

GLENCOE CORRELATION
PRE-ALGEBRA
ARIZONA
Academic Content Standards
Grade 8

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. Locate rational numbers on a number line.	SE: 56-58, 64-65, 93 #3, 111 ex 2, 209 #52, 228 ex 5, 293 TWE: DI 66 ICE 57
PO 2. Identify irrational numbers.	SE: 200, 206, 208 #48, 441, 443 #1, 444 #13-#28, 451 #39-#42, 484, 487 #1, 745 Lesson 9-2 #1-#9 TWE: DI 442 ICE 442
PO 3. Classify real numbers as rational or irrational.	SE: 205-209, 441-445, 451 #39-#42, 484, 487 #1, 745 Lesson 9-2 #1-#9 TWE: DI 442 ICE 442 PS 440
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: 6-10, 16 #52, 51 #2, 94 #2, 127 ex 3, 142 #10, 706-709 TWE: TNT 10
PO 2. Solve word problems using grade level appropriate operations and numbers.	SE: 14 ex 3, 19 #4, 94 #2, 113 #43 & #44, 116 ex 2, 143 #21 <i>Reading Mathematics</i> 125 TWE: DI 29, 117
PO 3. Determine the square of an integer.	SE: 436, 439 #12-#33, 483 TWE: DI 438
PO 4. Determine the square root of an integer.	SE: 436-440, 483 #9-#14, 487 #3-#5, 745 #1-#9
PO 5. Identify squaring and finding square roots as inverse operations.	SE: 436, 440 #61, 439 #12-#33 TWE: DI 438
PO 6. Apply grade level appropriate properties to assist in computation.	SE: 23-27, 51 #12, 77 ex 5, 98-102, 104 ex 2, 107 #57, 142 #3 TWE: A 27 ICE 24, 99
PO 7. Apply the symbols " $\sqrt{\quad}$ " to represent square root, " \pm " to represent roots, " $\{\}$ " as grouping symbols.	SE: 15 #43-#46, 436-439 TWE: DI 336 TT 436
PO 8. Use grade level appropriate mathematical terminology.	SE: <i>Key Concept</i> 18, 66, 175, 441 <i>Reading Mathematics</i> 11, 69, 174, 225, 269, 446, 589

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PO 9. Calculate the missing value in a percentage problem.	SE: 288-292, 298-302, 304-308, 318 #35-#40, 365 #24 <i>Algebra Activity</i> 286-287 <i>Spreadsheet Investigation</i> 303 TWE: ICE 289, 299, 305
PO 10. Convert standard notation to scientific notation and vice versa.	SE: 186-190, 194 #58-#65, 204 #52-#55, 209 #58-#61, 268 #61-#63, 733 #1-#16 TWE: ICE 187
PO 11. Simplify numerical expressions using the order of operations with grade appropriate operations on number sets.	SE: 12-16, 21 #55-#57, 107 #65-#67, 401 #46-#51, 525 #40-#43 TWE: DI 13, 18 ICE 13
Concept 3: Estimation Use estimation strategies reasonably and fluently.	
PO 1. Solve grade level appropriate problems using estimation.	SE: 294-297, 439 #51, 709, 712 #31-#32 <i>Algebra Activity</i> 275 TWE: A 297 DI 294
PO 2. Use estimation to verify the reasonableness of a calculation. (e.g., Is 32 the square root of 64?)	SE: 294-297, 308 #32-#34, 437 ex 3, 438 #9-#10, 586 ex 3 TWE: A 440
PO 3. Express answers to the appropriate place or degree of precision. (e.g., time and money)	SE: 295 ex 3, 590-594 <i>Reading Mathematics</i> 589 TWE: A 297 DI 591
PO 4. Verify the reasonableness of estimates made from calculator results within a contextual situation.	SE: 437 ex 2, 438 ex 4, 534 ex 1 <i>Graphing Calculator Investigation</i> 622
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.	SE: <i>Algebra Activity</i> 39, 237, 275, 286, 656-657 <i>Geometry Activity</i> 562, 583 <i>Spreadsheet Investigation</i> 452 <i>WebQuest</i> 3, 325, 603
PO 2. Construct box-and-whisker plots.	SE: 617-619, 633 #15, 753 #1-#4 <i>Graphic Calculator Investigation</i> 622 TWE: ICE 618 TNT 620
PO 3. Determine the appropriate type of graphical display for a given data set.	SE: 409-413, 722-723 <i>Algebra Activity</i> 237, 309 <i>Spreadsheet Investigation</i> 452 <i>WebQuest</i> 696
PO 4. Interpret box-and-whisker plots, circle graphs and scatter plots.	SE: 41, 52 #10, 409-413, 607-608, 618, 621 #21 <i>Algebra Activity</i> 39 <i>Graphing Calculator Investigation</i> 45-46 <i>Spreadsheet Investigation</i> 452 TWE: ICE 41, 410

CONTENT STANDARDS	PAGE REFERENCES
PO 5. Answer questions based on box-and-whisker plots, circle graphs and scatter plots.	SE: 42 ex 3, 43, 619 #7 <i>Graphing Calculator Investigation</i> 45-46 <i>Spreadsheet Investigation</i> 452
PO 6. Solve problems in contextual situations using the mean, median, mode, and range of a given data set.	SE: 238-242, 261 #23, 365 #15, 612-616, 735 <i>Graphing Calculator Investigation</i> 243 TWE: DI 242 ICE 239, 240, 613
PO 7. Formulate reasonable predictions based on a given set of data.	SE: 42 ex 3, 50 #35-#36, 312 ex 4, 409-411 <i>Algebra Activity</i> 39, 275 <i>WebQuest</i> 3, 325, 603 TWE: A 44, 413 ICE 42
PO 8. Compare trends in data related to the same investigation.	SE: 40-44, 763 #11 <i>Algebra Activity</i> 39, 253, 275 TWE: A 44
PO 9. Solve contextual problems using scatter plots, box-and-whisker plots, and double line graphs of continuous data.	SE: 43 #17-#20, 409 #4-#13, 620-621, 659 #13-#15, 769 #3 <i>WebQuest</i> 3, 325, 603
PO 10. Evaluate the effects of missing or incorrect data on the results of an investigation. (e.g., Susie's teacher recorded a 39 instead of a 93 for her last quiz, what will happen to Susie's average?)	SE: 630-633, 660 #17-#18, 769 #5 <i>Reading Mathematics</i> 634 TWE: A 633 ICE 631
PO 11. Identify a line of best fit for a scatter plot.	SE: 409-413, 418 #31 TWE: DI 412 ICE 410
PO 12. Distinguish between causation and correlation.	This objective can be met during teacher/class discussion.
Concept 2: Probability Understand and apply the basic concepts of probability.	
PO 1. Determine the probability that a specific event will occur in a 2-stage probability experiment.	SE: 635-639, 650-655 <i>Algebra Activity</i> 640 TWE: ICE 636
PO 2. Solve contextual situations using probability. (e.g., If the probability of Michelle making a free throw is 0.25, what is the probability that she will make three free throws in a row?)	SE: 310-314, 320, 333 #42 <i>Algebra Activity (Activity 2)</i> 657 TWE: ICE 311
PO 3. Predict the outcome of a grade level appropriate probability experiment.	SE: 310-314, 320, 333 #42 <i>Algebra Activity</i> 640, 656-657 <i>Graphing Calculator Investigation</i> 315
PO 4. Record the data from performing a grade level appropriate probability experiment.	SE: 635-639 <i>Graphing Calculator Investigation</i> 315 <i>Algebra Activity</i> 640, 656-657 TWE: DI 636
PO 5. Compare the outcome of an experiment to predictions made prior to performing the experiment.	SE: 646-649, 769 #8 <i>Algebra Activity</i> 656-657 TWE: DI 647 ICE 647

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PO 6. Distinguish between independent and dependent events.	SE: 650-655, 662 TWE: A 655 DI 651, 652 ICE 651
PO 7. Compare the results of two repetitions of the same grade level appropriate probability experiment.	SE: <i>Algebra Activity</i> 656-657 <i>Graphing Calculator Investigation</i> 315
Concept 3: Discrete Mathematics – Systematic Listing and Counting Understand and demonstrate the systematic listing and counting of possible outcomes.	
PO 1. Determine all possible outcomes involving the combination of two or more sets of objects. (e.g., If you roll a 6 sided number cube 4 times how many possible outcomes are possible?)	SE: 642-643, 650-655, 662 TWE: ICE 642
PO 2. Determine all possible arrangements given a set. (e.g., “How many ways can you arrange a set of 7 books on a shelf?”)	SE: 635-639, 641-645, 650-655
Concept 4: Vertex-Edge Graphs Understand and apply vertex-edge graphs.	
PO 1. Solve contextual problems represented by vertex-edge graphs.	This objective can be met during teacher/class discussion.
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: 7 ex 2, 9 #19-#20, 47-48, 52 #1, 167 #53, 223 #48, 249-252, 260 #10 TWE: DI 8 ICE 7
PO 2. Extend a grade level appropriate iterative or recursive pattern.	SE: 7 ex 2, 10 #29, 55, 94 #1, 167 #53 <i>Algebra Activity</i> 253, 532 TWE: DI 8 ICE 7
PO 3. Solve grade level appropriate iterative or recursive pattern problems.	SE: 9 #4-#7, 16 #55-#58, 27 #59, 47-48, 102 #69-#71, 167 #53 <i>Algebra Activity</i> 253
Concept 2: Functions and Relationships Describe and model functions and their relationships.	
PO 1. Describe the rule used in a simple grade level appropriate function. (e.g., T-chart, input/output model)	SE: 369-373, 385 #44-#45, 397 #1-#2, 429 #4-#5, 741 <i>Algebra Activity</i> 368 <i>Graphing Calculator Investigation</i> 374 TWE: A 373 ICE 689
PO 2. Distinguish between linear and nonlinear functions, given graphic examples.	SE: 687-691, 696 #42, 700 #41-#42, 701 #18-#20, 757, 770 #8-#9 TWE: A 691 DI 688 ICE 688

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PO 3. Determine whether a graph or table are related to a given an equation of the form $y=ax^2$ where 'a' is a natural number.	SE: 375-379, 405 ex 2, 406 ex 5, 430 #9 <i>Reading Mathematics</i> 380 TWE: ICE 405
PO 4. Identify independent and dependent variables for a contextual situation.	See <i>Mathematics: Applications and Concepts Course 3 Study Tip</i> page 518.
Concept 3: Algebraic Representations Represent and analyze mathematical situations and structures using algebraic representations.	
PO 1. Evaluate algebraic expressions by substituting rational values for variables. [e.g., $2(ab+ac+bc)$, when $a = 2$, $b = 3/5$, and $c = 4$]	SE: 17-21, 27 #52-#54, 48 #17-#20, 77 #13-#14, 82 ex 3, 147 #9-#16 TWE: A 21
PO 2. Use variables in contextual situations.	SE: 18 ex 3, 19 #12, 21, 28-32, 49 #27-#32, 73 #54, 131-136, 333 #41
PO 3. Translate a written sentence or phrase into an algebraic equation or expression and vice versa. (e.g., Three less than twice a number is $2n-3$.)	SE: 13, 15, 20 #33, 42, 31 #42-#47, 51-52, 97 #13-#16, 118 #35-#38, 141 #19-#20 <i>Reading Mathematics</i> 11, 125 TWE: A 32 ICE 18
PO 4. Translate a sentence written in context into an algebraic equation involving two operations.	SE: 120-124, 126-130, 152 #62-#63 TWE: ICE 121, 122
PO 5. Translate a contextual situation into an algebraic inequality. (e.g., Joe earns more than \$5.00 an hour; therefore, $x > 5$)	SE: 340-344, 349 #49, 353 #38, 740 TWE: ICE 341
PO 6. Identify an equation or inequality that represents a contextual situation.	SE: 112 ex 4, 116 ex 2, 127 ex 3, 128 #6, 142 #10, 335 ex 2, 344 #47-#48, 349 #49, 359 #47
PO 7. Solve one-step equations with rational numbers as coefficients or as solutions.	SE: 103, 110-114, 115-119, 244-248, 258 #74-#77 TWE: ICE 111, 116, 245
PO 8. Solve one-step equations that model contextual situations.	SE: <i>Algebra Activity</i> 108-109 TWE: DI 113
PO 9. Solve two-step equations with rational coefficients and integer solutions. (e.g., $3x + 5 = 11$, $4x - 20 = 8$)	SE: 120-124, 136 #47-#49, 140 #31-#34, 327 #1-#4 TWE: ICE 121
PO 10. Graph an inequality on a number line.	SE: 342-344, 346 ex 3, 347 #10-#11, 353 #4-#12, 357 #13-#28, 362 #32-#37, 362 #18-#23 TWE: ICE 342
PO 11. Solve a simple algebraic proportion.	SE: 271-272, 273 #15-#29, 276-280, 285 #66-#71, 288-292, 317, 471-475 TWE: ICE 271, 472
PO 12. Solve applied problems using the Pythagorean theorem.	SE: 460-464, 470 #35-#37, 475 #23-#25, 766 #7-#8 TWE: ICE 461
Concept 4: Analysis of Change Analyze change in a variable over time and in various contexts.	
PO 1. Identify the slope of a line as the rate of change. (the ratio of rise over run)	SE: 387-391, 397 #20, 401 #41-#43 <i>Algebra Activity</i> 386, 392 TWE: A 391 DI 388

CONTENT STANDARDS	PAGE REFERENCES
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. Draw a model that demonstrates basic geometric relationships such as parallelism, perpendicularity, similarity/proportionality, and congruence.	SE: 501 ex 2, 515 #2, 516 #27, #28 <i>Algebra Activity</i> 98-99, 518-519, 532 TWE: DI 586 TeT 569
PO 2. Draw three-dimensional figures by applying properties of each. (e.g., parallelism, perpendicularity and congruency)	SE: 559 #7 & #8 TWE: A 561
PO 3. Recognize the three-dimensional figure represented by a net.	SE: 573 <i>Geometry Activity</i> 554-555 TWE: A 582
PO 4. Represent the surface area of rectangular prisms and cylinders as the area of their net.	SE: 573, 574 TWE: DI 574 ICE 574
PO 5. Draw regular polygons with appropriate labels.	SE: 529 #1 TWE: DI 528
PO 6. Identify the properties of angles created by a transversal intersecting two parallel lines (e.g., corresponding angles are congruent).	SE: 492-493, 495-497, 544 TWE: A 497 DI 496 ICE 493
PO 7. Recognize the relationship between inscribed angles and intercepted arcs.	SE: Inscribed angles are referenced on pages 464 #36, 538.
PO 8. Identify tangents and secants of a circle.	This objective can be met during teacher/class discussion.
PO 9. Determine whether three given lengths can form a triangle.	SE: 453, 455 TWE: A 457
PO 10. Identify corresponding angles of similar polygons as congruent and sides as proportional.	SE: 471-475, 486, 497 #43, 500-504, 584-588 TWE: A 517, 588 DI 472 ICE 585 TeT 475
Concept 2: Transformation of Shapes	
Apply spatial reasoning to create transformations and use symmetry to analyze mathematical situations.	
PO 1. Identify the planar geometric figure that is the result of a given rigid transformation.	SE: 515 ex 2, 516 #22, 530 #22, #29, & #30 <i>Algebra Activity</i> 532
PO 2. Model a simple transformation on a coordinate grid. (e.g., translate right four units and down two units)	SE: 506-511 TWE: DI 508 ICE 507, 509
Concept 3: Coordinate Geometry	
Specify and describe spatial relationships using coordinate geometry and other representational systems.	
PO 1. Use a table of values to graph a linear equation.	SE: 375-379, 381-385, 425, 667 #13-#15
PO 2. Determine the midpoint given two points on a number line.	SE: 466-470, 481 #47-#49, 485
PO 3. Determine the distance between two points on a number line.	SE: 467 ex 1, 469 #9-#16, 475 #23-#25, 486 TWE: DI 467 ICE 467

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Concept 4: Measurement - Units of Measure - Geometric Objects	
Understand and apply appropriate units of measure, measurement techniques, and formulas to determine measurements.	
PO 1. Solve problems for the area of a trapezoid.	SE: 520-525, 531 #45, 547 #24 TWE: ICE 522
PO 2. Solve problems involving the volume of rectangular prisms and cylinders.	SE: 563-567, 596, 601 #19 & #21, 768 #4 TWE: ICE 564, 565
PO 3. Calculate the surface area of rectangular prisms or cylinders.	SE: 573-577, 597, 768 #6
PO 4. Identify rectangular prisms and cylinders having the same volume.	TWE: A 567 ICE (TT) 565
PO 5. Find the measure of a missing interior angle in a triangle or quadrilateral.	SE: 454 ex 1, 456 #11-#18, 472 ex 1, 514-516 TWE: ICE 454, 514
PO 6. Solve problems using ratios and proportions, given the scale factor.	SE: 276-280, 292 #32, 317, 321 #29, 322 #6 TWE: A 280 ICE 277
PO 7. Calculate the length of a side given two similar triangles.	SE: 471-475, 486 #34-#35 TWE: DI 472 ICE 472
Strand 5: Structure and Logic	
Concept 1: Algorithms and Algorithmic Thinking	
Use reasoning to solve mathematical problems in contextual situations.	
PO 1. Describe how to use a proportion to solve a problem in context.	SE: 271-272, 273, 274 #44, 276-279, 317, 474 #15-#16 <i>Algebra Activity 275</i> TWE: DI 278
PO 2. Analyze algorithms.	SE: 10 #28 TWE: DI 13, 331, 356 F 5, 553
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. Solve a logic problem given the necessary information.	SE: 157 #58, 385 #37 & #38, 709 <i>WebQuest 3, 136, 145, 325</i>
PO 2. Identify simple valid arguments using if...then statements. (e.g., All squares are rectangles. If quadrilateral ABCD is a rectangle, is it a square?)	SE: 32 #60, 157 #58, 204 #48, 419, 500, 503 #14 & #15 <i>Spreadsheet Investigation 303 #4</i> <i>Algebra Activity 386 #3, 476 #2</i>
PO 3. Model a contextual situation using a flow chart.	<i>WebQuest</i> projects could use flowcharts as part of the presentation. See <i>WebQuest 3, 145, and 325.</i>
PO 4. Verify the Pythagorean theorem using an area dissection argument.	SE: 460, 463 #16 <i>Algebra Activity 458-459</i>

Codes Used for TWE Pages

A	Assess
DI	Daily Intervention
F	Foldables
ICE	In-Class Example
PS	Prerequisite Skill
TeT	Teacher to Teacher
TNT	Tips for New Teachers
TT	Teaching Tip
WQ	WebQuest