

## Alabama Geometry with CORD Geometry, 2<sup>nd</sup> Edition

### Geometry

Geometry provides experiences that increase students' understanding of shapes and properties with an emphasis on its use in practical tasks, recreations, sciences, and the arts. Local school systems may design the types of courses, theoretical or applied, and the time frames [140 hours (1 credit), 210 hours (1 1/2 credits), or 280 hours (2 credits)] that will meet the needs of all students. In this way, delivery of Geometry content will vary; but the content will not be compromised. For example, Technical Geometry may be substituted for Geometry, provided the core content of geometry is taught.

Exploratory development of concepts related to two- and three-dimensional figures is integral to this course. Constructing, drawing, measuring, and modeling are used to further the understanding of properties of geometric figures and to represent problem situations.

Concepts, such as parallelism, perpendicularity, congruence, similarity, and symmetry, are studied in many contexts. Translations, reflections, and rotations are used to describe how objects move. Classifying figures in terms of congruence and similarity and applying these relationships are treated fully in this course. Deducing properties of and relationships between figures from given assumptions and developing an understanding of axiomatic systems are aspects of geometry that are of great importance to the future understanding of mathematics.

Calculators should be used on a regular basis, including use during assessments.

Content standards matched with *Stanford Achievement Test, Ninth Edition*, Task 2 objectives are indicated with a symbol. Task 2 objectives not matched are listed at the end of this course. Those objectives are addressed in other courses.

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Geometry

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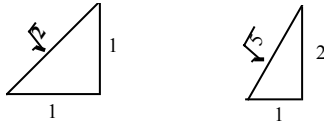
NUMBER SENSE  
 NUMBER SYSTEMS  
 NUMBER THEORY

CONTENT STANDARDS

Students will

1. Construct line segments whose lengths are irrational.

Examples:



Page or Location: 343, 546

GEOMETRY  
 SPATIAL SENSE  
 MEASUREMENT

2. Demonstrate an understanding of the term, “Euclidean geometry,” and the fundamental proposition of Euclidean geometry.

Page or Location: 4, 270

3. Distinguish among lines, rays, and segments.

Page or Location: 4-8, 9-11, 29, 51

4. Measure and classify angles.

Page or Location: 8, 19-25, 26-29, 33-35, 79, 88, 148

5. Determine area and circumference of a circle. *Stanford 9*

Page or Location: 481-486, 496, 499-501, 506, 508, 510, 511, 549, 576, 577

6. Determine arc length.

Page or Location: 533-541, 571, 576

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7. Use a compass and a straightedge for geometric constructions.
  - Parallel lines
  - Perpendicular lines
  - Congruent line segments
  - Median
  - Altitude
  - Perpendicular bisector
  - Congruent angles
  - Angle bisector

**Page or Location:** 36-46, 48-50, 53, 59, 61, 64, 65, 68, 73, 94, 109, 147, 155, 178, 207, 211, 223, 234, 235, 237-238, 249, 267, 278, 281, 285, 286, 319, 320, 323-325, 327, 335, 343, 428, 531, 536, 546, 571, 669, 704
8. Demonstrate reflections, translations, and rotations. *Stanford 9*

**Page or Location:** 666-673, 674-680, 681-687, 688-693, 698-704, 712-715, 721-730
9. Determine perimeter and area of polygons. *Stanford 9*

**Page or Location:** 458-464, 465-470, 471-476, 477-480, 487-491, 497-499, 504-515, 528, 529, 541, 545, 549, 556, 573, 595, 596-604, 612-614, 617, 631, 650-662, 673, 693, 711
10. Find the area of an inscribed or a circumscribed polygon or circle. *Stanford 9*

**Page or Location:** 513, 529-532, 577, 697
11. Find the surface area and volume of cylinders, spheres, and prisms given formulas., *Stanford 9*

**Page or Location:** 596-604, 605-611, 612-618, 632-636, 637-641, 647-649, 650-663, 673, 693
12. Apply postulates and theorems related to parallel lines. *Stanford 9*

**Page or Location:** 30-34, 44-45, 52, 140-147, 148-154, 155-161, 164-165, 184-186, 186-187, 190-201, 212, 214, 220-221, 223, 230, 273-278, 284, 497-499, 563, 680

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13. Apply the definition and theorems related to perpendicular lines.  
**Page or Location:** 30-35, 54, 62, 110-114, 122, 137, 158, 159, 180, 198, 231-233, 235, 238-239, 249, 415-416, 418-419, 439-441, 454, 496, 524, 525-532, 563, 588
14. Describe and use relationships between pairs of angles.
- Adjacent angles
  - Vertical angles
  - Complementary angles
  - Supplementary angles
- Page or Location:** 23-24, 26-29, 35, 43, 64, 73, 75-76, 88, 104-105, 107-108, 112-114, 130-131, 148-153, 199, 217, 230, 261, 274, 284, 290, 347, 551, 673
15. Classify a triangle according to its components.  
**Page or Location:** 162-164, 168
16. Apply properties and measures associated with triangles and quadrilaterals to solve problems. *Stanford 9*  
**Page or Location:** 162-170, 171-178, 179-183, 256-261, 268-272, 273-278, 279-284, 285-290, 316-322, 323-330, 331-334, 335-340, 341-347, 348-353, 354-360, 361-366, 373-387, 458-464, 465-470, 471-476, 477-480
17. Identify polyhedrons.  
**Page or Location:** 596
18. Deduce the measure of angles associated with polygons from given information. *Stanford 9*  
Examples: interior, exterior  
**Page or Location:** 162-170, 171-178, 186-187, 188-189, 190-201, 210, 257, 262-267, 269, 291-292, 297, 299, 300, 304, 330, 340, 360, 420, 470, 476, 529, 588, 611, 631, 680, 696
19. Determine whether triangles are congruent.  
**Page or Location:** 204-210, 211-217, 218-223, 224-230, 242-253, 274, 275-276, 278, 280, 284, 315, 404, 611, 687

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20. Describe and identify parts of circles.

- Radius
- Diameter
- Tangent
- Secant
- Chord
- Arcs
- Central angle
- Inscribed angle

**Page or Location:** 53, 481, 493, 525-532, 533-541, 542-549, 550-556

21. Apply properties and theorems related to circles.

Examples: A diameter perpendicular to a chord bisects the chord and its arcs.

The measure of an inscribed angle is equal to one-half the measure of its intercepted arc.

**Page or Location:** 525-532, 533-541, 542-549, 550-556, 565-567, 567-570, 571-579, 618, 625, 697

22. Distinguish among circumcenter, incenter, orthocenter, and centroid of a triangle.

**Page or Location:** 234, 235, 237-238, 253

**PATTERNS**  
**FUNCTIONS**  
**ALGEBRA**

23. Find the area of a rectangle or triangle, given the coordinates of the vertices. *Stanford 9*

**Page or Location:** 461, 463, 469, 618, 636

24. Determine the slope of a line from its graph or from its equation.

**Page or Location:** 141-144, 146, 183, 190-191, 298, 405-412, 413-420, 438-439, 439-441, 444-455, 496, 563, 631, 680

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25. Apply formulas of coordinate geometry. *Stanford 9*
- Distance
  - Slope
  - Midpoint
- Page or Location:** 390-396, 406-412, 421, 424, 427, 432, 436, 438-439, 441-443, 444-455, 469, 506, 549, 636
26. Determine an equation of a line from given information.
- Two points
  - Point and slope
  - Slope and y-intercept
- Page or Location:** 141-144, 146, 183, 413-420, 496, 549, 563, 588, 631, 680
27. Recognize and use the relationship of the slopes of parallel lines and the slopes of perpendicular lines.
- Page or Location:** 142-147, 183, 190, 415-420, 428, 439-441, 444-455, 496, 563, 588, 631, 680
28. Apply the Triangle Inequality Theorem in problem solving.
- Page or Location:** 179-183, 200, 236, 595, 611, 727
29. Recognize and use Pythagorean Triples.
- Page or Location:** 344-347, 386
30. Apply the Pythagorean Theorem in problem solving using calculators when appropriate. *Stanford 9*
- Page or Location:** 341-347, 360, 369-371, 373-387, 391, 407, 411, 504, 512, 537, 545, 576, 631, 653, 656
31. Solve an equation involving radicals. *Stanford 9*
- Page or Location:** 336-340, 342-343, 376, 378, 381, 382, 385, 387, 391-393, 400, 407, 421, 424, 432, 435-436, 444-455, 506, 545
32. Apply the properties of 30-60-90 degree triangles and 45-45-90 degree triangles.
- Page or Location:** 348-353, 369-371, 376, 377, 383, 385, 387, 396, 448, 451, 478, 505, 532, 577, 711

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33. Solve a problem using ratio or proportion. *Stanford 9*  
**Page or Location:** 65, 102, 269, 310-315, 318, 321, 323-330, 331-334, 335-340, 348-353, 354-360, 361-366, 367-369, 371-372, 373-387, 424, 464, 487-491, 603, 632-636, 660, 662, 705
34. Determine the geometric mean between two numbers.  
**Page or Location:** 336-340, 386, 467, 532, 549
35. Apply properties of similar polygons in problem solving. *Stanford 9*  
**Page or Location:** 316-322, 323-330, 331-334, 335-340, 341-347, 348-353, 354-360, 361-366, 367-369, 371-372, 373-387, 470, 487-491, 512, 524, 603, 611, 625, 641, 718-720
36. Know the right triangle definitions of the sine, cosine, and tangent functions and use them to solve a triangle. *Stanford 9*  
**Page or Location:** 354-360, 361-366, 373-387, 491, 496, 529, 718-720

**PROBABILITY**

**STATISTICS**

**DISCRETE MATHEMATICS**

37. Distinguish between inductive and deductive reasoning.  
**Page or Location:** 68-73, 74-79, 123-124, 136, 194, 198
38. Recognize the hypothesis and conclusion of an if-then statement.  
**Page or Location:** 74-79, 80-84, 154, 161
39. Describe the locus that satisfies a given condition.
- Circle
  - Cylinder
  - Sphere
- Page or Location:** 557-563, 564-565, 572-575, 577, 704

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***Stanford Achievement Test, Ninth Edition* Task 2 objectives not included  
in this course:**

- Identify an equation or inequality that represents a problem situation. (addressed in Algebra I)
- Identify the equation for the line of regression for a scattergram. (addressed in Algebra I and II)
- Solve problems involving sequences with recurrence relations. (addressed in Algebra II)
- Solve problems involving infinite sequences. (addressed in Algebra II)
- Solve inequalities. (addressed in Algebra I)
- Evaluate polynomials. (addressed in Algebra I)
- Make a prediction from a statistical sample. (addressed in Algebra II)
- Determine a correlation, given a set of data. (addressed in Algebra I)
- Draw inferences from tables and graphs. (addressed in Algebra I)
- Identify the effect on the mean, median, or mode when data is changed. (addressed in Algebra I)
- Identify the mean, median, mode, or range of a set of data. (addressed in Introduction to Algebra)
- Predict outcomes for a simple event, given a theoretical probability. (addressed in Algebra I)
- Estimate probability, given experimental data or graph. (addressed in Algebra I)
- Find probability, given a graph of probability distribution. (addressed in Algebra I)
- Solve problems involving normal distributions. (addressed in Algebra II)
- Make predictions from data in a table. (addressed in Algebra I)
- Identify graphs that represent function data in a table. (addressed in Algebra I)
- Identify equations that represent graphs. (addressed in Algebra I)
- Identify the effects of parameter changes on a function. (addressed in Algebra I)
- Identify the equation of a function, given a table of values. (addressed in Algebra I)
- Read and interpret the graph of a trigonometric function. (addressed in Algebra II)

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- Solve problems involving enumeration. (addressed in Algebra II)
- Identify the results of an algorithm. (addressed in Algebra II)
- Estimate the area underneath a curve. (addressed in Algebra I)
- Determine the maximum or minimum points of a graph. (addressed in Algebra I)