians born in the United States (“United States” includes the 50 states, its territories, the District of Columbia, and U.S. military bases abroad.) |
|   | 15 | Revised question wording and response options | How often do you use the internet to do the following tasks for mathematics or science schoolwork (including classroom tasks, homework, and studying outside of class)?- At least once a week- Once or twice a month- Never or almost never | Do you use the Internet to do any of the following tasks for schoolwork (including classroom tasks, homework, studying outsie of class)?- Yes- No |
|   | 15d | Revised item wording | Ask my teacher questions | Communicate with the teacher |
|   | 15e | Revised item wording | Find information, articles, or tutorials about mathematics or science | Find information, articles, or tutorials to aid in understanding mathematics or science |
|   | - | New question added | How much do you agree with these statements?Fill one circle for each line.- Agree a lot- Agree a little- Disagree a little- Disagree a lota) I can write and edit text on a computerb) I can create school presenations using a computer, tablet, or smartphonec) I can creat tables, charts, and graphs using a computer, tablet, or smartphoned) I can find information that I need onlinee) I can tell if a website is trustworthyf) I can easily do new things on computer, laptops, or smartphonesg) I can help my friends or family members with their computer, laptops, or smartphones | - |
|   | 16d | Revised item wording | Teachers at this school care about me | Teachers at my school are fair to me |
|   | - | New item added | I have friends at this school | - |
|   | - | New item added | Students in this school respect me | - |
|   | - | New item added | Students at this school like me the way I am | - |
|   | 17 | Revised question wording | During this school year, how often have other students from your school done any of the following things to you in person, through messaging, or through social media? | During this school year, how often have other students from your school done any of the following things to you, including through textings or the Internet? |
|   | 17e | Revised item wording | Said hurtful things to or about me because of my cultural background (e.g., race, ethnicity, religion) | Insulted a member of my family |
|   | 16b | Revised item wording | I do not like doing mathematics | I wish I did not have to study mathematics |
|   | 20a | Revised item wording | My teacher makes it clear what we should learn in each lesson | I know what my teacher expects me to do |
|   | 20f | Item deleted | - | My teacher links new lessons to what I already know |
|   | - | New item added | My teacher gives me helpful feedback on my work | - |
|   | - | New item added | My teacher lets me show what I have learned | - |
|   | - | New item added | My teacher asks me to explain my answers | - |
|   | - | New item added | My teacher asks us to apply what we have learned in new situations | - |
|   | 21b | Revised item wording | There is too much noise for student to work well | There is disruptive noise |
|   | 21c | Item deleted | - | It is too disorderly for students to work well |
|   | 21d | Revised item wording | My teacher has to wait a long time for students to be quiet | My teacher has to wait a long time for students to quiet down |
|   | 21f | Revised item wording | Students do not follow the classroom rules | My teacher has to keep telling us to follow the classroom rules |
|   | - | New item added | Other students' behavior makes it hard for me to concentrate | - |
|   | 22b | Revised item wording | Mathematics is harder for me than for many of my classmates | Mathematics is more difficult for me than for many of my classmates |
|   | 22d | Revised item wording | Mathematics is easy for me | I learn things quickly in mathematics |
|   | 19e | Item deleted | - | Mathematics makes me nervous |
|   | 22g | New item added | I am good at explaining mathematics to others | My teacher tells me I am good at mathematics |
|   | 25b | Revised item wording | I do not like doing science | I wish I did not have to study science |
|   | 26a | Revised item wording | My teacher makes it clear what we should learn in each lesson | I know what my teacher expects me to do |
|   | 26f | Item deleted | - | My teacher links new lessons to what I already know |
|   | - | New item added | My teacher gives me helpful feedback on my work | - |
|   | - | New item added | My teacher lets me show what I have learned | - |
|   | - | New item added | My teacher asks me to explain my answers | - |
|   | - | New item added | My teacher asks us to apply what we have learned in new situations | - |
|   |   | New question added | How often do these things happen in your science lessons?Fill one circle for each line.Every or almost every lessonAbout half the lessonsSome lessonsNevera) Students don’t listen to what the teacher saysb) There is too much noise for students to work wellc) My teacher has to wait a long time for students to be quietd) Students interrupt the teachere) Students do not follow the classroom rulesf) Other students’ behavior makes it hard for me to concentrate |   |
|   | 27d | Revised item wording | Science is easy for me | I learn things quickly in mathematics |
|   | 27f | Revised item wording | I am good at explaining science to others | My teacher tells me I am good at science |
|   | 29B | Question deleted |   | When your teacher gives you homework in the following subjects, about how many minutes do you usually spend on your homework?Fill in only one oval for each row.My teacher never gives me homework in...1-15 minutes16-30 minutes31-60 minutes61-90 minutesMore than 90 minutesa) Mathematicsb) Science |

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| **TIMSS 2023 Teacher Questionnaire – Grade 4** |
| **Changes from TIMSS 2019 Data Collection**  |
| **COVERS AND DIRECTIONS** |
| **TIMSS 2023 Field Test Location** | **TIMSS 2019 Data Collection Location** | **Type of Change** | **TIMSS 2023 Field Test Text** | **TIMSS 2019 Data Collection Text** |
| Front cover | Front cover | Field Test Version' has been added | Field Test Version | - |
| Copyright year has been changed from '2018' to '2021' | IEA, 2021 | IEA, 2018 |
| Directions | Directions | Change 'TIMSS 2019' to 'TIMSS 2023' in first paragraph and footer | TIMSS 2023 | TIMSS 2019 |
| Footers | Footers | Add 'Field Test' | Field Test Grade 4 Teacher Questionnaire | Grade 4 Teacher Questionnaire |
| Back cover | Back cover | Copyright year has been changed from '2018' to '2021' | IEA, 2021 | IEA, 2018 |
| **ITEMS** |
| **TIMSS 2023 Field Test Question #** | **TIMSS 2019 Data Collection Question #** | **Type of Change** | **TIMSS 2023 Field Test Question or Response Option** | **TIMSS 2019 Data Collection Question or Response Option** |
|   | 2 | Revised question wording | By the end of this school year, how many years will you have been teaching altogether? | At the end of this school year, how many years will you have been teaching altogether? |
|   | 3 | Revised question wording and response options | Which of these describes you?- Female- Male- Other- Prefer not to say | Are you female or male?- Female- Male |
|   | 7l | Item deleted | - | Collaboration between school leadership (including master teachers) and teachers to plan instruction |
|   | 8 | Revised question wording | How much do you agree or disagree with the following statements about your current school? | Thinking about your current school, indicate the extent to which you agree or disagree with each of the following statements. |
|   | 8a | Item deleted | - | This school is located in a safe neighborhood |
|   | 9 | Revised question wording | How often do you have these feelings about being a teacher? | How often do you feel the following way about being a teacher? |
|   | - | New item added | I feel appreciated as a teacher | - |
|   | - | New item added | I enjoy the challenges of teaching | - |
|   | 10 | Revised question wording | How much do you agree or disagree with the statements below? | Indicate the extent to which you agree or disagree with each of the following statements. |
|   | 13c | Revised item wording | Communicate goals of objectives for the lesson to the students | Bring interesting materials to class |
|   | - | New item added | Distracted students | - |
|   | Before 17 | Revised section heading | Using Calculators and Digital Devices for Teaching Mathematics to the TIMSS Class | Using Calculators and Computers for Teaching Mathematics to the TIMSS Class |
|   | Before 17 | Instructions deleted |   | Questions 17 - 18 ask about calculator and computer use for teaching mathematics to the fourth-grade students in the TIMSS class. |
|   | 17 | Revised question wording and response options | Are students in this class permitted to use calculators during mathematics lessons?Check one circle only.- Yes, with unrestricted use- Yes, with restricted use- No | Are students in this class permitted to use calculators during mathematics lessons?Check one circle only.- Yes, with unrestricted use- Yes, with restricted use- No, calculators are not permitted |
|   | 18A | Revised question wording | Do the students in this class have digital devices (including computers, tablets, or smartphones) to use during mathematics lessons? | Do the students in this class have computers (including tablets) available to use during their mathematics lessons? |
|   | 18B | Revised question wording | If yes,What access do the students have to digital devices? | If yes,What access do the students have to computers? |
|   | 18Ba | Revised item wording | The class has digital devices for each student to use | Each student has a computer |
|   | 18Bb | Revised item wording | The class has digital devices that students can share | The class has computers that students can share |
|   | 18Bc | Revised item wording | The school has digital devices that the class can use sometimes | The school has computers that the class can use sometimes |
|   | - | New item added | Students bring their own digital devices | - |
|   | 18C | Question deleted | - | How often do you do activities on computers during mathematics lessons to support learning for:-Every or almost every day-Once or twice a week-Once or twice a month-Never or almost nevera) Whole classb) Low-performing studentsc) High-performing studentsd) Students with special needs |
|   | - | New question added added | How often do you have students use digital devices during mathematics instruction?Check one circle only.- At least once a week- Once or twice a month- A few times a year- Never or almost never | - |
|   | - | New question added added | How often do you ask the students in your class to use digital devices to do these mathematics activities?Check one circle for each line.- At least once a week- Once or twice a month- A few times a year- Never or almost nevera) Practice problems and proceduresb) Solve extended or contextualized problemsc) Create graphs, tables, or other data displaysd) Play games involving mathematics calculations or conceptse) Read the textbook or watch instructional videos | - |
|   | - | New question added added | How much do each of these keep you from incorporating digital devices into mathematics instruction?- Not at all- Somewhat- A lota) Not knowing how to use digital devices to improve student learningb) Not enough access to digital devicesc) Keeping students on task when the class is using digital devicesd) Lack of technology support from the school | - |
|   | Before 19 | Instructions deleted |   | Question 19 asks about the topics taught and the content covered in teaching mathematics to the fourth-grade students in the TIMSS class. |
|   | 19 | Revised question wording and response options | The following list includes topics addressed by the TIMSS mathematics test. Choose the response that best describes when each topic is taught for students in this class.If a topic was in the curriculum before fourth grade, choose "Mostly taught before this year". If you have taught a topic this year, choose "Mostly taught this year". If a topic is not in the fourth grade curriculum for this year or you have not yet taught a topic, choose "Not yet taught".- Mostly taught before this year- Mostly taught this year- Not yet taught | The following list includes the main topics addressed by the TIMSS mathematics test. Choose the response that best describes when the students in this class have been taught each topic. If a topic was in the curriculum before the <fourth grade>, please choose "Mostly taught before this year." If a topic was taught half this year but not yet completed, please choose "Mostly taught this year." If a topic is not in the curriculum, please choose "Not yet taught or just introduced."- Mostly taught before this year- Mostly taught this year- Not yet taught or just introduced |
|   | 19Aa | Revised item wording | Recognize place value and order whole numbers | Concepts of whole numbers, including place value and ordering |
|   | 19Ab | Revised item wording | Add and subtract up to 4-digit numbers | Adding, subtracting, muliplying, and dividing with whole numbers |
|   | 19Ac | Revised item wording | Multiply up to 3-digit by 1-digit and 2-digit by 2-digit numbers | Concepts of multiples and factors, odd and even numbers |
|   | 19Ad | Revised item wording | Divide up to 3-digit by 1-digit numbers | Number sentences (finding the missing number, representing proble situations with number sentences) |
|   | 19Ae | Revised item wording | Solve problems with odd/even numbers, multiples, or factors | Number patterns (extending number patterns and finding missing terms) |
|   | 19Af | Revised item wording | Round or make estimations with whole numbers | Concepts of fractions, including representing, comparing and ordering, adding and subtracting simple fractions |
|   | 19Ag | Revised item wording | Find the missing number or operation in a number sentence | Concepts of decimals, including place value and ordering, adding and subtracting with decimals |
|   | - | New item added | Extend a number pattern or find the missing number in a pattern | - |
|   | - | New item added | Represent, compare, and order fractions | - |
|   | - | New item added | Add and subtract simple fractions | - |
|   | - | New item added | Represent, compare, and order decimals up to two decimal places | - |
|   | - | New item added | Add and subtract with decimals up to two decimal places | - |
|   | 19Ba | Revised item wording | Measure, estimate, add, and subtract lengths | Solving problems involving length, including measuring and estimating |
|   | 19Bb | Revised item wording | Add and subtract mass, volume, or time in appropriate units | Solving problems involving mass, volume, and time |
|   | 19Bc | Revised item wording | Find perimeters of polygons | Finding and estimating perimeter, area, and volume |
|   | 19Bd | Revised item wording | Find areas of shapes covered with squares or volumes of shapes filled with cubes | Parallel and perpendicular lines |
|   | 19Be | Revised item wording | Recognize and draw parallel and perpendicular lines | Comparing and drawing angles |
|   | 19Bf | Revised item wording | Compare and draw angles | Elementary properties of common geometric shapes |
|   | 19Bg | Revised item wording | Describe and draw common two-dimensional shapes (e.g., circles, triangles, quadrilaterals) | Three-dimensional shapes, including relationships with their two-dimensional representations |
|   | - | New item added | Describe and draw common three-dimensional shapes (e.g., cubes, rectangular solids, cones, cylinders, spheres) | - |
|   | 19Ca | Revised item wording | Read and interpret data displays | Reading and interpreting data from tables, pictographs, bar graphs, line graphs, and pie charts |
|   | 19Cb | Revised item wording | Create or complete data displays | Organizing and representing data to help answer questions |
|   | 19Cc | Revised item wording | Draw conclusions from two or more data sources | Drawing conclusions from data displays |
|   | Before 20 | Instructions deleted |   | Question 20 asks about mathematics homework for the fourth-grade students in the TIMSS class. |
|   | 20B | Question deleted | - | When you assign mathematics homework to the students in this class, about how many minutes do you usually assign? (Consider the time it would take an average student in your class.) |
|   | Before 21 | Instructions deleted |   | Questions 21-22 ask about mathematics assessment for the fourth-grade students in the TIMSS class. |
|   | 21 | Revised question wording | How much importance do you place on these strategies to assess students' learning in mathematics? | How much importance do you place on the following assessment strategies in mathematics? |
|   | 24 | Question deleted | - | In the past two years, how many hours in total have you spent in formal in-service/professional development (e.g., workshops, seminars) for mathematics? |
|   | Before 25 | Instructions deleted | - | Questions 25 - 26 ask about science instruction for the fourth-grade students in the TIMSS class. |
|   | 26d | Item deleted | - | Design or plan experiments or investigations |
|   | 26e | Item deleted |   | Conduct experiments or investigations |
|   | 26f | Item deleted |   | Present data from experiments or investigations |
|   | 26g | Item deleted |   | Interpret data from experiments or investigations |
|   | 26h | Item deleted |   | Use evidence from experiments or investigations to support conclusions |
|   | 26j | Revised item wording | Memorize facts and principles | Have students memorize facts and principles |
|   | - | New question added added | How much emphasis do you place on the following when teaching science to students in this class?Check one circle for each line.- A lot- Some- Nonea) Encouraging students to ask questions about scientific phenomenab) Having students predict the outcomes of experiments or investigationsc) Having students create representations (e.g., models, graphs) to explain scientific phenomenad) Having students use scientific concepts to explain phenomena | - |
|   | - | New question added added | How often do you provide opportunities for students to do the following when teaching this class?Check one circle for each line.- Once a week or more- Once or twice a month- Once or twice every few months- Never or almost nevera) Experiments or investigations that are carried out in a single lessonb) Experiments or investigations that are carried out over a series of lessonsc) Hands-on activities to explore science conceptsd) Experiments with a prescribed set of steps to answer a given questione) Experiments where students determine their own procedures to answer a given question | - |
|   | - | New question added added | How often do you go to a separate science laboratory when conducting experiments or investigations with students in this class?Check one circle only.- Always or almost always- Sometimes- Never or almost never | - |
|   | Before 27 | Revised section heading | Using Digital Devices for Teaching Science to the TIMSS Class | Using Computers for Teaching Science to the TIMSS Class |
|   | Before 27 | Instructions deleted |   | Question 27 asks about computer use for teaching science to the fourth-grade students in the TIMSS class. |
|   | 27A | Revised question wording | Do the students in this class have digital devices (including computers, tablets, or smartphones) available to use during science lessons? | Do the students in this class have computers (including tablets) available to use during their science lessons? |
|   | 27B | Revised question wording | If yes,What access do the students have to digital devices? | If yes,What access do the students have to computers? |
|   | 29Ba | Revised item wording | The class has digital devices for each student to use | Each student has a computer |
|   | 27Bb | Revised item wording | The class has digital devices that students can share | The class has computers that students can share |
|   | 27Bc | Revised item wording | The school has digital devices that the class can use sometimes | The school has computers that the class can use sometimes |
|   | - | New item added | Students bring their own digital devices | - |
|   | 27C | Question deleted | - | How often do you do activities on computers during science lessons to support learning for:-Every or almost every day-Once or twice a week-Once or twice a month-Never or almost nevera) Whole classb) Low-performing studentsc) High-performing studentsd) Students with special needs |
|   | - | New question added added | How often do you have students use digital devices during science instruction?Check one circle only.- At least once a week- Once or twice a month- A few times a year | - |
|   | - | New question added | How often do you ask the students in your class to use digital devices to do these science activities?Check one circle for each line.- At least once a week- Once or twice a month- A few times a year- Never or almost nevera) Solve extended or contextualized problemsb) Create graphs, tables, or other data displaysc) Play games involving science conceptsd) Conduct virtual experiments or other simulationse) Read the textbook or watch instructional videos |   |
|   | - | New question added | How much do each of these keep you from incorporating digital devices into science instruction?- Not at all- Somewhat- A lota) Not knowing how to use digital devices to improve student learningb) Not enough access to digital devicesc) Keeping students on task when the class is using digital devicesd) Lack of technology support from the school |   |
|   | Before 28 | Instructions deleted |   | Question 28 asks about the topics taught and the content covered in teaching science to the fourth-grade students in the TIMSS class. |
|   | 28 | Revised question wording and response options | The following list includes topics addressed by the TIMSS science test. Choose the response that best describes when each topic is taught for students in this class.If a topic was in the curriculum before fourth grade, choose "Mostly taught before this year". If you have taught a topic this year, choose "Mostly taught this year". If a topic is not in the fourth grade curriculum for this year or you have not yet taught a topic, choose "Not yet taught".- Mostly taught before this year- Mostly taught this year- Not yet taught | The following list includes the main topics addressed by the TIMSS science test. Choose the response that best describes when the students in this class have been taught each topic. If a topic was in the curriculum before the <fourth grade>, please choose "Mostly taught before this year." If a topic was taught half this year but not yet completed, please choose "Mostly taught this year." If a topic is not in the curriculum, please choose "Not yet taught or just introduced."- Mostly taught before this year- Mostly taught this year- Not yet taught or just introduced |
|   | 28Aa | Revised item wording | Basic differences between living and nonliving things | Physical and behavioral characteristics of living things and major groups of living things (e.g., mammals, birds, insects, flowering plants) |
|   | 28Ab | Revised item wording | Defining characteristics of major groups of living things | Major body structures and their functions in humans, other animals, and plants |
|   | 28Ac | Revised item wording | Functions of major structures in living things (e.g., roots in plants) | Life cycles of common plants and animals (e.g., flowering plants, butterflies, frogs) |
|   | 28Ad | Revised item wording | Life cycle stages of common plants and animals (e.g., flowering plants, frogs) | Characteristics of plans and animals that are inherited |
|   | 28Ae | Revised item wording | Inherited characteristics of living things | Interactions between organisms and their environments (e.g., physical features and behaviors that help living things survive in their environments) |
|   | 28Af | Revised item wording | How living things survive in their environments (e.g., physical characteristics, behaviors) | Relationships in ecosystems (e.g., simple food chains, predator-prey relationships, competition) |
|   | 28Ag | Revised item wording | How human actions impact the environment | Human health (transmission and prevention of diseases, everyday behaviors that promote good health) |
|   | - | New item added | Common ecosystems and their organisms (e.g., forest, desert) | - |
|   | - | New item added | Interpreting simple food chains | - |
|   | - | New item added | Competition within ecosystems | - |
|   | - | New item added | Ways for humans to maintain good health and avoid illness | - |
|   | 28Ba | Revised item wording | Solids, liquids, gases, and how their shapes and volumes differ | States of matter (solid, liquid, gas) and their properties (volume, shape) |
|   | 28Bb | Revised item wording | Grouping objects based on their physical properties | Classifying materials based on physical properties (e.g., weight/mass, volume, state of matter, conductivity of heat or electricity) |
|   | 28Bc | Revised item wording | Examples of mixtures and how they can be separated (e.g., filtration, evaporation) | Mixtures, including methods for separating a mixture into its components (e.g., sifting, filtering, evaporation, using a magnet) |
|   | 28Be | Revised item wording | Magnetic attraction and repulsion | Physical changes in everyday life (e.g., changes of state, dissolving) |
|   | 28Bf | Revised item wording | Examples of physical and chemical changes in everyday life | Chemical changes in everyday life (e.g., decating, burning, rusting, cooking) |
|   | 28Bg | Revised item wording | How to make solids dissolve faster in liquids (e.g., stirring, heating) | Common sources of energy (e.g., the Sun, wind, oil) and uses of energy (heating and cooling homes, providing light) |
|   |   | New item added | Concentration of solutions |   |
|   | 28Bh | Revised item wording | Sources of energy (e.g. the Sun, wind, water, coal, oil, and gas) | Light and sound in everyday life (e.g., shadows and reflections, vibrating objects make sound) |
|   | 28Bi | Revised item wording | How light is related to shadows, reflections, and rainbows | Heat transfer (e.g., energy flows from a hot object to a colder object) |
|   | 28Bj | Revised item wording | How vibrations are related to sound | Electricity and simple electrical circuits (e.g., a circuit must be complete to work correctly) |
|   | 28Bk | Revised item wording | Movement of heat from hotter to cooler objects | Forces that cause objects to move (e.g., gravity, pushing/pulling) or change their motion (e.g., friction) |
|   | 28Bl | Revised item wording | Simple electrical circuits | Simple machines (e.g., levers, pulleys, wheels, ramps) that help make motion easier |
|   |   | New item added | How motion is affected by forces (e.g., gravity, pushing, pulling, friction) | - |
|   | - | New item added | Examples of simple machines (e.g., levers, ramps) | - |
|   | 28Ca | Revised item wording | Composition of Earth's surface (i.e., land, fresh water, salt water) | Physical makeup of Earth's surface (e.g., land and water in unequal proportions, sources of fresh and salt water) |
|   | 28Cb | Revised item wording | Earth's resources and their use by humans | Earth's resources used in everyday life (e.g., water, wind, soil, forests, oil, natural gas, minerals) |
|   | 28Cc | Revised item wording | Renewable and nonrenewable resources | Changes in Earth's surface over time (e.g., mountain building, weathering, erosion) |
|   | 28Cd | Revised item wording | How wind and water change Earth's surface over time | Fossils and what they can tell us about past conditions on Earth |
|   | 28Ce | Revised item wording | What fossils can show about Earth's history | Weather and climate (e.g., daily, seasonal, and locational variations bersus long term trends) |
|   | 28Cf | Revised item wording | How weather changes day to day and with geographic location | Objects in the Solar System (the Sun, the Earth, the Moon, and other planets) and their movements |
|   | 28Cg | Revised item wording | Effects of increasing temperatures on Earth | Earth's motion and related patterns observed on Earth (e.g., day and night, seasons) |
|   | - | New item added | The Solar System (the Sun, Earth, Moon, and other plants) | - |
|   | - | New item added | How Earth's motion causes day and night | - |
|   | - | New item added | How Earth's annual movement around the Sun causes seasons or seasonal change | - |
|   | 29B | Question deleted | - | When you assign science homework to the students in this class, about how many minutes do you usually assign? (Consider the time it would take an average student in your class.) |
|   | Before 30 | Instructions deleted |   | Questions 30-31 ask about science assessment for the fourth-grade students in the TIMSS class. |
|   | 30 | Revised question wording | How much importance do you place on these strategies to assess students' learning in science? | How much importance do you place on the following assessment strategies in science? |
|   | 33 | Question deleted | - | In the past two years, how many hours in total have you spent in formal in-service/professional development (e.g., workshops, seminars) for science? |

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| **TIMSS 2023 Teacher Questionnaire – Mathematics – Grade 8** |
| **Changes from TIMSS 2019 Data Collection**  |
| **COVERS AND DIRECTIONS** |
| **TIMSS 2023 Field Test Location** | **TIMSS 2019 Data Collection Location** | **Type of Change** | **TIMSS 2023 Field Test Text** | **TIMSS 2019 Data Collection Text** |
| Front cover | Front cover | Field Test Version' has been added | Field Test Version | - |
| Copyright year has been changed from '2018' to '2021' | IEA, 2021 | IEA, 2018 |
| Directions | Directions | Replace 'TIMSS 2019' with 'TIMSS 2023' in first paragraph | TIMSS 2023 | TIMSS 2019 |
| Footers | Footers | Add 'Field Test' | Field Test Grade 8 Teacher Questionnaire | Grade 8 Teacher Questionnaire |
| Back cover | Back cover | Copyright year has been changed from '2018' to '2021' | IEA, 2021 | IEA, 2018 |
| **ITEMS** |
| **TIMSS 2023 Field Test Question #** | **TIMSS 2019 Data Collection Question #** | **Type of Change** | **TIMSS 2023 Field Test Question or Response Option** | **TIMSS 2019 Data Collection Question or Response Option** |
|   | 2 | Revised question wording | By the end of this school year, how many years will you have been teaching altogether? | At the end of this school year, how many years will you have been teaching altogether? |
|   | 3 | Revised question wording and response options | Which of these describes you?- Female- Male- Other- Prefer not to say | Are you female or male?- Female- Male |
|   | 7l | Item deleted | - | Collaboration between school leadership (including master teachers) and teachers to plan instruction |
|   | 8 | Revised question wording | How much do you agree or disagree with the following statements about your current school? | Thinking about your current school, indicate the extent to which you agree or disagree with each of the following statements. |
|   | 8a | Item deleted | - | This school is located in a safe neighborhood |
|   | 9 | Revised question wording | How often do you have these feelings about being a teacher? | How often do you feel the following way about being a teacher? |
|   | - | New item added | I feel appreciated as a teacher | - |
|   | - | New item added | I enjoy the challenges of teaching | - |
|   | 10 | Revised question wording | How much do you agree or disagree with the statements below? | Indicate the extent to which you agree or disagree with each of the following statements. |
|   | Before 10 | Instructions deleted |   | Questions 11-14 ask about instruction for the eighth-grade students in the TIMSS class. |
|   |   | New item added | Communicate goals or objectives for the lesson to the students |   |
|   | - | New item added | Distracted students | - |
|   | Before 15 | Instructions deleted |   | Questions 15 - 17 ask about mathematics instruction for the eighth-grade students in the TIMSS class. |
|   | Before 18 | Revised section heading | Using Calculators and Digital Devices for Teaching Mathematics to the TIMSS Class | Using Calculators and Computers for Teaching Mathematics to the TIMSS Class |
|   | Before 18 | Instructions deleted |   | Questions 18 - 19 ask about calculator and computer use for teaching mathematics to the eighth-grade students in the TIMSS class. |
|   | 18 | Revised response option wording | Are students in this class permitted to use calculators during mathematics lessons?Check one circle only.- Yes, with unrestricted use- Yes, with restricted use- No | Are students in this class permitted to use calculators during mathematics lessons?Check one circle only.- Yes, with unrestricted use- Yes, with restricted use- No, calculators are not permitted |
|   | 19A | Revised question wording | Do the students in this class have digital devices (including computers, tablets, or smartphones) to use during mathematics lessons? | Do the students in this class have computers (including tablets) available to use during their mathematics lessons? |
|   | 19B | Revised question wording | If yes,What access do the students have to digital devices? | If yes,What access do the students have to computers? |
|   | 19Ba | Revised item wording | The class has digital devices for each student to use | Each student has a computer |
|   | 19Bb | Revised item wording | The class has digital devices that students can share | The class has computers that students can share |
|   | 19Bc | Revised item wording | The school has digital devices that the class can use sometimes | The school has computers that the class can use sometimes |
|   |   | New item added | Students bring their own digital devices |   |
|   | 19C | Question deleted |   | How often do you do activities on computers during mathematics lessons to support learning for:-Every or almost every day-Once or twice a week-Once or twice a month-Never or almost nevera) Whole classb) Low-performing studentsc) High-performing studentsd) Students with special needs |
|   |   | New question added | How often do you have students use digital devices during mathematics instruction?Check one circle only.- At least once a week- Once or twice a month- A few times a year |   |
|   | - | New question added | How often do you ask the students in your class to use digital devices to do these mathematics activities?Check one circle for each line.- At least once a week- Once or twice a month- A few times a year- Never or almost nevera) Practice problems and proceduresb) Solve extended or contextualized problemsc) Create graphs, tables, or other data displaysd) Play games involving mathematics calculations or conceptse) Read the textbook or watch instructional videos |   |
|   |   | New question added added | How much do each of these keep you from incorporating digital devices into mathematics instruction?- Not at all- Somewhat- A lota) Not knowing how to use digital devices to improve student learningb) Not enough access to digital devicesc) Keeping students on task when the class is using digital devicesd) Lack of technology support from the school |   |
|   | Before 20 | Instructions deleted |   | Question 20 asks about the topics taught and the content covered in teaching mathematics to the eighth-grade students in the TIMSS class. |
|   | 20 | Revised question wording and response options | The following list includes topics addressed by the TIMSS mathematics test. Choose the response that best describes when each topic is taught for students in this class.If a topic was in the curriculum before eighth grade, choose "Mostly taught before this year". If you have taught a topic this year, choose "Mostly taught this year". If a topic is not in the eighth grade curriculum for this year or you have not yet taught a topic, choose "Not yet taught".- Mostly taught before this year- Mostly taught this year- Not yet taught | The following list includes the main topics addressed by the TIMSS mathematics test. Choose the response that best describes when the students in this class have been taught each topic. If a topic was in the curriculum before the eighth grade, please choose "Mostly taught before this year." If a topic was taught half this year but not yet completed, please choose "Mostly taught this year." If a topic is not in the curriculum, please choose "Not yet taught or just introduced."- Mostly taught before this year- Mostly taught this year- Not yet taught or just introduced |
|   | 20Aa | Revised item wording | Add and subtract positive and negative numbers | Computing with negative numbers |
|   | 20Ab | Revised item wording | Find and use factors, multiples, positive powers, or square roots of whole numbers | Concepts of fractions and decimals |
|   | 20Ac | Revised item wording | Compare fractions and decimals | Solving problems involving proportions and percents |
|   |   | New item added | Add, subtract, and multiply fractions and decimals | - |
|   |   | New item added | Divide fractions and decimals by a whole number | - |
|   |   | New item added | Determine proportions and ratios |   |
|   |   | New item added | Find percentages and convert between percentages and fractions/decimals |   |

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| **TIMSS 2023 Teacher Questionnaire – Science – Grade 8** |
| **Changes from TIMSS 2019 Data Collection**  |
| **COVERS AND DIRECTIONS** |
| **TIMSS 2023 Field Test Location** | **TIMSS 2019 Data Collection Location** | **Type of Change** | **TIMSS 2023 Field Test Text** | **TIMSS 2019 Data Collection Text** |
| Front cover | Front cover | Field Test Version' has been added | Field Test Version | - |
| Copyright year has been changed from '2018' to '2021' | IEA, 2021 | IEA, 2018 |
| Directions | Directions | Replace 'TIMSS 2019' with 'TIMSS 2023' in first paragraph | TIMSS 2023 | TIMSS 2019 |
| Footers | Footers | Add 'Field Test' | Field Test Grade 8 Teacher Questionnaire | Grade 8 Teacher Questionnaire |
| Back cover | Back cover | Copyright year has been changed from '2018' to '2021' | IEA, 2021 | IEA, 2018 |
| **ITEMS** |
| **TIMSS 2023 Field Test Question #** | **TIMSS 2019 Data Collection Question #** | **Type of Change** | **TIMSS 2023 Field Test Question or Response Option** | **TIMSS 2019 Data Collection Question or Response Option** |
|   | 2 | Revised question wording | By the end of this school year, how many years will you have been teaching altogether? | At the end of this school year, how many years will you have been teaching altogether? |
|   | 3 | Revised question wording and response options | Which of these describes you?- Female- Male- Other- Prefer not to say | Are you female or male?- Female- Male |
|   | 7l | Item deleted | - | Collaboration between school leadership (including master teachers) and teachers to plan instruction |
|   | 8 | Revised question wording | How much do you agree or disagree with the following statements about your current school? | Thinking about your current school, indicate the extent to which you agree or disagree with each of the following statements. |
|   | 8a | Item deleted | - | This school is located in a safe neighborhood |
|   | 9 | Revised question wording | How often do you have these feelings about being a teacher? | How often do you feel the following way about being a teacher? |
|   | - | New item added | I feel appreciated as a teacher | - |
|   | - | New item added | I enjoy the challenges of teaching | - |
|   | 10 | Revised question wording | How much do you agree or disagree with the statements below? | Indicate the extent to which you agree or disagree with each of the following statements. |
|   | Before 10 | Instructions deleted |   | Questions 11-14 ask about instruction for the eighth-grade students in the TIMSS class. |
|   |   | New item added | Communicate goals or objectives for the lesson to the students |   |
|   | - | New item added | Distracted students | - |
|   | Before 15 | Instructions deleted |   | Questions 15 - 17 ask about science instruction for the eighth-grade students in the TIMSS class. |
|   | 16d | Item deleted | - | Design or plan experiments or investigations |
|   | 16e | Item deleted |   | Conduct experiments or investigations |
|   | 16f | Item deleted |   | Present data from experiments or investigations |
|   | 16g | Item deleted |   | Interpret data from experiments or investigations |
|   | 16h | Item deleted |   | Use evidence from experiments or investigations to support conclusions |
|   | 16j | Revised item wording | Memorize facts and principles | Have students memorize facts and principles |
|   | - | New question added added | How much emphasis do you place on the following when teaching science to students in this class?Check one circle for each line.- A lot- Some- Nonea) Encouraging students to ask questions about scientific phenomenab) Having students predict the outcomes of experiments or investigationsc) Having students create representations (e.g., models, graphs) to explain scientific phenomenad) Having students use scientific concepts to explain phenomena | - |
|   | - | New question added added | How often do you provide opportunities for students to do the following when teaching this class?Check one circle for each line.- Once a week or more- Once or twice a month- Once or twice every few months- Never or almost nevera) Experiments or investigations that are carried out in a single lessonb) Experiments or investigations that are carried out over a series of lessonsc) Hands-on activities to explore science conceptsd) Experiments with a prescribed set of steps to answer a given questione) Experiments where students determine their own procedures to answer a given question | - |
|   | - | New question added added | How often do you go to a separate science laboratory when conducting experiments or investigations with students in this class?Check one circle only.- Always or almost always- Sometimes- Never or almost never | - |
|   | Before 18 | Revised section heading | Using Digital Devices for Teaching Science to the TIMSS Class | Using Computers for Teaching Science to the TIMSS Class |
|   | Before 18 | Instructions deleted |   | Question 18 asks about computer use for teaching science to the fourth-grade students in the TIMSS class. |
|   | 18A | Revised question wording | Do the students in this class have digital devices (including computers, tablets, or smartphones) to use during science lessons at school? | Do the students in this class have computers (including tablets) available to use during their science lessons? |
|   | 18B | Revised question wording | If yes,What access do the students have to digital devices? | If yes,What access do the students have to computers? |
|   | 18Ba | Revised item wording | The class has digital devices for each student to use | Each student has a computer |
|   | 18Bb | Revised item wording | The class has digital devices that students can share | The class has computers that students can share |
|   | 18Bc | Revised item wording | The school has digital devices that the class can use sometimes | The school has computers that the class can use sometimes |
|   | - | New item added | Students bring their own digital devices | - |
|   | 18C | Question deleted | - | How often do you do activities on computers during science lessons to support learning for:-Every or almost every day-Once or twice a week-Once or twice a month-Never or almost nevera) Whole classb) Low-performing studentsc) High-performing studentsd) Students with special needs |
|   | - | New question added added | How often do you have students use digital devices during science instruction?Check one circle only.- At least once a week- Once or twice a month- A few times a year | - |
|   | - | New question added | How often do you ask the students in your class to use digital devices to do these science activities?Check one circle for each line.- At least once a week- Once or twice a month- A few times a year- Never or almost nevera) Solve extended or contextualized problemsb) Create graphs, tables, or other data displaysc) Play games involving science conceptsd) Conduct virtual experiments or other simulationse) Read the textbook or watch instructional videos |   |
|   | - | New question added | How much do each of these keep you from incorporating digital devices into science instruction?- Not at all- Somewhat- A lota) Not knowing how to use digital devices to improve student learningb) Not enough access to digital devicesc) Keeping students on task when the class is using digital devicesd) Lack of technology support from the school |   |
|  | Before 19 | Instructions deleted |  | Question 19 asks about the topics taught and the content covered in teaching science to the eighth-grade students in the TIMSS class. |
|   | 19 | Revised question wording and response options | The following list includes topics and concepts addressed by the TIMSS science test. Choose the response that best describes when each topic or concept is taught for students in this class.If a topic or concept was in the curriculum before eighth grade, choose "Mostly taught before this year". If you have taught a topic this year, choose "Mostly taught this year". If a topic is not in the eighth grade curriculum for this year or you have not yet taught a topic, choose "Not yet taught".- Mostly taught before this year- Mostly taught this year- Not yet taught | The following list includes the main topics addressed by the TIMSS science test. Choose the response that best describes when the students in this class have been taught each topic. If a topic was in the curriculum before the eighth grade, please choose "Mostly taught before this year." If a topic was taught half this year but not yet completed, please choose "Mostly taught this year." If a topic is not in the curriculum, please choose "Not yet taught or just introduced."- Mostly taught before this year- Mostly taught this year- Not yet taught or just introduced |
|   | 19Aa | Revised item wording | Defining characteristics of major taxonomic groups of organisms | Differences among major taxonomic groups of organisms (plants, animals, fungi, mammals, birds, reptiles, fish, amphibians, insects) |
|   | 19Ab | Revised item wording | Structures and functions of major organs and organ systems | Major organs and organ systems in humans and other organisms (structure/function, life processes) |
|   | 19Ac | Revised item wording | How animals maintain stable body conditions | Cells, their structure and functions, including respiration and photosynthesis as cellular processes |
|   | 19Ad | Revised item wording | Major structures and functions in plant and animal cells | Life cycles, sexual reproduction, and heredity (inherited versus acquired/learned characteristics) |
|   | 19Ae | Revised item wording | Basic processes of photosynthesis | Role of variation and adaptation in survival/extinction of species (including fossil evidence) |
|   | 19Af | Revised item wording | Basic processes of cellular respiration | Interdependence of populations of organisms in an ecosystem (e.g., carbon and water cycles, energy flow, food webs, competition, predation, human impacts on ecosystems) |
|   | 19Ag | Revised item wording | Life cycles of mammals, birds, amphibians, insects, and plants | Human health (e.g., causes, transmission, and prevention of common infectious diseases, immunity) and the importance of diet, exercise, and other lifestyle choices in maintaining health) |
|   | - | New item added | Processes for reproduction and inheritance in plants and animals | - |
|   | - | New item added | How variation in traits relates to natural selection and changes in life on Earth over time | - |
|   |   | New item added | Interpreting food web diagrams and the ﬂow of energy in ecosystems |   |
|   |   | New item added | Cycling of water, oxygen, and carbon through ecosystems |   |
|   |   | New item added | Predation, competition, and symbiosis in ecosystems |   |
|   | - | New item added | How changes in an ecosystem affect the populations or organisms that live there | - |
|   | - | New item added | How human actions can positively or negatively impact the environment | - |
|   | - | New item added | How to prevent transmission of common diseases among humans | - |
|   | - | New item added | Importance of diet, exercise, and lifestyle choices for maintaining good human health | - |
|   | 19Ba | Revised item wording | Structure of atoms (i.e., protons, neutrons, electrons), and molecules | Particular structure, classification, and composition of matter (protons, neutrons, electrons, atoms, molecules, elements, compounds, mixtures) |
|   | 19Bb | Revised item wording | Differences among elements, compounds, and mixtures | The periodic table as an organizing principle for the known elements |
|   | 19Bc | Revised item wording | How to interpret the periodic table of elements | Physical and chemical properties of matter |
|   | 19Bd | Revised item wording | Classifying matter according to physical and chemical properties | Mixtures and solutions (e.g., solvent, solute, concentration/dilution) |
|   | 19Be | Revised item wording | Methods for separating mixtures | Properties of common acids and bases (e.g., acids have pH less than 7, reactions with indicators produce color changes, acids and nases neutralize each other) |
|   | 19Bf | Revised item wording | Solution concentration and rate of dissolving | Characteristics of chemical reactions (e.g., transformation of reactants, evidence of chemical change) |
|   | 19Bg | Revised item wording | Properties of acids and bases | Matter and energy in chemical reactions ( conservation of matter, familiar exothermic and endothermic reactions, factors affecting reaction rates) |
|   | 19Bh | Revised item wording | Matter and energy in chemical reactions, including evidence of chemical change | The role of electrons in chemical bonds |
|   | - | New item added | How to change the rate of chemical reactions | - |
|   | - | New item added | Chemical bonds (e.g., role of electrons) | - |
|   | 19Ca | Revised item wording | Separation and motion of atoms/molecules in solids, liquids, and gases  | Physical states and changes in matter (explanations of properties in terms of movement and distance between particles; phase change, changes in volume and/or pressure, physical changes) |
|   | 19Cb | Revised item wording | Characteristics of matter and energy during state changes | Energy transformation and transfer (e.g., forms of energy, energy conservation, heat, temeprature, equilibrium) |
|   | 19Cc | Revised item wording | Types of energy (e.g., kinetic, potential, thermal) and examples of energy transformations | Basic properties/behaviors of light (reflection, refraction, color, shadows, simple ray diagrams) |
|   | 19Cd | Revised item wording | Thermal conductivity and the transfer of thermal energy between objects of different temperatures | Basic properties of sound (vibrations that produce sound, transmission through media, loudness, pitch) |
|   | 19Ce | Revised item wording | Reflection, refraction, or absorption of light | Electric circuits (e.g., electrical conductors/insulators and the flow of electricity in series/parallel circuits) |
|   | 19Cf | Revised item wording | Characteristics of sound (i.e., amplitude, frequency) and its transmission, reflection, and absorption | Properties and uses of permanent magnets and electromagnets |
|   | 19Cg | Revised item wording | Electrical conductors and simple electrical circuits | Motion and forces (e.g., basic description of motion, common mechanical forces, properties of forces, effects of forces, simple machines, buoyancy, effects of density and pressure) |
|   | - | New item added | Polarity, strength, and uses of permanent magnets and electromagnets | - |
|   | - | New item added | Speed as distance changing over time | - |
|   | - | New item added | Acceleration as speed changing over time | - |
|   | - | New item added | Effects of common forces on speed and direction of motion | - |
|   | - | New item added | Density and buoyancy | - |
|   | - | New item added | Functioning of simple machines (e.g., levers, inclined planes, pulleys) | - |
|   | 19Da | Revised item wording | Earth's structure and distribution of water on its surface | Earth's structure and physical features (e.g., Earth's crust, mantle, and core; composition and relative distribution of water; composition of Earth's atmosphere) |
|   | 19Db | Revised item wording | Gases present in Earth's atmosphere and their relative abundance | Earth's processes, cycles, and history (e.g., rock cycle, major geological events, formation of fossils and fossil fuels water cycle, weather versus climate) |
|   | 19Dc | Revised item wording | Changes in temperature and pressure based on altitude | Earth's resource, their use, and conservation (e.g., renewable/nonrenewable resources, human use of land and water resources) |
|   | 19Dd | Revised item wording | How geological events impact Earth's surface | Earth in the Solar System and the universe (phenomena on Earth: seasons, eclipses, tides, phases of moon; members of the Solar System; physical features of Earth) |
|   | - | New item added | Processes in the rock cycle (e.g., lava cooling, weathering) | - |
|   | - | New item added | How fossils form and what they show about Earth's history | - |
|   | - | New item added | Processes in Earth's water cycle | - |
|   | - | New item added | Differences between weather and climate and geographic factors affecting climate | - |
|   | - | New item added | Evidence for climate change | - |
|   | - | New item added | Use and conservation of Earth's resources, including land, water, and renewable and nonrenewable energy sources | - |
|   | - | New item added | Phenomena caused by the motion of Earth and the Moon (e.g., seasons, tides, Moon phases) | - |
|   | - | New item added | The Sun as a star and physical features of the Earth, Moon, and other planets | - |
|   | Before 20 | Instructions deleted | - | Question 20 asks about science homework for the eighth-grade students in the TIMSS class. |
|   | 20B | Question deleted | - | When you assign science homework to the students in this class, about how many minutes do you usually assign? (Consider the time it would take an average student in your class.) |
|   | Before 21 | Instructions deleted | - | Questions 21 - 22 ask about science assessment for the eighth-grade students in the TIMSS class. |
|   | 21 | Revised question wording | How much importance do you place on these strategies to assess students' learning in science? | How much importance do you place on the following assessment strategies in science? |
|   | 24 | Question deleted | - | In the past two years, how many hours in total have you spent in formal in-service/professional development (e.g., workshops, seminars) for science? |

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| **TIMSS 2023 School Questionnaire – Grade 4** |
| **Changes from TIMSS 2019 Data Collection**  |
| **COVERS AND DIRECTIONS** |
| **TIMSS 2023 Field Test Location** | **TIMSS 2019 Data Collection Location** | **Type of Change** | **TIMSS 2023 Field Test Text** | **TIMSS 2019 Data Collection Text** |
| Front Cover | Front Cover | Field Test Version' has been added | Field Test Version | - |
| Copyright year has been changed from '2018' to '2021' | IEA, 2021 | IEA, 2018 |
| Directions  | Directions  | Change 'TIMSS 2019' to 'TIMSS 2023' in first paragraph and footer | TIMSS 2023 | TIMSS 2019 |
|   |   | Removed "When you have completed the questionnaire, please place it in the accompanying envelope and return it to the TIMSS school coordinator." |   | When you have completed the questionnaire, please place it in the accompanying envelope and return it to the TIMSS school coordinator. |
| Footers | Footers | Add 'Field Test' | Field Test Grade 4 School Questionnaire | Grade 4 School Questionnaire |
| Back Cover | Back Cover | Copyright year has been changed from '2018' to '2021' | IEA, 2021 | IEA, 2018 |
| **ITEMS** |
| **TIMSS 2023 Field Test Question #** | **TIMSS 2019 Data Collection Question #** | **Type of Change** | **TIMSS 2023 Field Test Question or Response Option** | **TIMSS 2019 Data Collection Question or Response Option** |
|   | 1 | changed date | What is the total enrollment of students in your school as of April 1, 2022? | What is the total enrollment of students in your school as of March 1, 2022? |
|   | 2 | Information in brackets has been updated for 2022 field test. | What is the total enrollment of fourth-grade students in your school as of March 1, 2022? | What is the total enrollment of fourth-grade students in your school as of April 1, 2022? |
|  | 4 |   | Around the 1st of October 2021, what percentage of students at this school were eligible to receive free or reduced-price lunches through the National School Lunch Program? | Around the 1st of October 2018, what percentage of students at this school were eligible to receive free or reduced-price lunches through the National School Lunch Program? |
|  | 7 | question deleted |   | What type of school is this?Fill in one circle only.Regular public school A regular public school with a magnet program A magnet school or school with a special program emphasis (e.g., Montessori, science/math school, performing arts school, talented/gifted school, foreign language immersion school) Special education: a school that primarily serves students with disabilities Alternative: a school designed to address the needs of students, typically at risk of educational failure, which cannot be met in regular schools Vocational Charter School Private (independent) Private (religiously affiliated) Other |
|  | 9 | question deleted |   | Which best characterizes the average income level of the school’s immediate area?HighMediumLow |
|  | 10B |   | Write in the number of minutes per day.Please convert the number of hours into minutes. | Write in the number of hours and minutes per day. |
|  | 14 |   |   | Does your school have a school library? |
|  | 14B | Delete items | - | If Yes,B. Approximately how many books (print) with different titles does your school library have (exclude magazines and periodicals)? |
|  | 15 |   |   | Does your school have classroom libraries? |
|   | - | New item added | Do students in your school have access to a library or media center with the following?Check one circle for each line.- Yes- Noa) High speed internet accessb) Digital devices (e.g., laptops, tablets, PCs)c) Printed learning materials (e.g., textbooks) | - |
|   | 17Ah | Revised | Digital devices for student use | Computer technology for teaching and learning (e.g., computers or tablets for student use) |
|   | 21 | Deleted question |   | In your school, are any of the following used to evaluate the practice of fourth-grade teachers?YesNoa) Observations by the principal or senior staff b) Observations by inspectors or other persons external to the schoolc) Student achievementd) Teacher peer review  |
|   | 23 |   | By the end of this school year, how many years will you have been a principal altogether? | By the end of this school year, how many years altogether will you have been a principal? |
|   | - | New item added | For how long was your school fully closed for in-person instruction because of the COVID-19 pandemic?-The school did not fully close-Less than one month-One to three months-More than three monthsa) 2019-2020 school yearb) 2020-2021 school yearc) 2021-2022 school year | - |
|   | - | New item added | Did your school provide these additional remote learning resources during the COVID-19 pandemic?- Yes- Noa) Printed learning materials for students (e.g., worksheets, textbooks)b) Digital devices (e.g., laptops, tablets) for studentsc) Online resources for studentsd) Pedagogical resources for teacherse) Digital devices (e.g., laptops, tablets) for teachersf) Technical support for teachers |   |

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| **TIMSS 2023 School Questionnaire – Grade 8** |
| **Changes from TIMSS 2019 Data Collection**  |
| **COVERS AND DIRECTIONS** |
| **TIMSS 2023 Field Test Location** | **TIMSS 2019 Data Collection Location** | **Type of Change** | **TIMSS 2023 Field Test Text** | **TIMSS 2019 Data Collection Text** |
| Front Cover | Front Cover | Field Test Version' has been added | Field Test Version | - |
| Copyright year has been changed from '2018' to '2021' | IEA, 2021 | IEA, 2018 |
| Directions  | Directions  | Year at the bottom of the page has been updated for 2023 cycle | TIMSS 2023 | TIMSS 2019 |
| Footers | Footers | Add 'Field Test' | Field Test Grade 8 School Questionnaire | Grade 8 School Questionnaire |
| Back Cover | Back Cover | Copyright year has been changed from '2018' to '2021' | IEA, 2021 | IEA, 2018 |
| **ITEMS** |
| **TIMSS 2023 Field Test Question #** | **TIMSS 2019 Data Collection Question #** | **Type of Change** | **TIMSS 2023 Field Test Question or Response Option** | **TIMSS 2019 Data Collection Question or Response Option** |
|   | 1 | Information in brackets has been updated for 2022 field test. | What is the total enrollment of students in your school as of April 1, 2022? | What is the total enrollment of students in your school as of March 1, 2022? |
|   | 2 | Information in brackets has been updated for 2022 field test. | What is the total enrollment of eighth-grade students in your school as of March 1, 2022? | What is the total enrollment of eighth-grade students in your school as of April 1, 2022? |
|  | 4 |   | Around the 1st of October 2021, what percentage of students at this school were eligible to receive free or reduced-price lunches through the National School Lunch Program? | Around the 1st of October 2018, what percentage of students at this school were eligible to receive free or reduced-price lunches through the National School Lunch Program? |
|  | 7 | question deleted |   | What type of school is this?Fill in one circle only.Regular public school A regular public school with a magnet program A magnet school or school with a special program emphasis (e.g., Montessori, science/math school, performing arts school, talented/gifted school, foreign language immersion school) Special education: a school that primarily serves students with disabilities Alternative: a school designed to address the needs of students, typically at risk of educational failure, which cannot be met in regular schools Vocational Charter School Private (independent) Private (religiously affiliated) Other |
|  | 9 | question deleted |   | Which best characterizes the average income level of the school’s immediate area?HighMediumLow |
|  | 10B |   | Write in the number of minutes per day.Please convert the number of hours into minutes. | Write in the number of hours and minutes per day. |
|  | 14 |   |   | Does your school have a school library? |
|  | 14B | Delete items | - | If Yes,B. Approximately how many books (print) with different titles does your school library have (exclude magazines and periodicals)? |
|  | 15 |   |   | Does your school have classroom libraries? |
|  | 16 | Deleted question |   | Does your school provide students access to digital learning resources (e.g., books, videos)? |
|   | - | New item added | Do students in your school have access to these resources?Check one circle for each line.- Yes- Noa) A library or media centerb) Digital devices (e.g., computers, laptops, tablets)c) High speed internet | - |
|   | 17Ah | Revised | Digital devices for student use | Computer technology for teaching and learning (e.g., computers or tablets for student use) |
|   | 22 | Deleted question |   | In your school, are any of the following used to evaluate the practice of eighth-grade mathematics teachers?YesNoa) Observations by the principal or senior staff b) Observations by inspectors or other persons external to the schoolc) Student achievementd) Teacher peer review  |
|   | 23 | Deleted question |   | In your school, are any of the following used to evaluate the practice of eighth-grade science teachers?YesNoa) Observations by the principal or senior staff b) Observations by inspectors or other persons external to the schoolc) Student achievementd) Teacher peer review  |
|   | 24 |   | By the end of this school year, how many years will you have been a principal altogether? | By the end of this school year, how many years altogether will you have been a principal? |
|   | - | New item added | For how long was your school fully closed for in-person instruction because of the COVID-19 pandemic?-The school did not fully close-Less than one month-One to three months-More than three monthsa) 2019-2020 school yearb) 2020-2021 school yearc) 2021-2022 school year | - |
|   | - | New item added | Did your school provide these additional remote learning resources during the COVID-19 pandemic?- Yes- Noa) Printed learning materials for students (e.g., worksheets, textbooks)b) Digital devices (e.g., laptops, tablets) for studentsc) Online resources for studentsd) Pedagogical resources for teacherse) Digital devices (e.g., laptops, tablets) for teachersf) Technical support for teachers |   |