

**Side-by-Side Comparison of the Texas Educational Knowledge and Skills (TEKS)  
and Louisiana Grade Level Expectations (GLEs)**

**MATHEMATICS: Geometry**

| TEKS  | Comments   | Louisiana GLE   |
|---|--|---|
| (G.1) Geometric Structure. The student understands the structure of, and relationships within, an axiomatic system.   |  |   |
| (G.1.A) develop an awareness of the structure of a mathematical system, connecting definitions, postulates, logical reasoning, and theorems;  | <i>Approximate Match. This TEKS item is partially covered in GLE G-17 but not assessed in LA state exams.</i>                                    | G-17 Compare and contrast inductive and deductive reasoning approaches to justify conjectures and solve problems (G-4-H) (G-6-H)<br><br>G-23 Draw and justify conclusions based on the use of logic (e.g., conditional statements, converse, inverse, contrapositive) (D-8-H) (G-6-H) (N-7-H) |
| (G.1.B) recognize the historical development of geometric systems and know mathematics is developed for a variety of purposes; and  | <i>Not specifically addressed in the LA Geometry (Grade 10) GLEs</i>   |   |
| (G.1.C) compare and contrast the structures and implications of Euclidean and non-Euclidean geometries.   | <i>Not specifically addressed in the LA Geometry (Grade 10) GLEs</i>   |   |
| (G.2) Geometric Structure. The student analyzes geometric relationships in order to make and verify conjectures.  |  |   |
| (G.2.A) use constructions to explore attributes of geometric figures and to make conjectures about geometric relationships; and   | <i>Approximate match. The TEKS is more in depth than the LA GLE because the TEKS expect students to also make conjectures.</i>                   | G-9 Construct 2- and 3-dimensional figures when given the name, description, or attributes, with and without technology (G-1-H)   |
| (G.2.B) make conjectures about angles, lines, polygons, circles, and three-dimensional figures and determine the validity of the conjectures, choosing from a variety of approaches such as coordinate, transformational, or axiomatic. | <i>Approximate match. The TEKS is more in depth than the LA GLE. The TEKS specifies more types of geometric figures and types of approaches.</i> | G-10 Form and test conjectures concerning geometric relationships including lines, angles, and polygons (i.e., triangles, quadrilaterals, and $n$ -gons), with and without technology (G-1-H) (G-4-H) (G-6-H)   |
| (G.3) Geometric Structure. The student applies logical reasoning to justify and prove mathematical statements.  |  |   |

| TEKS   | Comments  | Louisiana GLE   |
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| (G.3.A) determine the validity of a conditional statement, its converse, inverse, and contrapositive;                            |   | G-23 Draw and justify conclusions based on the use of logic (e.g., conditional statements, converse, inverse, contrapositive) (D-8-H) (G-6-H) (N-7-H)   |
| (G.3.B) construct and justify statements about geometric figures and their properties;   | <i>Approximate match. The TEKS expectation is very general in nature. Although the matching GLEs are more specific, it is difficult to be sure that they include all possible expectations for this TEKS objective.</i>   | G-10 Form and test conjectures concerning geometric relationships including lines, angles, and polygons (i.e., triangles, quadrilaterals, and $n$ -gons), with and without technology (G-1-H) (G-4-H) (G-6-H)<br><br>G-19 Develop formal and informal proofs (e.g., Pythagorean theorem, flow charts, paragraphs) (G-6-H) |
| (G.3.C) use logical reasoning to prove statements are true and find counter examples to disprove statements that are false;      | <i>Approximate match. The TEKS is more in depth than the LA GLE and specifies the use of counter examples which are not included or implied in the corresponding LA GLE.</i>  | G-19 Develop formal and informal proofs (e.g., Pythagorean theorem, flow charts, paragraphs) (G-6-H)  |
| (G.3.D) use inductive reasoning to formulate a conjecture; and   | <i>Approximate match. The TEKS implies application of that type of reasoning whereas the corresponding LA GLE focuses on knowing the difference between the two forms of reasoning. In LA, forming a conjecture is considered to be part of the inductive reasoning process. The LA curriculum has specific activities which are focused on making conjectures based on GLE G-17.</i> | G-17 Compare and contrast inductive and deductive reasoning approaches to justify conjectures and solve problems (G-4-H) (G-6-H)  |
| (G.3.E) use deductive reasoning to prove a statement.  | <i>Approximate match.</i>   | G-17 Compare and contrast inductive and deductive reasoning approaches to justify conjectures and solve problems (G-4-H) (G-6-H)  |
| (G.4) Geometric Structure. The student uses a variety of representations to describe geometric relationships and solve problems. | <i>Objective will be tested in Grade 11 Exit Level TAKS - Objective 6</i>   |   |
| select an appropriate representation (concrete, pictorial, graphical, verbal, or symbolic) in order to solve problems.           | <i>Not specifically addressed in the LA Geometry (Grade 10) GLEs</i>  |   |
| (G.5) Geometric Patterns. The student uses a variety of representations to describe geometric relationships and solve problems.  | <i>Objective will be tested in Grade 11 Exit Level TAKS - Objective 6</i>   |   |

| TEKS   | Comments  | Louisiana GLE  |
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| (G.5.A) use numeric and geometric patterns to develop algebraic expressions representing geometric properties;   |   | G-26 Generalize and represent patterns symbolically, with and without technology (P-1-H)   |
| (G.5.B) use numeric and geometric patterns to make generalizations about geometric properties, including properties of polygons, ratios in similar figures and solids, and angle relationships in polygons and circles;            | <i>Approximate match. None of the LA GLEs alone encompass all the components of this TEKS objective. However, the combination of the GLEs include most of the corresponding TEKS expectation.</i>   | G-4 Use ratios and proportional reasoning to solve a variety of real-life problems including similar figures and scale drawings (N-6-H) (M-4-H)<br><br>G-10 Form and test conjectures concerning geometric relationships including lines, angles, and polygons (i.e., triangles, quadrilaterals, and $n$ -gons), with and without technology (G-1-H) (G-4-H) (G-6-H)<br><br>G-26 Generalize and represent patterns symbolically, with and without technology (P-1-H) |
| (G.5.C) use properties of transformations and their compositions to make connections between mathematics and the real world, such as tessellations; and  | <i>Approximate match. The LA GLE is more specific to the coordinate plane. The TEKS implies more of a real-world application of those concepts.</i>   | G-14 Develop and apply coordinate rules for translations and reflections of geometric figures (G-3-H)  |
| (G.5.D) identify and apply patterns from right triangles to solve meaningful problems, including special right triangles (45-45-90 and 30-60-90) and triangles whose sides are Pythagorean triples.                                | <i>Approximate match. Neither of the two LA GLEs alone encompass all the components of this TEKS objective. The combination of the two GLEs includes most of the corresponding TEKS expectation, but the LA GLEs do not specifically address special right triangles. However, since all 30-60-90 right triangles are similar, they are addressed in GLE G-18. This also applies to 45-45-90 right triangles and Pythagorean Triples.</i> | G-12 Apply the Pythagorean theorem in both abstract and real-life settings (G-2-H)<br><br>G-26 Generalize and represent patterns symbolically, with and without technology (P-1-H)<br><br>G-18 Determine angle measures and side lengths of right and similar triangles using trigonometric ratios and properties of similarity, including congruence (G-5-H) (M-4-H)  |
| (G.6) Dimensionality and the Geometry of Location. The student analyzes the relationship between three-dimensional geometric figures and related two-dimensional representations and uses these representations to solve problems. | <i>Objective will be tested in Grade 11 Exit Level TAKS - Objective 7</i>   |  |
| (G.6.A) describe and draw the intersection of a given plane with various three-dimensional geometric figures;  | <i>Not specifically addressed in the LA Geometry (Grade 10) GLEs. This TEKS is addressed in the LA Algebra 2 (Grades 11-12) GLEs.</i>   |  |

| TEKS   | Comments  | Louisiana GLE   |
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| (G.6.B) use nets to represent and construct three-dimensional geometric figures; and   | <i>Approximate match. The TEKS specifies the use of nets which is addressed in the grade 8 GLEs. The GLE is more comprehensive because it involves construction that requires a deeper understanding of the figures' properties and attributes.</i> | G-9 Construct 2- and 3-dimensional figures when given the name, description, or attributes, with and without technology (G-1-H) |
| (G.6.C) use orthographic and isometric views of three-dimensional geometric figures to represent and construct three-dimensional geometric figures and solve problems.                                       | <i>Approximate match. The TEKS expectation is more in-depth and specific, including application to solving problems which is not addressed in the LA GLE.</i>   | G-9 Construct 2- and 3-dimensional figures when given the name, description, or attributes, with and without technology (G-1-H) |
| (G.7) Dimensionality and the Geometry of Location. The student understands that coordinate systems provide convenient and efficient ways of representing geometric figures and uses them accordingly.        | <i>Objective will be tested in Grade 11 Exit Level TAKS - Objective 7</i>   |   |
| (G.7.A) use one- and two-dimensional coordinate systems to represent points, lines, rays, line segments, and figures;  | <i>Not specifically addressed in the LA Geometry (Grade 10) GLEs</i>  |   |
| (G.7.B) use slopes and equations of lines to investigate geometric relationships, including parallel lines, perpendicular lines, and special segments of triangles and other polygons; and                   | <i>Approximate match.</i>   | G-6 Write the equation of a line parallel or perpendicular to a given line through a specific point (A-3-H) (G-3-H).            |
| (G.7.C) derive and use formulas involving length, slope, and midpoint.   | <i>Approximate match. The TEKS is more specific and includes more concepts and skills. The LA GLE is limited to finding distance.</i>   | G-16 Represent and solve problems involving distance on a number line or in the plane (G-3-H)                                   |
| (G.8) Congruence and the Geometry of Size. The student uses tools to determine measurements of geometric figures and extends measurement concepts to find perimeter, area, and volume in problem situations. | <i>Objective will be tested in Grade 11 Exit Level TAKS - Objective 8</i>   |   |
| (G.8.A) find areas of regular polygons, circles, and composite figures;  | <i>Approximate match. GLE G-7 addresses the TEKS figures listed. Other figures are to be mastered in earlier grades, primarily in the middle school GLEs.</i>   | G-7 Find volume and surface area of pyramids, spheres, and cones (M-3-H) (M-4-H)  |

| TEKS   | Comments   | Louisiana GLE   |
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| (G.8.B) find areas of sectors and arc lengths of circles using proportional reasoning;   | <i>Approximate match.</i>  | G-4 Use ratios and proportional reasoning to solve a variety of real-life problems including similar figures and scale drawings (N-6-H) (M-4-H).  |
| (G.8.C) derive, extend, and use the Pythagorean Theorem; and   | <i>Approximate match.</i>  | G-12 Apply the Pythagorean theorem in both abstract and real-life settings (G-2-H)  |
| (G.8.D) find surface areas and volumes of prisms, pyramids, spheres, cones, cylinders, and composites of these figures in problem situations.                          | <i>Approximate match. The TEKS is more extensive and includes more types of geometric figures than the corresponding LA GLE. In LA, other figures are to be reviewed as they are to be mastered in middle school.</i>  | G-7 Find volume and surface area of pyramids, spheres, and cones (M-3-H) (M-4-H)  |
| (G.9) Congruence and the Geometry of Size. The student analyzes properties and describes relationships in geometric figures.   | <i>Objective will be tested in Grade 11 Exit Level TAKS - Objective 7</i>  |   |
| (G.9.A) formulate and test conjectures about the properties of parallel and perpendicular lines based on explorations and concrete models;                             | <i>Approximate match. The LA GLE is more extensive and includes more specific types of geometric figures. The TEKS objective is limited to parallel and perpendicular lines.</i>   | G-10 Form and test conjectures concerning geometric relationships including lines, angles, and polygons (i.e., triangles, quadrilaterals, and $n$ -gons), with and without technology (G-1-H) (G-4-H) (G-6-H) |
| (G.9.B) formulate and test conjectures about the properties and attributes of polygons and their component parts based on explorations and concrete models;            | <i>Approximate match. The LA GLE is more extensive and includes more specific types of geometric figures. The TEKS objective is limited to polygons.</i>   | G-10 Form and test conjectures concerning geometric relationships including lines, angles, and polygons (i.e., triangles, quadrilaterals, and $n$ -gons), with and without technology (G-1-H) (G-4-H) (G-6-H) |
| (G.9.C) formulate and test conjectures about the properties and attributes of circles and the lines that intersect them based on explorations and concrete models; and | <i>Approximate match. The match in this case lies only in the fact that both involve circles and the lines that intersect them. However, the focus of each are not closely related with the LA GLE focused on problem solving and the TEKS focused on formulating and testing conjectures.</i> | G-13 Solve problems and determine measurements involving chords, radii, arcs, angles, secants, and tangents of a circle (G-2-H)   |

| TEKS   | Comments   | Louisiana GLE   |
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| (G.9.D) analyze the characteristics of polyhedra and other three-dimensional figures and their component parts based on explorations and concrete models.                            | <i>The LA GLE is comprehensive and does not have the focus on three-dimensional figures that the TEKS does. There is more of a match with the process than the content. Some of this TEKS is included in the middle school GLEs.</i>   | G-10 Form and test conjectures concerning geometric relationships including lines, angles, and polygons (i.e., triangles, quadrilaterals, and $n$ -gons), with and without technology (G-1-H) (G-4-H) (G-6-H) |
| (G.10) Congruence and the Geometry of Size. The student applies the concept of congruence to justify properties of figures and solve problems.                                       | <i>Objective will be tested in Grade 11 Exit Level TAKS - Objective 6</i>  |   |
| (G.10.A) use congruence transformations to make conjectures and justify properties of geometric figures including figures represented on a coordinate plane; and                     | <i>Not specifically addressed in the LA Geometry (Grade 10) GLEs</i>   |   |
| (G.10.B) justify and apply triangle congruence relationships.  | <i>Not specifically addressed in the LA Geometry (Grade 10) GLEs</i>   |   |
| (G.11) Similarity and the Geometry of Shape. The student applies the concepts of similarity to justify properties of figures and solve problems.                                     | <i>Objective will be tested in Grade 11 Exit Level TAKS - Objective 8</i>  |   |
| (G.11.A) use and extend similarity properties and transformations to explore and justify conjectures about geometric figures;  | <i>Not specifically addressed in the LA Geometry (Grade 10) GLEs</i>   |   |
| (G.11.B) use ratios to solve problems involving similar figures;   |  | G-4 Use ratios and proportional reasoning to solve a variety of real-life problems including similar figures and scale drawings (N-6-H) (M-4-H)   |
| (G.11.C) develop, apply, and justify triangle similarity relationships, such as right triangle ratios, trigonometric ratios, and Pythagorean triples using a variety of methods; and | <i>Approximate match. Neither LA GLEs G-8 or G-12 alone encompass all the components of this TEKS objective. The combination of those two GLEs and G-4 and G-18 include most of the corresponding TEKS expectation, but the LA GLEs do not specifically address the development and justification of those mathematical concepts and properties.</i> | G-8 Model and use trigonometric ratios to solve problems involving right triangles (M-4-H) (N-6-H)<br><br>G-12 Apply the Pythagorean theorem in both abstract and real-life settings (G-2-H)                  |
|  |  | Number and Number Relations   |

| TEKS | Comments   | Louisiana GLE  |
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|      | <p><i>Not specifically addressed in the TEKS. The TEKS focus strictly on the subject area of Geometry. The Geometry GLEs in essence are the grade 10 GLEs which included the same strands found in grades K-8. The assumption is that many of the expectations in this LA Number and Number Relations strand could be implied to be imbedded in the TEKS Geometry expectations but caution must be taken to insure the expectations in this LA content strand occur as part of the TEKS Geometry expectations.</i></p> | <p>G-1 Simplify and determine the value of radical expressions (N-2-H) (N-7-H)</p> <p>G-2 Predict the effect of operations on real numbers (e.g., the quotient of a positive number divided by a positive number less than 1 is greater than the original dividend) (N-3-H) (N-7-H)</p> <p>G-3 Define <i>sine</i>, <i>cosine</i>, and <i>tangent</i> in ratio form and calculate them using technology (N-6-H)</p> |
|      |  | Algebra  |
|      | <p><i>Not specifically addressed in the Texas Geometry TEKS. Also, the concept of the line of best fit is not found in the Algebra 1 TEKS.</i></p>   | <p>G-5 Write the equation of a line of best fit for a set of 2-variable real-life data presented in table or scatter plot form, with or without technology (A-2-H) (D-2-H)</p>   |
|      |  | Geometry   |
|      | <p><i>Not specifically addressed in the Texas Geometry TEKS. A match for the GLE G-15 can be found in the 8<sup>th</sup> grade TEKS.</i></p>   | <p>G-11 Determine angle measurements using the properties of parallel, perpendicular, and intersecting lines in a plane (G-2-H)</p> <p>G-15 Draw or use other methods, including technology, to illustrate dilations of geometric figures (G-3-H)</p>  |
|      |  | Data Analysis, Probability, and Discrete Math  |

| TEKS | Comments   | Louisiana GLE   |
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|      | <p><i>Not specifically addressed in the TEKS. The TEKS focus strictly on the subject area of Geometry. The Geometry GLEs in essence are the grade 10 GLEs which included the same strands found in grades K-8. The assumption is that many of the expectations in this LA Data Analysis, Probability, and Discrete Math strand could be implied to be imbedded in the TEKS Geometry expectations but caution must be taken to insure these expectations in this LA content strand occur as part of the TEKS Geometry expectations.</i></p> | <p>G-20 Show or justify the correlation (match) between a linear or non-linear data set and a graph (D-2-H) (P-5-H)</p> <p>G-21 Determine the probability of conditional and multiple events, including mutually and non-mutually exclusive events (D-4-H) (D-5-H)</p> <p>G-22 Interpret and summarize a set of experimental data presented in a table, bar graph, line graph, scatter plot, matrix, or circle graph (D-7-H)</p> <p>G-24 Use counting procedures and techniques to solve real-life problems (D-9-H)</p> <p>G-25 Use discrete math to model real life situations (e.g., fair games, elections) (D-9-H)</p> |
|      |  | Patterns, Relations, and Functions  |
|      | <p><i>Not specifically addressed in the Texas Geometry TEKS.</i></p>   | <p>G-27 Translate among tabular, graphical, and symbolic representations of patterns in real-life situations, with and without technology (P-2-H) (P-3-H) (A-3-H)</p>   |