

# TIMSS 2011

## Fourth Grade Mathematics Item Descriptions developed during the TIMSS 2011 Benchmarking

### Items at Low International Benchmark (400)

#### Number

M01_05	Solves a word problem involving addition of three-digit whole numbers
M05_01	Adds a four-digit and a three-digit whole number
M07_04	Finds the missing number in a number sentence involving simple multiplication
M08_01	Adds a four-digit and a three-digit whole number
M09_01	Subtracts a three-digit number from another three-digit number
M13_01	Identifies a four-digit number given in words

#### Geometric Shapes and Measures

M06_07A	Given the coordinates on a simple map, determines the position
M06_07B	Given a position on a simple map, gives its coordinates
M09_07	Identifies a pair of parallel lines
M14_06B	Identifies a street perpendicular to a given street

#### Data Display

M03_13	Identifies the bar graph that shows a given piece of information
M05_12	Completes a bar graph from data in a table
M06_11	Identifies information from a pie chart
M09_12	Completes a table from given information by counting
M10_11A	Reads data from a bar graph
M13_12	Identifies the largest increase shown in a bar graph

### Items at Intermediate International Benchmark (475)

#### Number

M01_01	Selects appropriate information and uses it to solve a simple multiplication problem
M02_01	Solves a word problem involving addition of decimals (one place)
M03_01	Identifies the value of a digit in a four-digit number
M03_03	Shades half of a geometric figure divided into four equal parts
M04_01	Subtracts a three-digit number from a four-digit number
M05_05	Selects the expression that represents a word problem involving addition
M06_01	Identifies the number sentence that represents a word problem involving subtraction
M06_06A	Extends a given geometric pattern to draw a specified term

M07_06B	Extends a numeric sequence based on a geometric pattern
M11_01	Identifies the rectangular representation for a unit fraction
M11_04	Writes a fraction that represents a subset of a set of objects
M13_02	Solves a word problem involving multiplication of one-digit numbers
M14_02	Identifies the representation of a non-unit fraction

### Geometric Shapes and Measures

M01_06	Identifies a three-dimensional object given the pictures of its faces
M02_07B	Given the coordinates on a map, determines the position
M03_08	Writes the names of three familiar geometrical shapes
M03_09	Determines the number of cubes in a stack with some hidden
M04_09	Draws the reflection of a simple shape across a line
M05_10	Orders four angles by size
M07_10	Identifies the moves to get from one position to another on a map grid
M07_11	Identifies the figure in which a line of symmetry is shown
M13_06A	Identifies the shape made by connecting specified dots on a circle
M14_07	Identifies the number of triangular faces in a given three-dimensional shape

### Data Display

M02_10	Reads data from a pictograph
M03_14	Identifies the bar graph that matches the information shown in a pie chart
M06_12	Identifies the bar graph that matches the information shown in a table
M11_11	Interprets a bar graph to solve a problem
M11_12	Recognizes which set of labels on a bar graph could show given information
M13_11	Interprets information in a table to solve a problem
M14_09A	Identifies the greatest value in a bar graph

## Items at High International Benchmark (550)

### Number

M01_08	Solves a word problem involving measures and proportional reasoning
M02_05	Multiplies a two-digit number by another two-digit number
M02_06	Determines the number of objects in the next term of a geometric pattern
M03_04	Given five different digits, writes the smallest possible three-digit number
M03_05	Writes a number between two consecutive whole numbers
M04_02	Solves a word problem involving division of two-digit numbers with a remainder
M04_06	Identify a term in a repeating pictorial pattern using division with a remainder
M05_09	Identifies the appropriate operation to solve a word problem involving division
M06_02	Identifies the number that is a hundred more than a given four-digit number
M06_04	Identifies appropriately rounded numbers in a multiplication problem
M06_06	Extends a given geometric pattern to find the value of the 16th term
M07_03	Generalizes from the first several terms of a numeric sequence to select another number that is also in the sequence

M07_06	Generalizes from the first several terms of a numeric sequence to find the tenth term
M07_08	Solves a word problem involving addition of time and conversion between hours and minutes
M08_02	Identifies the number closest in size to a given four-digit number
M08_03	Solves a word problem involving division
M08_04	Solves a word problem involving addition of time
M09_02	Identifies the whole number closest to a given multiple of a hundred
M10_01	Selects an expression that represents a given relationship
M11_02	Uses knowledge of place value to solve a problem involving a five-digit number
M11_05	Identifies the largest of a set of unit fractions
M12_03	Solves a word problem involving two-digit numbers
M12_05	Solves a number sentence involving multiplication facts
M13_03	Identifies multiples of a given number
M13_04	Adds two two-place decimals
M13_05	Follows a rule to complete a table
M14_01	Identifies the set of numbers having a given number as factors
M14_04A	Solves a word problem involving rectangular representations of fractions
M14_04B	Solves a word problem involving rectangular representations of fractions
M14_05	Follows a two-step rule to extend a number pattern

### Geometric Shapes and Measures

M02_07A	Given a position on a map, gives its coordinates
M02_08	Completes a shape so that it has line symmetry and a given number of sides
M03_07	Given a set of angles, identifies the right angle
M03_10	Draws the reflection of a shape across a line
M03_11	Identifies the distance around a square given the length of one side
M04_07	Identifies a shape that can be made by combining two given shapes
M04_08	Identifies a property common to two triangles
M05_11	Identifies a pattern generated by quarter turns clockwise
M06_08	Draws the line of symmetry on a given polygon
M08_08	Identifies a shape with a right angle
M08_09	Identifies a shape that has both line and rotational symmetry
M08_11	Solves a problem by filling a three-dimensional shape with rectangular solids
M09_08	Uses knowledge about properties of rectangles to classify statements as true or false
M09_10	Identifies a net of a cube
M10_07	Identifies a shape that has a line of symmetry
M10_09	Identifies the stack of cubes with the largest volume
M10_10	Given a starting position on a map, follows specified moves and provides final coordinates
M11_07	Identifies a pair of shapes which are not mirror images of each other
M12_08	Given a line, draws another line to form an angle less than a right angle
M12_09	Identifies the two-dimensional view of a three-dimensional object
M13_06B	Draws a specified geometric shape by connecting dots on a circle
M13_06C	Draws a specified geometric shape by connecting dots on a circle
M13_07	Identifies the number of edges of a solid shown in a picture
M13_08	Determines the perimeter of a figure made of squares
M14_06A	Identifies a street parallel to a given street

## Data Display

M02_11	Solves a multi-step reasoning problem using data from a bar graph
M04_11	Compares information in a table and a bar graph to solve a problem
M04_12	Interprets data from a pie chart to solve a problem
M05_07	Identifies the value of an unlabeled mark on a circular scale
M07_12	Interprets data from a bar graph to solve a problem
M08_12	Completes a bar graph using information from a pictograph
M09_13	Completes a bar graph from information given in a tally chart
M10_11B	Uses information from a bar graph to solve a problem
M11_13A	Finds totals and decides which one is the least
M12_11	Uses information from a bar graph to solve problem
M12_12	Identifies a pie chart that has the same information as a bar graph

## Items at Advanced International Benchmark (625)

### Number

M01_01B	Selects appropriate information and uses it to solve a multi-step problem involving proportions
M01_01C	Selects appropriate information and uses it to solve a proportion problem
M01_02	Selects appropriate information and uses it to solve a proportion problem
M02_02	Given a set of fractions, identifies a fraction not equivalent to the others
M02_03	Solves a multi-step numerical reasoning problem
M03_02	Solves a word problem involving division and rounding up the remainder
M03_06	Adds two familiar unit fractions to solve a word problem
M04_03	Solves a word problem involving subtraction of time and conversion between hours and minutes
M04_05	Solves a multi-step problem involving two-place decimals and whole numbers
M05_02	Identifies all the numbers in a given interval ending in a given string of digits
M05_03	Halves the amounts in a recipe involving whole numbers and fractions
M05_06	Identifies the two-step rule for a linear relationship between the first and second numbers in a set of ordered pairs of numbers
M06_03	Identifies six of the six factors of a two-digit number
M06_05	Identifies equivalent familiar fractions in a context
M07_01	Given a unit fraction, identifies a larger fraction with a different denominator
M07_02	Solves a multi-step word problem involving halving, doubling, and adding
M07_05	Identifies the number that satisfies a number sentence involving addition of two terms on each side
M08_05	Identifies a fraction equivalent to a given fraction
M09_03	Identifies the smallest number from a set of one- and two-place decimals
M09_04A	Identifies the circular representation of a non-unit fraction
M09_04B	Explains why a chosen circular representation shows a given non-unit fraction
M09_05	Identifies the missing first number in a number sentence involving subtraction
M09_06	Identifies the two-step rule that relates the numbers in two columns of a table
M10_02	Identifies the closest estimate to the result of a subtraction involving a five-digit number
M10_03	Given four different digits, writes two two-digit numbers with the largest sum

M10_04	Identifies a two-place decimal on a number line marked with one-place decimals
M10_05	Solves a multi-step problem involving two-place decimals and whole numbers
M11_03	Estimates the quotient of a four-digit number divided by a two-digit number
M11_06	Solves a word problem involving proportional reasoning
M12_01	Solves a multi-step word problem involving multiplication and addition of whole numbers
M12_02	Identifies a fraction equivalent to a one place decimal
M12_04	Identifies a set of objects with a given fraction shaded
M12_06	Adds a whole number and a two-place decimal
M14_03	Solves a multi-step problem involving division and gives a reason for their answer

### Geometric Shapes and Measures

M01_07	Identifies the position of a shape after a half-turn rotation
M02_09	Identifies the number of lines of symmetry in an unfamiliar shape
M04_10	Finds the perimeter of a given figure made of a square and a rectangle
M05_08	Determines the area of a figure made up of squares and half squares on a grid
M06_09	Given the pictures of two common solids, classifies four statements as true or false
M06_10	Matches a solid to its net
M07_09	Draws an angle greater than $90^\circ$
M08_10	Determines the length of one side of an equilateral triangle and finds its perimeter
M09_09	Solves a multi-step word problem involving perimeter
M09_11	Identifies the area of a right triangle drawn on a grid
M10_08	Selects an appropriate unit of length to use in three different contexts
M11_08	Determines the number of cubes in a given rectangular box
M11_09	Identifies the area of an isosceles triangle drawn on a grid
M11_10	Draws a line through a given point perpendicular to a given line
M12_07	Reads a ruler to find the length of an object
M12_10	Finds the area of a rectangle given its dimensions
M13_09	Estimates the length of a curved line in non-standard units
M13_10	Draws all four lines of symmetry on a non-standard shape

### Data Display

M11_13B	Draws and justifies a conclusion from data given in a table
M14_09B	Interprets a bar graph to solve a two-step problem

## Items Above the Advanced International Benchmark (625)

### Number

M01_03	Selects the appropriate information and uses it to solve a multi-step problem involving two proportions
M02_04	Solves a multi-step word problem involving proportional thinking
M04_04	Solves a non-routine problem presented pictorially
M08_06	Solves a multi-step problem involving fractions
M10_06	Solves a multi-step reasoning problem involving place value of whole numbers

## Geometric Shapes and Measures

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M03_12	Classifies polygons according to two given properties
M07_07	Estimates the length of a curved line next to the middle of a ruler
M08_07	Identifies a rule to sort shapes into two sets
M14_08	Identifies a net of a given object

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## Data Display

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None

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