

TIMSS 2019

Data Collection Completed!



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IEA General Assembly
Ljubljana, Slovenia

October 8-11, 2019



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

Overview of TIMSS 2019

24 Years of Trends

- 64 countries, 6 benchmarking entities
- More than half transitioned to eTIMSS!
- Mathematics and science assessments
 - 28 item blocks, 400 items/grade
 - Each for eTIMSS and paper
- eTIMSS includes Problem Solving and Inquiry tasks (PSIs)
 - 4 blocks each grade – 2 mathematics, 2 science



Countries Participating

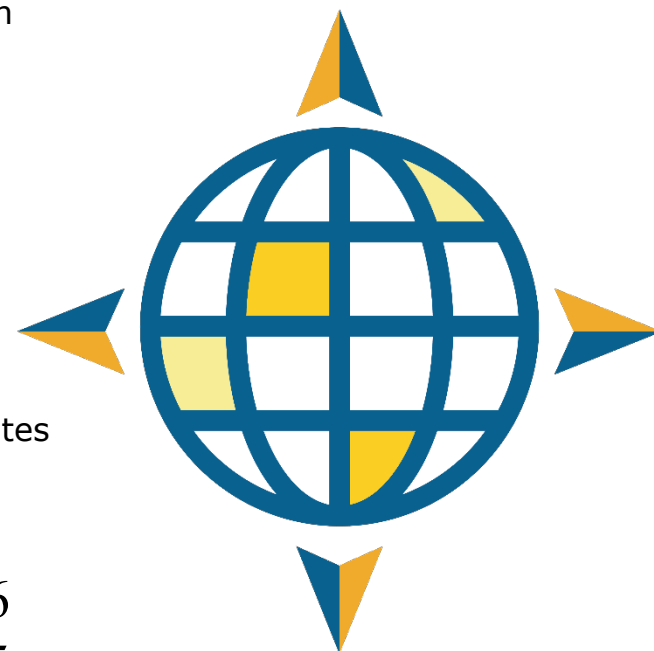
Albania
Armenia
Australia
Austria
Azerbaijan
Bahrain
Belgium (Fl.)
Bosnia and Herzegovina
Bulgaria
Canada
Chile
Chinese Taipei
Croatia
Cyprus
Czech Republic
Denmark
Egypt
England
Finland
France
Georgia
Germany

Hong Kong SAR
Hungary
Iran
Ireland
Israel
Italy
Japan
Jordan
Kazakhstan
Korea
Kosovo
Kuwait
Latvia
Lebanon
Lithuania
Macedonia
Malaysia
Malta
Montenegro
Morocco
Netherlands
New Zealand

Northern Ireland
Norway
Oman
Pakistan
Philippines
Poland
Portugal
Qatar
Romania
Russian Federation
Saudi Arabia
Serbia
Singapore
Slovak Republic
South Africa
Spain
Sweden
Turkey
United Arab Emirates
United States

Benchmarking Participants

Ontario, Canada
Quebec, Canada
Moscow City, Russia
Madrid, Spain
Abu Dhabi, UAE
Dubai, UAE



4th grade: 50 + 6

8th grade: 40 + 5

TIMSS 2019 Data Collection

Oct – Dec 2018

Southern Hemisphere

March – June 2019

Northern Hemisphere

Data Collection – Enormous Undertaking

eTIMSS and paperTIMSS

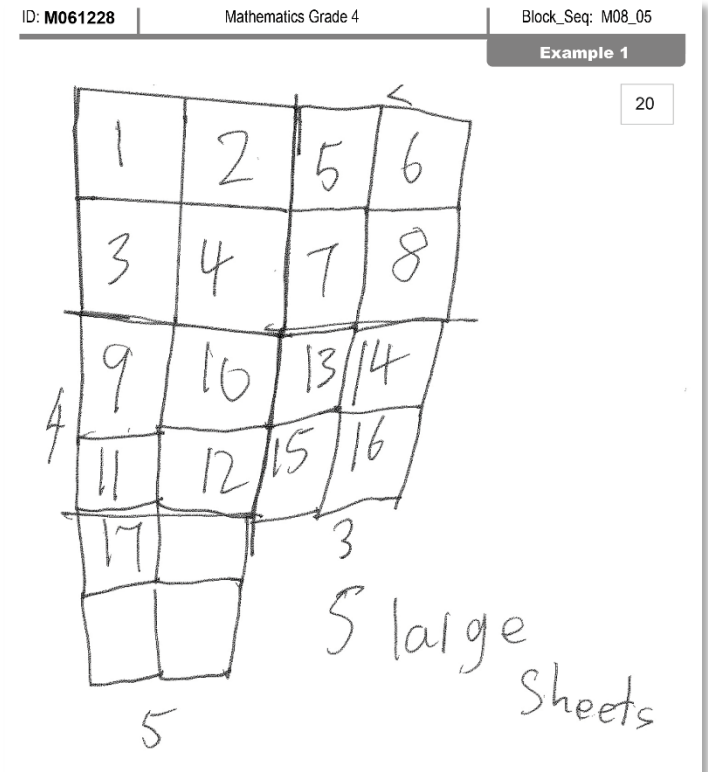
- 600,000 students assessed
- 20,000 schools

Paper-to-e bridge for eTIMSS countries

- 90,000 students
- 3,000 schools

Scoring and Scoring Training

- Each constructed response item has a unique scoring guide – about 700 scoring guides
- Updated based on field test results and reviews
- Training materials prepared
- Southern hemisphere scoring training
 - Cape Town, Nov 2018
- Northern hemisphere scoring training
 - Limassol, March 2019



Translation and Verification

- Countries translated international instruments
- IEA Amsterdam verified the translations
- TIMSS & PIRLS International Study Center verified layout
- Resource intensive endeavor
 - eTIMSS, paperTIMSS, bridge
 - eTIMSS translation system worked well, but IEA Hamburg had to customize the eTIMSS player for many countries – big effort!



Survey Operations and Data Management

- Series of manuals to support key stages
 - Scoring constructed response items, and using IEA Hamburg's Coding Expert software
 - Creating and submitting the TIMSS 2019 data files
- IEA Hamburg working closely with countries to clean and process data files
- NRCs completed a Survey Activities Questionnaire



International Quality Control Program

- TIMSS & PIRLS International Study Center and IEA Amsterdam recruited and trained 71 International Quality Control Monitors
 - Visited 15 schools/grade in each country
 - Observed and documented administration sessions
- Nearly all observation records and document received
 - Indications that data collection went extremely well



Data Analysis and Reporting

- Developed International Report outline and analysis specifications
 - 200 exhibits since last October 2018
- Working on populating exhibits with background data
 - NRC Meeting December 2019, Agadir, Morocco
 - Exhibits with background data will be reviewed by NRCs
- Sampling adjudication – Feb 2020

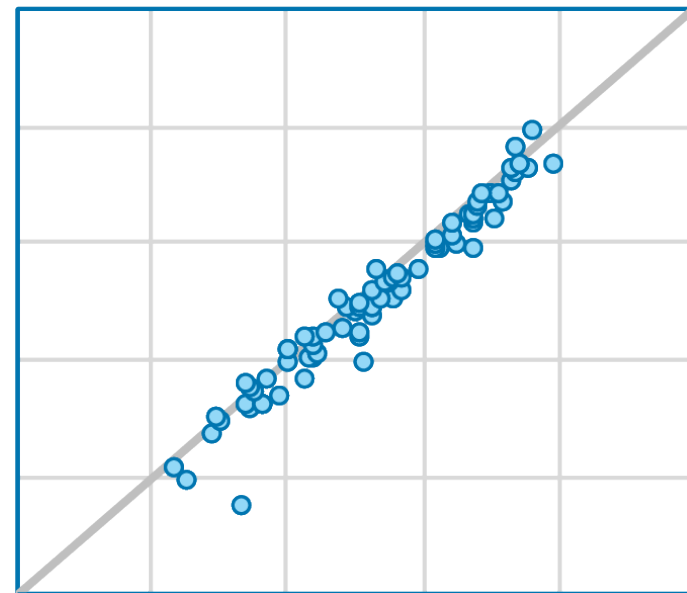
Exhibit 1.1: Distribution of Mathematics Achievement

Country	Average Scale Score
Country 0F5	593 (1.5) ▲
Country 16A	593 (1.3) ▲
Country 14C	587 (2.0) ▲
Country 01A	587 (2.5) ▲
Country 039	585 (1.2) ▲
Country 06E	585 (1.4) ▲
Country 06A	585 (1.8) ▲
Country 17C	585 (1.3) ▲
Country 0E4	572 (3.1) ▲
Country 0D2	570 (1.7) ▲
Country 11F	563 (1.7) ▲
Country 100	563 (2.2) ▲
Country 02D	562 (1.6) ▲
Country 163	557 (1.5) ▲
Country 140	557 (2.2) ▲
Country 1A6	557 (1.6) ▲
Country 09E	556 (2.4) ▲
Country 077	543 (1.5) ▲
Country 02C	538 (1.6) ▲
Country 104	537 (1.8) ▲
Country 1B8	537 (1.9) ▲
Country 166	532 (2.3) ▲
Country 180	532 (2.6) ▲
Country 04E	529 (1.8) ▲
Country 177	528 (2.0) ▲
Country 197	519 (2.9) ▲
Country 06B	516 (2.0) ▲
Country 0C1	515 (2.6) ▲
Country 1A2	513 (1.9) ▲
Country 0AD	501 (2.3) ▲
TIMSS Scale Centerpoint	500
Country 04C	498 (1.8) ▼
Country 02F	492 (2.1) ▼
Country 0BD	491 (2.9) ▼
Country 092	491 (2.2) ▼
Country 16E	490 (1.9) ▼
Country 095	489 (2.2) ▼
Country 035	489 (2.5) ▼
Country 011	482 (1.6) ▼
Country 0B7	476 (1.3) ▼
Country 19F	474 (1.4) ▼
Country 075	473 (1.8) ▼
Country 11E	459 (1.2) ▼
Country 188	452 (1.9) ▼
Country 0F6	432 (2.0) ▼
Country 08C	432 (2.1) ▼
Country 12C	429 (2.1) ▼
Country 058	423 (1.9) ▼
Country 18D	422 (1.6) ▼
Country 193	419 (1.5) ▼
Country 017	419 (2.9) ▼
Country 11B	416 (2.6) ▼
Country 057	416 (2.2) ▼
Country 0BA	412 (2.1) ▼
Country 096	406 (2.0) ▼
Country 0CE	
Country 09D	

Data Analysis and Reporting

- Achievement scaling

- Informed by Item Equivalence Study in 2017
- Developed scaling plan for linking eTIMSS and paperTIMSS while maintaining trends to previous TIMSS assessments
- Reviewed by TEG and ETS experts
- Scaling will be conducted by TIMSS & PIRLS International Study Center - Mar-Apr 2020
- Independent replication by ETS psychometricians



Looking Ahead

- Draft chapters of International Report
- NRCs and PEC review
 - Jun 2020, NRC meeting in Prague
- *TIMSS 2019 Encyclopedia*, November 17, 2020
- Release International Results Dec 8, 2020
 - *Methods and Procedures in TIMSS 2019* also available
- Special thematic report on Problem Solving and Inquiry tasks
- Release International Database Feb 2021



Thank You!

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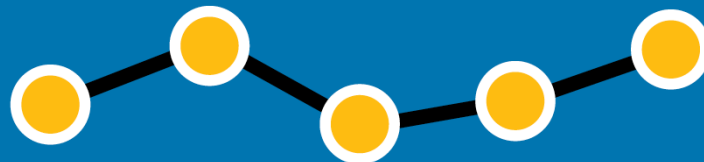
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TIMSS 2023



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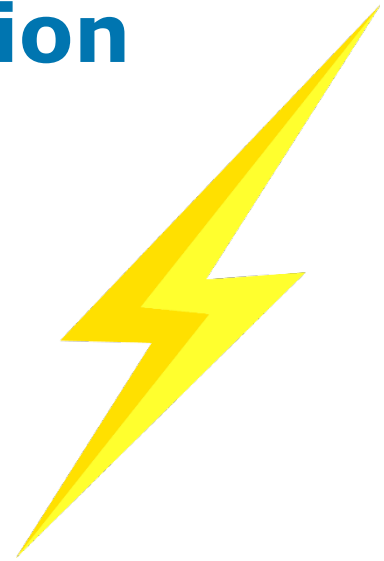
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TIMSS 2023 Completes Transition to e-Assessment

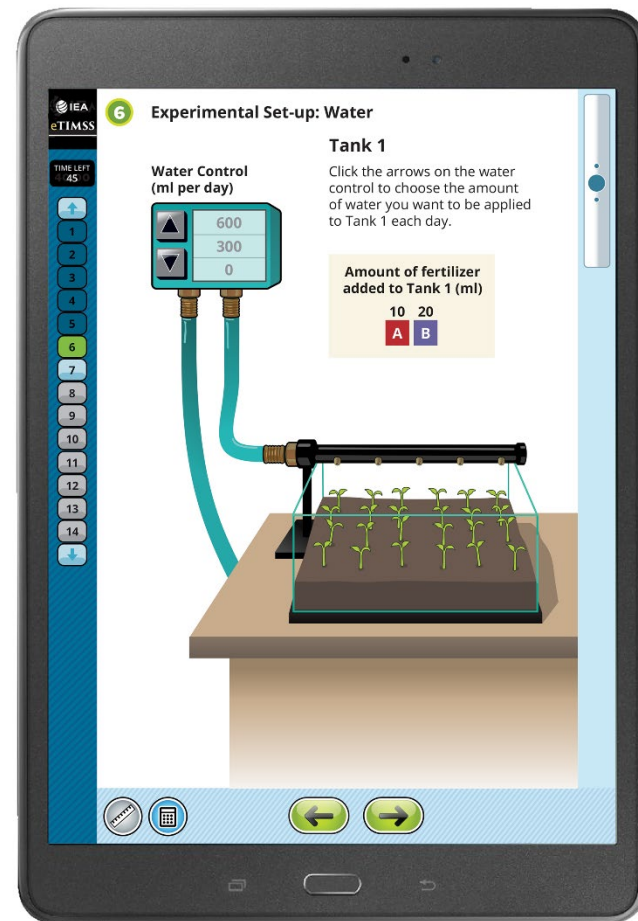
- Second stage of two-stage process
 - Half the countries transitioned to eTIMSS in 2019
 - Process completed with TIMSS 2023
 - Countries transitioning in 2023 will administer paper bridge booklets
- As many countries as possible do eTIMSS
 - Paper option available based only on trend items
 - No new items developed for paper



Capitalizing on the Benefits of e-Assessment

e

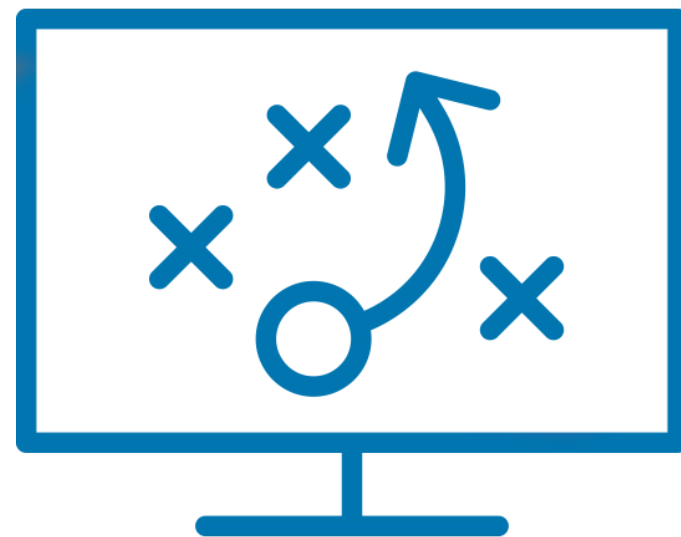
- Integrate Problem Solving and Inquiry (PSI) tasks
 - Extended scenario-based tasks and science investigations
 - Only administered with eTIMSS in 2019
- More emphasis on PSIs
 - Degree an aspect of updating the assessment frameworks



Capitalizing on the Benefits of e-Assessment -cont

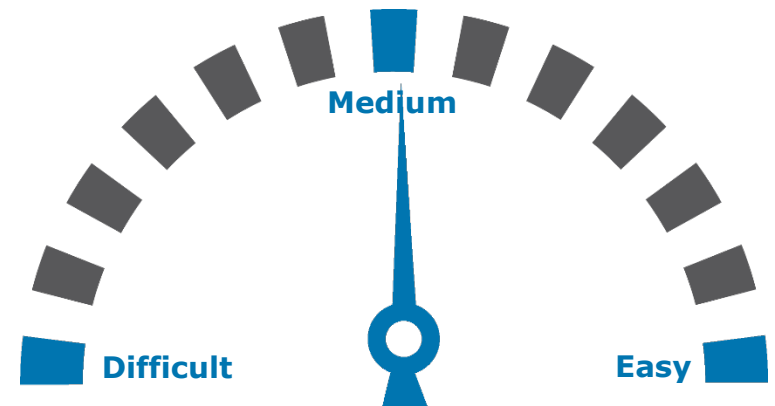


- Incorporate reporting process data into international reports – timing and event data
- Use timing and event data to examine response patterns
 - Test taking strategies
 - Approaches to problem solving and inquiry
 - Evidence of strategy; more or less successful strategies
 - Disengaged students



Begin Moving Toward Adaptive Assessment - Group Adaptive Approach

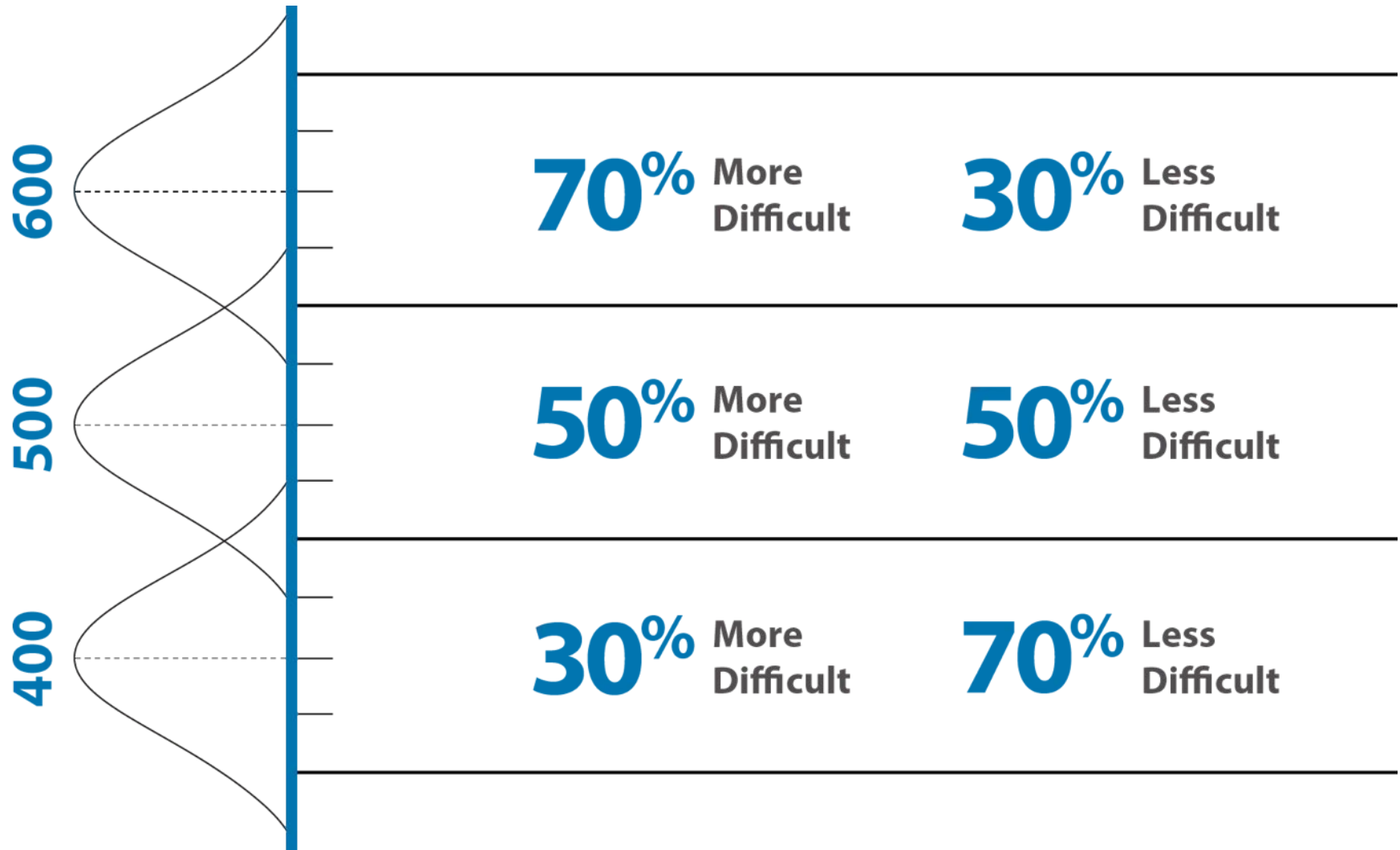
- Better align with achievement of our student populations
- Two levels of booklet difficulty
 - More Difficult booklets (**Difficult** and **Medium** blocks)
 - Less Difficult booklets (**Medium** and **Easy** blocks)
- All countries take all booklets, but in varying proportions



Adapting the Assessment to Countries' Student Populations

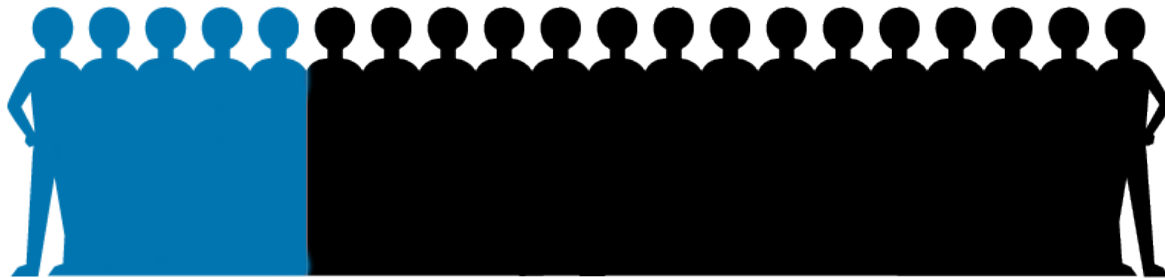
- Higher performing countries
 - Proportionally more of the more difficult booklets
- Lower performing countries
 - Proportionally more of the less difficult booklets
- Goal is better match between assessment difficulty and student achievement in each country

Adapting the Assessment



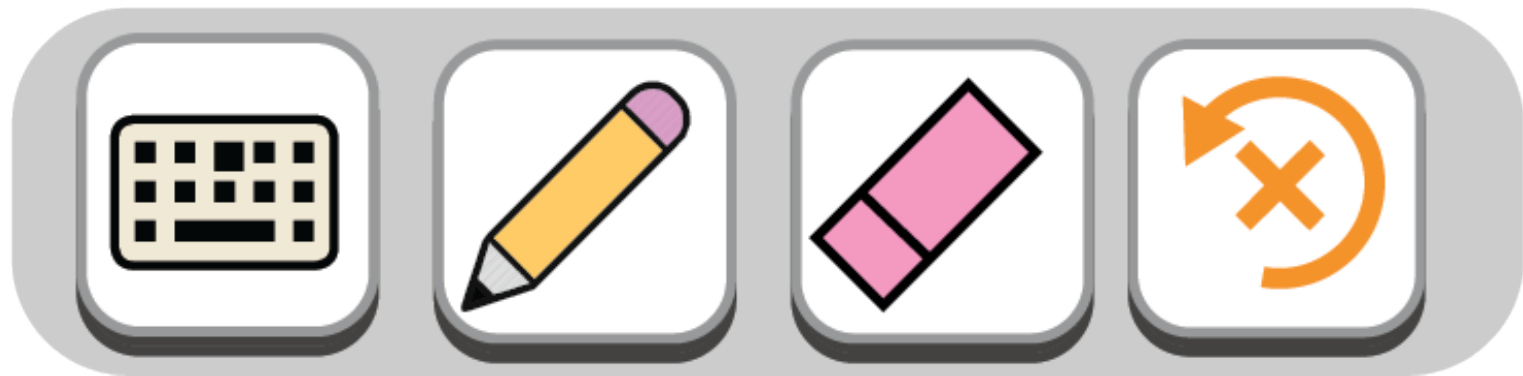
Advantages of Group Adaptive Design

- Better measurement at all achievement levels
- All countries will participate in the same assessment
 - No need for “Less Difficult” mathematics assessment at 4th grade
- More student engagement
- Less student frustration
- Possibility of targeting subpopulations



Innovative Item Types

- Videos and animations
- Creating various types of graphs
- Freehand drawing
- “Show your work”
 - Drawing and text
 - Text and symbols



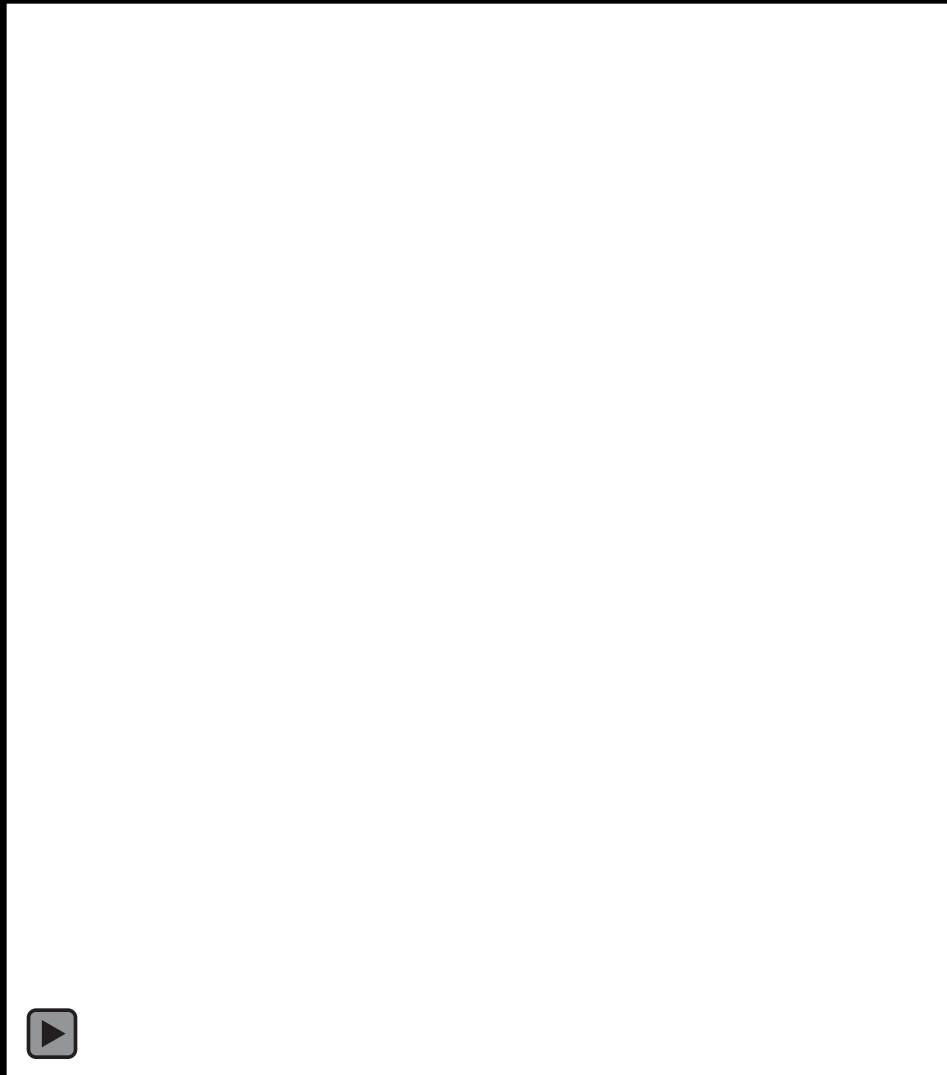
Enhanced Multiple Choice



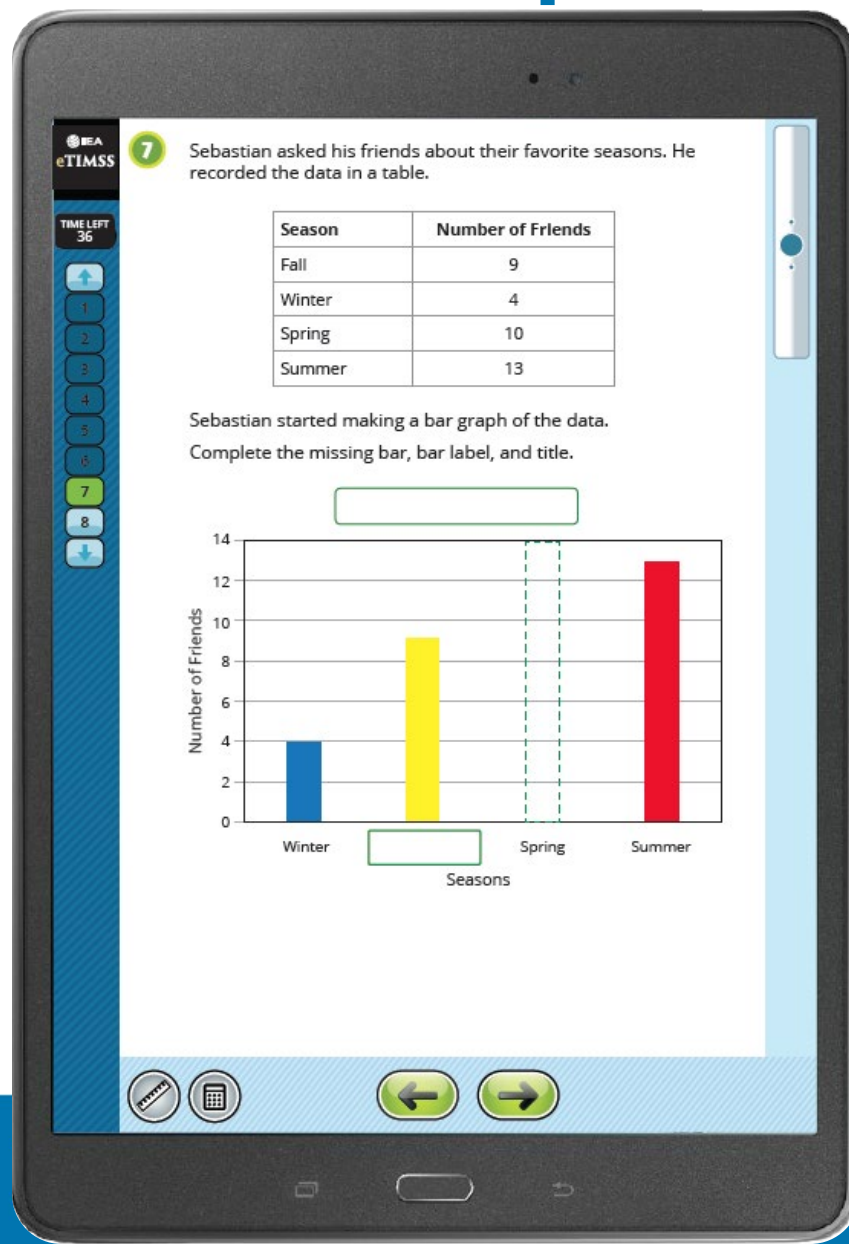
Make a Geometric Shape



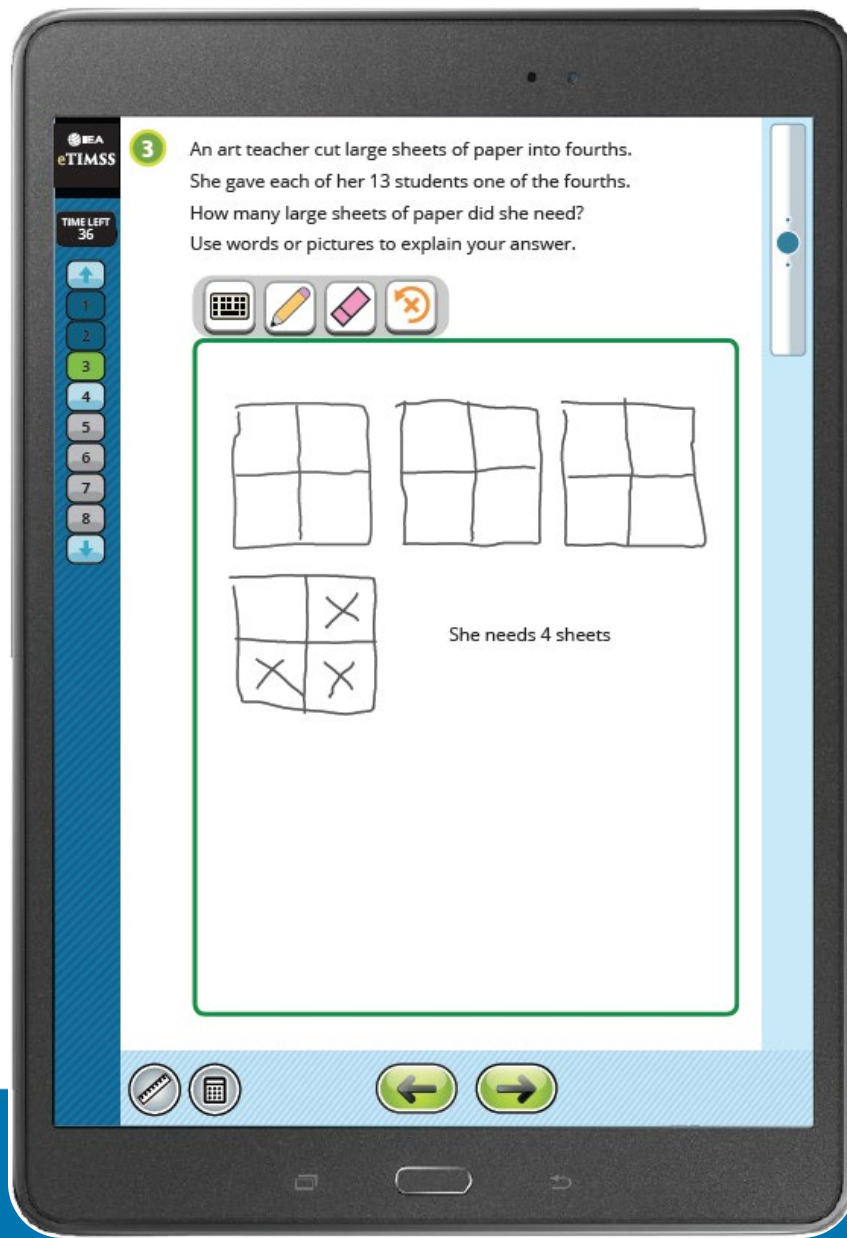
Make a Pie Chart



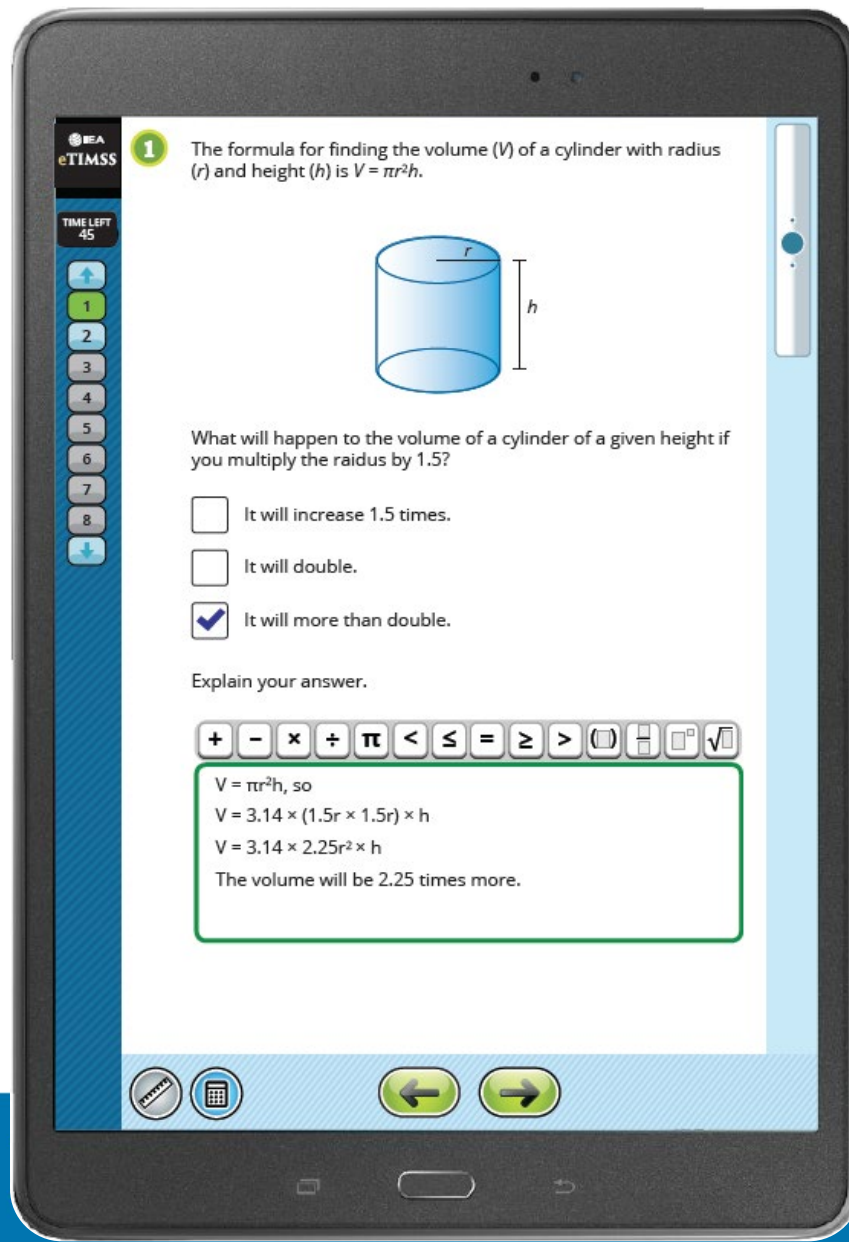
Complete a Bar Graph



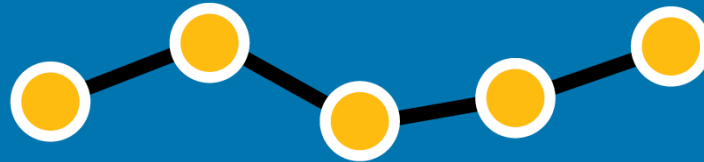
Show Your Work – 4th Grade



Show Your Work – 8th Grade



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