Texas Assessment of Knowledge and Skills

Mathematics Survey — Grade 4

Fall 2006

Survey of Content Proposed To Be Assessed

- **TAKS Objectives**

- **TEKS Knowledge and Skills Statements**

- **TEKS Student Expectations**

TAKS

Mathematics

Grade 4

TAKS Mathematics Survey — Grade 4

IMPORTANT!

This survey includes the knowledge and skills statements and student expectations from the grade 4 mathematics TEKS, the state-mandated curriculum, that are proposed for assessment on TAKS. Also included are the TAKS objectives for grade 4 mathematics.

- Each **objective** represents knowledge and skills measured on the statewide assessment for mathematics. These objectives have been in place for TAKS since 2003 and are unchanged. No input is sought regarding these objectives.

- Below each objective are **knowledge and skills statements**, broad statements describing what students should know and be able to do in mathematics. Each knowledge and skills statement has been taken verbatim from the recently refined TEKS. The number preceding each statement indicates its location in the TEKS. No input is sought regarding these statements.

- Listed below the objectives and knowledge and skills statements are the **student expectations** addressing the content proposed for assessment. Each student expectation has also been taken verbatim from the recently refined TEKS. The letter preceding each statement indicates its location in the TEKS. Input is sought regarding the inclusion of each student expectation in TAKS grade 4 mathematics.

  o The student expectations describe what students should know or be able to do to demonstrate proficiency in the objective.

  o The student expectations provide a detailed picture of each objective. Students will be tested on skills described in the student expectations.

TAKS Mathematics Survey — Grade 4

Please review the content described below and respond to the statements following each student expectation.

Objective 1
The student will demonstrate an understanding of numbers, operations, and quantitative reasoning.

Knowledge and Skills Statement
4.1   **Number, operation, and quantitative reasoning**. The student uses place value to represent whole numbers and decimals. The student is expected to:

Student Expectations:

    (A)   use place value to read, write, compare, and order whole numbers through 999,999,999
- ⊙ Essential to measure
- ⊙ Do not measure
- ⊙ Essential to measure, but not in its entirety – please comment below

Additional comments: _____

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    (B)   use place value to read, write, compare, and order decimals involving tenths and hundredths, including money, using concrete objects and pictorial models
- ⊙ Essential to measure
- ⊙ Do not measure
- ⊙ Essential to measure, but not in its entirety – please comment below

Additional comments: _____

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Knowledge and Skills Statement

4.2 **Number, operation, and quantitative reasoning.** The student describes and compares fractional parts of whole objects or sets of objects. The student is expected to:

Student Expectations:
- **(A)** use concrete objects and pictorial models to generate equivalent fractions
  - ⊙ Essential to measure
  - ⊙ Do not measure
  - ⊙ Essential to measure, but not in its entirety – please comment below

  Additional comments: _____
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- **(B)** model fraction quantities greater than one using concrete objects and pictorial models
  - ⊙ Essential to measure
  - ⊙ Do not measure
  - ⊙ Essential to measure, but not in its entirety – please comment below

  Additional comments: _____
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- **(C)** compare and order fractions using concrete objects and pictorial models
  - ⊙ Essential to measure
  - ⊙ Do not measure
  - ⊙ Essential to measure, but not in its entirety – please comment below

  Additional comments: _____
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- **(D)** relate decimals to fractions that name tenths and hundredths using concrete objects and pictorial models
  - ⊙ Essential to measure
  - ⊙ Do not measure
  - ⊙ Essential to measure, but not in its entirety – please comment below

  Additional comments: _____
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Knowledge and Skills Statement

4.3 **Number, operation, and quantitative reasoning.** The student adds and subtracts to solve meaningful problems involving whole numbers and decimals. The student is expected to:

Student Expectations:

   (A)   use addition and subtraction to solve problems involving whole numbers
   - ⊙ Essential to measure
   - ⊙ Do not measure
   - ⊙ Essential to measure, but not in its entirety – please comment below

   Additional comments: _____

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   (B)   add and subtract decimals to the hundredths place using concrete objects and pictorial models
   - ⊙ Essential to measure
   - ⊙ Do not measure
   - ⊙ Essential to measure, but not in its entirety – please comment below

   Additional comments: _____

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Knowledge and Skills Statement

4.4   **Number, operation, and quantitative reasoning**. The student multiplies and divides to solve meaningful problems involving whole numbers. The student is expected to:

Student Expectations:

   (A)   model factors and products using arrays and area models
   - ⊙ Essential to measure
   - ⊙ Do not measure
   - ⊙ Essential to measure, but not in its entirety – please comment below

   Additional comments: _____

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   (B)   represent multiplication and division situations in picture, word, and number form
   - ⊙ Essential to measure
   - ⊙ Do not measure
   - ⊙ Essential to measure, but not in its entirety – please comment below

   Additional comments: _____

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(C) recall and apply multiplication facts through 12 x 12
- ⊙ Essential to measure
- ⊙ Do not measure
- ⊙ Essential to measure, but not in its entirety – please comment below

Additional comments: _____

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(D) use multiplication to solve problems (no more than two digits times two digits without technology)
- ⊙ Essential to measure
- ⊙ Do not measure
- ⊙ Essential to measure, but not in its entirety – please comment below

Additional comments: _____

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(E) use division to solve problems (no more than one-digit divisors and three-digit dividends without technology)
- ⊙ Essential to measure
- ⊙ Do not measure
- ⊙ Essential to measure, but not in its entirety – please comment below

Additional comments: _____

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Knowledge and Skills Statement

4.5 **Number, operation, and quantitative reasoning.** The student estimates to determine reasonable results. The student is expected to:

Student Expectations:

(A) round whole numbers to the nearest ten, hundred, or thousand to approximate reasonable results in problem situations
- ⊙ Essential to measure
- ⊙ Do not measure
- ⊙ Essential to measure, but not in its entirety – please comment below

Additional comments: _____
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(B) use strategies including rounding and compatible numbers to estimate solutions to multiplication and division problems
- ⊙ Essential to measure
- ⊙ Do not measure
- ⊙ Essential to measure, but not in its entirety – please comment below

Additional comments: _____
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TAKS Mathematics Survey — Grade 4

Please review the content described below and respond to the statements following each student expectation.

Objective 2

The student will demonstrate an understanding of patterns, relationships, and algebraic reasoning.

Knowledge and Skills Statement

4.6 **Patterns, relationships, and algebraic thinking.** The student uses patterns in multiplication and division. The student is expected to:

Student Expectations:

(A) use patterns and relationships to develop strategies to remember basic multiplication and division facts (such as the patterns in related multiplication and division number sentences (fact families) such as 9 x 9 = 81 and 81 ÷ 9 = 9)

- ⊙ Essential to measure
- ⊙ Do not measure
- ⊙ Essential to measure, but not in its entirety – please comment below

Additional comments: _____

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(B) use patterns to multiply by 10 and 100

- ⊙ Essential to measure
- ⊙ Do not measure
- ⊙ Essential to measure, but not in its entirety – please comment below

Additional comments: _____

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Knowledge and Skills Statement

4.7   **Patterns, relationships, and algebraic thinking.** The student uses organizational structures to analyze and describe patterns and relationships. The student is expected to:

Student Expectations:

    (A)   describe the relationship between two sets of related data such as ordered pairs in a table

- ⊙ Essential to measure
- ⊙ Do not measure
- ⊙ Essential to measure, but not in its entirety – please comment below

Additional comments: _____

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TAKS Mathematics Survey — Grade 4

Please review the content described below and respond to the statements following each student expectation.

Objective 3

The student will demonstrate an understanding of geometry and spatial reasoning.

Knowledge and Skills Statement

4.8 **Geometry and spatial reasoning.** The student identifies and describes attributes of geometric figures using formal geometric language. The student is expected to:

Student Expectations:

(A) identify and describe right, acute, and obtuse angles
- ⦿ Essential to measure
- ⦿ Do not measure
- ⦿ Essential to measure, but not in its entirety – please comment below

Additional comments: _____
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(B) identify and describe parallel and intersecting (including perpendicular) lines using concrete objects and pictorial models
- ⦿ Essential to measure
- ⦿ Do not measure
- ⦿ Essential to measure, but not in its entirety – please comment below

Additional comments: _____
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(C) use essential attributes to define two- and three-dimensional geometric figures
- ⦿ Essential to measure
- ⦿ Do not measure
- ⦿ Essential to measure, but not in its entirety – please comment below

Additional comments: _____
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Knowledge and Skills Statement

4.9 **Geometry and spatial reasoning.** The student connects transformations to congruence and symmetry. The student is expected to:

Student Expectations:

(A) demonstrate translations, reflections, and rotations using concrete models
- ⊙ Essential to measure
- ⊙ Do not measure
- ⊙ Essential to measure, but not in its entirety – please comment below

Additional comments: _____
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(B) use translations, reflections, and rotations to verify that two shapes are congruent
- ⊙ Essential to measure
- ⊙ Do not measure
- ⊙ Essential to measure, but not in its entirety – please comment below

Additional comments: _____
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(C) use reflections to verify that a shape has symmetry
- ⊙ Essential to measure
- ⊙ Do not measure
- ⊙ Essential to measure, but not in its entirety – please comment below

Additional comments: _____
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Knowledge and Skills Statement

4.10   **Geometry and spatial reasoning.** The student recognizes the connection between numbers and their properties and points on a line. The student is expected to:

Student Expectations:

(A)   locate and name points on a number line using whole numbers, fractions such as halves and fourths, and decimals such as tenths

⊙ Essential to measure

⊙ Do not measure

⊙ Essential to measure, but not in its entirety – please comment below

Additional comments: _____

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TAKS Mathematics Survey — Grade 4

Please review the content described below and respond to the statements following each student expectation.

Objective 4

The student will demonstrate an understanding of the concepts and uses of measurement.

Knowledge and Skills Statement

4.11   Measurement. The student applies measurement concepts. The student is expected to estimate and measure to solve problems involving length (including perimeter) and area. The student uses measurement tools to measure capacity/volume and weight/mass. The student is expected to:

Student Expectations:

   (A)   estimate and use measurement tools to determine length (including perimeter), area, capacity and weight/mass using standard units SI (metric) and customary
   - ⊙ Essential to measure
   - ⊙ Do not measure
   - ⊙ Essential to measure, but not in its entirety – please comment below

   Additional comments: _____

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   (B)   perform simple conversions between different units of length, between different units of capacity, and between different units of weight within the customary measurement system
   - ⊙ Essential to measure
   - ⊙ Do not measure
   - ⊙ Essential to measure, but not in its entirety – please comment below

   Additional comments: _____

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(C) use concrete models of standard cubic units to measure volume
- ⊙ Essential to measure
- ⊙ Do not measure
- ⊙ Essential to measure, but not in its entirety – please comment below

Additional comments: _____
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(D) estimate volume in cubic units
- ⊙ Essential to measure
- ⊙ Do not measure
- ⊙ Essential to measure, but not in its entirety – please comment below

Additional comments: _____
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(E) explain the difference between weight and mass
- ⊙ Essential to measure
- ⊙ Do not measure
- ⊙ Essential to measure, but not in its entirety – please comment below

Additional comments: _____
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Knowledge and Skills Statement

4.12 **Measurement.** The student applies measurement concepts. The student measures time and temperature (in degrees Fahrenheit and Celsius). The student is expected to:

Student Expectations:
(A) use a thermometer to measure temperature and changes in temperature
- ⊙ Essential to measure
- ⊙ Do not measure
- ⊙ Essential to measure, but not in its entirety – please comment below

Additional comments: _____
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(B) use tools such as a clock with gears or a stopwatch to solve problems involving elapsed time

- ⊙ Essential to measure
- ⊙ Do not measure
- ⊙ Essential to measure, but not in its entirety – please comment below

Additional comments: _____

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TAKS Mathematics Survey — Grade 4

Please review the content described below and respond to the statements following each student expectation.

Objective 5

The student will demonstrate an understanding of probability and statistics.

Knowledge and Skills Statement

4.13 **Probability and statistics.** The student solves problems by collecting, organizing, displaying, and interpreting sets of data. The student is expected to:

Student Expectations:

(A) use concrete objects or pictures to make generalizations about determining all possible combinations of a given set of data or of objects in a problem situation
- ⊙ Essential to measure
- ⊙ Do not measure
- ⊙ Essential to measure, but not in its entirety – please comment below

Additional comments: _____

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(B) interpret bar graphs
- ⊙ Essential to measure
- ⊙ Do not measure
- ⊙ Essential to measure, but not in its entirety – please comment below

Additional comments: _____

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TAKS Mathematics Survey — Grade 4

Please review the content described below and respond to the statements following each
student expectation.

Objective 6
**The student will demonstrate an understanding of the mathematical
processes and tools used in problem solving.**

Knowledge and Skills Statement
4.14 **Underlying processes and mathematical tools.** The student applies Grade 4
mathematics to solve problems connected to everyday experiences and activities in and
outside of school. The student is expected to:

Student Expectations:
(A) identify the mathematics in everyday situations
- ⊙ Essential to measure
- ⊙ Do not measure
- ⊙ Essential to measure, but not in its entirety – please comment below

Additional comments: _____
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(B) solve problems that incorporate understanding the problem, making a plan,
carrying out the plan, and evaluating the solution for reasonableness
- ⊙ Essential to measure
- ⊙ Do not measure
- ⊙ Essential to measure, but not in its entirety – please comment below

Additional comments: _____
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(C) select or develop an appropriate problem-solving plan or strategy, including
drawing a picture, looking for a pattern, systematic guessing and checking,
acting it out, making a table, working a simpler problem, or working
backwards to solve a problem
- ⊙ Essential to measure
- ⊙ Do not measure
- ⊙ Essential to measure, but not in its entirety – please comment below

Additional comments: _____
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(D) use tools such as real objects, manipulatives, and technology to solve problems
- ⦿ Essential to measure
- ⦿ Do not measure
- ⦿ Essential to measure, but not in its entirety – please comment below

Additional comments: _____
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Knowledge and Skills Statement

4.15   Underlying processes and mathematical tools. The student communicates about Grade 4 mathematics using informal language. The student is expected to:

Student Expectations:
    (A) explain and record observations using objects, words, pictures, numbers, and technology
- ⦿ Essential to measure
- ⦿ Do not measure
- ⦿ Essential to measure, but not in its entirety – please comment below

Additional comments: _____
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    (B) relate informal language to mathematical language and symbols
- ⦿ Essential to measure
- ⦿ Do not measure
- ⦿ Essential to measure, but not in its entirety – please comment below

Additional comments: _____
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Knowledge and Skills Statement

4.16 **Underlying processes and mathematical tools.** The student uses logical reasoning. The student is expected to:

Student Expectations:

(A) make generalizations from patterns or sets of examples and nonexamples

- ⊙ Essential to measure
- ⊙ Do not measure
- ⊙ Essential to measure, but not in its entirety – please comment below

Additional comments: _____

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(B) justify why an answer is reasonable and explain the solution process

- ⊙ Essential to measure
- ⊙ Do not measure
- ⊙ Essential to measure, but not in its entirety – please comment below

Additional comments: _____

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TAKS Mathematics Survey — Grade 4

Survey of Additional Information

The Texas Education Agency is exploring several issues related to the TAKS mathematics test at grade 4. We would appreciate your response to the following questions.

Do you use graph paper as a regular part of classroom mathematics instruction?

⊙ Yes
⊙ No
⊙ Not sure—please comment below

Additional comments: _____

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Should 1 sheet of graph paper be included in the back of the test booklet for TAKS grade 4 mathematics?

⊙ Yes
⊙ No
⊙ Not sure—please comment below

Additional comments: _____

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Do you have any suggested changes to the TAKS grade 4 mathematics chart?

Please comment below: