

GLENCOE CORRELATION
GEOMETRY: INTEGRATION•APPLICATIONS•CONNECTIONS
ARIZONA
Academic Content Standards
High School

CONTENT STANDARDS	PAGE REFERENCES
Strand 1: Number Sense and Operations	
Concept 1: Number Sense	
Understand and apply numbers, ways of representing numbers, the relationships among numbers and different number systems.	
PO 1. Classify real numbers as members of one or more subsets: natural, whole, integers, rational, or irrational numbers.	This objective can be referenced in Glencoe's <i>Algebra 2</i> .
PO 2. Identify properties of the real number system: commutative, associative, distributive, identity, inverse, and closure.	Properties of equality for real numbers are defined and identified. SE: 92-99 TWE: 5MC 100 ICE 93-94
PO 3. Distinguish between finite and infinite sets of numbers.	This objective can be referenced in Glencoe's <i>Algebra 2</i> .
Concept 2: Numerical Operations	
Understand and apply numerical operations and their relationship to one another.	
PO 1. Select the grade level appropriate operation to solve word problems.	SE: 338-344, 348-353, 356-360, 420-425 TWE: CA 425 E 425 ICE 339-340, 348, 356, 421
PO 2. Solve word problems using grade level appropriate operations and numbers.	SE: 338-344, 348-353, 356-360, 420-425 TWE: CA 425 E 425 ICE 339-340, 348, 356, 421
PO 3. Simplify numerical expressions including signed numbers and absolute values.	SE: 28-35, 37-42 <i>Prerequisite Skills 5</i> TWE: 5MC 36 ICE 31, 37-38
PO 4. Apply subscripts to represent ordinal position.	SE: 380, 382 TWE: ICE 380
PO 5. Use grade level appropriate mathematical terminology.	SE: 6-9, 12-17, 36-40, 44-49, 53-59, 124-129, 180-185, 196-199, 291-295, 397-401
PO 6. Compute using scientific notation.	SE: 361 #46, 383 #28
PO 7. Simplify numerical expressions using the order of operations.	SE: 18 #70-#72, 114 #50 <i>Prerequisite Skills 5</i>
Concept 3: Estimation	
Use estimation strategies reasonably and fluently.	
PO 1. Solve grade level appropriate problems using estimation.	SE: 212 #37, 398-403, 593, 631-634 TWE: ICE 398, 631
PO 2. Determine if a solution to a problem is reasonable.	SE: 156-157, 268-269, 364-365, 414-415, 420-421, 492, 552-553, 585-586, 608, 682-683

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PO 3. Determine rational approximations of irrational numbers.	SE: 31-34, 399-404 <i>Modeling Mathematics</i> 447 TWE: 5MC 36 ICE 31, 399
Strand 2: Data Analysis, Probability, and Discrete Mathematics	
Concept 1: Data Analysis (Statistics)	
Understand and apply data collection, organization and representation to analyze and sort data.	
PO 1. Formulate questions to collect data in contextual situations.	This objective can be referenced in Glencoe's <i>Algebra 2</i> .
PO 2. Organize collected data into an appropriate graphical representation.	SE: 452-457, 660-665, 671 #35 TWE: ALS 663 ICE 453
PO 3. Display data as lists, tables, matrices, and plots.	SE: 452-458, 660-665 <i>Modeling Mathematics</i> 447 TWE: ALS 453 ICE 663
PO 4. Construct equivalent displays of the same data.	SE: 659 #56
PO 5. Identify graphic misrepresentations and distortions of sets of data.	This objective can be referenced in Glencoe's <i>Algebra 1</i> .
PO 6. Identify which of the measures of central tendency is most appropriate in a given situation.	Find the measures of central tendency for a set of data. SE: 369 #48
PO 7. Make reasonable predictions based upon linear patterns in data sets or scatter plots.	SE: 660-665
PO 8. Make reasonable predictions for a set of data, based on patterns.	SE: <i>Exploration</i> 545 <i>Modeling Mathematics</i> 354, 447
PO 9. Draw inferences from charts, tables, graphs, plots, or data sets.	SE: 20-21, 144 #52, 660-665 <i>Exploration</i> 545 <i>Modeling Mathematics</i> 354, 447
PO 10. Apply the concepts of mean, median, mode, range, and quartiles to summarize data sets.	SE: 153 #46, 169 #42, 203 #50, 271 #54, 369 #48, 465 #50, 628 #55
PO 11. Evaluate the reasonableness of conclusions drawn from data analysis.	SE: 203 #50
PO 12. Recognize and explain the impact of interpreting data (making inferences or drawing conclusions) from a biased sample.	This objective can be referenced in Glencoe's <i>Algebra 2</i> .
PO 13. Draw a line of best fit for a scatter plot.	SE: 660-665 TWE: ALS 663
PO 14. Determine whether a displayed data has positive, negative, or no correlation.	SE: 598 #49
PO 15. Identify a normal distribution.	This objective can be referenced in Glencoe's <i>Algebra 2</i> .
PO 16. Identify differences between sampling and census.	This objective can be referenced in Glencoe's <i>Algebra 2</i> .
PO 17. Identify differences between biased and unbiased samples.	This objective can be referenced in Glencoe's <i>Algebra 2</i> .

CONTENT STANDARDS	PAGE REFERENCES
Concept 2: Probability	
Understand and apply the basic concepts of probability.	
PO 1. Find the probability that a specific event will occur, with or without replacement.	SE: 294, 297 #46, 551-558, 635 #42 <i>Prerequisite Skills</i> 289
PO 2. Determine simple probabilities related to geometric figures.	SE: 294, 297 #46, 551-558 <i>Modeling Mathematics</i> 384-385 TWE: 5MC 559 ICE 294, 552-553 R 554
PO 3. Predict the outcome of a grade level appropriate probability experiment.	SE: <i>Modeling Mathematics</i> 384-385
PO 4. Record the data from performing a grade level appropriate probability experiment.	TWE: F 384
PO 5. Compare the outcome of an experiment to predictions made prior to performing the experiment.	This objective can be referenced in Glencoe's <i>Algebra 2</i> .
PO 6. Distinguish between independent and dependent events.	SE: 312 #50, 353 #45, 708 #40
PO 7. Compare the results of two repetitions of the same grade level appropriate probability experiment.	This objective can be referenced in Glencoe's <i>Algebra 2</i> .
Concept 3: Discrete Mathematics – Systematic Listing and Counting	
Understand and demonstrate the systematic listing and counting of possible outcomes.	
PO 1. Determine the number of possible outcomes for a contextual event using a chart, a tree diagram, or the counting principle.	SE: 294, 297 #46, 753 #61 <i>Modeling Mathematics</i> 384-385 TWE: F 384
PO 2. Determine when to use combinations versus permutations in counting objects.	SE: 753 #61
PO 3. Use combinations or permutations to solve contextual problems.	SE: 753 #61
Concept 4: Vertex-Edge Graphs	
Understand and apply vertex-edge graphs.	
Strand 3: Patterns, Algebra, and Functions	
Concept 1: Patterns	
Identify patterns and apply pattern recognition to reason mathematically.	
PO 1. Communicate a grade level appropriate iterative or recursive pattern, using symbols or numbers.	SE: 378-383 TWE: ICE 379 MM 378 TT 380
PO 2. Find the n^{th} term of an iterative or recursive pattern.	SE: 258 #54, 328 #55
PO 3. Evaluate problems using basic recursion formulas.	SE: 378-383 TWE: ICE 380 TT 380
Concept 2: Functions and Relationships	
Describe and model functions and their relationships.	
PO 1. Determine if a relationship is a function, given a graph, table, or set of ordered pairs.	SE: 6-11, 581 #44, 646-651, 721 #44 TWE: E 11 ICE 8, 647-648

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PO 2. Describe a contextual situation that is depicted by a given graph.	SE: 75 #40, 772 #59
PO 3. Identify a graph that models a given real-world situation.	SE: 702-704, 706-708
PO 4. Sketch a graph that models a given contextual situation.	SE: <i>Modeling Mathematics</i> 646
PO 5. Determine domain and range for a function.	SE: 228 #58, 319 #66, 383 #29, 527 #39
PO 6. Determine the solution to a contextual maximum/minimum problem, given the graphical representation.	SE: 20-21
PO 7. Express the relationship between two variables using tables/matrices, equations, or graphs.	SE: 7-9, 646-651, 653-658 <i>Using Technology</i> 652 TWE: ICE 8, 647-648, 654
PO 8. Interpret the relationship between data suggested by tables/matrices, equations, or graphs.	SE: 646-651, 702-707 <i>Using Technology</i> 652 TWE: ICE 647
PO 9. Determine from two linear equations whether the lines are parallel, perpendicular, coincident, or intersecting but not perpendicular.	Systems of equations are solved. SE: 702-707 TWE: 5MC 709 ICE 703-704
Concept 3: Algebraic Representations Represent and analyze mathematical situations and structures using algebraic representations.	
PO 1. Evaluate algebraic expressions, including absolute value and square roots.	SE: 18 #70-#72, 145 #63-#64 <i>Prerequisite Skills</i> 5
PO 2. Simplify algebraic expressions.	SE: 25 #49-#52, 35 #57-#60, 43 #56, 99 #40-#41, 244 #55-#56, 258 #55, 404 #56, 465 #55
PO 3. Multiply and divide monomial expressions with integral exponents.	SE: 411 #40, 451 #56, 458 #67, 465 #56, 550 #51, 651 #50, 659 #55
PO 4. Translate a written expression or sentence into a mathematical expression or sentence.	SE: 55-60, 83 #66, 91 #49, 254-258, 340-344, 348-353, 419 #64 TWE: ICE 55, 254, 340
PO 5. Translate a sentence written in context into an algebraic equation involving multiple operations.	SE: 55-60, 91 #49, 254-258, 340-344 TWE: ICE 55, 254, 340
PO 6. Write a linear equation for a table of values.	SE: <i>Using Technology</i> 652
PO 7. Write a linear algebraic sentence that represents a data set that models a contextual situation.	SE: 653-658, 660-665 TWE: ALS 663 ICE 655
PO 8. Solve linear (first degree) equations in one variable (may include absolute value).	SE: 29-33, 54-60, 254-258, 340-344, 468-471, 517-520 <i>Prerequisite Skills</i> 5, 69 TWE: 5MC 346 ICE 254
PO 9. Solve linear inequalities in one variable.	SE: 268-271, 275-278, 628 #61-#62, 729 #69-#70 TWE: ICE 268, 275

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PO 10. Write an equation of the line given: two points on the line, the slope and a point on the line, or the graph of the line.	SE: 653-658, 660-665 TWE: 5MC 660, 666 ICE 654-655, 661 R 655
PO 11. Solve an algebraic proportion.	SE: 338-344, 346-353, 354-360, 362-368 <i>Prerequisite Skills</i> 123, 395 TWE: 5MC 346, 354 ICE 340, 347-348
PO 12. Solve systems of linear equations in two variables (integral coefficients and rational solutions).	SE: 213 #46, 419 #65, 451 #55, 473 #69, 503 #48, 564 #37, 661-662, 702-707 TWE: 5MC 709 ICE 703-704
PO 13. Add, subtract and perform scalar multiplication with matrices.	SE: 676-678 TWE: ICE 676
PO 14. Calculate powers and roots of real numbers, both rational and irrational, using technology when appropriate.	SE: 30-35, 51 #48, 137 #62, 272 #58, 397-403, 405-411, 581 #43 TWE: ICE 30-31, 399-400, 406-407
PO 15. Simplify square roots and cube roots with monomial radicands (including those with variables) that are perfect squares or perfect cubes.	SE: 30-35, 51 #48, 272 #58, 581 #43, 592, 607
PO 16. Solve square root radical equations involving only one radical.	SE: 30-35 TWE: ICE 30-31
PO 17. Solve quadratic equations.	SE: 51 #49, 314-317, 345 #63, 430 #40, 490 #61, 493-496, 534 #36, 558 #42, 679 #68 TWE: ICE 493
PO 18. Identify the sine, cosine, and tangent ratios of the acute angles of a right triangle.	SE: 412-418, 420-425 TWE: 5MC 420 E 425 ICE 413-414, 421
Concept 4: Analysis of Change Analyze change in a variable over time and in various contexts.	
PO 1. Determine slope, x-, and y-intercepts of a linear equation.	SE: 425 #42, 646-651, 653-658, 660-665 TWE: 5MC 653 ICE 648 R 649
PO 2. Solve formulas for specified variables.	SE: 22, 153 #52
Strand 4: Geometry and Measurement	
Concept 1: Geometric Properties Analyze the attributes and properties of two- and three-dimensional shapes and develop mathematical arguments about their relationships.	
PO 1. Identify the attributes of special triangles. (isosceles, equilateral, right)	SE: 180-186, 222-227, 399-403, 667-671 TWE: 5MC 189 ALS 182 ICE 223 R 224
PO 2. Identify the hierarchy of quadrilaterals.	SE: 291-297, 298-303, 306-312, 313-319, 321-328 <i>Using Technology</i> 290, 305 TWE: 5MC 321, 338

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PO 3. Make a net to represent a three-dimensional object.	SE: 584-589, 594, 602, 638 #14 TWE: 5MC 591 ICE 585
PO 4. Make a three-dimensional model from a net.	SE: 586 #4, 588 #26-#28, 589 #33
PO 5. Draw 2-dimensional and 3-dimensional figures with appropriate labels.	SE: 14-17, 49-50, 183 #4, 184, 295 #5, 575-581, 584-589 TWE: ICE 14, 576, 585
PO 6. Solve problems related to complementary, supplementary, or congruent angle concepts.	SE: 55-59, 107-113, 131-137, 468-471 TWE: E 113 ICE 55, 108, 110, 132-133 R 110
PO 7. Solve problems by applying the relationship between circles, angles, and intercepted arcs.	SE: 446-451, 452-457, 459-465, 466-472 TWE: 5MC 459, 466, 475 ICE 453-454, 460-461, 467-469
PO 8. Solve problems by applying the relationship between radii, diameters, chords, tangents or secants.	SE: 446-451, 475-482, 483-490, 491-497 TWE: 5MC 483, 491 ICE 447, 476-478, 484-485, 492-493
PO 9. Solve problems using the triangle inequality property.	SE: 259-264, 267-271, 273-279 TWE: 5MC 267, 273 ICE 260-261, 268, 274-275
PO 10. Solve problems using special case right triangles.	SE: 405-411 TWE: 5MC 412 E 410 ICE 406-408 R 408
PO 11. Determine when triangles are congruent by applying SSS, ASA, AAS or SAS.	SE: 206-212, 214-221 TWE: 5MC 214, 222 ALS 215 ICE 207-208, 215
PO 12. Determine when triangles are similar by applying SAS, SSS, or AA similarity postulates.	SE: 354-360 TWE: 5MC 362 ICE 355-356 R 357
PO 13. Construct a triangle congruent to a given triangle.	SE: <i>Modeling Mathematics</i> 204-205
PO 14. Solve contextual situations using angle and side length relationships.	SE: 206-212, 214-221, 348-353, 354-360, 370-372 TWE: ICE 348, 356, 372
Concept 2: Transformation of Shapes	
Apply spatial reasoning to create transformations and use symmetry to analyze mathematical situations.	
PO 1. Sketch the planar figure that is the result of two or more transformations.	SE: 196-200, 731-736 <i>Modeling Mathematics</i> 522 TWE: ICE 732
PO 2. Identify the properties of the planar figure that is the result of two or more transformations.	SE: 196-200
PO 3. Determine the new coordinates of a point when a single transformation is performed on a planar geometric figure.	SE: 348-352, 717-720, 724-729, 731-736 TWE: ICE 348, 724, 733

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PO 4. Determine whether a given pair of figures on a coordinate plane represents a translation, reflection, rotation, or dilation.	SE: 196-197, 715-720, 722-729 TWE: ICE 716, 725
PO 5. Classify transformations based on whether they produce congruent or similar figures.	SE: 196-197, 715-720, 722-729 <i>Modeling Mathematics</i> 739 TWE: ICE 716-717
PO 6. Determine the effects of a single transformation on linear or area measurements of a planar geometric figure.	SE: 715-720, 744 #28-#30, 746-752 TWE: ICE 717, 748-749
Concept 3: Coordinate Geometry Specify and describe spatial relationships using coordinate geometry and other representational systems.	
PO 1. Graph a quadratic equation with lead coefficient equal to one.	SE: 711 TWE: ICE 711
PO 2. Graph a linear equation in two variables.	SE: 7-11, 404 #55, 646-651, 702-707 TWE: 5MC 709 ICE 8, 647-648, 703
PO 3. Graph a linear inequality in two variables.	SE: 425 #43
PO 4. Determine the solution to a system of equations in two variables from a given graph.	SE: 473 #69, 702-707 TWE: ICE 703
PO 5. Determine the midpoint between two points in a coordinate system.	SE: 36-42, 661-664, 666-671 TWE: 5MC 44 ICE 37-38
PO 6. Determine changes in the graph of a linear function when constants and coefficients in its equation are varied.	SE: 647-650
PO 7. Determine the distance between two points in the coordinate system.	SE: 30-34, 182-185, 206-210, 300-302, 315-317, 348-352 TWE: ICE 30-31, 182, 207, 300
Concept 4: Measurement - Units of Measure - Geometric Objects Understand and apply appropriate units of measure, measurement techniques, and formulas to determine measurements.	
PO 1. Calculate the area of geometric shapes composed of two or more geometric figures.	SE: 24 #43, 531-534, 539-540 TWE: E 540 ICE 531 R 532
PO 2. Calculate the volumes of three-dimensional geometric figures.	SE: 607-613, 615-620, 621-627, 629-635 <i>Modeling Mathematics</i> 614 TWE: 5MC 615 E 613, 620 ICE 608-610, 616-617
PO 3. Calculate the surface areas of three-dimensional geometric figures.	SE: 584-589, 591-597, 599-606, 621-627, 629-635 TWE: 5MC 599, 607 ICE 585, 592-595, 601-603
PO 4. Compare perimeter, area, or volume of figures when dimensions are changed.	SE: 629-635 TWE: ICE 631
PO 5. Find the length of a circular arc.	SE: 454-457 TWE: ICE 454

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PO 6. Find the area of a sector of a circle.	SE: 553-555 TWE: ICE 553 R 554
PO 7. Solve for missing measures in a pyramid. (i.e., slant height, height)	SE: 601-606 TWE: 5MC 607 ICE 601
PO 8. Find the sum of the interior and exterior angles of a polygon.	SE: 516-520 TWE: 5MC 523 ICE 516-518
PO 9. Solve scale factor problems using ratios and proportions.	SE: 346-353, 354-360, 629-635, 746-752 TWE: 5MC 354, 362 ICE 347-348, 356, 630-631, 747-749
PO 10. Solve applied problems using similar triangles.	SE: 354-360, 362-368, 370-376 TWE: ICE 356, 372
Strand 5: Structure and Logic	
Concept 1: Algorithms and Algorithmic Thinking	
Use reasoning to solve mathematical problems in contextual situations.	
PO 1. Determine whether a given procedure for simplifying an expression is valid.	Simplifying an expression SE: 25 #49-#52, 43 #56, 99 #40-#41, 244 #55-#56, 272 #58, 411 #40, 451 #56, 521 #66, 564 #36, 659 #55
PO 2. Determine whether a given procedure for solving an equation is valid.	SE: 92-99 TWE: ICE 93 R 94
PO 3. Determine whether a given procedure for solving a linear inequality is valid.	Solving a linear inequality SE: 145 #62, 345 #62, 534 #37, 589 #40-#41, 620 #35, 628 #61-#62, 729 #70
PO 4. Select an algorithm that explains a particular mathematical process.	SE: <i>Communicating Mathematics</i> 75 #4, 80 #3, 88 #4, 134 #4, 141 #5, 276 #4, 349 #2, 357 #4, 494 #4, 712 #1
PO 5. Determine the purpose of a simple mathematical algorithm.	SE: 29, 338-339, 397
PO 6. Determine whether given simple mathematical algorithms are equivalent.	TWE: R 32
Concept 2: Logic, Reasoning, Arguments, and Mathematical Proof	
Evaluate situations, select problem-solving strategies, draw logical conclusions, develop and describe solutions and recognize their applications.	
PO 1. Draw a simple valid conclusion from a given <i>if...then</i> statement and a minor premise.	SE: 76-82, 85-90 <i>Prerequisite Skills</i> 237 #8-#10 TWE: 5MC 92 ICE 86-87
PO 2. List related <i>if... then</i> statements in logical order.	TWE: E 90
PO 3. Write an appropriate conjecture given a certain set of circumstances.	SE: 70-74, 85-90 TWE: 5MC 92 ICE 71, 86
PO 4. Analyze assertions related to a contextual situation by using principles of logic.	SE: 70-74, 85-90 TWE: E 74, 90 ICE 87

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PO 5. Identify a valid conjecture using inductive reasoning.	SE: 70-74 TWE: 5MC 76 CA 75 ICE 71-72 R 72
PO 6. Distinguish valid arguments from invalid arguments.	SE: 85-90 TWE: ICE 87 R 72
PO 7. Create inductive and deductive arguments concerning geometric ideas and relationships, such as congruence, similarity, and the Pythagorean relationship.	SE: 72-73, 88-90, 94-98, 206-212, 214-221, 354-360, 666-671 TWE: ICE 94 R 72, 80
PO 8. Critique inductive and deductive arguments concerning geometric ideas and relationships, such as congruence, similarity, and the Pythagorean relationship.	TWE: E 213 R 357, 668
PO 9. Identify a counterexample for a given conjecture.	SE: 72-74, 77-82
PO 10. Construct a counterexample to show that a given conjecture is false.	SE: 72-74, 76-82 TWE: 5MC 76, 85 ICE 72, 77
PO 11. State the inverse, converse, or contrapositive of a given statement.	SE: 76-82 TWE: 5MC 85 CA 83 ICE 78
PO 12. Determine if the inverse, converse, or contrapositive of a given statement is true or false.	SE: 76-82 TWE: 5MC 85 CA 83 ICE 77-78
PO 13. Construct a simple formal or informal deductive proof.	SE: 85-90, 92-99 TWE: 5MC 92 E 90 ICE 86-87, 93-94
PO 14. Verify characteristics of a given geometric figure using coordinate formulas such as distance, mid-point, and slope to confirm parallelism, perpendicularity, and congruency.	SE: 666-671 TWE: 5MC 673 ICE 667

Codes Used for TWE Pages

5MC	5-Minute Check
ALS	Alternative Learning Styles
CA	Closing Activity
E	Extension
F	Focus
ICE	In-Class Example
MM	Modeling Mathematics
R	Reteaching
TT	Teaching Tip