

Mastering the GEE 21

Diagnose – Prescribe – Practice Workbook

Includes:

- Louisiana Mathematics Framework, Grades 9-12 Benchmarks, Correlated to Glencoe's *Geometry* and *Geometry: Concepts and Applications*
- Student Recording Chart
- GEE 21 General Scoring Rubric
- GEE 21 Mathematics Reference Sheet
- Diagnostic Test
- Practice for Each Benchmark
- A Full-Size Sample Test
- Standardized Chapter Tests



Road Map to GEE 21 Success

- 1 Diagnose** strengths and weaknesses by taking the Diagnostic Test.
- 2 Prescribe** a plan for improvement by using the Recording Chart to see where additional practice is needed.
- 3 Practice** test-taking skills by using the practice pages and taking the Sample Test.

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Test-Taking Tips

- Go to bed early the night before the test. You will think more clearly after a good night's rest.
- Read each problem carefully and think about ways to solve the problem before you try to answer the question.
- Relax. Most people get nervous when taking a test. It's natural. Just do your best.
- Answer questions you are sure about first. If you do not know the answer to a question, skip it and go back to that question later.
- Think positively. Some problems may seem hard to you, but you may be able to figure out what to do if you read each question carefully.
- If no figure is provided, draw one. If one is furnished, mark it up to help you solve the problem.
- When you have finished each problem, reread it to make sure your answer is reasonable.
- Become familiar with a variety of formulas and when they should be used.
- Make sure that the number of the question on the answer sheet matches the number of the question on which you are working in your test booklet.



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Mastering the GEE 21: Diagnose, Prescribe, Practice, Grade 10

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Road Map to GEE 21 Success



Checkpoint Ahead

1 Diagnose Strengths and Weaknesses

- Take the **Diagnostic Test** on pages 1–14. This test will help you identify any weaknesses you may have as you prepare to take the test.
- Complete the **Student Recording Chart** found on page v, using a **X** for questions you answered incorrectly.

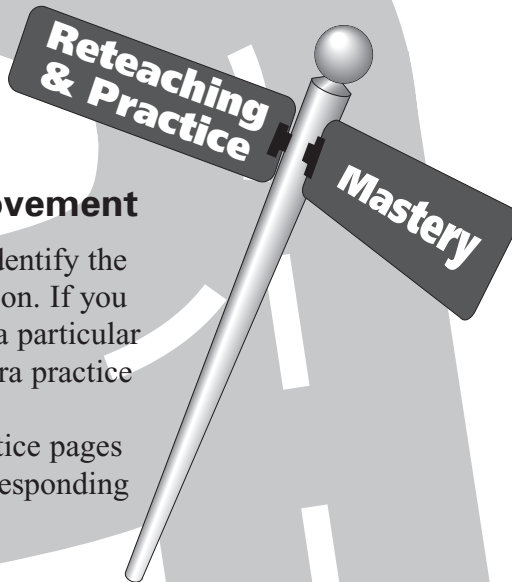
2 Prescribe a Plan for Improvement

- Use your Student Recording Chart to identify the benchmarks that you still need to work on. If you missed one or two of the questions for a particular benchmark, you could probably use extra practice with that benchmark.
- The Student Recording Chart lists practice pages for each benchmark. Complete the corresponding practice pages in your workbook.

3 Practice Test-Taking Skills

After you have completed the practice pages, take the **Sample Test** found on pages 42–55 of this workbook.

- The Sample Test gives you an opportunity to practice and improve your test-taking skills.
- Use the Standardized Chapter Tests on pages 57–70 to practice testing specific chapter topics in the GEE 21 format.



Welcome to
Success!

Name _____

Student Recording Chart

Directions Mark an \times by each question from the Diagnostic Test that you answered *incorrectly*. If there are one or two \times s marked for a benchmark, write *Yes* in the **Need Practice?** box. Then complete the practice pages for that benchmark.

Benchmark	N-2-H	N-3-H	N-5-H	N-6-H	A-1-H	A-2-H
Test Questions	1 <input type="checkbox"/> 12 <input type="checkbox"/> 58 <input type="checkbox"/>	15 <input type="checkbox"/> 25 <input type="checkbox"/> 27 <input type="checkbox"/>	16 <input type="checkbox"/> 47 <input type="checkbox"/> 57 <input type="checkbox"/>	26 <input type="checkbox"/> 51 <input type="checkbox"/> 59 <input type="checkbox"/>	3 <input type="checkbox"/> 33 <input type="checkbox"/> 53 <input type="checkbox"/>	7 <input type="checkbox"/> 43 <input type="checkbox"/>
Need Practice?						
Practice Pages	15	16	17	18	19	20

Benchmark	A-3-H	A-4-H	M-1-H	M-2-H	M-3-H	M-4-H
Test Questions	17 <input type="checkbox"/> 30 <input type="checkbox"/>	38 <input type="checkbox"/> 54 <input type="checkbox"/>	2 <input type="checkbox"/> 22 <input type="checkbox"/> 40 <input type="checkbox"/>	9 <input type="checkbox"/> 32 <input type="checkbox"/> 52 <input type="checkbox"/> 64 <input type="checkbox"/>	10 <input type="checkbox"/> 35 <input type="checkbox"/> 49 <input type="checkbox"/>	62 <input type="checkbox"/>
Need Practice?						
Practice Pages	21	22	23	24, 40	25	40

Benchmark	G-1-H	G-2-H	G-3-H	G-5-H	G-6-H
Test Questions	8 <input type="checkbox"/> 11 <input type="checkbox"/> 37 <input type="checkbox"/>	31 <input type="checkbox"/> 41 <input type="checkbox"/> 56 <input type="checkbox"/>	19 <input type="checkbox"/> 21 <input type="checkbox"/> 45 <input type="checkbox"/>	34 <input type="checkbox"/> 60 <input type="checkbox"/>	20 <input type="checkbox"/> 61 <input type="checkbox"/>
Need Practice?					
Practice Pages	26	27	28	29	41

Benchmark	D-1-H	D-2-H	D-4-H	D-7-H	D-9-H
Test Questions	6 <input type="checkbox"/> 14 <input type="checkbox"/> 44 <input type="checkbox"/> 63 <input type="checkbox"/>	23 <input type="checkbox"/> 42 <input type="checkbox"/>	36 <input type="checkbox"/> 55 <input type="checkbox"/>	13 <input type="checkbox"/> 18 <input type="checkbox"/> 24 <input type="checkbox"/>	29 <input type="checkbox"/> 39 <input type="checkbox"/>
Need Practice?					
Practice Pages	30	31	32	33	34, 41

Benchmark	P-1-H	P-2-H	P-3-H	P-4-H	P-5-H
Test Questions	50 <input type="checkbox"/>	29 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	46 <input type="checkbox"/> 48 <input type="checkbox"/>
Need Practice?					
Practice Pages	35	36	37	38	39

Louisiana Mathematics Framework, Grades 9–12 Benchmarks, Correlated to Glencoe’s *Geometry and Geometry: Concepts and Applications*

The lessons in which the standards are a primary focus are indicated in **bold**. The asterisk (*) indicates those benchmarks addressed on the GEE 21.

Strands and Benchmarks	Geometry Lesson(s)	Geometry: Concepts and Applications Lesson(s)
STRAND N Number and Number Relations		
N-1-H Demonstrating an understanding of the real number system	This objective is addressed in every lesson.	2-1, 7-1, 13-1
N-2-H* Demonstrating that a number can be expressed in many forms, and selecting an appropriate form for a given situation (e.g., fractions, decimals, percents, and scientific notation)		
<ul style="list-style-type: none"> Understand the relationship between fractions, decimals, and percents (e.g., $\frac{1}{5}$ vs. 0.20 vs. 20%) 	<i>Glencoe Algebra 1:</i> PS4	2-1 <i>Algebra: Concepts and Applications:</i> 3-1, 5-3, 5-4, 5-5
<ul style="list-style-type: none"> Understand the effects of operations on quantities expressed as fractions, decimals, or integers (including negative numbers) 	<i>Glencoe Algebra 1:</i> 2-1, 2-2, 2-3, 2-4, PS1, PS2	2-1 <i>Algebra: Concepts and Applications:</i> 3-1, 3-2, 4-1, 4-3,
<ul style="list-style-type: none"> Use scientific notation to describe the magnitude of numbers 	<i>Glencoe Algebra 1:</i> 8-3	<i>Algebra: Concepts and Applications:</i> 8-4
<ul style="list-style-type: none"> Explain why various forms of numbers are appropriate in a given situation 	<i>Glencoe Algebra 1:</i> 2-1, 8-3	7-1, 13-1
N-3-H* Using number sense to estimate and determine if solutions are reasonable	6-2, 7-4, 10-8, 12-6, 13-5	This objective is addressed in every lesson.
N-4-H Determining whether an exact or approximate answer is necessary	This objective is addressed in every lesson.	12-3
N-5-H* Selecting and using appropriate computational methods and tools for given situations (e.g., estimation, or exact computation using mental arithmetic, calculator, symbolic manipulator, or paper and pencil)	This objective is addressed in every lesson.	This objective is addressed in every lesson.
N-6-H* Applying ratios and proportional thinking in a variety of situations (e.g., finding a missing term of a proportion)		
<ul style="list-style-type: none"> find the missing part of a given proportion 	6-1	9-1, 9-2, 9-4, 9-5, 9-6, 9-7, Chapter 10 Investigation, 12-7, 13-4, 13-5, 14-5

P = Preview Lesson, F = Follow-Up Lesson, PS = Prerequisite Skill, RM = Reading Mathematics

Strands and Benchmarks	Geometry Lesson(s)	Geometry: Concepts and Applications Lesson(s)
<ul style="list-style-type: none"> solve problems involving elements of scale drawings 	6-2, 6-3	9-2, 9-4
N-7-H Justifying reasonableness of solutions and verifying results	6-2, 7-4, 10-8, 12-6, 13-5	This objective is addressed in every lesson.
STRAND A Algebra		
A-1-H* Demonstrating the ability to translate real-world situations (e.g., distance versus time relationships, population growth, growth functions for diseases, growth of minimum wage, auto insurance tables) into algebraic expressions, equations, and inequalities and vice versa.		
<ul style="list-style-type: none"> Use letters to represent unknown or arbitrary numbers 	<i>Glencoe Algebra 1: 1-1, 1-3, 2-1, 2-7, 3-1, 4-8, 5-1, 5-3, 5-4, 5-5, 11-3, 11-4, 11-5</i>	4-5 <i>Algebra: Concepts and Applications: 1-1, 1-2</i>
<ul style="list-style-type: none"> Recognize, read, and use various symbols for multiplication and division, including whole number exponents 	<i>Glencoe Algebra 1: 2-3, 2-4</i>	<i>Algebra: Concepts and Applications: 1-1, 1-2, 9-1</i>
<ul style="list-style-type: none"> Use proper order of operations 	<i>Glencoe Algebra 1: 1-2</i>	4-5 <i>Algebra: Concepts and Applications: 1-2</i>
<ul style="list-style-type: none"> Recognize and use grouping symbols (parentheses, brackets, fraction bars, absolute value signs, and square root signs) 	<i>Glencoe Algebra 1: 1-2</i>	4-5 <i>Algebra: Concepts and Applications: 1-1, 1-2</i>
<ul style="list-style-type: none"> Analyze linear patterns in data and represent them algebraically 	<i>Glencoe Algebra 1: 3-9, 4-7, 4-7F, 4-8, 10-7</i>	4-5 <i>Algebra: Concepts and Applications: 7-1, 7-2, 7-3, 7-4</i>
A-2-H* Recognizing the relationship between operations involving real numbers and operations involving algebraic expressions		
<ul style="list-style-type: none"> Evaluate algebraic expressions by applying the correct order of operations 	<i>Glencoe Algebra 1: 1-1, 1-2, 1-3</i>	2-5 <i>Algebra: Concepts and Applications: 1-1, 1-2, 8-2, 9-2, 9-3, 9-4, 9-5, 14-3, 14-4, 15-1, 15-2, 15-3, 15-4, 15-5</i>
<ul style="list-style-type: none"> Solve and graph linear equations and inequalities involving addition, subtraction, multiplication, or division 	PS6, PS7, PS8	<i>Algebra: Concepts and Applications: 7-5, 7-6, 7-7, 12-7, 13-1, 13-7</i>

Strands and Benchmarks	Geometry Lesson(s)	Geometry: Concepts and Applications Lesson(s)
A-3-H* Using tables and graphs as tools to interpret algebraic expressions, equations, and inequalities	3-3, 3-4	4-6 <i>Algebra: Concepts and Applications: 2-1, 2-2, 7-1, 7-2, 7-3, 7-4, 7-5, 7-7, 11-1, 11-3, 11-7, 12-1, 12-7, Chapter 12 Investigation, 13-1, 13-2, 13-7</i>
A-4-H* Solving algebraic equations and inequalities using a variety of techniques with the appropriate tools (e.g., hand-held manipulatives, graphing calculator, symbolic manipulator, or pencil and paper)		
<ul style="list-style-type: none"> Solve and graph real-world problems (addition, subtraction, multiplication, division) involving linear equations or inequalities and systems of linear equations or inequalities 	3-3, 3-4	16-1, 16-2 <i>Algebra: Concepts and Applications: 13-1, 13-2, 13-3, 13-4, 13-5, 13-6, 13-7</i>
<ul style="list-style-type: none"> Solve and graph multi-step linear equations 	PS6, PS8	16-1, 16-2 <i>Algebra: Concepts and Applications: 3-4, 3-5, 3-6, 3-7, 4-4, 4-5, 4-6, 4-7, 5-1, 5-2, 5-3, 5-4, 6-2, 7-1, 7-5, 7-6</i>
STRAND M Measurement		
M-1-H* Selecting and using appropriate units, techniques, and tools to measure quantities in order to achieve specified degrees of precision, accuracy, and error (or tolerance) of measurements.		
<ul style="list-style-type: none"> Measure length and read linear measurement units accurately to the nearest millimeter or sixteenth of an inch 	1-2	1-5, 2-2
<ul style="list-style-type: none"> Understand numerical relationships among units within each system (customary and metric) 	PS2	2-2
<ul style="list-style-type: none"> Compare approximate relationships between systems in terms of intuitive reference points (e.g., 10 yards is approximately 9 meters) 	<i>Glencoe Pre-Algebra: 5-3</i>	2-2
<ul style="list-style-type: none"> Demonstrate an understanding of precision, accuracy, and significant digits 	1-2	2-2
M-2-H* Demonstrating an intuitive sense of measurement (e.g., estimating and determining reasonableness of results as related to area, volume, mass, rate, and distance)	1-5, 6-2, 12-6	1-5, 2-1, 2-2, 10-3

Strands and Benchmarks	Geometry Lesson(s)	Geometry: Concepts and Applications Lesson(s)
M-3-H* Estimating, computing, and applying physical measurement using suitable units (e.g., calculate perimeter and area of plane figures, surface area and volume of solids presented in real-world situations)		
<ul style="list-style-type: none"> Calculate perimeter and area of plane figures and volume of cylinders and rectangular solids shown in diagrams or described in real-world terms <i>Note:</i> Such items draw on geometry skills, but for assessment purposes, items involving these calculations will be treated as mainly related to Measurement. 	1-6, 11-1, 13-1, 13-2	1-6, 2-2, 10-4, 10-5, Chapter 10 Investigation, 11-5, 11-6, 12-3, 12-5, 12-6, 12-7
<ul style="list-style-type: none"> Calculate the surface area of rectangular solids and cylinders. Calculate the volume of rectangular solids, cylinders, cones, and spheres. 	12-3, 12-4, 12-5, 12-6, 13-1, 13-2, 13-3	12-2, 12-3, 12-4, 12-5, 12-6, 12-7
<ul style="list-style-type: none"> Estimate and calculate area, volume, mass, and distance, given a diagram or map, illustration of an object, or a description of a situation 	11-4 <i>Glencoe Pre-Algebra:</i> 11-2, 11-3, 11-4, 11-5 <i>Glencoe Algebra 1:</i> 3-1, 11-5, 12-5, PS12	1-6, 2-1, 2-2, 10-3, 10-4, 10-5, Chapter 10 Investigation, 12-3, 12-5, 12-6, 12-7
<ul style="list-style-type: none"> Understand, read, and write quantities which represent rates, using appropriate units 	<i>Glencoe Algebra 1:</i> 5-1, 5-3P, 10-7F	<i>Algebra: Concepts and Applications:</i> 1-5, 5-1
<ul style="list-style-type: none"> Perform necessary calculations to solve problems involving various kinds of rates (e.g., miles per hour, words per minute) 	<i>Glencoe Algebra 1:</i> 3-8, 12-3, 12-4	2-2 <i>Algebra: Concepts and Applications:</i> 1-5, 5-1
<ul style="list-style-type: none"> Distinguish between instantaneous, average, and constant rates 	<i>Glencoe Algebra 1:</i> 5-1	
M-4-H* Demonstrating the concept of measurement as it applies to real-world experiences	1-2, 6-3	1-6, 2-1, 2-2, 10-4, 10-5, 11-2, 11-3, 11-4, 11-5, 11-6, 12-2, 12-4, 12-5, 12-6, 12-7, 13-2, 13-3, 13-4, Chapter 13 Investigation, 13-5, 14-1, 14-2, 14-3, 14-4, 14-5

Strands and Benchmarks	Geometry Lesson(s)	Geometry: Concepts and Applications Lesson(s)
STRAND G Geometry		
G-1-H* Identifying, describing, comparing, constructing, and classifying geometric figures in two and three dimensions using technology where appropriate to explore and make conjectures about geometric concepts and figures	1-2, 1-4, 1-5, 1-6, 3-1, 4-1, 6-2, 11-4, 12-1	2-3, 3-1, 3-2, Chapter 3 Investigation, 3-3, 3-4, 3-5, 3-6, 3-7, 4-1, 4-4, 5-1, 5-2, 5-3, 5-5, 6-1, 6-2, 6-3, Chapter 6 Investigation, 6-4, 6-5, 6-6, 7-2, 7-3, 7-4, 8-1, 8-2, 8-3, 8-4, 8-5, Chapter 8 Investigation, 9-2, 9-3, 9-4, 9-5, 9-6, 9-7, 10-1, 10-2, 10-5, 10-6, 10-7, 11-1, 11-2, 11-3, 11-4, 11-5, 11-6, 12-1, 12-2, 12-3, 12-4, 12-5, 12-6, 13-2, 13-3, 13-4, 13-5, 14-1, 14-2, 14-3, 14-4, 14-5
G-2-H* Representing and solving problems using geometric models and the properties of those models (e.g., Pythagorean Theorem or formulas involving radius, diameter, and circumference)		
<ul style="list-style-type: none"> Solve a problem involving the Pythagorean theorem 	7-2	6-6, 6-7 , 11-3, 13-2, 13-3, 14-2
<ul style="list-style-type: none"> Solve problems using formulas involving radius, diameter, circumference 	10-1, 10-2, 10-3, 10-8	11-1 , 11-2, 11-3, 11-4, 11-5 , 11-6, 12-2, 12-3, 12-4, 12-5, 12-6, 12-7, 14-1, 14-2, 14-6
G-3-H* Solving problems using coordinate methods, as well as synthetic and transformational methods (e.g., transform on a coordinate plane a design found in real-life situations)		
<ul style="list-style-type: none"> Use coordinate methods to solve real-world problems (e.g., slope) 	3-3	2-4 , Chapter 2 Investigation, 2-5, 4-5 , 4-6, 6-7, 14-6, 15-6
<ul style="list-style-type: none"> Identify slope of a given line 	3-3, 3-4	4-5
<ul style="list-style-type: none"> Match a line with graph, given point and slope or two points 	3-4	4-5 , 4-6
<ul style="list-style-type: none"> Transform a design on a coordinate plane 	9-1, 9-2, 9-3, 9-5	16-3, 16-4, 16-5 , Chapter 16 Investigation
<ul style="list-style-type: none"> Perform translations, reflections, or rotations on a coordinate plane 	9-1, 9-2, 9-3	16-3, 16-4, 16-5 , Chapter 16 Investigation
<ul style="list-style-type: none"> Find the distance between two points on a coordinate plane 	1-3	6-7

Strands and Benchmarks	Geometry Lesson(s)	Geometry: Concepts and Applications Lesson(s)
G-4-H Using inductive reasoning to predict, discover, and apply geometric properties and relationships (e.g., patty paper constructions, sum of the angles in a polygon)	1-1, 2-1, 2-4, 2-5, 2-6, 2-7, 2-8, 4-3, 4-4, 4-5, 4-5F, 4-6, 6-3, 6-4, 6-5, 7-2P, 7-2	1-1, Chapter 1 Investigation , 2-5, Chapter 3 Investigation , 3-3, 4-2, Chapter 4 Investigation , 4-4, 5-2, Chapter 5 Investigation , 5-5, 6-2, 7-2, Chapter 7 Investigation , 8-1, 8-2, 8-4, Chapter 8 Investigation , Chapter 9 Investigation , 10-2, 10-3, Chapter 11 Investigation , 11-3, 11-4, 13-2, 13-3, Chapter 14 Investigation , 14-2
G-5-H* Classifying figures in terms of congruence and similarity and applying these relationships	6-2, 6-3, 6-5	2-3, 3-6, 5-4 , Chapter 5 Investigation, 5-5, 5-6, 9-2, 9-3, 9-4, 9-5 , 9-7, 12-7
G-6-H* Demonstrating deductive reasoning and mathematical justification (e.g., oral explanation, informal proof, and paragraph proof)	2-4, 4-2	2-3, 3-7, 4-3, 5-2, 6-4, 15-1, 15-2, 15-3, 15-4, 15-5
STRAND D Data Analysis, Probability, and Discrete Math		
D-1-H* Designing and conducting statistical experiments that involve the collection, representation, and analysis of data in various forms.		
<ul style="list-style-type: none"> Select the most appropriate type of graph for a given situation and construct, label, and scale bar graphs, line graphs, and/or circle graphs 	10-2 <i>Glencoe Algebra 1: 1-9, 13-3, 13-5F</i>	<i>Algebra: Concepts and Applications: 1-7</i>
<ul style="list-style-type: none"> Organize and display data using frequency distributions, charts and tables, scatter plots, stem-and-leaf plots, box-and-whisker plots, Venn diagrams, and/or spreadsheets 	2-2 <i>Glencoe Algebra 1: 1-9F, 2-1, 2-5, 5-7, 5-7F, 13-4, 13-5, 13-5F, RM13</i>	<i>Algebra: Concepts and Applications: 1-6</i>
<ul style="list-style-type: none"> Calculate/find mean, median, and mode, and recognize which measure of central tendency is most appropriate for a given set of data 	<i>Glencoe Algebra 1: 2-5, PS12</i>	<i>Algebra: Concepts and Applications: 3-3</i>
<ul style="list-style-type: none"> Solve a variety of problems involving measures of central tendency and/or ranges 	<i>Glencoe Algebra 1: 2-5, PS12</i>	<i>Algebra: Concepts and Applications: 3-3, Chapter 5 Investigation</i>

Strands and Benchmarks	Geometry Lesson(s)	Geometry: Concepts and Applications Lesson(s)
D-2-H* Recognizing data that relate two variables as linear, exponential, or otherwise in nature (e.g., match a data set, linear or nonlinear, to a graph and vice versa)	<i>Glencoe Algebra 1</i> : 4-5, 10-1, 10-5	<i>Algebra: Concepts and Applications</i> : 7-1, 7-4, 11-7
D-3-H Using simulations to estimate probabilities (e.g., lists and tree diagrams)	<i>Glencoe Algebra 1</i> : 6-6F, 14-1, 14-2, 14-5	<i>Algebra: Concepts and Applications</i> : Chapter 6 Investigation
D-4-H* Demonstrating an understanding of the calculation of finite probabilities using permutations, combinations, sample spaces, and geometric figures		
<ul style="list-style-type: none"> • Use lists and tree diagrams to generate combinations as part of the solution of a logic problem that involves other steps as well 	<i>Glencoe Algebra 1</i> : 14-1, 14-2	<i>Algebra: Concepts and Applications</i> : 4-2, Chapter 4 Investigation, 5-6, 5-7
<ul style="list-style-type: none"> • Use Venn diagrams 	2-2	<i>Algebra: Concepts and Applications</i> : 5-7
<ul style="list-style-type: none"> • Systematically count how many ways a particular event can happen or a particular choice can be made 	<i>Glencoe Algebra 1</i> : 14-1	<i>Algebra: Concepts and Applications</i> : Chapter 4 Investigation
<ul style="list-style-type: none"> • Calculate the probability of occurrence of a given event 	11-5	11-6
<ul style="list-style-type: none"> • Represent probabilities as common fractions for a given situation 	11-5	11-6
D-5-H Recognizing events as dependent or independent in nature and demonstrating techniques for computing multiple-event probabilities	<i>Glencoe Algebra 1</i> : 14-3	<i>Algebra: Concepts and Applications</i> : 5-7
D-6-H Recognizing and answering questions about data that are normally or non-normally distributed	<i>Glencoe Algebra 2</i> : 12-7	<i>Glencoe Algebra 2</i> : 12-7
D-7-H* Making inferences from data that are organized in charts, tables, and graphs (e.g., pictograph; bar, line, or circle graph; stem-and leaf plot or scatter plot)		
<ul style="list-style-type: none"> • Interpret and summarize a set of experimental data presented in a table, bar graph, line graph, or circle graph in context 	<i>Glencoe Algebra 1</i> : 1-9, 13-3	1-1
<ul style="list-style-type: none"> • Draw conclusions and make predictions from a variety of graphs, charts and tables (e.g., pictograph; bar, line, or circle graph; stem-and-leaf plot or scatter plot) 	<i>Glencoe Algebra 1</i> : 1-9, 1-9F, RM2, 2-5, 5-7, 13-3, 13-4, 13-5, 13-5F	1-1 <i>Algebra: Concepts and Applications</i> : Chapter 7 Investigation

Strands and Benchmarks	Geometry Lesson(s)	Geometry: Concepts and Applications Lesson(s)
<ul style="list-style-type: none"> • Make predictions based on the calculation of the probability of independent events, in a described situation or using experimental data presented in tables or graphs 	<i>Glencoe Algebra 1: 14-3</i>	<i>Algebra: Concepts and Applications: 5-6, 5-7</i>
<ul style="list-style-type: none"> • Explain predictions based on an understanding of the logic of probability 	<i>Glencoe Algebra 1: 2-6, 14-1, 14-2, 14-3, 14-4, 14-5</i>	<i>Algebra: Concepts and Applications: 5-6, 5-7</i>
D-8-H Using logical thinking procedures, such as flow charts, Venn diagrams, and truth tables	2-1, 2-2, 2-3, RM2, 2-4, 2-5, 4-2	1-4, 15-1, 15-2, Chapter 15 Investigation
D-9-H* Using discrete math to model real-life situations (e.g., fair games or elections, map coloring)	<i>Glencoe Algebra 1: 14-1F</i>	<i>Algebra: Concepts and Applications: Chapter 4 Investigation, Chapter 6 Investigation</i>
STRAND P Patterns, Relations, and Functions		
P-1-H* Modeling the concepts of variables, functions, and relations as they occur in the real world, and using the appropriate notation and terminology	<i>Glencoe Algebra 1: 4-3, 4-4, 4-5, 4-6</i>	<i>Algebra: Concepts and Applications: 6-1, 6-3, 6-4</i>
P-2-H* Translating between tabular, symbolic, or graphic representations of functions	2-1, 6-6	4-6 <i>Algebra: Concepts and Applications: 6-1</i>
P-3-H* Recognizing behavior of families of elementary functions, such as polynomial, trigonometric, and exponential functions, and, where appropriate, using graphing technologies to represent them	<i>Glencoe Algebra 1: 5-3F, 10-1F</i>	4-5 <i>Algebra: Concepts and Applications: 7-6, 11-2</i>
P-4-H* Analyzing the effects of changes in parameters (e.g., coefficients and constants) on the graphs of functions, using technology whenever possible	<i>Glencoe Algebra 1: 5-3F</i>	4-5 <i>Algebra: Concepts and Applications: 7-6</i>
P-5-H Analyzing real-world relationships that can be modeled by elementary functions	<i>Glencoe Algebra 1: 4-4, 4-6, 4-8</i>	4-6 <i>Algebra: Concepts and Applications: 6-4, Chapter 6 Investigation</i>

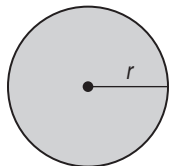
GEE 21 General Scoring Rubric

The general scoring rubric for constructed-response items is:

Score	Description
4	<ul style="list-style-type: none">• The student's response demonstrates in-depth understanding of the relevant content and/or procedures.• The student completes all important components of the task accurately and communicates ideas effectively.• Where appropriate, the student offers insightful interpretations and/or extensions.• Where appropriate, the student uses more sophisticated reasoning and/or efficient procedures.
3	<ul style="list-style-type: none">• The student completes most important aspects of the task accurately and communicates clearly.• The student's response demonstrates an understanding of major concepts and/or processes, although less important ideas or details may be overlooked or misunderstood.• The student's logic and reasoning may contain minor flaws.
2	<ul style="list-style-type: none">• The student completes some parts of the task successfully.• The student's response demonstrates gaps in conceptual understanding.
1	<ul style="list-style-type: none">• The student completes only a small portion of the task and/or shows minimal understanding of the concepts and/or processes.
0	<ul style="list-style-type: none">• The student's response is incorrect, irrelevant, too brief to evaluate, or blank.

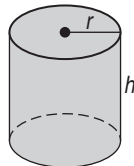
GEE 21 Mathematics Reference Sheet

Circle



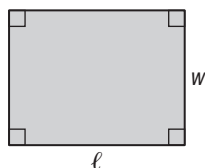
$\pi \approx 3.14$
 Area = πr^2
 Circumference = $2\pi r$

Cylinder



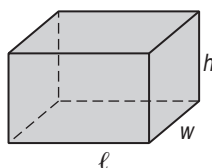
Volume = $\pi r^2 h$
 Surface Area = $2\pi r^2 + 2\pi r h$

Rectangle



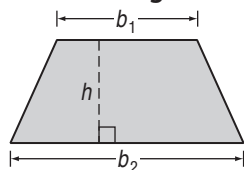
Area = ℓw
 Perimeter = $2w + 2\ell$

Rectangular Solid



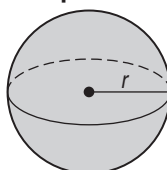
Volume = $\ell w h$
 Surface Area = $2w\ell + 2\ell h + 2wh$

Parallelogram



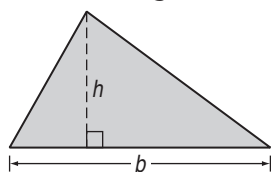
Area = $\frac{1}{2}h(b_1 + b_2)$

Sphere



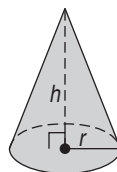
Volume = $\frac{4}{3}\pi r^3$

Triangle



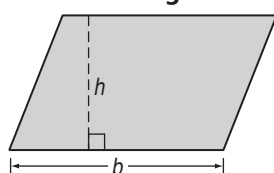
Area = $\frac{1}{2}bh$

Cone



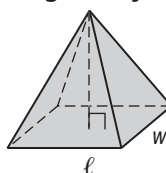
Volume = $\frac{1}{3}\pi r^2 h$

Parallelogram



Area = bh

Rectangular Pyramid



Volume = $\frac{1}{3}\ell w h$

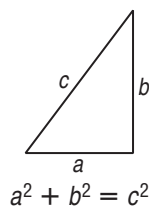
Metric Units of Length

- 1 kilometer = 1,000 meters
- 1 centimeter = 0.01 meter
- 1 millimeter = 0.001 meter
- 1 micrometer = 0.000001 meter

U.S. Units Conversions

- 8 fluid ounces = 1 cup
- 2 cups = 1 pint
- 2 pints = 1 quart
- 4 quarts = 1 gallon
- 16 ounces = 1 pound
- 5,280 feet = 1 mile

Pythagorean Theorem



Cartesian Distance Formula

$AB = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$
 (see note below)

Slope Formula

Slope = $\frac{y_2 - y_1}{x_2 - x_1}$
 (see note below)

Note: Point A: (x_1, y_1)
 Point B: (x_2, y_2)

Diagnostic Test

Part A, Section 1



To be completed *without* the aid of a calculator.

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

- 1** An insect has a mass of 0.000907 kilogram. What is this number expressed in scientific notation? **N-2-H** **1** _____
A 9.07×10^{-5} **B** 9.07×10^{-4}
C 9.07×10^{-3} **D** 9.07×10^3
- 2** Simone is working in a lab at Louisiana State University. She needs to know the volume of a very thin wafer of silicon and germanium that she can place on a fingertip. What is the most appropriate unit of measure for the wafer? **M-1-H** **2** _____
A cubic kilometers **B** cubic meters
C cubic centimeters **D** cubic millimeters
- 3** A vendor at a seafood stand has small shrimp for sale at \$3.75 per pound and large shrimp for sale at \$6.00 per pound. Which represents a total income from the sale of 380 pounds of shrimp of at least \$1750 if x represents the number of pounds of small shrimp sold? **A-1-H** **3** _____
A $3.75x + 6y \geq 380$
B $(380 - x) + x \geq 1750$
C $3.75(380 - x) + 6x \geq 1750$
D $3.75x + 6(380 - x) \geq 1750$

Use the following functions to answer Questions 4 and 5.

$$f(x) = 2^x + 4 \qquad g(x) = -6x^2 - 8$$

$$h(x) = x^2 - 3x + 12 \qquad j(x) = x^3 + 2x^2 - 4x + 10$$

- 4** The graphs of which two functions have the same basic shape? **4** _____
A $f(x)$ and $h(x)$ **P-3-H, GLE 27**
B $g(x)$ and $h(x)$
C $f(x)$ and $g(x)$
D $h(x)$ and $j(x)$
- 5** If the coefficient -6 of $g(x)$ is changed to 6, what change will occur to the graph? **P-4-H, GLE 27** **5** _____
A change from opening to the left to opening to the right
B change from opening to the right to opening to the left
C change from opening down to opening up
D change from opening up to opening down



Diagnostic Test (continued)



Part A, Section 1

To be completed *without* the aid of a calculator.

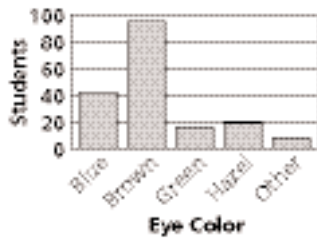
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

- 11** Which is the most specific name that applies to all quadrilaterals with four congruent sides? **G-1-H, GLE 10** **11** _____
- A** parallelogram **B** rectangle
C rhombus **D** square

- 12** Which is the best estimate of the length of a side of a square whose area is 84 square units? **N-2-H, GLE 1** **12** _____
- A** 42 **B** 21
C 9 **D** 8

Use the following information to answer Questions 13 and 14.

The graph shows the results of a survey asking the eye color of 180 students at a Lake Charles high school.



- 13** About what percent of the students have blue or hazel eyes? **D-7-H, GLE 22** **13** _____
- A** 10% **B** 25%
C 35% **D** 60%

- 14** Which survey method would produce the most reliable results? **D-1-H** **14** _____
- A** Asking a random sample of 180 students taking French.
B Setting up a survey table in the cafeteria and asking the first 180 students who volunteer.
C Choosing the first 180 names from a complete student list.
D Having a computer choose 180 names at random from a complete student list.

- 15** Cassie divides $\frac{6}{7}$ by $\frac{1}{3}$ and gets the answer $2\frac{4}{7}$. Which calculation can she use as a quick check to see if her answer is reasonable? **N-3-H** **15** _____
- A** $18 \div 3$ **B** 1×0.5
C $1 \div 3$ **D** $6 \div 3$



Diagnostic Test (continued)

Part A, Section 1



To be completed *without* the aid of a calculator.

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

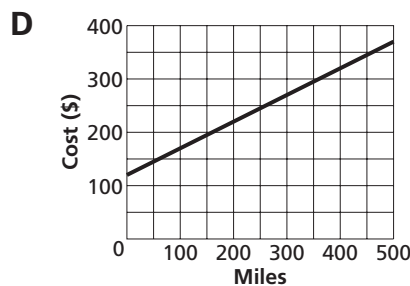
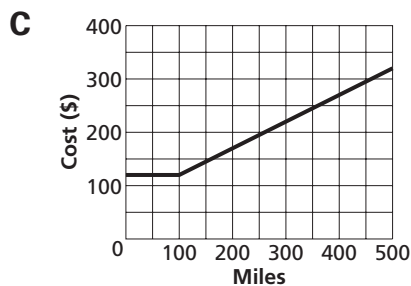
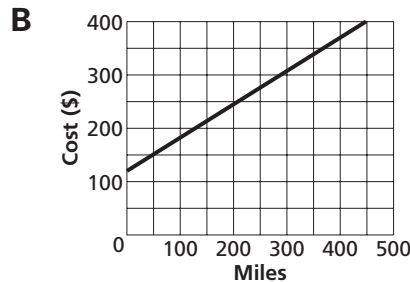
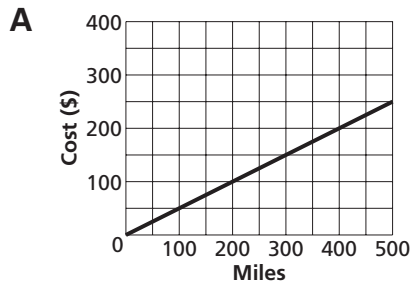
- 16** What are the coordinates of the image of the point at $(7, -8)$ after a 180° clockwise rotation about the origin? **G-3-H, GLE 14** **16** _____
A $(7, -8)$ **B** $(-7, -8)$ **C** $(7, 8)$ **D** $(-7, 8)$

- 17** If quadrilaterals $PLKM$ and $QWSZ$ are congruent, which is congruent to \overline{ZS} ? **G-5-H, GLE 10** **17** _____
A \overline{PL} **B** \overline{LK} **C** \overline{MK} **D** \overline{PM}

Use the following information to answer Questions 18–20.

Darius and McKenna are moving from Shreveport to St. Tammany Parish. They rented a moving van with a flat cost of \$120 that includes the first 100 miles, and an additional cost of \$0.50 for each mile driven over 100 miles.

- 18** What was the total cost for the van if Darius and McKenna drove 350 miles? **N-5-H** **18** _____
A \$295 **B** \$245 **C** \$175 **D** \$132.50
- 19** Which graph represents the cost of renting the van as a function of the number of miles driven? **A-3-H, GLE 27** **19** _____



- 20** According to the correct graph above, about how far can Darius and McKenna drive for \$300? **D-7-H, GLE 22** **20** _____
A 600 miles **B** 450 miles **C** 350 miles **D** 300 miles



Diagnostic Test (continued)



Part A, Section 1

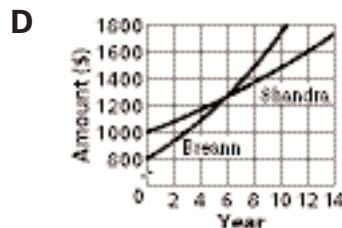
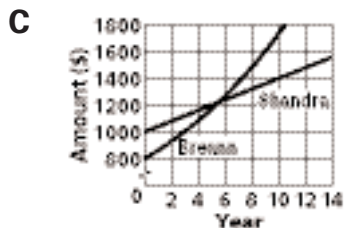
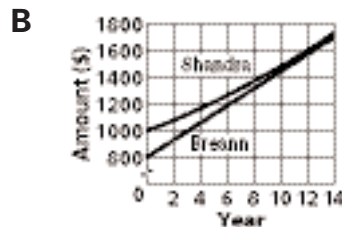
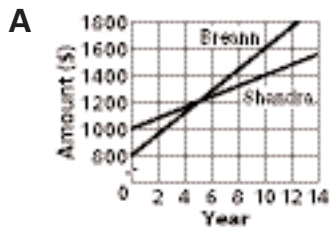
To be completed *without* the aid of a calculator.

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

- 21** A segment with endpoints at $(-2, 4)$ and $(3, 7)$ is reflected in the x -axis. What are the coordinates of the endpoints of the image segment? **G-3-H, GLE 14** **21** _____
- A** $(-2, -4)$ and $(3, -7)$ **B** $(2, 4)$ and $(-3, 7)$
C $(2, -4)$ and $(-3, -7)$ **D** $(4, -2)$ and $(7, 3)$

- 22** Omar measures the length of the beak of a brown pelican, Louisiana's state bird, as 27.4 centimeters. By the precision of this measurement, what is the actual range in centimeters for the length ℓ ? **M-1-H** **22** _____
- A** $27.35 \leq \ell \leq 27.45$ **B** $27.3 < \ell < 27.5$
C $27 \leq \ell \leq 28$ **D** $27.34 < \ell \leq 27.44$

- 23** Shandra invests \$1000 at an interest rate of 4% compounded annually. Breann invests \$800 at an annual simple interest rate of 8%. Which graph models the amounts of money in the accounts? **D-2-H, GLE 27** **23** _____



- 24** The matrix gives the average daily production in barrels for 5 weeks for two oil wells. Which had the greatest one week percent increase? **D-7-H, GLE 22** **24** _____

$$\text{Week} \begin{matrix} 1 & 2 & 3 & 4 & 5 \\ A \begin{bmatrix} 14 & 18 & 15 & 21 & 25 \\ B \begin{bmatrix} 17 & 9 & 14 & 19 & 25 \end{bmatrix} \end{matrix}$$

- A** well A from weeks 3 to 4 **B** well B from weeks 1 to 2
C well B from weeks 4 to 5 **D** well B from weeks 2 to 3

- 25** If a number x that is between 0 and -1 is divided by $\frac{1}{n}$, where n is any integer greater than 1, which is true of the quotient? **N-3-H, GLE 2** **25** _____
- A** It will be greater than 0. **B** It will be less than -1 .
C It will be greater than x . **D** It will be less than x .



Diagnostic Test (continued)

Part A, Section 1



To be completed *without* the aid of a calculator.

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

- 26** Tao is planning to apply fertilizer to his lawn. The directions say to apply it at a rate of 1 pound per 90 square feet. Tao's lawn has an area of 3400 square feet. Which proportion can Tao use to find how many pounds x of fertilizer he needs for his lawn? **N-6-H, GLE 4** **26** _____

A $\frac{1}{90} = \frac{3400}{x}$

B $\frac{3400}{90} = \frac{1}{x}$

C $\frac{x}{1} = \frac{90}{3400}$

D $\frac{90}{1} = \frac{3400}{x}$

- 27** Louisiana has about 4.5×10^6 people living on about 4.36×10^4 square miles. Which is a reasonable rough estimate of the average number of people per square mile in Louisiana? **N-3-H** **27** _____

A 100 people

B 20 people

C 10 people

D 0.01 person

- 28** An ice cream shop sells 26 different flavors, in 3 different sizes, and in a cup, a waffle cone, or a regular cone. How many choices do you have when you order ice cream at the shop? **D-9-H, GLE 24** **28** _____

A 702 choices

B 234 choices

C 156 choices

D 32 choices

- 29** The table shows the relationship between the time t in hours after 6:00 A.M. and the temperature y in degrees Fahrenheit one May morning. Which function models the data? **P-2-H, GLE 26** **29** _____

x	1	3	4	6
y	66	74	78	86

A $y = x^2 + 65$

B $y = x^3 - 9x + 74$

C $y = 2x + 64$

D $y = 4x + 62$

- 30** Which equation represents the line that passes through the point at $(-4, 9)$ and is perpendicular to the line whose equation is $2x - 3y = 7$? **A-3-H, GLE 6** **30** _____

A $3x + 2y = 6$

B $2x - 3y = -35$

C $-3x + 2y = 30$

D $2x + 3y = 19$



Diagnostic Test (continued)



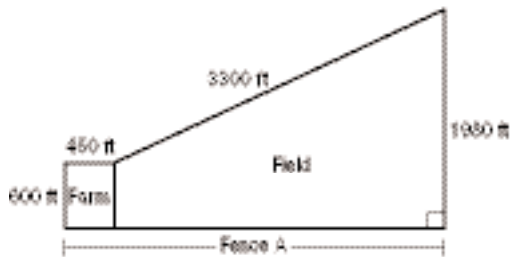
Part A, Section 2

To be completed *with* the aid of a calculator.

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

Use the following information to answer Questions 31–34.

The Boudreaux bought a farm and a field along the Atchafalaya River to raise vegetables and grow cotton. The dimensions of the property are shown in the diagram. The solid lines represent fences around the property.



- 31** What is the approximate length of Fence A? **G-2-H, GLE 12** **31** _____
- A** 3450 feet **B** 3090 feet
C 3000 feet **D** 2640 feet
- 32** Given that one acre is equal to 43,560 square feet, which would be the most reasonable rough estimate for the total area of the property? **M-2-H** **32** _____
- A** 10 acres **B** 100 acres
C 200 acres **D** 1000 acres
- 33** Suppose the Boudreaux paid \$2300 per acre to buy the property and then 15 years later sold it for \$3200 per acre, from which they paid a real estate broker \$17,500. Which expression represents the profit the Boudreaux made from the purchase and sale of their a acres? **A-1-H** **33** _____
- A** $3200a - (2300a + 17,500)$ **B** $3200a - 17,500$
C $3200a - (2300a - 17,500)$ **D** $3200a + 2300a - 17,500$
- 34** The tax assessor is making a scale drawing of the Boudreaux farm. On his drawing 1 centimeter is equal to 25 feet. What is the perimeter of just the farm on the scale drawing? **G-5-H, GLE 4** **34** _____
- A** 108 centimeters **B** 84 centimeters
C 66 centimeters **D** 42 centimeters
- 35** A grain silo is cylindrical, with a diameter of 16 feet and a height of 24 feet, and capped by a dome in the shape of a hemisphere. What is the total volume of the silo to the nearest hundred cubic feet? **M-3-H, GLE 7** **35** _____
- A** 4800 cubic feet **B** 5200 cubic feet
C 5900 cubic feet **D** 7100 cubic feet



Diagnostic Test (continued)

Part A, Section 2



To be completed *with* the aid of a calculator.

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

- 36** How many different groups of 4 people can you choose from a group of 20 people to ride on a Mardi Gras float? **D-4-H, GLE 24** **36** _____

A 160,000 groups
B 6840 groups
C 4845 groups
D 80 groups

- 37** A triangle has sides of length 12, 16, and 25. Which describes the triangle? **G-1-H, GLE 12** **37** _____

A acute
B isosceles
C obtuse
D right

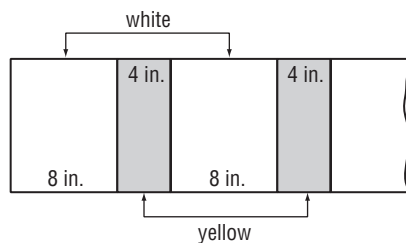
- 38** What are the solutions of $3 + 2w^2 = 15$ to the nearest tenth? **A-4-H** **38** _____

A ± 4.9
B ± 3
C ± 2.4
D ± 1.6

- 39** To open a combination lock you must enter a sequence of 3 numbers from 1 to 49. How many combinations are possible? **D-9-H, GLE 24** **39** _____

A 147 combinations
B 18,424 combinations
C 110,544 combinations
D 117,649 combinations

- 40** Martin is painting vertical yellow stripes on his son's white bedroom wall near the ceiling as part of a border design. The wall is 9 feet 8 inches wide. Martin calculates that using the pattern shown, he will end on the right with an 8-inch wide white stripe, so that the pattern will be symmetrical. To mark off the yellow stripes, he uses one board that is 8 inches wide and another board that he thinks is 4 inches wide, but that is actually $3\frac{1}{2}$ inches wide. If he continues the pattern from left to right, what will be the color and width of the last stripe or portion of a stripe that remains on the right? **M-1-H** **40** _____



- A** white, $3\frac{1}{2}$ inches
B white, 1 inch
C white, $\frac{1}{2}$ inch
D yellow, $4\frac{1}{2}$ inches



Diagnostic Test (continued)

Part A, Section 2



To be completed *with* the aid of a calculator.

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

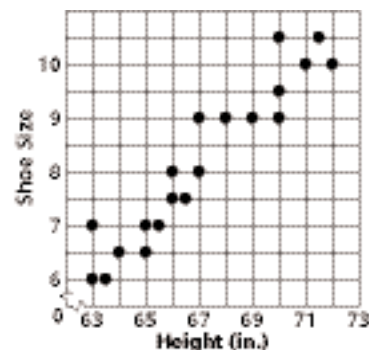
- 41** The circumference of the Burnett's 5-foot-deep circular pool is about 102 feet. Which is the best estimate of the volume of the pool? **41** _____

A 52,000 cubic feet
B 13,000 cubic feet
C 5300 cubic feet
D 4100 cubic feet

G-2-H, GLE 7

Use the following information to answer Questions 42–44.

The graph shows the height h in inches of different female students chosen at random and their corresponding shoe size s .



- 42** Which best describes the correlation of the variables? **D-2-H, GLE 20** **42** _____

A strong negative
B weak negative
C strong positive
D zero

- 43** Which of the following best fits as a model of the data? **A-2-H, GLE 5** **43** _____

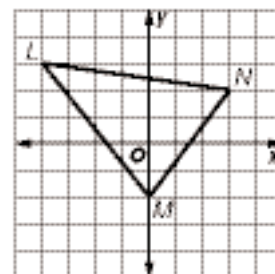
A $s = 0.1(h - 63)^2 + 6$
B $s = 0.5h - 25$
C $s = 0.4h - 18$
D $s = h + 5.5$

- 44** Which conclusion drawn from the data is most valid? **D-1-H, GLE 22** **44** _____

A The model will also apply to male students.
B The model will apply regardless of location.
C Females less than 54 inches tall will have a shoe size less than 8.
D Local females over 6 feet tall will likely wear at least size 8 shoes.

- 45** If the triangle shown is dilated by a factor of 4.2, what will the coordinates of the image of the point at L be? **G-3-H, GLE 15** **45** _____

A $(-16.8, 12.6)$
B $(-0.95, 0.7)$
C $(0.2, 7.2)$
D $(-16.8, 3)$



Diagnostic Test (continued)

Part A, Section 2



To be completed *with* the aid of a calculator.

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

- 46** Zoe and Elise own a catering business. The third year in business, they made a profit of \$48,000. The fifth year in business, they made a profit of \$57,500. Which is a model of their profit p as a function of their number of years y in business? **P-5-H, GLE 26** **46** _____
- A** $p(y) = 16,000y$ **B** $p(y) = 11,500y$
C $p(y) = 9500y + 19,500$ **D** $p(y) = 4750y + 33,750$

- 47** There are about 7.8 million acres of farmland in Louisiana. Of this farmland, 12.8% is classified as woodland (as opposed to cropland, pastureland, and so on). About how many acres of woodland are in Louisiana? **N-5-H** **47** _____
- A** 0.1 million acres **B** 1.0 million acres
C 6.1 million acres **D** 6.8 million acres

Use the following information to answer Questions 48–50.

A snake breeder periodically measured the length ℓ , in inches, of Albert, a Louisiana pine snake, t years after he hatched. Some of the results are shown in the table.

t	0.5	0.75	1	1.5	2.25	4
ℓ	22	24	26	30	36	50

- 48** What was Albert's average rate of growth in inches per year? **P-5-H** **48** _____
- A** 2 inches per year **B** 6 inches per year
C 8 inches per year **D** 26 inches per year
- 49** If Albert's volume at 2.25 years could be modeled by a cylinder with diameter 1.5 inches and height 36 inches, what was his approximate volume at that age? **M-3-H, GLE 7** **49** _____
- A** 254 cubic inches **B** 170 cubic inches
C 64 cubic inches **D** 48 cubic inches
- 50** If Albert's growth is modeled by a linear function, what does the model predict for Albert's length when he hatched? **P-1-H, GLE 27** **50** _____
- A** 8 inches
B 16 inches
C 18 inches
D 20 inches



Diagnostic Test (continued)

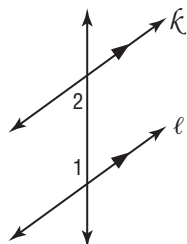
Part A, Section 2



To be completed *with* the aid of a calculator.

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

- 56** If line k is parallel to line ℓ , $m\angle 1 = 4.4x + 24.8$, and $m\angle 2 = 2x + 8$, what is the measure of $\angle 2$? **G-2-H, GLE 11** **56** _____



- A** 23° **B** 52° **C** 54° **D** 126°

- 57** Trevor is a stock car driver. He is competing in a 50-mile race on a course on which 2.4 laps is equal to 1 mile. How many complete laps of the course will Trevor make during the race? **N-5-H, GLE 4** **57** _____

- A** 20 laps **B** 60 laps **C** 120 laps **D** 208 laps

- 58** The world record frog jump is 33 feet $5\frac{1}{2}$ inches over a course of 3 consecutive jumps. What was the average number of feet per jump? **58** _____

- A** $11\frac{11}{72}$ feet **B** $11\frac{1}{6}$ feet **N-2-H**
C $11\frac{2}{11}$ feet **D** $11\frac{11}{60}$ feet

Use the following information to answer Questions 59 and 60.

The state capitol building in Louisiana is 450 feet tall. At the same time that it casts a shadow that is 232.5 feet long, a nearby tree casts a shadow that is 27.75 feet long.

- 59** Which proportion can be used to find the height h of the tree? **N-6-H, GLE 4, 18** **59** _____

- A** $\frac{450}{h} = \frac{232.5}{27.75}$ **B** $\frac{h}{27.75} = \frac{232.5}{450}$
C $\frac{450}{232.5} = \frac{27.75}{h}$ **D** $\frac{232.5}{h} = \frac{450}{27.75}$

- 60** What is the height of the tree to the nearest tenth of a foot? **G-5-H** **60** _____

- A** 14.3 feet **B** 22.4 feet
C 46.9 feet **D** 53.7 feet

Go on

Diagnostic Test (continued)

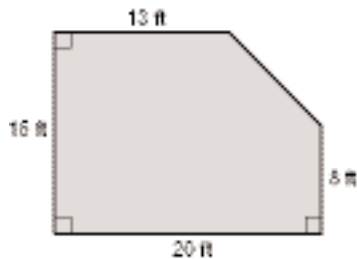
Part B, Constructed Response



Write your answer to each question in the space provided. Show all of your work.

- 61** Demonstrate that a quadrilateral with endpoints $A(1, 3)$, $B(2, -1)$, $C(-1, -3)$, and $D(-2, 1)$ is a parallelogram, but not a rhombus. Include a drawing of the quadrilateral in your answer. **G-6-H, GLE 10, 16**

- 62** Madison is going to lay carpet in the family room, which has the dimensions shown. If carpet costs \$28 a square yard, and is sold in whole numbers of square yards only, how much will it cost for the carpet? **M-4-H**



Diagnostic Test (continued)

Part B, Constructed Response



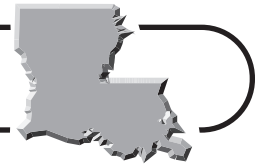
Write your answer to each question in the space provided. Show all of your work.

63 You have been assigned to conduct a poll of the 420 tenth grade students at your school to determine opinions about the 4 candidates for class president. How would you design and conduct your poll? How would you present your results to your math class? Be sure to include such factors as your sampling method and how you will avoid bias. **D-1-H**

64 How does doubling the length of one base of a trapezoid change the area of the trapezoid? Explain how you found your answer, and give support for your answer. **M-2-H**



Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question. You may use a calculator for any question that has a (C).

BENCHMARK N-2-H Demonstrate that a number can be expressed in many forms, and select an appropriate form for a given situation (e.g., fractions, decimals, percents, and scientific notation). **GLE 1**

1 Which list contains equivalent expressions for the same number? **1** _____

A 0.25%, 0.0025, $\frac{1}{400}$, 2.5×10^{-3}

B 0.25%, 0.25, $\frac{1}{40}$, 2.5×10^{-1}

C 25%, 0.25, $\frac{1}{4}$, 2.5×10^{-3}

D 25%, 0.0025, $\frac{1}{4}$, 2.5×10^{-1}

2 What is $\sqrt{75} + \sqrt{12}$ written in simplest radical form? **2** _____

A $7\sqrt{3}$

B $9\sqrt{3}$

C $\sqrt{87}$

D $29\sqrt{3}$

3 In Louisiana in 2000 there were 365,945 teenagers aged 15 to 19. If the **3** _____

number of teenagers in this age range were projected to increase a total of 0.78% from 2000 to 2010, which expression could you use to find the increase in the projected number of teenagers in this age range in 2010?

A $365,945(0.78)(10)$

B $365,945(0.78)$

C $365,945(0.0078)$

D $365,945(0.078)$

Use the following information to answer Questions 4 and 5.

The distance from Earth to Alpha Centauri is about 25,000,000,000,000 miles.

The maximum distance from Earth to the Moon is about 2.5×10^5 miles.

4 What is the distance from Earth to Alpha Centauri expressed in **4** _____
scientific notation?

A 25×10^{12} miles

B 2.5×10^{12} miles

C 2.5×10^{13} miles

D 2.5×10^{14} miles

5 About how many times as great is the distance from Earth to Alpha **5** _____
Centauri as the maximum distance from Earth to the Moon?

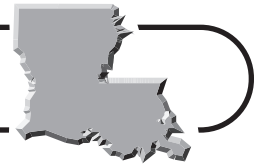
A 2.6 times

B 8 times

C 10^7 times

D 10^8 times

Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

BENCHMARK N-3-H Use number sense to estimate and determine if solutions are reasonable. **GLE 2, 4**

- 1 Jermaine has an 8-inch by 10-inch photograph of his dog. If he wants to enlarge the photograph to make a poster to fit a 42-inch by 64-inch space as closely as possible without having to trim the poster, about how many times as large should the photograph be? **1** _____

A 3 times
B 4 times
C 5 times
D 6 times

- 2 If a number greater than 1 is divided by a number between 0 and 1, which must be true of the quotient? **2** _____

A The quotient will be less than 0.
B The quotient will be less than 1, but greater than 0.
C The quotient will be greater than 1, but less than the number.
D The quotient will be greater than the number.

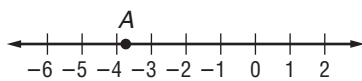
- 3 Sylvia divided 920.02 by 15.7 and got the answer 58.6. Which operation should Sylvia perform to provide the best mental estimate to determine if her answer is reasonable? **3** _____

A $900 \div 20$
B $1000 \div 20$
C $900 \div 15$
D $1000 \div 15$

- 4 Tyrei can make 4 identical ceramic bowls in 1 hour 12 minutes. If she keeps making bowls at this rate, which is the best estimate of how many bowls she can make in 5 hours? **4** _____

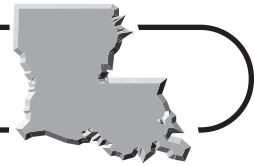
A 20 bowls
B 16 bowls
C 5 bowls
D 4 bowls

- 5 Which is the best estimate for the coordinate of point *A* on the number line? **5** _____



A $-\sqrt{8}$
B $-\sqrt{14}$
C $-\sqrt{18}$
D $-\sqrt{22}$

Standards Practice



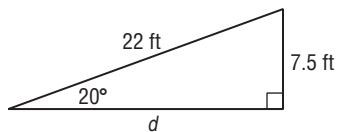
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

BENCHMARK N-6-H Apply ratios and proportional thinking in a variety of situations (e.g., finding a missing term of a proportion).

GLE 3, 4, 8, 18

- 1** Biologists catch 120 bass from a lake, tag them, and release them. Later, they catch 200 bass and find that 16 of these have tags. Using proportional reasoning, which is the best estimate of the total number of bass in the lake? **(C)** **1** _____
- A** 24,000 bass **B** 3200 bass
C 1920 bass **D** 1500 bass

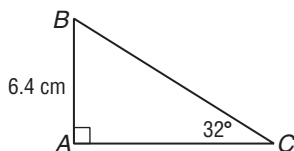
- 2** Which expression can be used to find the horizontal distance d that the ramp in the diagram covers? **2** _____



- A** $\sin 70^\circ = \frac{d}{22}$ **B** $\sin 20^\circ = \frac{d}{22}$
C $\cos 20^\circ = \frac{d}{7.5}$ **D** $\tan 70^\circ = \frac{d}{22}$

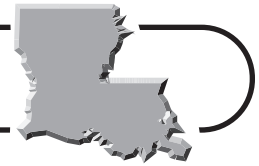
- 3** The ratio of the weight of Cyrus's dog to his weight is the same as the ratio of the weight of Jasmine's dog to her weight. If Jasmine's dog weighs 36 pounds, Cyrus's dog weighs 48 pounds, and Jasmine weighs 144 pounds, how much does Cyrus weigh? **3** _____
- A** 192 pounds **B** 184 pounds
C 156 pounds **D** 108 pounds

- 4** What is the length of \overline{AC} in the triangle shown to the nearest tenth of a centimeter? **(C)** **4** _____



- A** 12.1 centimeters
B 10.2 centimeters
C 7.5 centimeters
D 4.0 centimeters

Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

BENCHMARK A-1-H Demonstrate the ability to translate real-world situations (e.g., distance versus time relationships, population growth, growth functions for diseases, growth of minimum wage, auto insurance tables) into algebraic expressions, equations, and inequalities and vice versa. **GLE 4, 26, 27**

- 1** Jen begins walking on the Wild Azalea National Recreation Trail at the 4.2-mile marker. If she takes 15 minutes per mile, and is walking in the direction in which the mile markers increase, which equation represents Jen's distance d in miles from the 0-mile mark after walking t hours?

A $d = 15t + 4.2$

B $d = 0.15t + 4.2$

C $d = 0.25t$

D $d = 4t + 4.2$

1 _____

Use the following information to answer Questions 2 and 3.

The table shows the monthly installment payment m per \$1,000 borrowed to finance a house for 30 years at various interest rates r .

r	7.00	7.25	7.50	7.75	8.00	8.25
m	\$8.99	\$9.13	\$9.27	\$9.41	\$9.55	\$9.69

- 2** Which equation models the data? **(C)**

A $m = 1.79r + 5.07$

B $m = 0.56r + 5.07$

C $m = 1.79r + 8.99$

D $m = 0.56r + 8.99$

2 _____

- 3** What is the monthly payment on a 30-year \$120,000 loan at 7.50% interest? **(C)**

A \$9.27

B \$111.24

C \$1112.40

D \$3337.20

3 _____

- 4** Laticia's fingernails grow at least 0.5 inch in 4 weeks. If one of Laticia's fingernails is a total of 0.75 inch long, which represents the length of this fingernail in 3 weeks if Laticia does not trim it?

A $\ell \geq 3 \times 0.5 + 0.75$

B $\ell \geq 0.75 \times 0.5 + 0.75$

C $\ell > 0.75 \times 0.5$

D $\ell \geq 0.75^2 + 0.5$

4 _____

- 5** Production at an offshore oil drilling platform increased by 4.2% weekly for each of 4 weeks. What was the total percent of increase? **(C)**

A 16.8%

B 17.9%

C 116.8%

D 117.9%

5 _____

Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

BENCHMARK A-2-H Recognize the relationship between operations involving real numbers and operations involving algebraic expressions.

GLE 5

1 What is the difference of $6.2k - 3.2 + k^2$ and $2.7k - 0.4k^2 + 1.2$? **1** _____

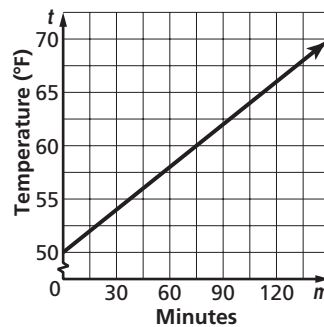
A $1.4k^2 + 3.5k - 4.4$

B $0.6k^2 + 8.9k - 4.4$

C $1.4k^2 + 3.5k - 2$

D $0.6k^2 + 3.5k - 2$

2 Miranda checked the temperature t at 30-minute intervals one Saturday morning for a school project and graphed her data. If m represents the number of minutes since Miranda's first temperature reading, which is the equation of the line that represents the data?



2 _____

A $t = \frac{2}{15}m$

B $t = \frac{15}{2}m + 50$

C $t = \frac{15}{2}m$

D $t = \frac{2}{15}m + 50$

3 Simplify $3\frac{3}{8}rs^2 - 4\frac{1}{2}r^2s + 2\frac{1}{2}rs^2 - 8\frac{5}{8}rs + 5r^2s$. **3** _____

A $5\frac{7}{8}rs^2 + \frac{1}{2}r^2s - 8\frac{5}{8}rs$

B $-1\frac{1}{8}rs^2 + 2\frac{1}{2}r^2s - 8\frac{5}{8}rs$

C $-1\frac{1}{8}rs^2 + 7\frac{1}{2}r^2s - 8\frac{5}{8}rs$

D $6\frac{3}{8}rs^2 - 8\frac{5}{8}rs$

4 The table gives the number of tons t of hot peppers that a small farm produced to make hot sauce in various harvest years y after 1995. Which equation represents the line of best fit for the data? **(C)** **4** _____

y	1	3	7	10
t	20.0	21.5	24.5	26.75

A $t = \frac{1}{2}y + 19$

B $t = \frac{1}{2}y + 21.75$

C $t = \frac{3}{4}y + 19.25$

D $t = \frac{3}{2}y + 18.5$

5 Simplify $3(5w^2 + 2w - 12) - 7(-w^2 - 1 + 2w)$. **5** _____

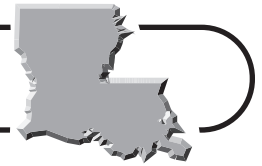
A $22w^2 + 4w - 13$

B $8w^2 - 8w - 43$

C $22w^2 - 8w - 29$

D $8w^2 - 12w - 5$

Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

BENCHMARK A-3-H Use tables and graphs as tools to interpret algebraic expressions, equations, and inequalities. **GLE 6, 27**

- 1 Which equation represents the line that is perpendicular to the line whose equation is $y = -\frac{1}{3}x + 7$ and that passes through the point at $(4, -2)$? **1** _____

A $y = -\frac{1}{3}x - \frac{2}{3}$

B $y = -3x + 10$

C $y = 3x - 10$

D $y = 3x - 14$

Use the following information to answer Questions 2 and 3.

The table shows the price p , in dollars, of various amounts of gold g , in ounces, on a particular day.

g	2	4	7	12
p	944	1888	3304	5664

- 2 Which equation represents the data in the table? **2** _____

A $p = g + 942$

B $p = 944(g - 1)$

C $p = 472g$

D $p = 944g$

- 3 At the given prices, what would be the price of 18 ounces of gold? **(C)** **3** _____

A \$16,992

B \$8496

C \$7552

D \$962

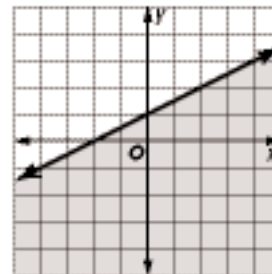
- 4 Which inequality models the graph shown? **4** _____

A $y < \frac{1}{2}x + 1$

B $y \leq \frac{1}{2}x + 1$

C $y > \frac{1}{2}x + 1$

D $y \geq \frac{1}{2}x + 1$



- 5 Which equation represents the line that is parallel to the line whose equation is $3x - 4y = 9$ and that passes through the point at $(-1, 6)$? **5** _____

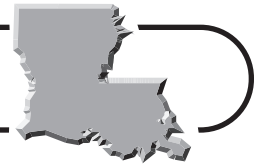
A $-3x + 4y = 27$

B $3x + 4y = -27$

C $-3x + 4y = 21$

D $4x + 3y = 14$

Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

BENCHMARK A-4-H Solve algebraic equations and inequalities using a variety of techniques with the appropriate tools (e.g., hand-held manipulatives, graphing calculator, symbolic manipulator, or pencil and paper).

1 What is the solution of $8.3h + 1.2 - 12.8h < 3.9 - 4.6h$? **(C)** 1 _____

A $h < 0.27$

B $h < 0.6$

C $h < 27$

D $h < 39$

2 Students at a school find that the expression $m^2 + 9m + 20$ models the number of fire ant nests on the school property m months after the first count. According to the model, after how many months will the number of nests reach 132? 2 _____

A 4 months

B 5 months

C 7 months

D 16 months

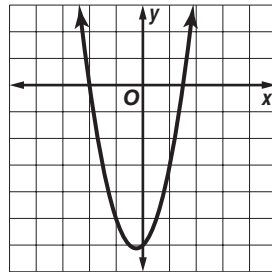
3 Use the graph of $f(x) = 2x^2 + x - 6$ shown to find the solution(s) of $2x^2 + x - 6 = 0$.

A -6.125

B -6

C -0.25

D -2 and 1.5



3 _____

4 What value of v makes $-5v - 7 + 2(3v - 4) = 6v - (8 + v)$ a true statement? 4 _____

A -11

B -3

C $-1\frac{3}{4}$

D $-\frac{1}{2}$

5 The inequality $116 - \frac{1}{4}d \geq 112\frac{1}{2}$ models the days d after engineers begin lowering the level of a reservoir for which the surface level will remain at an elevation of at least $112\frac{1}{2}$ feet. What is the solution of this inequality? 5 _____

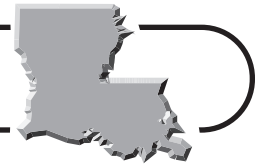
A $d \leq 14$

B $d \geq 14$

C $d \leq 18$

D $d \geq 18$

Standards Practice



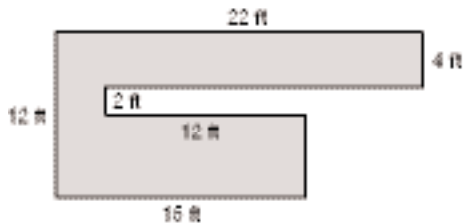
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

BENCHMARK M-3-H Estimate, compute, and apply physical measurement using suitable units (e.g., calculate perimeter and area of plane figures, surface area and volume of solids presented in real-world situations). **GLE 7**

- 1 If the diameter of a ball is 11 inches, what is the volume of the ball to the nearest ten cubic inches? **(C)** 1 _____
- A** 5580 cubic inches **B** 700 cubic inches
C 380 cubic inches **D** 130 cubic inches

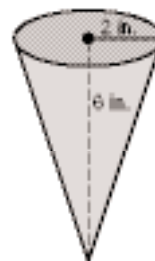
Use the following information to answer Questions 2 and 3.

The dimensions of a miniature golf hole are shown.



- 2 What is the perimeter of the playing surface? 2 _____
- A** 67 feet **B** 87 feet
C 92 feet **D** 94 feet
- 3 What is the area of the playing surface? 3 _____
- A** 214 square feet **B** 208 square feet
C 184 square feet **D** 178 square feet

- 4 The dimensions of an ice cream waffle cone are shown. To the nearest square inch, how much waffle does it take to make the cone, ignoring any overlap? **(C)** 4 _____
- A** 52 square inches
B 40 square inches
C 38 square inches
D 25 square inches



- 5 What is the volume of a triangular pyramid with height 8 inches, and whose base has one leg of length 3 inches and a hypotenuse of 5 inches? **(C)** 5 _____
- A** 16 cubic inches **B** 20 cubic inches
C 40 cubic inches **D** 48 cubic inches

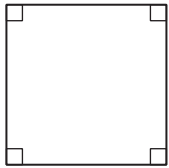
Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

BENCHMARK G-1-H Identify, describe, compare, construct, and classify geometric figures in two and three dimensions using technology where appropriate to explore and make conjectures about geometric concepts and figures. **GLE 9, 10**

- 1 Which is the most specific name for the figure as shown? **1** _____



- A parallelogram
- B rectangle
- C rhombus
- D square

- 2 The angles in a triangle are in the ratio 2:3:4. What is the measure of the largest angle? **2** _____

- A 40°
- B 80°
- C 90°
- D 100°

- 3 What is the measure of each interior angle of a regular octagon? **3** _____

- A 45°
- B 120°
- C 135°
- D 150°

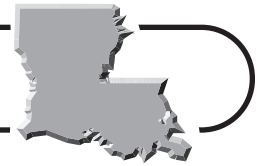
- 4 Which name describes the set of points equidistant from a given point in space? **4** _____

- A cone
- B circle
- C cylinder
- D sphere

- 5 If a plane intersects a right square pyramid perpendicular to one of its faces, but not through its vertex or base, what shape will be formed by the intersection of the plane and the surface of the pyramid? **5** _____

- A isosceles trapezoid
- B isosceles triangle
- C rectangle
- D square

Standards Practice

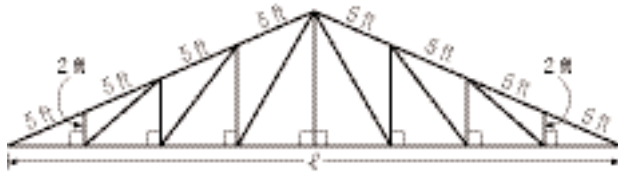


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

BENCHMARK G-2-H Represent and solve problems using geometric models and the properties of those models (e.g., Pythagorean Theorem or formulas involving radius, diameter, and circumference). **GLE 11, 12, 18**

- 1 Lauren is building a practice studio for a zydeco band. What is the length ℓ , to the nearest tenth of a foot, of the horizontal base of the roof truss shown? **(C)**

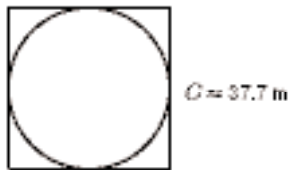
1 _____



- A** 43.1 feet **B** 38.2 feet
C 36.7 feet **D** 18.33 feet

- 2 The circumference of the circle is about 37.7 meters. What is the approximate area of the square? **(C)**

2 _____



- A** 576 square meters **B** 144 square meters
C 96 square meters **D** 48 square meters

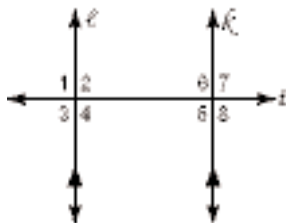
- 3 Which could represent the lengths of the legs of a right triangle? **(C)**

3 _____

- A** 6, 8, 12 **B** 10, 24, 26
C 3, 4, 8 **D** 40, 51, 62

- 4 In the diagram, line ℓ is parallel to line k . Which angles must be congruent to $\angle 2$?

4 _____



- A** $\angle 4$, $\angle 6$, $\angle 8$ **B** $\angle 4$, $\angle 5$, $\angle 6$
C $\angle 1$, $\angle 3$, $\angle 4$ **D** $\angle 3$, $\angle 5$, $\angle 7$

Standards Practice

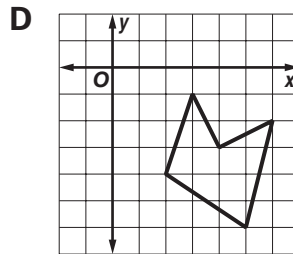
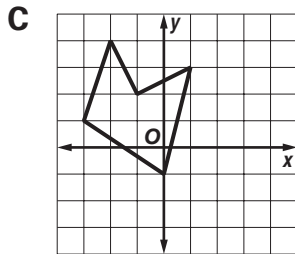
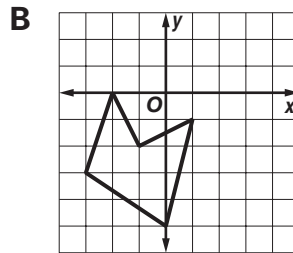
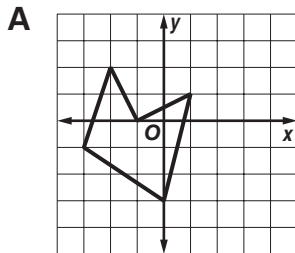
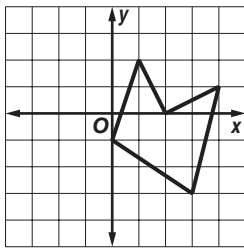


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

BENCHMARK G-3-H Solve problems using coordinate methods, as well as synthetic and transformational methods (e.g., transform on a coordinate plane a design found in real-life situations). **GLE 14, 15, 16**

1 Which graph below shows the image of the given figure after the transformation $(x, y) \rightarrow (x - 3, y + 2)$?

1 _____



2 If point Q is at $(-1, 7)$ and point R is at $(4, 3)$, what is the length of \overline{QR} ?

2 _____

A 5

B $\sqrt{41}$

C $\sqrt{74}$

D 9

3 If the figure shown undergoes a dilation by a factor of $\frac{3}{4}$, what will be the coordinates of the image of point W ?

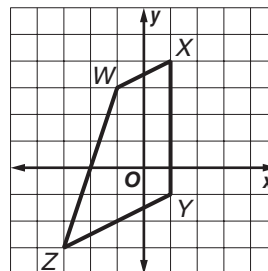
3 _____

A $(-\frac{1}{4}, 3\frac{3}{4})$

B $(-\frac{3}{4}, 2\frac{1}{4})$

C $(-1\frac{3}{4}, 2\frac{1}{4})$

D $(-1\frac{1}{3}, 4)$



Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

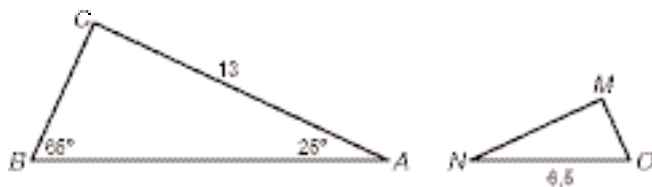
BENCHMARK G-5-H Classify figures in terms of congruence and similarity and apply these relationships. **GLE 12, 18**

1 If $\triangle JKL \sim \triangle RST$ with $JK = 6$ meters, $KL = 8$ meters, and $ST = 12$ meters, what is the length of RS ?

- A** 16 meters **B** 9 meters
C 8 meters **D** 4 meters

1 _____

Use the diagram of similar triangles BAC and ONM to answer Questions 2 and 3.



2 What is the measure of $\angle M$?

- A** 90° **B** 65°
C 45° **D** 25°

2 _____

3 What is the length of \overline{OM} to the nearest tenth? **(C)**

- A** 6.1 **B** 5.5
C 3.0 **D** 2.7

3 _____

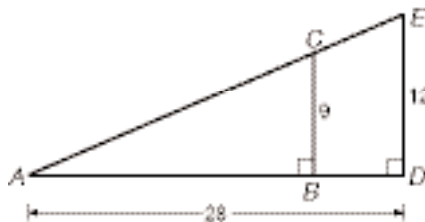
4 If $\triangle XYZ$, which has a right angle at Y , is congruent to $\triangle HJG$, with $XZ = 15$ and $YZ = 12$, what is HJ ?

- A** 5 **B** 9
C 12 **D** 15

4 _____

5 What is the length of \overline{CE} in the figure? **(C)**

5 _____



- A** $\frac{4}{3}\sqrt{522}$ **B** $\sqrt{928}$
C $\sqrt{522}$ **D** $\frac{1}{3}\sqrt{522}$

Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

BENCHMARK D-1-H Design and conduct statistical experiments that involve the collection, representation, and analysis of data in various forms (analysis should reflect an understanding of factors such as: sampling, bias, accuracy, and reasonableness of data). **GLE 22**

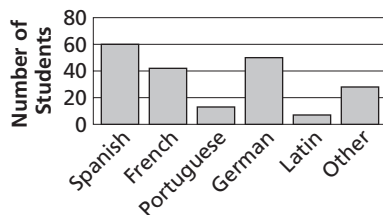
1 Elena, a freshman at a Shreveport high school, is studying the television viewing habits of students at her school. Which sampling method would best represent the habits of all the students in the school?

1 _____

- A** Survey every member of her algebra class.
- B** Set up an interview table in the cafeteria and survey students who come to the table.
- C** Choose 12 students at random from each grade level and survey all of these students.
- D** Send a questionnaire to 100 students chosen at random from a list of all students and use those that are filled out and returned.

Use the following information to answer Questions 2 and 3.

The graph shows the results of a random survey asking students at a Louisiana state university what non-English language they most enjoy studying.



2 Which measure of central tendency is most appropriate for the data?

2 _____

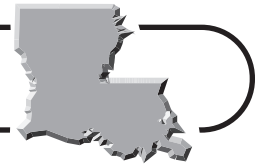
- A** range
- B** mean
- C** median
- D** mode

3 For which purpose would the study be most applicable for statistical inference?

3 _____

- A** Determining U.S. student interest in non-English languages.
- B** Shaping the Louisiana budget for foreign languages at its state universities.
- C** Measuring non-English speaking abilities of students at Louisiana state universities.
- D** Gauging potential student interest in language classes at the university where the study was conducted.

Standards Practice



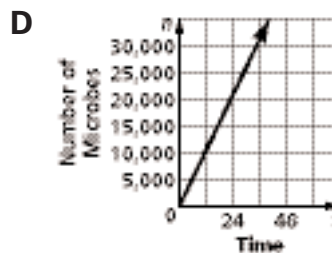
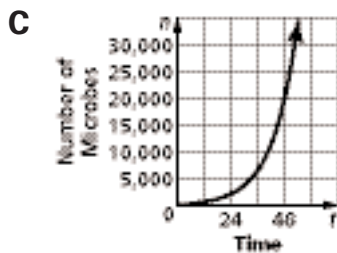
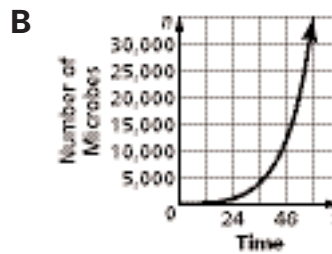
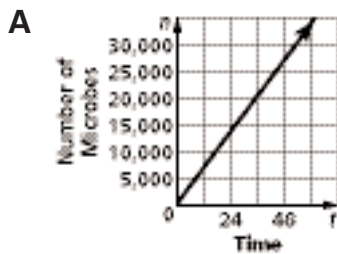
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

BENCHMARK D-2-H Recognize data that relate two variables as linear, exponential, or otherwise in nature (e.g., match a data set, linear or non-linear, to a graph and vice versa). GLE 5, 20, 27

- 1 The table shows the estimated number of microbes m in a culture at different times t for an experiment in an Advanced Biology class at a high school in Alexandria. Which graph best represents the data?

1 _____

t	12	24	36	48	60
b	420	1260	3780	11,340	34,020



- 2 The table shows the price g of a gallon of gas over a period of weeks w . Which function best fits the data?

2 _____

w	0	1	2	3	4	5	6
g	\$1.90	\$1.94	\$1.96	\$2.00	\$2.02	\$2.06	\$2.08

A $g = 0.03w + 1.90$

B $g = w + 1.90$

C $g = 1.9(1.04^w)$

D $g = w^2 + 1.91$

- 3 The table indicates the height h in feet above the water of a cliff diver t seconds after jumping. Which type of function best models the data?

3 _____

w	0	0.5	1	1.5	2	2.5
g	100	96	84	64	36	0

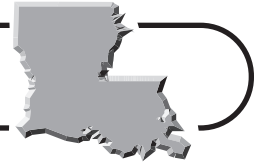
A linear

B quadratic

C cubic

D exponential decay

Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

BENCHMARK D-4-H Demonstrate an understanding of the calculation of finite probabilities using permutations, combinations, sample spaces, and geometric figures. **GLE 24**

- 1 Bryan is adopting 3 dogs from a pet shelter in Monroe. In how many ways can he choose 3 dogs from the 18 dogs that are available? **(C)** 1 _____

A 5832 ways **B** 4896 ways **C** 816 ways **D** 54 ways

- 2 In how many ways can 7 DVDs be arranged in a row on a shelf? **(C)** 2 _____

A 5040 ways **B** 720 ways **C** 49 ways **D** 7 ways

- 3 At a cooking competition, there are 25 entries for seafood gumbo, 22 entries for shrimp creole, and 18 entries for crawfish étouffée. In how many ways can a first and second place be awarded for each dish? **(C)** 3 _____

A 98,010,000 ways **B** 84,823,200 ways
C 10,602,900 ways **D** 79,200 ways

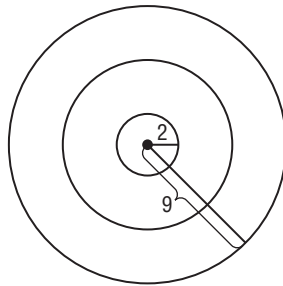
- 4 If a dart hits the target at a random place, what is the probability that it lands in the bull's-eye? 4 _____

A $\frac{2}{9}$

B $\frac{2}{11}$

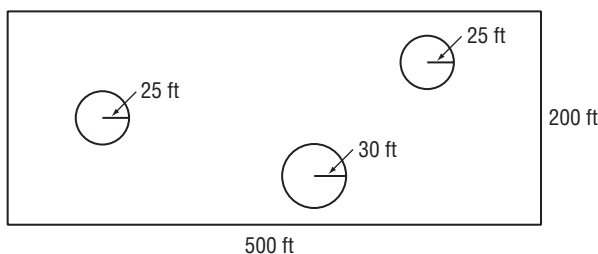
C $\frac{4}{77}$

D $\frac{4}{81}$



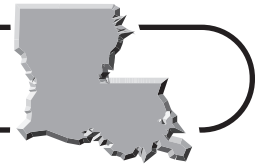
- 5 A skydiver will land in the field shown, but because the wind is unpredictable, where in the field the skydiver lands will be at random. 5 _____

The circles represent ponds. What is the probability to the nearest percent that the skydiver will land in a pond? **(C)**



A 1% **B** 5% **C** 7% **D** 27%

Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

BENCHMARK D-7-H Make inferences from data that are organized in charts, tables, and graphs (e.g., pictograph; bar, line, or circle graph; stem-and-leaf plot or scatter plot). **GLE 22**

- 1** The stem-and-leaf plot shows the test scores from one of Ms. McCollough's Louisiana History classes. Which can be concluded from the plot?

Stem	Leaf
9	0 1 2 8
8	1 3 7 8
7	0 2 4 6 8 8 9
6	5 7
5	1

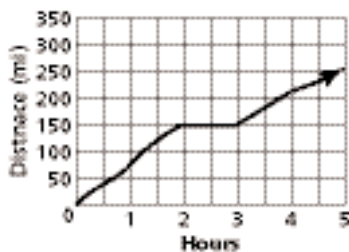
$8|1 = 81\%$

1 _____

- A** Over half of the students scored 70% or below.
- B** The range of the scores was 39%.
- C** The mean score was higher than the median score.
- D** There was no mode in the scores.

Use the following information to answer Questions 2 and 3.

The graph shows distance as a function of time on Evan's trip from Morgan City to Shreveport.



- 2** What can be concluded about the horizontal segment on the graph?
- A** Evan was traveling at a constant speed.
- B** Evan stopped driving for 1 hour.
- C** Evan was driving on a flat road without hills.
- D** Evan had car trouble.

2 _____

- 3** What can be concluded about Evan's speed between 3 and 4 hours?
- A** It was steadily increasing.
- B** It was constant.
- C** It was the maximum speed on his trip.
- D** It was decreasing.

3 _____

Standards Practice

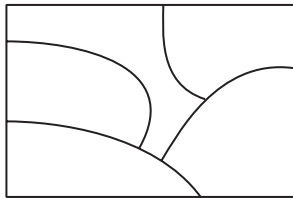


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

BENCHMARK D-9-H Use discrete math to model real-life situations (e.g., fair games or elections, map coloring). **GLE 24, 25**

- 1 What is the least number of colors needed to color the figure shown so that no two regions that share a side can be the same color?

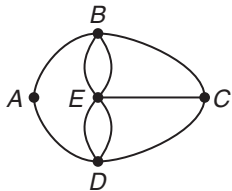
1 _____



- A 2 colors B 3 colors
C 4 colors D 5 colors

- 2 In the network shown, what is the degree of the vertex at E ?

2 _____



- A 5 B 4
C 3 D 2

- 3 Theo, Wilma, and Ysidra are playing a game in which they repeatedly use a calculator to generate a random integer from 1 to 10. If the number is prime, Theo wins 25 points. If the number is composite, Wilma wins 20 points. If the number is neither prime nor composite, Ysidra wins. For the game to be fair, how many points should Ysidra be awarded if she wins?

3 _____

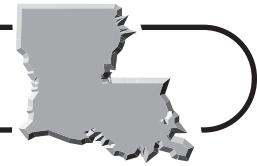
- A 10 points B 50 points
C 100 points D 1000 points

- 4 A Winnboro diner sells dinner salads in 2 sizes, with 3 choices of meat and 6 choices of dressing. How many different salads are possible?

4 _____

- A 11 salads B 15 salads
C 24 salads D 36 salads

Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

BENCHMARK P-2-H Translate between tabular, symbolic, or graphic representations of functions. **GLE 26, 27**

- 1 Which function includes the values given in the table?

1 _____

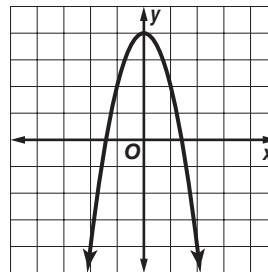
x	-2	0	2	4
$f(x)$	8	4	8	20

- A $f(x) = -4x$
 B $f(x) = 2x + 12$
 C $f(x) = -2x + 4$
 D $f(x) = x^2 + 4$

- 2 Which table has all of its points on the graph?

2 _____

- A
- | | | | | | |
|--------|----|----|---|----|---|
| x | -2 | -1 | 0 | 1 | 2 |
| $f(x)$ | -4 | -2 | 4 | -2 | 4 |
- B
- | | | | | | |
|--------|----|----|----|----|---|
| x | -2 | -1 | 0 | 1 | 2 |
| $f(x)$ | 4 | -2 | -4 | -2 | 4 |
- C
- | | | | | | |
|--------|----|----|---|---|----|
| x | -2 | -1 | 0 | 1 | 2 |
| $f(x)$ | -4 | 2 | 4 | 2 | -4 |
- D
- | | | | | | |
|--------|----|----|---|----|----|
| x | -2 | -1 | 0 | 1 | 2 |
| $f(x)$ | -4 | 2 | 0 | -2 | -4 |



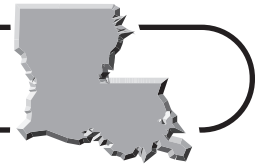
- 3 The table approximates the pressure in pounds per square inch on a diver's body as the diver reaches different depths while inspecting an offshore drilling rig in the Gulf of Mexico. If the pattern continues, approximately what would be the pressure on the diver if the diver were to descend to a depth of 390 feet? (C)

3 _____

Depth (ft)	Pressure (lb/in ²)
40	32.7
60	41.7
80	50.7
100	59.7

- A 175.5 pounds per square inch
 B 190.2 pounds per square inch
 C 232.8 pounds per square inch
 D 318.8 pounds per square inch

Standards Practice

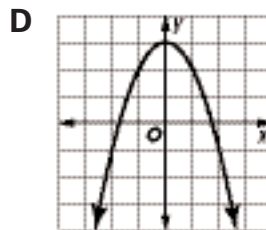
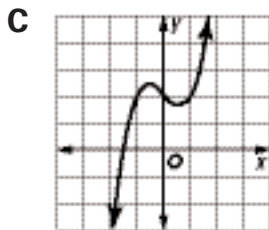
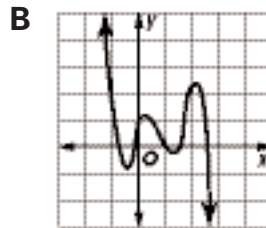
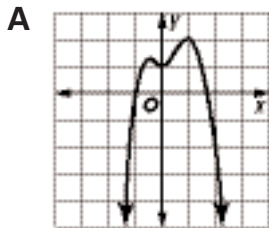


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

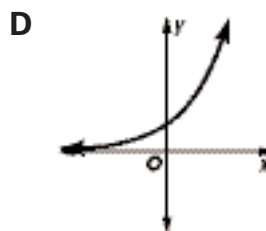
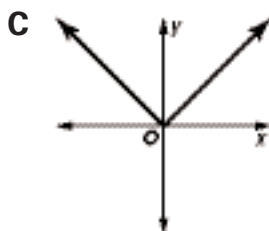
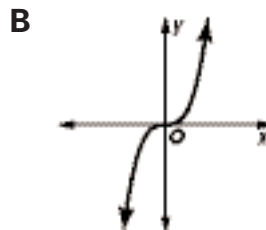
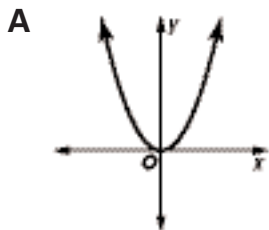
BENCHMARK P-3-H Recognize the behavior of families of elementary functions, such as polynomial, trigonometric, and exponential functions, and, where appropriate, use graphing technologies to represent them.

GLE 27

- 1 Which graph represents a function that is in the same function family as $f(x) = -5x^3 + x^2 + 3x + 4$? 1 _____



- 2 Which is the graph of an exponential function? 2 _____



- 3 The graph of a function $f(x)$ has the line $y = 2$ as an asymptote and increases without bound as x increases. Which type of function could $f(x)$ be? 3 _____

A absolute value
C linear

B exponential growth
D quadratic

Standards Practice



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

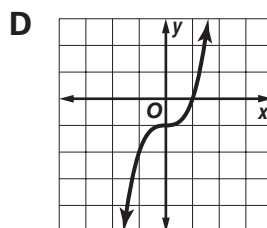
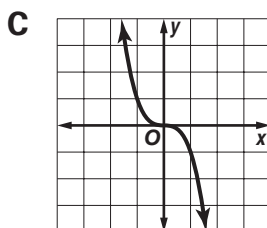
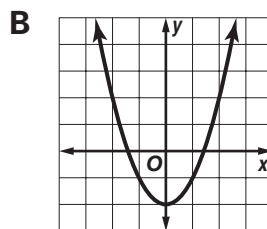
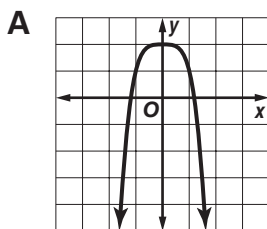
BENCHMARK P-4-H Analyze the effects of changes in parameters (e.g., coefficients and constants) on the graphs of functions, using technology whenever possible. **GLE 27**

- 1 What happens to the graph of $f(x) = 6x + 12$ if 12 is changed to 10? **1** _____
A It moves 2 units right. **B** It moves 2 units left.
C It moves 2 units up. **D** It moves 2 units down.
- 2 What does the coefficient a represent in the graph of the function $f(x) = ax + b$, where a and b are real numbers? **2** _____
A slope **B** solution **C** x -intercept **D** y -intercept
- 3 How does the graph of $y = 3|x - 4|$ differ from the graph of $y = 3|x|$? **3** _____
A It is the graph of $y = 3|x|$ shifted 4 units down.
B It is the graph of $y = 3|x|$ shifted 4 units up.
C It is the graph of $y = 3|x|$ shifted 4 units right.
D It is the graph of $y = 3|x|$ shifted 4 units left.

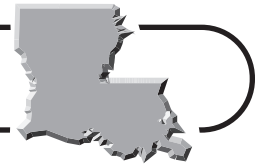
Use the following function to answer Questions 4 and 5.

$f(x) = ax^n + b$, where a and b are real numbers and n is an integer.

- 4 What does n determine? **4** _____
A general shape of the graph
B number of times the graph crosses the x -axis
C slope
D y -intercept
- 5 Which could be the graph of $f(x)$ for a negative value of a and an even value of n ? **5** _____



Standards Practice

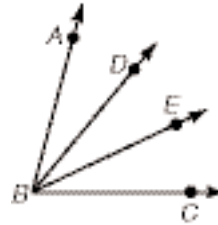


Write your answer to each question in the space provided. Show all of your work.

BENCHMARKS G-6-H AND D-9-H Demonstrate deductive reasoning and mathematical justification (e.g., oral explanation, informal proof, and paragraph proof); Use discrete math to model real-life situations (e.g., fair games or elections, map coloring). **GLE 10, 19, 25**

1 Given: \overline{BD} bisects $\angle ABE$; \overline{BE} bisects $\angle DBC$.

Prove: $\angle ABD \cong \angle EBC$



- 2** Mikayla and Angela are playing a game with two dice. If the sum of the two dice is 2, 3, 4, 10, 11, or 12, Mikayla gets a point. If the sum is 5, 6, 7, 8, or 9, Angela gets a point. The first player to score 15 points wins. Is the game fair? Why or why not?

Sample Test

Part A, Section 1



To be completed *without* the aid of a calculator.

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

- 1 The table shows the relationship between lengths in centimeters m and inches n . Which equation represents the formula for lengths in centimeters in terms of lengths in inches?

n	10	15	100	130
m	25.4	38.1	254	330.2

- A** $m = 2.54n$ **B** $m = \frac{n}{2.54}$
C $n = \frac{2.54}{m}$ **D** $n = 2.54m$

1 _____

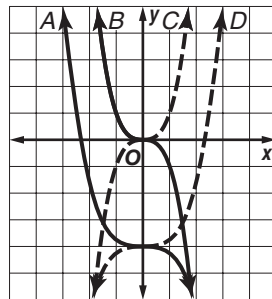
- 2 Claire and Jamila are traveling from Bossier City to Lafayette. Their map has a scale of 10 centimeters to 60 miles. It is approximately 35 centimeters on the map from Bossier City to Lafayette. About how far is the actual distance between the cities?

- A** 600 miles **B** 350 miles
C 210 miles **D** 17 miles

2 _____

- 3 Which is the graph of $y = -\frac{1}{3}x^3 - 4$?

- A** A
B B
C C
D D



3 _____

- 4 The graph of a function $f(x)$ decreases without bound as x decreases and as x increases, and has two local maxima. Which type of function could $f(x)$ be?

- A** polynomial of degree 2 **B** polynomial of degree 3
C polynomial of degree 4 **D** exponential decay

4 _____

- 5 Jayde needs to determine which of several data sets has the smallest standard deviation, a measure that indicates the spread of a data set. Which of the following standard deviations is smallest?

- A** $2\sqrt{3}$ **B** $2\sqrt{5}$
C $2\sqrt{6}$ **D** $4\sqrt{2}$

5 _____



Sample Test (continued)

Part A, Section 1



To be completed *without* the aid of a calculator.

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

- 6** In 2003, the Louisiana Department of Wildlife and Fisheries estimated the brown pelican population in Louisiana as 53,000. If a 19.6% increase is predicted by 2007, which is the most reasonable estimate for the 2007 population? **6** _____

A 43,000 **B** 58,000 **C** 63,000 **D** 100,000

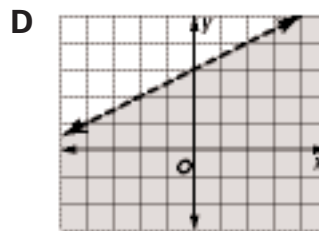
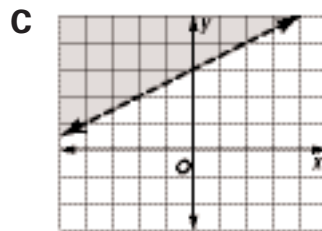
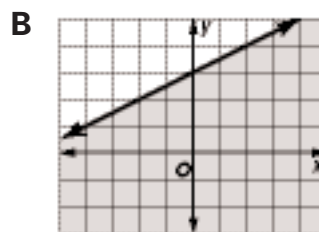
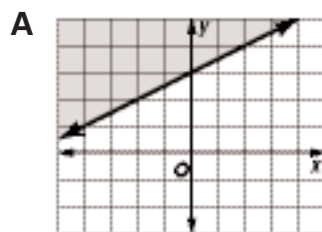
- 7** Shanice tossed a fair coin 3 times and says that she tossed an odd number of heads. What is the probability that she tossed an odd number of heads? **7** _____

A $\frac{1}{8}$ **B** $\frac{1}{4}$ **C** $\frac{3}{8}$ **D** $\frac{1}{2}$

- 8** Samuel is describing to a friend a clear paperweight he bought that encloses a dragonfly. He tells his friend that 6 of the sides are triangular in shape. Which solid could the paperweight be? **8** _____

A hexagonal prism **B** hexagonal pyramid
C triangular prism **D** triangular pyramid

- 9** Which is the graph of $-0.5x + y > 3$? **9** _____



- 10** Which is a reasonable estimate for $13.012 \div 0.3148$? **10** _____

A 0.02
B 4
C 26
D 40



Sample Test (continued)

Part A, Section 1



To be completed *without* the aid of a calculator.

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

- 11** A model of an ancient square pyramid measures 4 feet 1 inch high and 5 feet 11 inches on each side of its base. Which could be a reasonable estimate for the model's volume? **11** _____

A 24 cubic feet **B** 48 cubic feet
C 72 cubic feet **D** 144 cubic feet

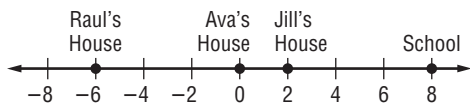
- 12** If the bases of an isosceles trapezoid are 9 and 24 and each leg has a length of 8, what is the height of the trapezoid to the nearest tenth? **12** _____

A 2.8 **B** 3.5
C 7.8 **D** 12.7

- 13** If a sphere's radius doubles, what happens to its surface area? **13** _____

A It stays the same. **B** It doubles.
C It triples. **D** It quadruples.

- 14** Ava, Jill, and Raul all have houses on the same street as their school. The houses are arranged as shown on the number line representing blocks. If Ava leaves her house, bikes to Jill's, then to Raul's, and finally to school, how many blocks has she biked? **14** _____



A 8 blocks **B** 16 blocks
C 20 blocks **D** 24 blocks

- 15** The table shows numbers of eggs laid by different numbers of Jillian's hens for different numbers of days. Assuming the same proportions, how many eggs can 4 of her chickens lay in 4 days? **15** _____

Chickens	2	4	2	4
Days	2	2	4	8
Eggs	3	6	6	24

A 9 eggs **B** 12 eggs
C 16 eggs **D** 24 eggs



Sample Test (continued)

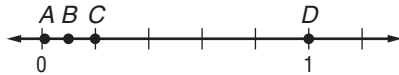
Part A, Section 1



To be completed *without* the aid of a calculator.

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

21 Which point on the number line represents 1%? _____



A A

B B

C C

D D

Use the following information to answer Questions 22–25.

Leah and Marta each borrowed money from their parents to help with moving expenses as they left for Grambling State University. The table shows the remaining amounts they owe after making weekly payments.

Week	0	1	2	3
Leah	\$350	\$315	\$280	\$245
Marta	\$270	\$245	\$220	\$195

22 Which equation represents Leah's repayment plan if x represents the number of weeks and y represents the amount owed? _____

A $y = 350x - 35$

B $y = 350 - 35x$

C $y = 350x + 35$

D $y = 350 + 35x$

23 When will Leah and Marta owe the same amount? _____

A week 10

B week 9

C week 8

D week 6

24 If Leah instead paid $\frac{1}{4}$ more than the weekly payment indicated by the table, by how many weeks would she reduce her total repayment time? _____

A 2 weeks

B 3 weeks

C 5 weeks

D 8 weeks

25 Which best describes Marta's data? _____

A relation only

B function only

C relation, but not a function

D relation and a function



Sample Test (continued)

Part A, Section 1



To be completed *without* the aid of a calculator.

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

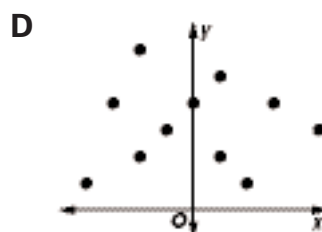
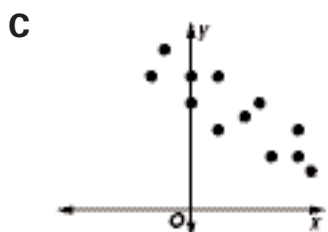
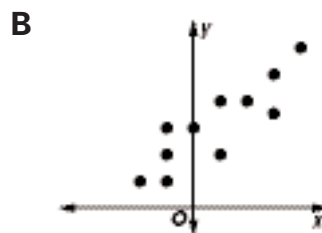
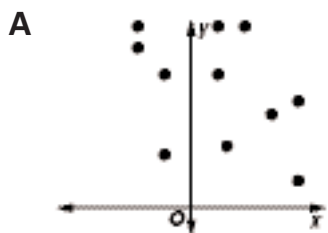
- 26** To make gumbo, Ada buys 6 pounds of chicken at \$2.89 per pound, 4 pounds of shrimp at \$8.95 per pound, and 2 pounds of onions at \$1.05 per pound. Which is the best estimate for the total grocery bill? **26** _____
- A** \$13 **B** \$44 **C** \$46 **D** \$56

- 27** Which describes the angles formed by two intersecting, nonperpendicular lines? **27** _____
- A** 2 acute and 2 obtuse **B** 4 obtuse
C 4 right **D** 4 acute

- 28** The hypotenuse of a right isosceles triangle is a diameter of a circle with area 25π square meters. How long is a leg of the triangle? **28** _____
- A** 5 meters **B** $5\sqrt{2}$ meters
C 10 meters **D** $\frac{25\sqrt{2}}{2}$ meters

- 29** One Thursday, Avery surveyed the first 50 customers to eat at a café to find out how many times they eat out monthly. From the data, he concludes that, on average, people in his town eat out 6.7 times per month. Is this a valid conclusion, and why? **29** _____
- A** Yes; the sample is large enough to be representative.
B Yes; he chose a representative day for the survey.
C No; a person cannot eat out 6.7 times per month.
D No; he surveyed only café patrons, and only at one meal on one day.

- 30** Which scatter plot exhibits a strong negative correlation? **30** _____



Sample Test (continued)

Part A, Section 2



To be completed *with* the aid of a calculator.

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

- 31** The Garcias are fencing their back yard. Its dimensions are 80 feet by 100 feet. They will use their house, which is 63 feet long, as part of one side of the fenced-in rectangle. The fencing is sold only in full yards and costs \$12.25 per yard. How much will it cost for the fencing? **31** _____

A \$1212.75 **B** \$1323
C \$1849.75 **D** \$3638.25

- 32** A softball “diamond” is a square formed by home plate and the three bases. Latisha catches for the Cajun Queens team. How far would she have to throw from home to second to get a runner out who is trying to steal second if the distance from home to first is 60 feet? **32** _____

A 120 feet **B** 96 feet 8 inches
C 84 feet 10 inches **D** 60 feet

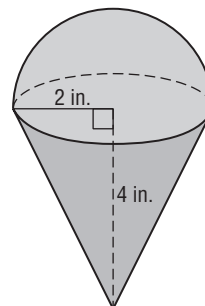
- 33** A culture of 18 million bacteria doubles its number every 20 minutes. About how many bacteria will be present after 2 hours? **33** _____

A 108 million **B** 324 million
C 1.15 billion **D** 1.44 billion

- 34** The members of a basketball team consist of 5 guards, 6 forwards, and 3 centers. A starting lineup of 5 players consisting of 2 forwards, 2 guards, and 1 center will be picked at random from the members. What is the probability that Sancho, a guard, is a starter? **34** _____

A $\frac{1}{10}$ **B** $\frac{1}{7}$
C $\frac{50}{143}$ **D** $\frac{2}{5}$

- 35** What is the total volume to the nearest tenth of a cubic inch of the cone and ice cream with dimensions shown, assuming that the ice cream forms a hemisphere above the cone? **35** _____



A 25.1 cubic inches
B 33.5 cubic inches
C 50.3 cubic inches
D 67.0 cubic inches



Sample Test (continued)

Part A, Section 2



To be completed *with* the aid of a calculator.

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

Use the following information to answer Questions 41–42.

Nadia, Braxton, and Rochelle are working the concession stand at a school basketball game. Nadia sold 53 hot dogs, 27 bags of chips, and 73 sodas; Braxton sold 46 hot dogs, 21 bags of chips, and 55 sodas; and Rochelle sold 72 hot dogs, 35 bags of chips, and 98 sodas. A bag of chips costs \$2 less than a hot dog, and a soda costs \$0.50 more than a bag of chips.

- 41** If h represents the cost of a hot dog, which represents the total amount of money made from the sale of hot dogs, chips, and sodas? **41** _____
- A** $171h - 505$ **B** $171h - 53$
C $480h - 53$ **D** $480h - 505$
- 42** What was the total amount made if a hot dog cost \$3? **42** _____
- A** \$460 **B** \$709
C \$935 **D** \$1387
- 43** A set of data shows an increase by a factor of 2 in the dependent variable for every increase of 6 in the independent variable. What kind of function would best model the data? **43** _____
- A** linear **B** quadratic
C cubic **D** exponential
- 44** Carlos and Sybil are constructing a rectangular fish pond with dimensions 300 centimeters by 420 centimeters by 150 centimeters deep. Using the fact that 1 cubic centimeter = 0.001 liter, about how many liters of water are needed to fill the pond $\frac{5}{6}$ full? **44** _____
- A** 16,000 liters **B** 19,000 liters
C 160,000 liters **D** 190,000 liters
- 45** Rondell's bank statement shows a balance of \$113.72. The balance he has recorded in his checkbook is \$72.13. When comparing the canceled checks to his record, he notices that 3 checks had not yet been cashed when the bank issued its statement. One of the checks is for \$22.07 and another is for \$7.83. For what amount is the third check? **45** _____
- A** \$11.69 **B** \$29.90
C \$41.59 **D** \$42.23



Sample Test (continued)

Part A, Section 2

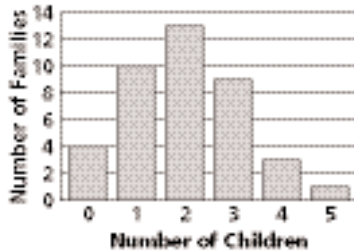


To be completed *with* the aid of a calculator.

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

Use the following information to answer Questions 46 and 47.

The bar graph shows the numbers of children in 40 Calcasieu Parish families.



46 What is the mode of the data?

- A 2
- B 3
- C 13
- D Cannot be determined.

46 _____

47 What percent of the families had 3 or more children?

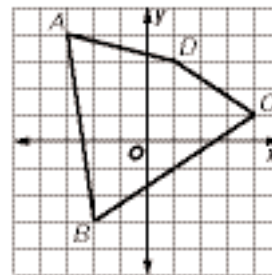
- A 10%
- B 13%
- C 32.5 %
- D 44.8%

47 _____

Use the graph to answer Questions 48–50.

48 If the translation $(x, y) \rightarrow (x + 3, y - 1)$ is applied to the quadrilateral, what will be the coordinates of the image of the point at C ?

- A (4, 3)
- B (7, 0)
- C (12, -1)
- D (6, 3)



48 _____

49 If a dilation by a factor of 1.6 is applied to the quadrilateral, what will be the coordinates of the image of the point at A ?

- A (-4.6, 2.4)
- B (-1.4, 5.6)
- C (-1.875, 2.5)
- D (-4.8, 6.4)

49 _____

50 If the quadrilateral is reflected across the y -axis, what will be the coordinates of the image of the point at D ?

- A (3, 1)
- B (1, -3)
- C (-1, -3)
- D (-1, 3)

50 _____



Sample Test (continued)

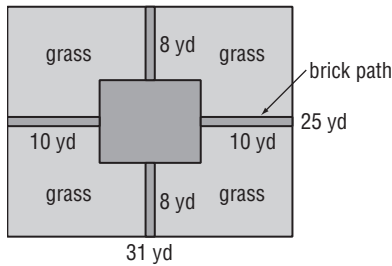
Part A, Section 2



To be completed *with* the aid of a calculator.

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

Use the map of a city park, which has brick paths 1 yard wide, to answer Questions 51 and 52.



- 51** What is the total area, in square feet, of the grassy areas? **51** _____
A 6084 square feet **B** 5940 square feet
C 5760 square feet **D** 1920 square feet
- 52** What is the probability to the nearest percent that a leaf that lands randomly in the park lands on a grassy region? **52** _____
A 28% **B** 83% **C** 85% **D** 87%
- 53** Cooper uses a tape measure marked only in 1-centimeter increments to measure a window as 40 centimeters wide and tells Yen he needs a piece of glass 40 centimeters wide. What is the maximum error in the measurement Cooper gives to Yen if he used the tape properly? **53** _____
A 25% **B** 2.5% **C** 1.25% **D** 0.25%
- 54** A factory has 3 technicians who repair breakdowns. Kylie services 30% of the breakdowns but makes an incomplete repair leading to a breakdown in 1 of 20 repairs. Thad services 45% of the breakdowns but makes an incomplete repair in 1 of 25 repairs. Jami services 25% of the breakdowns but makes an incomplete repair in 1 of 10 times. If a breakdown occurs due to an initial incomplete repair, what is the probability Jami made the initial repair? **54** _____
A 0.025 **B** 0.25 **C** 0.36 **D** 0.43
- 55** Each exterior angle of a regular polygon measures 51.43° to the nearest hundredth. What type of polygon is it? **55** _____
A heptagon **B** hexagon
C octagon **D** pentagon



Sample Test (continued)

Part A, Section 2



To be completed *with* the aid of a calculator.

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

- 56** What is an equation of the line that passes through (1, 7) and is perpendicular to the line through (−1, 10) and (3, 4)? **56** _____

A $y = -\frac{3}{2}x + \frac{23}{2}$

B $y = -\frac{3}{2}x + \frac{17}{2}$

C $y = \frac{2}{3}x + \frac{32}{3}$

D $y = \frac{2}{3}x + \frac{19}{3}$

- 57** Lark bought a dress for 15% off the original price and saved \$22.50. The following week, the same dress was on sale for 25% off the original price. How much more money would Lark have saved if she had waited a week to buy the dress? **57** _____

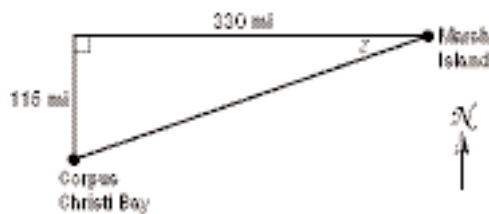
A \$2.25

B \$15.00

C \$37.50

D \$60.00

- 58** Captain Carla is taking her shrimp boat from Marsh Island, Louisiana, to Corpus Christi Bay, Texas. If she wants to cover the least possible distance, at what angle z should she travel? **58** _____



A 70.79° south of west

B 69.61° south of west

C 20.39° south of west

D 19.21° south of west

- 59** Joshua bought a game that contains a spinner with equal-sized regions numbered 0 through 10. What are the odds of spinning an odd number on the spinner? **59** _____

A $\frac{5}{6}$

B $\frac{6}{11}$

C $\frac{1}{2}$

D $\frac{5}{11}$

- 60** To find the height of the long-leaf pine in her yard, Jerico moves near the tree until the end of her shadow just coincides with the end of the tree's shadow. She knows she is 32 feet from the tree, her shadow is 6 feet long, and she is 5 feet tall. How tall is the tree? **60** _____

A 26 feet 8 inches

B 31 feet 8 inches

C 38 feet 4.8 inches

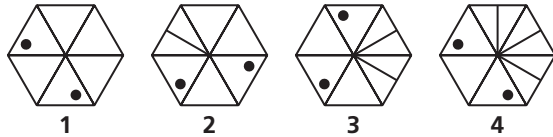
D 45 feet 7.2 inches



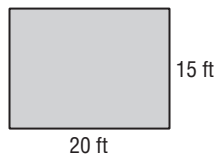
Sample Test (continued)**Part B, Constructed Response**

Write your answer to each question in the space provided. Show all of your work.

- 61** Draw the next 3 figures in the pattern shown. Describe the pattern you observe.



- 62** Jon and Noah have built a concrete hurricane shelter with outside dimensions indicated in the top view shown. The floor is a concrete slab 8 inches thick. The 4 concrete walls rest on the outside edges of the floor, and each is 8 feet tall and 6 inches thick. How many cubic yards, to the nearest tenth, of concrete are contained in the floor and walls?



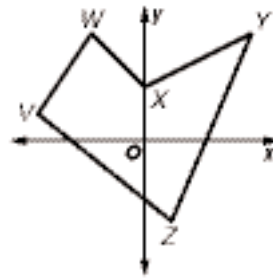
Sample Test (continued)

Part B, Constructed Response

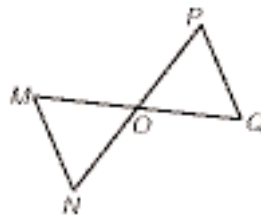


Write your answer to each question in the space provided. Show all of your work.

- 63** Sketch the image of the figure shown after a reflection in the y -axis. Then sketch the image of this second figure after a reflection in the x -axis. What transformation, written in coordinate form, would map the original image onto the final reflected image?



- 64 Given:** \overline{MN} is parallel to \overline{PQ} .
 O is the midpoint of \overline{MQ} .
Prove: $\triangle MNO \cong \triangle QPO$



Standardized Chapter Tests

Correlation to *Glencoe Geometry* and *Geometry: Concepts and Applications*

Topic	<i>Glencoe Geometry</i> Chapter	<i>Geometry: Concepts and Applications</i> Chapter(s)
1. Segments	Lessons 1-1 through 1-3	2
2. Angles	Lessons 1-4 through 1-6	3
3. Reasoning	2	1
4. Parallel and Perpendicular Lines	3	4
5. Congruent Triangles	4	5 and 6
6. Relationships in Triangles	5	7
7. Proportions and Similarity	6	9
8. Right Triangles and Trigonometry	7	13
9. Quadrilaterals	8	8
10. Transformations	9	16
11. Circles	10	11 and 14
12. Area	11	10
13. Surface Area	12	Lessons 12-1, 12-2, and 12-4
14. Volume	13	Lessons 12-3 and 12-5 through 12-7

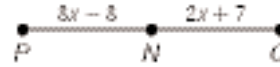
Standardized Chapter Tests

Segments



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question. If there are no answer choices, write your answer in the space provided. Be sure to show all of your work.

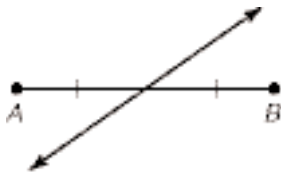
- 1 If N is the midpoint of \overline{PQ} , describe how you can find the value of x . What is this value?



- 2 Which figure shows an example of a bisector of \overline{AB} ?

2 _____

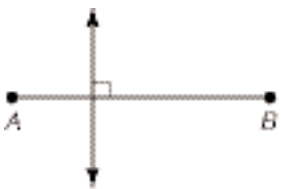
A



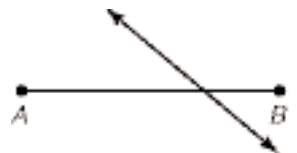
B



C



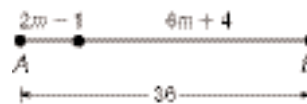
D



- 3 What is the value of m in the diagram?

3 _____

- A 4.875
B 4.125
C 3.375
D 1.25



- 4 If \overline{PQ} has endpoints $P(-3, 5)$ and $Q(6, -7)$, what are the coordinates of its midpoint M ?

4 _____

- A $M(3, -2)$
B $M(1.5, 1)$
C $M(1.5, -1)$
D $M(1, 1.5)$

Standardized Chapter Tests

Reasoning



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question. If there are no answer choices, write your answer in the space provided. Be sure to show all of your work.

1 What is the inverse of the statement “If an animal is a dog, then it has 4 legs?” **1** _____

- A** If an animal is not a dog, then it does not have 4 legs.
- B** If an animal has 4 legs, then it is a dog.
- C** If an animal does not have 4 legs, then it is not a dog.
- D** If an animal is not a dog, then it has 4 legs.

2 Sarita, Dani, Clinton, Maya, and Zeke are each planning to attend college in a different state. The states they have chosen are Texas, Iowa, New York, Louisiana, and Georgia. Use the clues to determine who attends college in which state.

- 1. Sarita is going to either Texas, New York, or Georgia.
- 2. Dani is not going to Iowa.
- 3. Clinton is not going to Louisiana, New York, Iowa, or Texas.
- 4. Maya is going to either Georgia or New York.

3 Which conclusion can be made logically from the following statements about the imaginary objects Zings, Zoops, Zaps, and Blings? **3** _____

If a Bling is a Zing, then it is a Zoop.

If a Bling is a Zoop, then it is a Zap.

- A** If a Bling is a Zoop, then it is a Zing.
- B** If a Bling is a Zap, then it is a Zoop.
- C** If a Bling is a Zap, then it is a Zing.
- D** If a Bling is a Zing, then it is a Zap.

4 If $p \Rightarrow q$, which must also be true? **4** _____

- A** $\sim p \Rightarrow \sim q$
- B** $\sim q \Rightarrow p$
- C** $\sim q \Rightarrow \sim p$
- D** $q \Rightarrow p$

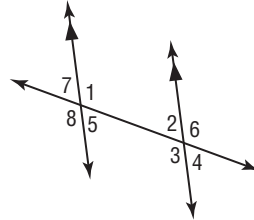
Standardized Chapter Tests

Parallel and Perpendicular Lines



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question. If there are no answer choices, write your answer in the space provided. Be sure to show all of your work.

Use the diagram to answer Questions 1–3.



1 Which is a pair of corresponding angles?

- A $\angle 2$ and $\angle 7$
- B $\angle 1$ and $\angle 8$
- C $\angle 1$ and $\angle 3$
- D $\angle 3$ and $\angle 5$

1 _____

2 Find x if $m\angle 1 = (2x + 7)^\circ$ and $m\angle 2 = 49^\circ$.

- A 131
- B 118
- C 62
- D 49

2 _____

3 What is the relationship between $\angle 4$ and $\angle 7$?

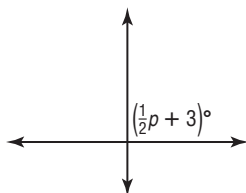
- A They are complementary.
- B They are congruent.
- C They are supplementary.
- D They are a linear pair.

3 _____

4 Line k is parallel to lines j and m . Line n is perpendicular to line j . Sketch a diagram. What is the relationship between line n and lines k and m ?

5 What value of p would make the lines perpendicular?

5 _____



- A 87
- B 90
- C 174
- D 186

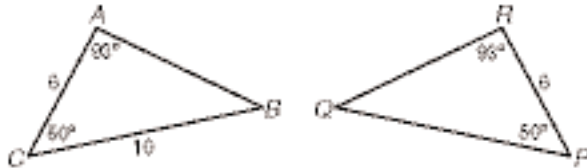
Standardized Chapter Tests

Congruent Triangles

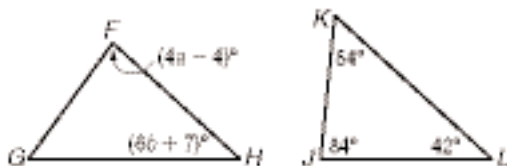


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question. If there are no answer choices, write your answer in the space provided. Be sure to show all of your work.

Use the diagram to answer Questions 1 and 2.



- 1 Which congruency statement is correct? 1 _____
- A $\triangle ACB \cong \triangle RPQ$ B $\triangle ABC \cong \triangle PQR$
 C $\triangle BAC \cong \triangle QPR$ D $\triangle BCA \cong \triangle PQR$
- 2 By which congruency theorem can you conclude directly that the triangles are congruent? 2 _____
- A SSS B SAS C ASA D AAS
- 3 Two right triangles each have a leg with the same length. Which additional information is *not sufficient* to prove that the two triangles are congruent? 3 _____
- A The other legs of the triangles are the same length.
 B The hypotenuses of the triangles are the same length.
 C The triangles each have an acute angle with the same measure.
 D Both pairs of corresponding angles adjacent to the congruent legs are congruent.
- 4 If $\triangle LMN \cong \triangle BAC$, which is congruent to \overline{BC} ? 4 _____
- A \overline{LM} B \overline{NM} C \overline{NL} D \overline{AB}
- 5 Given $\triangle FGH \cong \triangle JKL$, describe how you can find the values of a and b . What are these values?



Standardized Chapter Tests

Relationships in Triangles

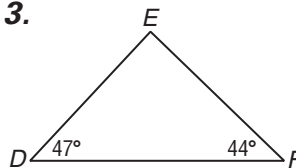


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question. If there are no answer choices, write your answer in the space provided. Be sure to show all of your work.

- 1** Which are possible distances between pairs of trees for 3 magnolia trees that are arranged in a triangle? **1** _____
- A** 3 yards, 10 yards, 14 yards
B 6 yards, 8 yards, 13 yards
C 1 yard, 4 yards, 5 yards
D 3 yards, 3 yards, 6 yards

Use the diagram to answer Questions 2 and 3.

- 2** What is the measure of $\angle E$? **2** _____
- A** 89°
B 90°
C 91°
D 99°



- 3** Based on angle measure, what kind of triangle is $\triangle DEF$? **3** _____
- A** acute scalene
B obtuse isosceles
C obtuse scalene
D right
- 4** Eric and Jen see a road sign that reads Bay View 5 miles and Heron City 12 miles. Draw 3 possible arrangements of how the towns might be located with respect to the road sign. What can you conclude about the distance d between Bay View and Heron City?

Standardized Chapter Tests

Proportions and Similarity



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question. If there are no answer choices, write your answer in the space provided. Be sure to show all of your work.

- 1** What is the ratio of the dimensions of the smaller to the larger of two similar pentagons if one has side lengths of 6, 8, 9, 10, and 7 and the other has side lengths of 10.5, 15, 13.5, 9, and 12? **1** _____

A $\frac{2}{5}$ **B** $\frac{4}{7}$ **C** $\frac{7}{12}$ **D** $\frac{2}{3}$

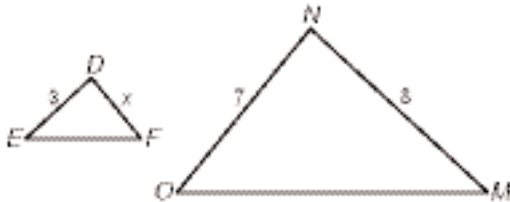
- 2** The angles of a triangle are in the ratio 4:5:6. What is the measure of the largest angle? **2** _____

A 12° **B** 60° **C** 72° **D** 120°

- 3** Solve $\frac{s+3}{4} = \frac{s}{8}$ for s . **3** _____

A 20 **B** 6 **C** 1 **D** -6

- 4** In the figure, $\triangle DEF \sim \triangle NMO$. What is the length of \overline{DF} ? **4** _____

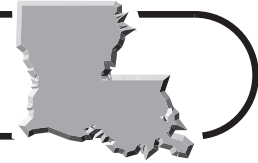


A 3.75 **B** 3.43 **C** 2.625 **D** 2.4

- 5** Pia aligns two trees in her line of sight so that the very tops coincide. Her eyes are 5 feet above the ground. It is 10 feet to the first tree and an additional 40 feet along the same line to the second tree. Pia knows that the closer tree is 11 feet tall. Draw a diagram of the situation and use it to find the height of the taller tree.

Standardized Chapter Tests

Right Triangles and Trigonometry

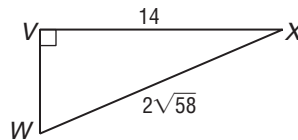


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question. If there are no answer choices, write your answer in the space provided. Be sure to show all of your work.

- 1** Tori leaves from New Orleans Armstrong Airport in a jet heading for Seattle. After 1 hour 10 minutes, the plane is 240 miles north of the airport and 450 miles west of the airport. Draw a diagram of the situation, and use your diagram to find the average speed of the plane, assuming that it has flown in a straight line.

- 2** What is the cosine of $\angle W$?

- A** $\frac{7}{3}$
B $\frac{\sqrt{58}}{7}$
C $\frac{7\sqrt{58}}{58}$
D $\frac{3\sqrt{58}}{58}$



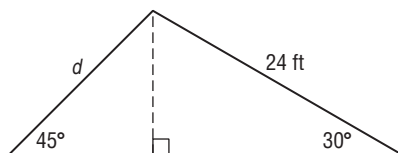
2 _____

- 3** Which can be the lengths of the sides of a right triangle?

- A** 11, 20, 23 **B** $2, 2\frac{2}{3}, 3\frac{1}{3}$
C 1.67, 2.76, 3.33 **D** 8, 14, 17

3 _____

- 4** The diagram shows a cross section through a portion of the roof of a house. What is the length marked d ? (Round to the nearest inch, if necessary.)



- A** 20 feet 9 inches **B** 17 feet
C 16 feet **D** 12 feet

4 _____

Standardized Chapter Tests

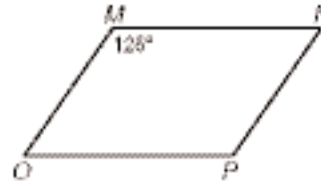
Quadrilaterals



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question. If there are no answer choices, write your answer in the space provided. Be sure to show all of your work.

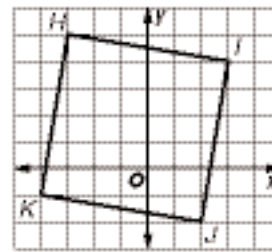
- 1 If quadrilateral $MNPO$ is a parallelogram, what is the measure of $\angle N$?

- A 55°
 B 65°
 C 125°
 D Cannot be determined.



1 _____

- 2 Is the quadrilateral shown a rhombus? Explain your reasoning.



- 3 If quadrilateral $QRST$ is a kite, what is the measure of $\angle T$?

- A 110°
 B 90°
 C 50°
 D Cannot be determined.



3 _____

- 4 If $ABCD$ is an isosceles trapezoid with $m\angle A = 100$, $m\angle B = 80$, $m\angle C = 80$, and $m\angle D = 100$, which two sides are parallel?

- A \overline{AB} and \overline{CD}
 B \overline{BC} and \overline{AD}
 C \overline{AB} and \overline{BC}
 D \overline{BC} and \overline{CD}

4 _____

- 5 Which statement is true?

- A Some kites are trapezoids.
 B Some kites are rhombuses.
 C Some rhombuses are rectangles.
 D Some parallelograms are trapezoids.

5 _____

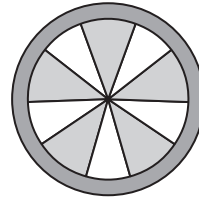
Standardized Chapter Tests

Transformations

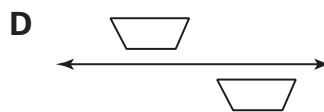
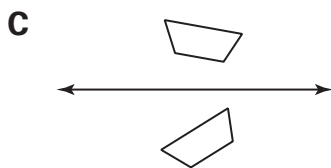
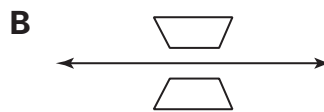
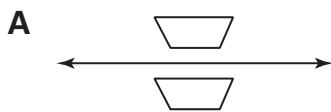


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question. If there are no answer choices, write your answer in the space provided. Be sure to show all of your work.

- 1** Draw all lines of symmetry for the wheel shown given that all shaded sectors are congruent to each other and all unshaded sectors are congruent to each other.

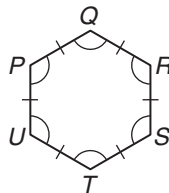


- 2** Which pair of figures are images of each other after reflection in the line shown? **2** _____



- 3** Which rotation maps P onto R ? **3** _____

- A** 120° clockwise
B 60° clockwise
C 60° counterclockwise
D 120° counterclockwise



- 4** If point X at $(-3, 4)$ is translated using the transformation $(x, y) \rightarrow (x - 4, y - 5)$, what will be the coordinates of the image of X ? **4** _____

- A** $(-8, 0)$
B $(12, -20)$
C $(-7, -1)$
D $(1, 9)$

Standardized Chapter Tests

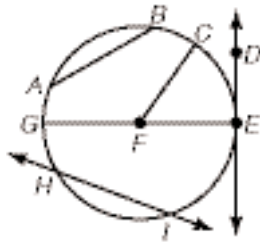
Circles



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question. If there are no answer choices, write your answer in the space provided. Be sure to show all of your work.

- 1** Name the following in relationship to the circle shown:

\overline{AB} , \overline{FC} , \overline{DE} , \overline{HI} , \overline{GE} .

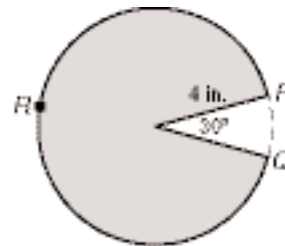


Use the diagram of an apple pie to answer Questions 2 and 3.

- 2** What is the measure of \widehat{PRQ} ?

A 15°
C 60°

B 30°
D 330°



2 _____

- 3** What is the area of the uneaten (shaded) portion of the pie?

A $\frac{44\pi}{3}$ square inches
C $\frac{4\pi}{3}$ square inches

B $\frac{22\pi}{3}$ square inches
D $\frac{11\pi}{12}$ square inches

3 _____

- 4** An angle inscribed in a circle has a measure of 88° . What is the measure of its intercepted arc?

A 44°
C 92°

B 88°
D 176°

4 _____

- 5** The circumference of a bowl is 13 inches. What is the length of the radius to the nearest tenth of an inch?

A 2.1 inches
C 4.1 inches

B 3.7 inches
D 6.5 inches

5 _____

Standardized Chapter Tests

Area

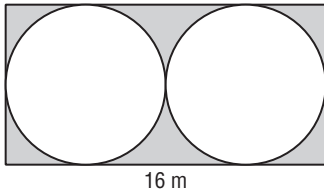


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question. If there are no answer choices, write your answer in the space provided. Be sure to show all of your work.

- 1** Emma needs to replace the jumping mat on her circular trampoline. The outside of the trampoline frame has a diameter of 14 feet, but the frame itself has a $2\frac{1}{2}$ -inch diameter, and springs fill a gap of $7\frac{1}{2}$ inches between the inside of the frame and the mat. What is the area of the mat Emma has to replace to the nearest square foot? **1** _____
- A** 89 square feet **B** 119 square feet
C 136 square feet **D** 154 square feet

- 2** West Carroll Parish is shaped approximately like a parallelogram. If the lengths of the longer bases of an approximating parallelogram are about 30 miles, the lengths of the shorter bases are about 16 miles, and the perpendicular distance between the longer bases is about 12 miles, which is the best estimate for the area of the parish? **2** _____
- A** 480 square miles **B** 420 square miles
C 360 square miles **D** 192 square miles

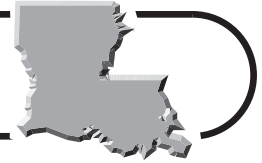
- 3** What is the area of the shaded region to the nearest meter? **3** _____



- A** 27 square meters **B** 50 square meters
C 78 square meters **D** 101 square meters
- 4** A regular hexagon has a side length of 16.8 meters and an area of about 733.3 square feet. A second regular hexagon has a perimeter of 73.2 feet. Is it possible to find the area of the second hexagon using just this information? If so, what is the area of the second hexagon? If not, explain why not.

Standardized Chapter Tests

Surface Area



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question. If there are no answer choices, write your answer in the space provided. Be sure to show all of your work.

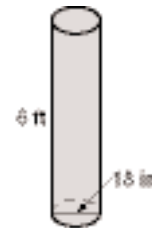
- 1** To keep in humidity, a terrarium is covered with a clear plastic dome that is in the shape of a hemisphere. If the diameter of the dome is 60 centimeters, what is its exterior surface area?

1 _____

- A** $18,000\pi$ square centimeters
B 7700π square centimeters
C 3600π square centimeters
D 1800π square centimeters

- 2** Miranda is wrapping a gift for her friend. She has a roll of wrapping paper that is 4 feet wide and 9 feet long to wrap the gift, which she has placed in a box with dimensions 2 feet wide by 3 feet long by 2.5 feet tall. Does she have enough paper to cover the box (assuming no overlap)? Explain your reasoning. If she has enough paper, draw a net of the box and show how Miranda can cover it.

- 3** An art student at Tulane University is going to cover 4 columns, each having dimensions shown, with gold leaf. Only the sides of the columns will be covered. About how many square feet of gold leaf are needed?



3 _____

- A** 42 square feet
B 113 square feet
C 170 square feet
D 452 square feet

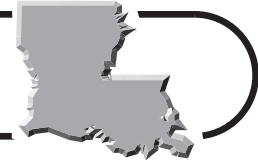
- 4** What is the surface area to the nearest square foot of a square pyramid with a height of 7 feet and whose base has sides of length 8 feet?

4 _____

- A** 288 square feet
B 248 square feet
C 193 square feet
D 176 square feet

Standardized Chapter Tests

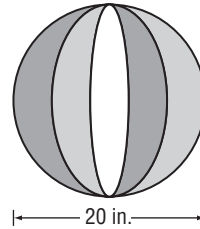
Volume



Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question. If there are no answer choices, write your answer in the space provided. Be sure to show all of your work.

- 1** About how many cubic inches of air will the beach ball hold?

A 1300 cubic inches
B 3100 cubic inches
C 4200 cubic inches
D 33,500 cubic inches



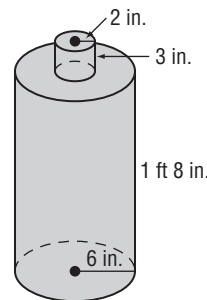
1 _____

- 2** A glass display building at a botanical gardens is built in the shape of a square pyramid with a volume of 1620 cubic yards and a base edge of 18 yards. What is the height of the building?

A 90 yards
B 45 yards
C 15 yards
D 5 yards

2 _____

- 3** A plastic water container can be modeled by two cylinders with the dimensions shown. About how much will the bottle weigh when it is filled with water completely, ignoring the weight of the bottle itself? (1 gallon = 231 cubic inches; 1 gallon of water weighs about $8\frac{1}{3}$ pounds.)



4 _____

- 4** What is the exact volume of a cone with diameter 20 centimeters and height 16 centimeters?

A $\frac{6400\pi}{3}$ cubic centimeters
B 1600π cubic centimeters
C $\frac{1600\pi}{3}$ cubic centimeters
D 320π cubic centimeters