To the Parent(s):

After registration is complete and the proctor has been approved, your child may take the Fourth Grade Mathematics Credit by Examination to assess mastery over the Texas Essential Knowledge and Skills.

WHAT TO BRING

- several sharpened No. 2 pencils
- a protractor
- a ruler with centimeters and inches

ABOUT THE EXAM

The examination for Fourth Grade Mathematics consists of 72 questions. There are 65 multiple-choice questions worth 1 point each and 7 short answer questions worth 5 points each. The exam is based on the Texas Essential Knowledge and Skills (TEKS) for this subject. The full list of TEKS is included in this document (it is also available online at the Texas Education Agency website, http://www.tea.state.tx.us/). The TEKS outline specific topics covered in the exam, as well as more general areas of knowledge and levels of critical thinking. Use the TEKS to focus your study in preparation for the exam. You will also find the 4th Grade Reference chart and some sample practice problems with answers. The practice problems are samples and do not cover all the TEKS.

The examination will take place under supervision, and the recommended time limit is three hours. You may not use any notes or books. You will need to bring the materials listed above. A percentage score from the examination will be reported to the official at your school.

In preparation for the examination, review the TEKS for this subject. It is important to prepare adequately. Any textbook from the Texas Adoption list can be used for a review.

The practice exam included in this document will give you a model of the types of questions that will be asked on your examination. It is **not** a duplicate of the actual examination. It is provided to illustrate the format of the exam, not to serve as a complete review sheet.

Good luck on your test!

MATH 4 Mathematics Chart

LENGTH

Metric	Customary
1 kilometer = 1000 meters	1 mile = 1760 yards
1 meter = 100 centimeters	1 mile = 5280 feet
1 centimeter = 10 millimeters	1 yard = 3 feet
	1 foot = 12 inches

CAPACITY AND VOLUME

Metric	Customary
1 liter = 1000 milliliters	1 gallon = 4 quarts
	1 gallon = 128 fluid ounces
	1 quart = 2 pints
	1 pint = 2 cups
	1 cup = 8 fluid ounces

MASS AND WEIGHT

Metric	Customary
1 kilogram = 1000 grams	1 ton = 2000 pounds
1 gram = 1000 milligrams	1 pound = 16 ounces

TIME

1 year = 365 days
1 year = 12 months
1 year = 52 weeks
1 week = 7 days
1 day = 24 hours
1 hour = 60 minutes
1 minute = 60 seconds

Perimeter	square	$P = 4 \times s$
	rectangle	$P = (2 \times l) + (2 \times w)$
Area	square	$A = s \times s$
	rectangle	$A = l \times w$

MATH 4 Practice Exam

Be sure to use the TEKS as the basis for additional study.

1. Examine the number below and answer the questions about the number.

   63,022,075

   A. How is the number written in expanded form?
   B. What digit is in the ten thousands place?
   C. What is the value of 3?
   D. What is the relationship between the ten thousands place and the thousands place?

2. List the following numbers in order from greatest to least:

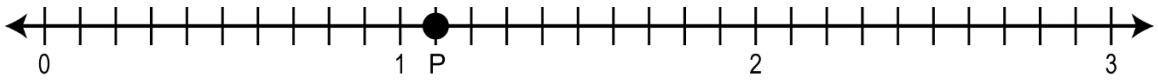
   487,047,921 487,103,111 487,009,999 487,092,031

3. Round 752,985 to the nearest hundred thousand.

4. How is 0.07 written as a fraction?

5. Write a comparison sentence, using $<$, $=$, or $>$ symbols, comparing $\frac{1}{3}$ *and* $\frac{2}{8}$.

6. What point best represents point *P* on the number line below?



7. Write $\frac{3}{5}$ as the sum of unit fractions.

8. To get to the park, Jan walked $\frac{7}{10}$ of a mile. Mark walked $\frac{1}{10}$ of a mile. How much farther did Jan walk than Mark?

9. Third grade drank 10.3 gallons of water at the school picnic. Fourth grade drank 13.25 gallons of water. What is the combined total of water consumed by third and fourth grade?

10. The pet store has 248 dog toys. They can display exactly 5 toys on each shelf. How many shelves will they need to display all of the dog toys?

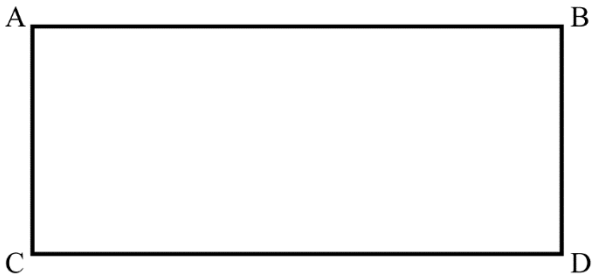
11. Use an area model to find the product of 13×25.

12. Peter read 1,278 pages. If he read 9 books and each book had the same number of pages, how many pages did each book have?

13. Carol bought 5 boxes of envelopes. Each box had 150 envelopes. She used 97 of the envelopes. How many envelopes did she then have?

14. Use a protractor and draw an angle that is 60°. **NOTE: Practice using a protractor to both draw angles and to measure angles.**

15. Measure and label the length of each side of rectangle *ABCD* to the nearest centimeter then answer the questions below.



A. How many lines of symmetry does the rectangle have?
B. What is the perimeter of the rectangle?
C. What is the area of the rectangle?
D. Identify the perpendicular line segments in rectangle *ABCD.*
E. Identify the parallel line segments in rectangle *ABCD.*
F. How many acute angles? How many right angles? How many obtuse angles?

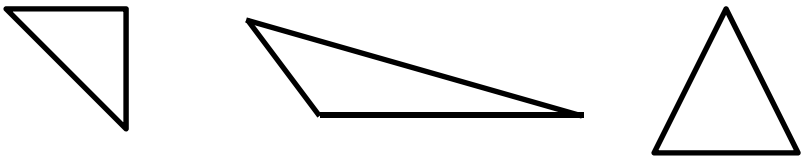
16. Mary created a table to show the relationship between feet and yards. Fill in the missing numbers in the table.

RELATIONSHIP BETWEEN FEET & YARDS

Feet	Yards
3	1
6	2
	5
21	
	9

17. Arthur spent 3 weeks and 4 days at a mountain cabin. How many days was he at the cabin? (NOTE: you must be able to solve problems that deal with length, intervals of time, liquid volumes, mass, and money.)

18. Examine the three triangles below. Identify the acute, right, and obtuse triangle.



Note: Be sure to study different ways to represent data (frequency tables, dot plots, stem-and-leaf plots, scatter plots).

MATH 4 Practice Exam Answer Key

1.

   A. 60,000,000 + 3,000,000 + 20,000 + 2,000 + 70 + 5

   B. 2

   C. 3,000,000

   D. 10 times the thousands place = the ten thousands place AND $\frac{1}{10}$ the ten thousands place = the thousands place

2. 487,103,111 487,092,031 487,047,921 487,009,999

3. 800,000

4. $\frac{7}{100}$

5. $\frac{1}{3} > \frac{2}{8}$ OR $\frac{2}{8} < \frac{1}{3}$

6. 1.1

7. $\frac{3}{5} = \frac{1}{5} + \frac{1}{5} + \frac{1}{5}$

8. $\frac{6}{10}$

9. 23.55 gallons

10. 50 shelves

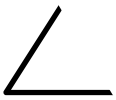
11.

	20	5
10	200	50
3	60	15

200 + 50 + 60 + 15 = 325

12. $1{,}278 \div 9 = 142$ 142 pages

13. 653 envelopes

14. 

15. Dimensions 3 cm wide × 7 cm long

    A. 2 lines of symmetry

    B. P = 20 cm *See Reference Chart for Formulas*

    C. A = 21 square centimeters *See Reference Chart for Formulas*

    D. ($\overline{AB}$ & $\overline{AC}$) ($\overline{AB}$ & $\overline{BD}$) ($\overline{CD}$ & $\overline{AC}$) ($\overline{CD}$ & $\overline{BD}$)

    E. ($\overline{AB}$ & $\overline{CD}$) ($\overline{AC}$ & $\overline{BD}$)

    F. 0 acute angles, 4 right angles, 0 obtuse angles

16. 15 feet = 5 yards
    21 feet = 7 yards
    27 feet = 9 yards

17. 25 days

18. In order shown: right triangle, obtuse triangle, acute triangle

Texas Essential Knowledge and Skills
MATH 4 – Mathematics, Grade 4

TTU K-12: MATH 4 CBE, v.4.0		
TEKS: §111.6. Mathematics, Grade 4, Adopted 2012.		
TEKS Requirement (Elementary)	**Set A Question Numbers**	**Set B Question Numbers**
§111.1. Implementation of Texas Essential Knowledge and Skills for Mathematics, Elementary, Adopted 2012.		
(a) The provisions of §§111.2-111.7 of this subchapter shall be implemented by school districts.		
(b) No later than August 31, 2013, the commissioner of education shall determine whether instructional materials funding has been made available to Texas public schools for materials that cover the essential knowledge and skills for mathematics as adopted in §§111.2-111.7 of this subchapter.		
(c) If the commissioner makes the determination that instructional materials funding has been made available under subsection (b) of this section, §§111.2-111.7 of this subchapter shall be implemented beginning with the 2014-2015 school year and apply to the 2014-2015 and subsequent school years.		
(d) If the commissioner does not make the determination that instructional materials funding has been made available under subsection (b) of this section, the commissioner shall determine no later than August 31 of each subsequent school year whether instructional materials funding has been made available. If the commissioner determines that instructional materials funding has been made available, the commissioner shall notify the State Board of Education and school districts that §§111.2-111.7 of this subchapter shall be implemented for the following school year.		
(e) Sections 111.11-111.17 of this subchapter shall be superseded by the implementation of §§111.1-111.7 under this section.		
§111.6. Grade 4, Adopted 2012.		
(a) Introduction.		
(1) The desire to achieve educational excellence is the driving force behind the Texas essential knowledge and skills for mathematics, guided by the college and career readiness standards. By embedding statistics, probability, and finance, while focusing on computational thinking, mathematical fluency, and solid understanding, Texas will lead the way in mathematics education and prepare all Texas students for the challenges they will face in the 21st century.		
(2) The process standards describe ways in which students are expected to engage in the content. The placement of the process standards at the beginning of the knowledge and skills listed for each grade and course is intentional. The process standards weave the other knowledge and skills together so that students may be successful problem solvers and use mathematics efficiently and effectively in daily life. The process standards are integrated at every grade level and course. When possible, students will apply mathematics to problems arising in everyday life, society, and the workplace. Students will use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution. Students will select appropriate tools such as real objects, manipulatives, algorithms, paper and pencil, and technology and techniques such as mental math, estimation, number sense, and generalization and abstraction to solve problems. Students will effectively communicate mathematical ideas, reasoning, and their implications using multiple representations such as symbols, diagrams, graphs, computer programs, and language. Students will use mathematical relationships to generate solutions and make connections and predictions. Students will analyze mathematical relationships to connect and communicate mathematical ideas. Students will display, explain, or justify mathematical ideas and arguments using precise mathematical language in written or oral communication.		
(3) For students to become fluent in mathematics, students must develop a robust sense of number. The National Research Council's report, "Adding It Up," defines procedural fluency as "skill in carrying out procedures flexibly, accurately, efficiently, and appropriately." As students develop procedural fluency, they must also realize that true problem solving may take time, effort, and perseverance. Students in Grade 4 are expected to perform their work without the use of calculators.		

(4) The primary focal areas in Grade 4 are use of operations, fractions, and decimals and describing and analyzing geometry and measurement. These focal areas are supported throughout the mathematical strands of number and operations, algebraic reasoning, geometry and measurement, and data analysis. In Grades 3-5, the number set is limited to positive rational numbers. In number and operations, students will apply place value and represent points on a number line that correspond to a given fraction or terminating decimal. In algebraic reasoning, students will represent and solve multi-step problems involving the four operations with whole numbers with expressions and equations and generate and analyze patterns. In geometry and measurement, students will classify two-dimensional figures, measure angles, and convert units of measure. In data analysis, students will represent and interpret data.		
(5) Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.		
(b) Knowledge and skills.		
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:		
(A) apply mathematics to problems arising in everyday life, society, and the workplace;	14, 20, 52, 61, 63, 67	14, 20, 52, 61, 63, 67
(B) use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;	23, 36, 42, 62, 68	23, 36, 42, 62, 68
(C) select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems;	22, 55, 60, 71	22, 55, 60, 71
(D) communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;	24, 37, 64, 72	24, 37, 64, 72
(E) create and use representations to organize, record, and communicate mathematical ideas;	18, 50, 69, 72	18, 50, 69, 72
(F) analyze mathematical relationships to connect and communicate mathematical ideas; and	25, 51, 53, 70	25, 51, 53, 70
(G) display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.	1, 31, 32, 46	1, 31, 32, 46
(2) Number and operations. The student applies mathematical process standards to represent, compare, and order whole numbers and decimals and understand relationships related to place value. The student is expected to:		
(A) interpret the value of each place-value position as 10 times the position to the right and as one-tenth of the value of the place to its left;	1	1
(B) represent the value of the digit in whole numbers through 1,000,000,000 and decimals to the hundredths using expanded notation and numerals;	2, 44, 57, 66	2, 44, 57, 66
(C) compare and order whole numbers to 1,000,000,000 and represent comparisons using the symbols >, <, or =;	3	3
(D) round whole numbers to a given place value through the hundred thousands place;	4	4
(E) represent decimals, including tenths and hundredths, using concrete and visual models and money;	5	5
(F) compare and order decimals using concrete and visual models to the hundredths;	6	6
(G) relate decimals to fractions that name tenths and hundredths; and	7, 45, 58	7, 45, 58
(H) determine the corresponding decimal to the tenths or hundredths place of a specified point on a number line.	8	8
(3) Number and operations. The student applies mathematical process standards to represent and generate fractions to solve problems. The student is expected to:		
(A) represent a fraction a/b as a sum of fractions $1/b$, where a and b are whole numbers and $b > 0$, including when a > b;	9	9
(B) decompose a fraction in more than one way into a sum of fractions with the same denominator using concrete and pictorial models and recording results with symbolic representations;	10	10
(C) determine if two given fractions are equivalent using a variety of methods;	11	11
(D) compare two fractions with different numerators and different denominators and represent the comparison using the symbols >, =, or <;	12, 46, 59	12, 46, 59
(E) represent and solve addition and subtraction of fractions with equal denominators using objects and pictorial models that build to the number line and properties of operations;	14, 47, 60	14, 47, 60

(F) evaluate the reasonableness of sums and differences of fractions using benchmark fractions 0, 1/4, 1/2, 3/4, and 1, referring to the same whole; and	15	15
(G) represent fractions and decimals to the tenths or hundredths as distances from zero on a number line.	13	13
(4) Number and operations. The student applies mathematical process standards to develop and use strategies and methods for whole number computations and decimal sums and differences in order to solve problems with efficiency and accuracy. The student is expected to:		
(A) add and subtract whole numbers and decimals to the hundredths place using the standard algorithm;	16, 48, 61, 67	16, 48, 61, 67
(B) determine products of a number and 10 or 100 using properties of operations and place value understandings;	17	17
(C) represent the product of 2 two-digit numbers using arrays, area models, or equations, including perfect squares through 15 by 15;	18	18
(D) use strategies and algorithms, including the standard algorithm, to multiply up to a four-digit number by a one-digit number and to multiply a two-digit number by a two-digit number. Strategies may include mental math, partial products, and the commutative, associative, and distributive properties;	19	19
(E) represent the quotient of up to a four-digit whole number divided by a one-digit whole number using arrays, area models, or equations;	20	20
(F) use strategies and algorithms, including the standard algorithm, to divide up to a four-digit dividend by a one-digit divisor;	21	21
(G) round to the nearest 10, 100, or 1,000 or use compatible numbers to estimate solutions involving whole numbers; and	22	22
(H) solve with fluency one- and two-step problems involving multiplication and division, including interpreting remainders.	23, 49, 62, 68	23, 49, 62, 68
(5) Algebraic reasoning. The student applies mathematical process standards to develop concepts of expressions and equations. The student is expected to:		
(A) represent multi-step problems involving the four operations with whole numbers using strip diagrams and equations with a letter standing for the unknown quantity;	24, 50, 63	24, 50, 63
(B) represent problems using an input-output table and numerical expressions to generate a number pattern that follows a given rule representing the relationship of the values in the resulting sequence and their position in the sequence;	25, 51, 69	25, 51, 69
(C) use models to determine the formulas for the perimeter of a rectangle ($l + w + l + w$ or $2l + 2w$), including the special form for perimeter of a square ($4s$) and the area of a rectangle (l x w); and	26	26
(D) solve problems related to perimeter and area of rectangles where dimensions are whole numbers.	27, 52, 70	27, 52, 70
(6) Geometry and measurement. The student applies mathematical process standards to analyze geometric attributes in order to develop generalizations about their properties. The student is expected to:		
(A) identify points, lines, line segments, rays, angles, and perpendicular and parallel lines;	28	28
(B) identify and draw one or more lines of symmetry, if they exist, for a two-dimensional figure;	29	29
(C) apply knowledge of right angles to identify acute, right, and obtuse triangles; and	30	30
(D) classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines or the presence or absence of angles of a specified size.	31, 53, 64	31, 53, 64
(7) Geometry and measurement. The student applies mathematical process standards to solve problems involving angles less than or equal to 180 degrees. The student is expected to:		
(A) illustrate the measure of an angle as the part of a circle whose center is at the vertex of the angle that is "cut out" by the rays of the angle. Angle measures are limited to whole numbers;	44	44
(B) illustrate degrees as the units used to measure an angle, where 1/360 of any circle is one degree and an angle that "cuts" n/360 out of any circle whose center is at the angle's vertex has a measure of n degrees. Angle measures are limited to whole numbers;	44	44
(C) determine the approximate measures of angles in degrees to the nearest whole number using a protractor;	32, 54,	32, 54,
(D) draw an angle with a given measure; and	71	71
(E) determine the measure of an unknown angle formed by two non-overlapping adjacent angles given one or both angle measures.	33	33

(8) Geometry and measurement. The student applies mathematical process standards to select appropriate customary and metric units, strategies, and tools to solve problems involving measurement. The student is expected to:		
(A) identify relative sizes of measurement units within the customary and metric systems;	34	34
(B) convert measurements within the same measurement system, customary or metric, from a smaller unit into a larger unit or a larger unit into a smaller unit when given other equivalent measures represented in a table; and	35	35
(C) solve problems that deal with measurements of length, intervals of time, liquid volumes, mass, and money using addition, subtraction, multiplication, or division as appropriate.	36, 55, 65	36, 55, 65
(9) Data analysis. The student applies mathematical process standards to solve problems by collecting, organizing, displaying, and interpreting data. The student is expected to:		
(A) represent data on a frequency table, dot plot, or stem-and-leaf plot marked with whole numbers and fractions; and	37, 56, 72	37, 56, 72
(B) solve one- and two-step problems using data in whole number, decimal, and fraction form in a frequency table, dot plot, or stem-and-leaf plot.	38	38
(10) Personal financial literacy. The student applies mathematical process standards to manage one's financial resources effectively for lifetime financial security. The student is expected to:		
(A) distinguish between fixed and variable expenses;	39	39
(B) calculate profit in a given situation;	40	40
(C) compare the advantages and disadvantages of various savings options;	41	41
(D) describe how to allocate a weekly allowance among spending; saving, including for college; and sharing; and	42	42
(E) describe the basic purpose of financial institutions, including keeping money safe, borrowing money, and lending.	43	43
Source: The provisions of this §111.6 adopted to be effective September 10, 2012, 37 TexReg 7109.		