

**To the Student:**

After your registration is complete and your proctor has been approved, you may take the Credit by Examination for MATH 7B.

**WHAT TO BRING**

- several sharpened No. 2 pencils
- lined notebook paper

**ABOUT THE EXAM**

The examination for the second semester of Mathematics consists of 40 questions, of which 35 are multiple choice and the rest are short answer. 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.

The examination will take place under supervision, and the recommended time limit is three hours. You may not use any notes or books. 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. All TEKS are assessed. A list of review topics is included in this document to focus your studies. It is important to prepare adequately. Since questions are not taken from any one source, you can prepare by reviewing any of the state-adopted textbooks that are used at your school. The textbook used with our MATH 7B course is:

Charles, Illingworth, McNemar, Mills, Ramirez, and Reeves. (2008).  
*Texas Mathematics, Course 2*. Boston, MA: Pearson Prentice Hall.  
ISBN 0-13-134018-2

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 examination!

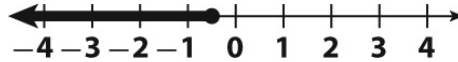
## MATH 7B Concepts

Multiple Representations of Linear Relations	Geometric Relationships	Measurement and Data	Personal Financial Literacy
<p>Writing 2-step Equations</p> <p>Solving 2-step Equations</p> <p>Solving 2-step Inequalities</p>	<p>Angle Relationships</p> <p>Finding Circumference</p> <p>Area of Circles</p> <p>Area of Composite Figures</p> <p>Volume of Rectangular Prisms and Pyramids</p> <p>Volume of Triangular Prisms and Pyramids</p> <p>Lateral and Total Surface Area</p>	<p>Analyzing Categorical Data</p> <p>Comparing Data Displayed in Dot Plots</p> <p>Comparing Data Displayed in Box Plots</p> <p>Populations and Samples</p> <p>Making Inferences from a Random Sample</p> <p>Comparing Populations</p>	<p>Calculating Sales and Income Tax</p> <p>Calculating and Comparing Simple and Compound Interest</p> <p>Making Purchasing Decisions</p> <p>Personal Budgets</p> <p>Planning a Budget</p> <p>Constructing a Net Worth Statement</p>

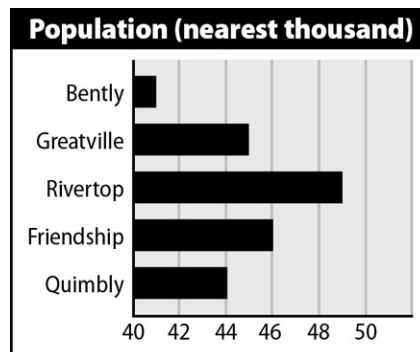
# MATH 7B Practice Exam

**Multiple Choice.** Identify the choice that best completes the statement or answers the question.

1. Which inequality has the graphed solution below?



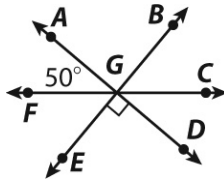
- A.  $-2x - 4 \geq -5$   
B.  $-2x - 4 \geq 5$   
C.  $2x - 4 \leq -5$   
D.  $2x - 4 \leq 5$
2. A school bought basketball equipment costing \$548 and uniforms costing \$29.50 each. The total cost was \$2023. Write an equation you can use to find the number of uniforms the school purchased.
- A.  $29.5u + 548 = 2,023$   
B.  $548u - 29.5 = 2,023$   
C.  $29.5u - 548 = 2,023$   
D.  $548u + 29.5 = 2,023$
3. Which of the following values is a solution to the equation  $5p - 20 = 35$ ?
- A. -11  
B. -3  
C. 3  
D. 11
4. Use the bar graph to solve the problem below.



What percent of the people above live in the two least populous cities? Round to the nearest whole number percent.

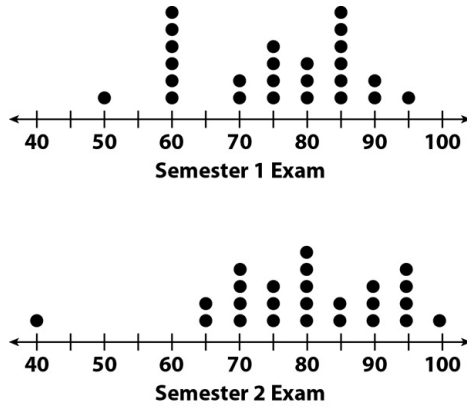
- A. 37%  
B. 40%  
C. 38%  
D. 45%

5. What is the measure of  $\angle BGC$ ?



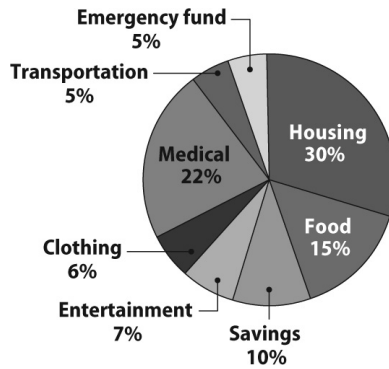
- A.  $30^\circ$
- B.  $40^\circ$
- C.  $45^\circ$
- D.  $50^\circ$

6. Use the dot plots to answer the question below.



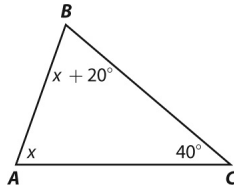
What is the difference in the medians of the two exams?

- A. 5 points
  - B. 10 points
  - C. 15 points
  - D. no difference
7. The Grabo family's monthly budget is shown in the circle graph. The family has a monthly income of \$5,000. How much money do they spend on medical each month?



- A. \$250
- B. \$500
- C. \$1,100
- D. \$1,500

8. Luke can purchase a 12-pound item from several different retailers. Which of the following is the best buy?
- A. Buy online for \$15 plus pay shipping and handling costs of \$0.79 per pound.
  - B. Buy online for \$17 plus pay shipping and handling costs of \$0.69 per pound.
  - C. Buy at a local store where the item's price is \$24.99, and use a \$3-off coupon.
  - D. Buy at a local store where the item's regular price is \$22.50 and it is on sale for 10% off.
9. A triangular prism and a triangular pyramid each have a base that is a triangle with a base of 5 inches and a height of 4 inches. Both the prism and the pyramid are 8 inches high. To the nearest hundredth, how much greater than the volume of the triangular pyramid is the volume of the triangular prism?
- A. 26.67 in.<sup>3</sup>
  - B. 53.33 in.<sup>3</sup>
  - C. 106.67 in.<sup>3</sup>
  - D. 240.00 in.<sup>3</sup>
10. Use the figure to answer the questions below. Show all work.



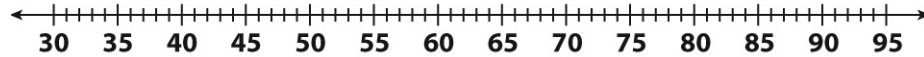
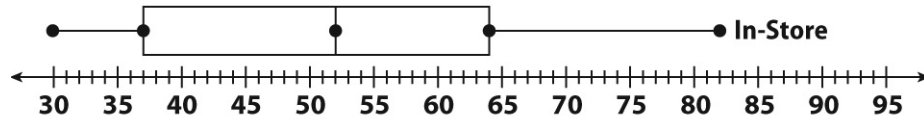
- A. What is the value of  $x$ ? Write an equation and then solve.
- B. What is the measure of  $\angle ABC$ ? Write an equation and then solve.

*continued* →

11. Use the two sets of data to answer the questions below.

In-Store Purchases (\$)
30, 34, 35, 37, 38, 46, 48, 52, 53, 56, 64, 64, 71, 80, 82
Online Purchases (\$)
46, 50, 52, 52, 53, 58, 60, 61, 64, 65, 74, 75, 77, 80, 88

A. The number lines show a box plot for the In-Store Purchases. Make another box plot to show the Online Purchases.



B. Compare the medians.

In-store: \_\_\_\_\_

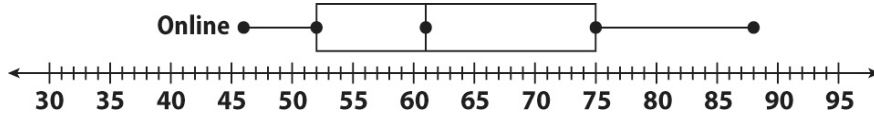
Online: \_\_\_\_\_

C. What conclusion can you draw from the box plots?

## MATH 7B Practice Exam Answer Key

1. C
2. A
3. D
4. C
5. B
6. A
7. C
8. D
9. B
10. A.  $x + x + 20^\circ + 40^\circ = 180^\circ$ ;  $x = 60^\circ$   
B. angle B =  $x + 20^\circ$ ; angle B =  $80^\circ$

11. A.



- B. In store: \$52; online: \$61
- C. Sample answer: Online buyers tend to spend more.

## Texas Essential Knowledge and Skills MATH 7B – MATHEMATICS

§111.27. Grade 7, 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) The primary focal areas in Grade 7 are number and operations; proportionality; expressions, equations, and relationships; and measurement and data. Students use concepts, algorithms, and properties of rational numbers to explore mathematical relationships and to describe increasingly complex situations. Students use concepts of proportionality to explore, develop, and communicate mathematical relationships, including number, geometry and measurement, and statistics and probability. Students use algebraic thinking to describe how a change in one quantity in a relationship results in a change in the other. Students connect verbal, numeric, graphic, and symbolic representations of relationships, including equations and inequalities. Students use geometric properties and relationships, as well as spatial reasoning, to model and analyze situations and solve problems. Students communicate information about geometric figures or situations by quantifying attributes, generalize procedures from measurement experiences, and use the procedures to solve problems. Students use appropriate statistics, representations of data, and reasoning to draw conclusions, evaluate arguments, and make recommendations. While the use of all types of technology is important, the emphasis on algebra readiness skills necessitates the implementation of graphing technology.

(4) 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 and use rational numbers in a variety of forms. The student is expected to extend previous knowledge of sets and subsets using a visual representation to describe relationships between sets of rational numbers.

(3) Number and operations. The student applies mathematical process standards to add, subtract, multiply, and divide while solving problems and justifying solutions. The student is expected to:

(A) add, subtract, multiply, and divide rational numbers fluently; and

(B) apply and extend previous understandings of operations to solve problems using addition, subtraction, multiplication, and division of rational numbers.



(4) Proportionality. The student applies mathematical process standards to represent and solve problems involving proportional relationships. The student is expected to:

(A) represent constant rates of change in mathematical and real-world problems given pictorial, tabular, verbal, numeric, graphical, and algebraic representations, including  $d = rt$ ;

(B) calculate unit rates from rates in mathematical and real-world problems;

(C) determine the constant of proportionality ( $k = y/x$ ) within mathematical and real-world problems;

(D) solve problems involving ratios, rates, and percents, including multi-step problems involving percent increase and percent decrease, and financial literacy problems; and

(E) convert between measurement systems, including the use of proportions and the use of unit rates.

(5) Proportionality. The student applies mathematical process standards to use geometry to describe or solve problems involving proportional relationships. The student is expected to:

(A) generalize the critical attributes of similarity, including ratios within and between similar shapes;

(B) describe  $\pi$  as the ratio of the circumference of a circle to its diameter; and

(C) solve mathematical and real-world problems involving similar shape and scale drawings.

(6) Proportionality. The student applies mathematical process standards to use probability and statistics to describe or solve problems involving proportional relationships. The student is expected to:

(A) represent sample spaces for simple and compound events using lists and tree diagrams;

(B) select and use different simulations to represent simple and compound events with and without technology;

(C) make predictions and determine solutions using experimental data for simple and compound events;

(D) make predictions and determine solutions using theoretical probability for simple and compound events;

(E) find the probabilities of a simple event and its complement and describe the relationship between the two;

(F) use data from a random sample to make inferences about a population;

(G) solve problems using data represented in bar graphs, dot plots, and circle graphs, including part-to-whole and part-to-part comparisons and equivalents;

(H) solve problems using qualitative and quantitative predictions and comparisons from simple experiments; and

(I) determine experimental and theoretical probabilities related to simple and compound events using data and sample spaces.

(7) Expressions, equations, and relationships. The student applies mathematical process standards to represent linear relationships using multiple representations. The student is expected to represent linear relationships using verbal descriptions, tables, graphs, and equations that simplify to the form  $y = mx + b$ .

(8) Expressions, equations, and relationships. The student applies mathematical process standards to develop geometric relationships with volume. The student is expected to:

(A) model the relationship between the volume of a rectangular prism and a rectangular pyramid having both congruent bases and heights and connect that relationship to the formulas;

(B) explain verbally and symbolically the relationship between the volume of a triangular prism and a triangular pyramid having both congruent bases and heights and connect that relationship to the formulas; and

(C) use models to determine the approximate formulas for the circumference and area of a circle and connect the models to the actual formulas.

(9) Expressions, equations, and relationships. The student applies mathematical process standards to solve geometric problems. The student is expected to:

(A) solve problems involving the volume of rectangular prisms, triangular prisms, rectangular pyramids, and triangular pyramids;

(B) determine the circumference and area of circles;

(C) determine the area of composite figures containing combinations of rectangles, squares, parallelograms, trapezoids, triangles, semicircles, and quarter circles; and

(D) solve problems involving the lateral and total surface area of a rectangular prism, rectangular pyramid, triangular prism, and triangular pyramid by determining the area of the shape's net.

(10) Expressions, equations, and relationships. The student applies mathematical process standards to use one-variable equations and inequalities to represent situations. The student is expected to:

(A) write one-variable, two-step equations and inequalities to represent constraints or conditions within problems;

(B) represent solutions for one-variable, two-step equations and inequalities on number lines; and

(C) write a corresponding real-world problem given a one-variable, two-step equation or inequality.

(11) Expressions, equations, and relationships. The student applies mathematical process standards to solve one-variable equations and inequalities. The student is expected to:

(A) model and solve one-variable, two-step equations and inequalities;

(B) determine if the given value(s) make(s) one-variable, two-step equations and inequalities true; and

(C) write and solve equations using geometry concepts, including the sum of the angles in a triangle, and angle relationships.

(12) Measurement and data. The student applies mathematical process standards to use statistical representations to analyze data. The student is expected to:

(A) compare two groups of numeric data using comparative dot plots or box plots by comparing their shapes, centers, and spreads;

(B) use data from a random sample to make inferences about a population; and

(C) compare two populations based on data in random samples from these populations, including informal comparative inferences about differences between the two populations.

(13) Personal financial literacy. The student applies mathematical process standards to develop an economic way of thinking and problem solving useful in one's life as a knowledgeable consumer and investor. The student is expected to:

(A) calculate the sales tax for a given purchase and calculate income tax for earned wages;

(B) identify the components of a personal budget, including income; planned savings for college, retirement, and emergencies; taxes; and fixed and variable expenses, and calculate what percentage each category comprises of the total budget;

(C) create and organize a financial assets and liabilities record and construct a net worth statement;

(D) use a family budget estimator to determine the minimum household budget and average hourly wage needed for a family to meet its basic needs in the student's city or another large city nearby;

(E) calculate and compare simple interest and compound interest earnings; and

(F) analyze and compare monetary incentives, including sales, rebates, and coupons.

*Source: The provisions of this §111.27 adopted to be effective September 10, 2012, 37 TexReg 7109.*