

To the Parent(s):

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

WHAT TO BRING

- several sharpened No. 2 pencils
- lined notebook paper

ABOUT THE EXAM

The examination for Fifth Grade Mathematics consists of 75 questions. There are 70 multiple choice questions worth 1 point each and 5 short answer questions worth 6 points each. The exam is based on the Texas Essential Knowledge and Skills (TEKS) for this subject. The full list of TEKS is included at the end of 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 some sample practice problems with answers.

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 sample practice problems 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 examination!

Sample Practice Problems for Grade 5 Credit by Exam

1. Mr. Gomez has \$405.62 in his checking account. How much does he have after he spends \$37.84?
2. Charles builds a scale model of a bridge that measures 0.572 meters tall. What is 0.572 rounded to the nearest tenth?
3. Each month, Annie earns \$56 tutoring and receives an allowance totaling \$20. Her expenses each month are \$88. How much more does Annie need to earn to balance her budget?
4. Paul's parakeet weighs 45 grams. How many kilograms does the parakeet weigh?
5. A dime has a mass of about 0.002 kilograms. What is the place value of 2 in 0.002?
6. Greg built a rectangular prism with inch cubes. He used 12 inch cubes to make the bottom layer. If the prism was built with a total of 72 cubes, how many layers does Greg's prism have?
7. Stephanie had a starting balance of \$593.27 in her bank account. How much money does Stephanie have left after she spends \$81.75 of the money in her account?
8. Four friends share $\frac{1}{4}$ of a bag of baby carrots. What fraction of the bag of carrots will each person get?
9. Write the correct comparison for the decimals 4.279 and 4.28.
10. Manny buys 4 sheets of 10 stamps each and 5 sheets of 8 stamps each. He uses 34 of the stamps on envelopes. Write an equation that shows how to find s , the number of stamps Manny has left?
11. Jody has 7 cups of apple juice. She uses $\frac{1}{4}$ cup of apple juice in each serving of fruit punch. How many servings of punch can Jody make with the apple juice?

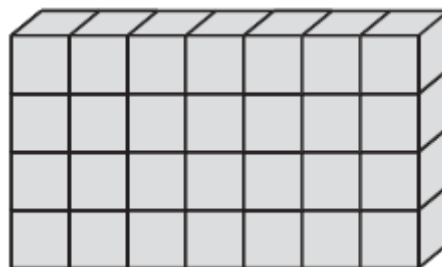
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12. Robin made a chart to keep track of her money.

Robin's April Budget	
Income	Expenses
Allowance: \$28	Photo supplies: \$27
Tutoring: \$18	Savings: \$15
	Stationery: \$9

Which of the following changes should Robin make to balance her budget?

- A. Increase savings by \$5.
 - B. Decrease allowance by \$5.
 - C. Decrease photography supplies purchase by \$5.
 - D. Decrease tutoring income by \$5.
13. Anna plots a point to represent the ordered pair (4, 6). Describe how to locate this point on a coordinate grid?
14. Shayna drew a rectangle that was 3 centimeters by 8 centimeters. Write an equation to represent the area of the rectangle.
15. Michael spent 17.4 minutes folding 100 flyers. If he spent the same amount of time folding each flyer, how many minutes did it take Michael to fold 10 flyers.
16. What is the volume of the rectangular prism below?



17. At an animal shelter, David records the lengths of the cats. In centimeters, the lengths are: 46, 42, 38, 50, 33, 46, 47, 51, 30, 44, 51, 37, 49. How many more cats are longer than 46 centimeters than are exactly 46 centimeters?
18. Ms. Ching sees a stereo she would like to buy. If Ms. Ching pays for the stereo with her credit card, she will pay \$890 plus \$71 in interest. If she pays with her debit card, she will pay \$890 with no interest fee. How much will Ms. Ching save by paying for the stereo with her debit card?

19. There are 249 calories in one serving of chips. How many calories are there in 31 servings of chips?
20. Write the number 2,346,709 in words.
21. Sylvia's corn stalks measured 2.34 feet, 2.04 feet, 2.43 feet, and 2.06 feet. Order the heights of the corn stalks from longest to shortest.
22. Molly's mother made 6 pies. Each pie was cut into 6 equal pieces. If she has 17 pieces left, what is another way to express the amount of pie that was left?
23. Write 12.45 as a fraction and simplify.
24. List the prime numbers between 20 and 30.
25. Describe 2 attributes of a cube.
26. Beverly marked the point (4, 3) on a coordinate grid. Jasmine marked her point 4 up and 2 left from Beverly. What is Jasmine's point?
27. A tea maker can brew 18 cups of tea. How many ounces of tea can it brew?
28. Daniel leaves for a movie at 2:45 p.m. He returns home at 5:15 p.m. How long was he gone?
29. There are 13 stairs leading to the second floor at Angelina's house. She starts on the first stair and skips every other stair. How many stairs does she skip?
30. Melissa purchased 2 dozen pencils at \$3 per dozen, 14 erasers at \$0.25 each, and 4 composition books at \$0.79 each. How much did she spend?

Note: Be sure to study different types of graphs (bar graphs, stem-and-leaf plots, scatter plots).

Answers to Sample Practice Problems

1. \$367.78
2. 0.6
3. \$12
4. 0.045 kilograms
5. thousandth's place
6. 6 layers
7. \$511.52
8. $\frac{1}{16}$
9. $4.279 < 4.28$
10. $s = (4 \times 10) + (5 \times 8) - 34$
11. 28 servings
12. C
13. begin at (0,0), go 4 right and 6 up
14. $A = 3 \times 8$
15. 1.74 minutes
16. 28 cubic units
17. 3 cats
18. \$71
19. 7,719 calories
20. two million, three hundred forty-six thousand, seven hundred nine
21. 2.43 ft., 2.34 ft., 2.06 ft., 2.04 ft.
22. $\frac{17}{36}$

23. $12\frac{9}{20}$

24. 23, 29

25. all 6 faces are square; 8 vertices

26. (2, 7)

27. 144 ounces

28. 2 hours 30 minutes

29. 6 stairs

30. \$12.66

Texas Essential Knowledge and Skills MATH 5 – Grade 5 Mathematics

§111.7. Grade 5, 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 5 are expected to perform their work without the use of calculators.

(4) The primary focal areas in Grade 5 are solving problems involving all four operations with positive rational numbers, determining and generating formulas and solutions to expressions, and extending measurement to area and volume. 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 identify part-to-whole relationships and equivalence. In algebraic reasoning, students will represent and solve problems with expressions and equations, build foundations of functions through patterning, identify prime and composite numbers, and use the order of operations. In geometry and measurement, students will classify two-dimensional figures, connect geometric attributes to the measures of three-dimensional figures, use units of measure, and represent location using a coordinate plane. 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;

(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;

(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;

(D) communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;

(E) create and use representations to organize, record, and communicate mathematical ideas;

(F) analyze mathematical relationships to connect and communicate mathematical ideas; and

(G) display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.

(2) **Number and operations.** The student applies mathematical process standards to represent, compare, and order positive rational numbers and understand relationships as related to place value. The student is expected to:

(A) represent the value of the digit in decimals through the thousandths using expanded notation and numerals;

(B) compare and order two decimals to thousandths and represent comparisons using the symbols $>$, $<$, or $=$; and

(C) round decimals to tenths or hundredths.

(3) **Number and operations.** The student applies mathematical process standards to develop and use strategies and methods for positive rational number computations in order to solve problems with efficiency and accuracy. The student is expected to:

- (A) estimate to determine solutions to mathematical and real-world problems involving addition, subtraction, multiplication, or division;
- (B) multiply with fluency a three-digit number by a two-digit number using the standard algorithm;
- (C) solve with proficiency for quotients of up to a four-digit dividend by a two-digit divisor using strategies and the standard algorithm;
- (D) represent multiplication of decimals with products to the hundredths using objects and pictorial models, including area models;
- (E) solve for products of decimals to the hundredths, including situations involving money, using strategies based on place-value understandings, properties of operations, and the relationship to the multiplication of whole numbers;
- (F) represent quotients of decimals to the hundredths, up to four-digit dividends and two-digit whole number divisors, using objects and pictorial models, including area models;
- (G) solve for quotients of decimals to the hundredths, up to four-digit dividends and two-digit whole number divisors, using strategies and algorithms, including the standard algorithm;
- (H) represent and solve addition and subtraction of fractions with unequal denominators referring to the same whole using objects and pictorial models and properties of operations;
- (I) represent and solve multiplication of a whole number and a fraction that refers to the same whole using objects and pictorial models, including area models;
- (J) represent division of a unit fraction by a whole number and the division of a whole number by a unit fraction such as $1/3 \div 7$ and $7 \div 1/3$ using objects and pictorial models, including area models;
- (K) add and subtract positive rational numbers fluently; and
- (L) divide whole numbers by unit fractions and unit fractions by whole numbers.

(4) **Algebraic reasoning.** The student applies mathematical process standards to develop concepts of expressions and equations. The student is expected to:

- (A) identify prime and composite numbers;
- (B) represent and solve multi-step problems involving the four operations with whole numbers using equations with a letter standing for the unknown quantity;
- (C) generate a numerical pattern when given a rule in the form $y = ax$ or $y = x + a$ and graph;
- (D) recognize the difference between additive and multiplicative numerical patterns given in a table or graph;
- (E) describe the meaning of parentheses and brackets in a numeric expression;
- (F) simplify numerical expressions that do not involve exponents, including up to two levels of grouping;
- (G) use concrete objects and pictorial models to develop the formulas for the volume of a rectangular prism, including the special form for a cube ($V = l \times w \times h$, $V = s \times s \times s$, and $V = Bh$); and
- (H) represent and solve problems related to perimeter and/or area and related to volume.

(5) **Geometry and measurement.** The student applies mathematical process standards to classify two-dimensional figures by attributes and properties. The student is expected to classify two-dimensional figures in a hierarchy of sets and subsets using graphic organizers based on their attributes and properties.

(6) **Geometry and measurement.** The student applies mathematical process standards to understand, recognize, and quantify volume. The student is expected to:

- (A) recognize a cube with side length of one unit as a unit cube having one cubic unit of volume and the volume of a three-dimensional figure as the number of unit cubes (n cubic units) needed to fill it with no gaps or overlaps if possible; and
- (B) determine the volume of a rectangular prism with whole number side lengths in problems related to the number of layers times the number of unit cubes in the area of the base.

(7) **Geometry and measurement.** The student applies mathematical process standards to select appropriate units, strategies, and tools to solve problems involving measurement. The student is expected to solve problems by calculating conversions within a measurement system, customary or metric.

(8) **Geometry and measurement.** The student applies mathematical process standards to identify locations on a coordinate plane. The student is expected to:

- (A) describe the key attributes of the coordinate plane, including perpendicular number lines (axes) where the intersection (origin) of the two lines coincides with zero on each number line and the given point $(0, 0)$; the x -coordinate, the first number in an ordered pair, indicates movement parallel to the x -axis starting at the origin; and the y -coordinate, the second number, indicates movement parallel to the y -axis starting at the origin;
- (B) describe the process for graphing ordered pairs of numbers in the first quadrant of the coordinate plane; and
- (C) graph in the first quadrant of the coordinate plane ordered pairs of numbers arising from mathematical and real-world problems, including those generated by number patterns or found in an input-output table.

(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 categorical data with bar graphs or frequency tables and numerical data, including data sets of measurements in fractions or decimals, with dot plots or stem-and-leaf plots;

(B) represent discrete paired data on a scatterplot; and

(C) solve one- and two-step problems using data from a frequency table, dot plot, bar graph, stem-and-leaf plot, or scatterplot.

(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) define income tax, payroll tax, sales tax, and property tax;

(B) explain the difference between gross income and net income;

(C) identify the advantages and disadvantages of different methods of payment, including check, credit card, debit card, and electronic payments;

(D) develop a system for keeping and using financial records;

(E) describe actions that might be taken to balance a budget when expenses exceed income; and

(F) balance a simple budget.

Source: The provisions of this §111.7 adopted to be effective September 10, 2012, 37 TexReg 7109.