



Geometry

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STANDARDS		PAGE REFERENCES
Grade Ten		
Number, Number Sense and Operations Standard		
<i>Number and Number Systems</i>		
1. Connect physical, verbal and symbolic representations of irrational numbers; e.g., construct $\sqrt{2}$ as a hypotenuse or on a number line.		Student Edition: 51, 52, 556-557, 659 <i>Reading Math</i> 51
<i>Meaning of Operations</i>		
2. Explain the meaning of the n th root.		The n th root is not used, but the geometric concept of n is used to represent the number of sides of polygons (n -gon). See the examples below. Student Edition: 318-323, 330 #46-#49, 339 #45-#48 <i>Spreadsheet Lab</i> 324 Also see Glencoe's <i>Algebra 2</i> © 2008 Lesson 7-4.
<i>Computation and Estimation</i>		
3. Use factorial notation and computations to represent and solve problem situations involving arrangements.		See Glencoe's <i>Algebra 1</i> © 2008 Lesson 12-2.

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4. Approximate the n th root of a given number greater than zero between consecutive integers when n is an integer; e.g., the 4th root of 50 is between 2 and 3.	See Glencoe's <i>Algebra 2</i> © 2008 Lesson 7-4.
Measurement Standard	
<i>Use Measurement Techniques and Tools</i>	
1. Explain how a small error in measurement may lead to a large error in calculated results.	The concept of error in measurement and its effect on calculations could be discussed with the following examples. Student Edition: 14, 19 #42, #45-#47, 20 #56-#59, 746 #22
2. Calculate relative error.	Student Edition: 19
3. Explain the difference between absolute error and relative error in measurement.	Student Edition: 19
4. Give examples of how the same absolute error can be problematic in one situation but not in another; e.g., compare “accurate to the nearest foot” when measuring the height of a person versus when measuring the height of a mountain.	Student Edition: 14, 18 #16-#21, 19 #42-#47 <i>Get Ready</i> 13
5. Determine the measures of central and inscribed angles and their associated major and minor arcs.	Student Edition: 536-569, 578-586, 666 <i>Study Guide and Review</i> 621 10-2, 922 10-4
Geometry and Spatial Sense Standard	
<i>Characteristics and Properties</i>	
1. Formally define and explain key aspects of geometric figures, including: a. interior and exterior angles of polygons; b. segments related to triangles (median, altitude, midsegment); c. points of concurrency related to triangles (centroid, incenter, orthocenter, circumcenter); d. circles (radius, diameter, chord, circumference, major arc, minor arc, sector, segment, inscribed angle).	Student Edition: 144-147, 149-153, 172-174, 269-278, 286 #44, 416-418, 434-436, 554, 557-559, 570-577, 586 #48-#50, 607-608, 610-612, 667 <i>Geometry Lab</i> 266-268 <i>Geometry Software Lab</i> 148, 433 <i>Study Guide and Review</i> 194 3-5 <i>Study Tip</i> 639

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2. Recognize and explain the necessity for certain terms to remain undefined, such as point, line and plane.	Student Edition: 6-10, 25, 105-106, 109 #25, 188, 327 <i>Geometry Lab</i> 188 <i>Reading Math</i> 12
3. Make, test and establish the validity of conjectures about geometric properties and relationships using counterexample, inductive and deductive reasoning, and paragraph or two-column proof, including: <ol style="list-style-type: none"> prove the Pythagorean Theorem; prove theorems involving triangle similarity and congruence; prove theorems involving properties of lines, angles, triangles and quadrilaterals; test a conjecture using basic constructions made with a compass and straightedge or technology. 	Student Edition: 21-22, 52, 78-82, 99-104, 105-106, 109 #25, #27, #30, 111-112, 116 #30, 118-119, 269-278, 286 #44, 403 #39, 416-418, 434-436, 440-446, 448, 450, 537-538 Example 5, 590 Example 2, 701 Example 2 <i>Geometry Lab</i> 30, 266-268, 439 <i>Geometry Software Lab</i> 433 <i>Study Tip</i> 639
<i>Spatial Relationships</i>	
4. Construct right triangles, equilateral triangles, parallelograms, trapezoids, rectangles, rhombuses, squares and kites, using compass and straightedge or dynamic geometry software.	Student Edition: <i>Construction</i> 25, 33, 35, 225, 228, 234 <i>Geometry Lab</i> 48, 226-268, 597-598 <i>Geometry Software Lab</i> 148
5. Construct congruent figures and similar figures using tools, such as compass, straightedge, and protractor or dynamic geometry software.	Student Edition: 269-278, 286 #44, 416-418, 434-436 <i>Geometry Lab</i> 266-268 <i>Geometry Software Lab</i> 433 <i>Study Tip</i> 639
<i>Transformations and Symmetry</i>	
6. Identify the reflection and rotation symmetries of two- and three-dimensional figures.	Student Edition: 497-503, 504-508, 510-516 <i>Foldables Study Organizer</i> 543 Reflections, Translations, and Rotations <i>Geometry Lab</i> 496 <i>Study Guide and Review</i> 544, 545 9-3
7. Perform reflections and rotations using compass and straightedge constructions and dynamic geometry software.	Student Edition: 498-503, 504-508, 510-516, 541 #67-#71 <i>Geometry Lab</i> 496 #1-#9 <i>Study Guide and Review</i> 544, 545 9-3

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8. Derive coordinate rules for translations, reflections and rotations of geometric figures in the coordinate plane.	Student Edition: 497, 504-505, 510 <i>Foldables Study Organizer</i> 543 Reflections, Translations, and Rotations <i>Geometry Lab</i> 496
9. Show and describe the results of combinations of translations, reflections and rotations (compositions); e.g., perform compositions and specify the result of a composition as the outcome of a single motion, when applicable.	Student Edition: 498-503, 504-508, 510-516, 541 #67-#71 <i>Geometry Lab</i> 496 #1-#9 <i>Study Guide and Review</i> 544, 545 9-3
<i>Visualization and Geometric Models</i>	
10. Solve problems involving chords, radii and arcs within the same circle.	Student Edition: 554, 557-559, 570-577, 586 #48-#50, 607-608, 610-612, 667
Patterns, Functions and Algebra Standard	
<i>Use Patterns, Relations and Functions</i>	
1. Define function formally and with $f(x)$ notation.	See Glencoe's <i>Algebra 1</i> © 2008 Lesson 3-2.
2. Describe and compare characteristics of the following families of functions: square root, cubic, absolute value and basic trigonometric functions; e.g., general shape, possible number of roots, domain and range.	The characteristics of the listed families of functions could be discussed with the following examples. Student Edition: 21, 456-462, 464-469, 471-476, 479-484, 650 <i>Prerequisite Skills</i> 781-782, 783-784, 788-789
<i>Use Algebraic Representations</i>	
3. Solve equations and formulas for a specified variable; e.g., express the base of a triangle in terms of the area and height.	Student Edition: 19 #43-#44, 51-56, 62-66, 415-416, 639-646, 649-655
4. Use algebraic representations and functions to describe and generalize geometric properties and relationships.	Student Edition: 21, 51-53, 62-65, 156-159, 165-169, 184, 252 Example 3, 273 Example 3 <i>Geometry Lab</i> 171 <i>Graphing Calculator Lab</i> 155
5. Solve simple linear and nonlinear equations and inequalities having square roots as coefficients and solutions.	Student Edition: 22 Example 2, 253 Example 3, 730 Example 3 <i>Standardized Test Practice</i> 671 #34
6. Solve equations and inequalities having rational expressions as coefficients and solutions.	Student Edition: 22 Example 2, 51-53, 62-65, 156-159, 252 Example 3, 273 Example 3, 730 Example 3 <i>Standardized Test Practice</i> 671 #34

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7. Solve systems of linear inequalities.	The examples below show foundational concepts for this standard. Student Edition: <i>Prerequisite Skills</i> 783-784, 788-789
8. Graph the quadratic relationship that defines circles.	See Glencoe's <i>Geometry</i> © 2008 Lesson 10-8.
9. Recognize and explain that the slopes of parallel lines are equal and the slopes of perpendicular lines are negative reciprocals.	Student Edition: 159-162, 167 Example 4, 175 Example 4, 184 <i>Geometry Lab</i> 158, 171 <i>Reading Math</i> 279
10. Solve real-world problems that can be modeled using linear, quadratic, exponential or square root functions.	Student Edition: 253 Example 64, 341 Example 1, 729-730 Example 2, 738 Example 1 <i>Prerequisite Skills</i> 781-782 <i>Standardized Test Practice</i> 756 #42
11. Solve real-world problems that can be modeled, using systems of linear equations and inequalities.	Student Edition: 273-274 Example 3, #3 <i>Prerequisite Skills</i> 788-789
Analyze Change	
12. Describe the relationship between slope of a line through the origin and the tangent function of the angle created by the line and the positive x-axis.	Student Edition: 156-162, 364 Example 3 <i>Prerequisite Skills</i> 785-787
Data Analysis and Probability Standard	
Data Collection	
1. Describe measures of center and the range verbally, graphically and algebraically.	Student Edition: 23-24, 26-27 <i>Foldables Study Organizer</i> 68 Distance and Midpoint <i>Geometry Lab</i> 22 <i>Study Guide and Review</i> 70 1-3
2. Represent and analyze bivariate data using appropriate graphical displays (scatterplots, parallel box-and-whisker plots, histograms with more than one set of data, tables, charts, spreadsheets) with and without technology.	Student Edition: 19 #45-#47, 292 #23-#25, 384 #31-#32, 394 #26-#27, 561 #77-#79, 565-566 Example 3, 567 #9, 670 #19-#22, 747 #30 <i>Standardized Test Practice</i> 671 #33

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3. Display bivariate data where at least one variable is categorical.	Student Edition: 19 #45-#47, 292 #23-#25, 384 #31-#32, 394 #26-#27, 561 #77-#79, 565-566 Example 3, 567 #9, 670 #19-#22, 747 #30 <i>Standardized Test Practice</i> 671 #33
4. Identify outliers on a data display; e.g., use interquartile range to identify outliers on a box-and-whisker plot.	See Glencoe's <i>Pre-Algebra</i> © 2008 Lesson 12-2.
<i>Statistical Methods</i>	
5. Provide examples and explain how a statistic may or may not be an attribute of the entire population; e.g., intentional or unintentional bias may be present.	This standard can be introduced with the following examples. Student Edition: 561 #77-#79, 565 Example 3, 567 #9
6. Interpret the relationship between two variables using multiple graphical displays and statistical measures; e.g., scatterplots, parallel box-and-whisker plots, and measures of center and spread.	Student Edition: 19 #45-#47, 292 #23-#25, 384 #31-#32, 394 #26-#27, 561 #77-#79, 565-566 Example 3, 567 #9, 670 #19-#22, 747 #30 <i>Standardized Test Practice</i> 671 #33
<i>Probability</i>	
7. Model problems dealing with uncertainty with area models (geometric probability).	Student Edition: 665-670 <i>Study Guide and Review</i> 674 11-5
8. Differentiate and explain the relationship between the probability of an event and the odds of an event, and compute one given the other.	Student Edition: 666 #1, 757 #54 <i>Foldables Study Organizer</i> 672 Geometric Probability and Area of Sectors