



IDAHO
Mathematics Standards Grades 9 Through 12
***Geometry: Concepts and Applications* © 2004**

OBJECTIVES	PAGE REFERENCES
347. BASIC ARITHMETIC, ESTIMATION, AND ACCURATE COMPUTATIONS	
01. Understand and use numbers.	
a. Understand and use positive and negative numbers, fractions, decimals, percentages, and scientific notations.	SE: 28 #30, 50-53, 54 #11-16, 147 #59, 214 #28, 273 #3, 347 #3, 583 #2, 720-721 <i>Problem-Solving Workshop</i> 89
b. Understand properties of the real number system.	SE: 50-53, 54 #11-16, 57, 127 #27, 279, 548, 641 #10, 642 #19 <i>Problem-Solving Workshop</i> 453 TWE: 5MC 56
c. Understand properties of roots, exponents, and logarithms.	SE: 87 #1, 139 #5, 256-259, 262-264, 265 #4-6, 548-551, 553 #44, 558 #18-20, 583 #2, 618-619
d. Use number theory concepts (e.g., divisibility rules, factors, multiples, primes) to solve problems.	SE: 28 #30, 44 #32, 46, 50-55, 61 #32-34, 87 #9, 273 #10, 583 #1, 629 #3
02. Perform computations accurately.	
a. Use the proper order of operations. Perform operations with real numbers.	SE: 46, 86, 87 #10, 130 #3, 265 #4-6, 272, 273 #1, 350-352, 398, 718-719
b. Use graphs, matrices, and sequences to represent and solve problems.	SE: 4-7, 8 #15-26, 9 #36, 101 #37, 133 #32, 262-264, 338 #31, 620 #2 <i>Hands-On Geometry</i> 388 <i>Problem-Solving Workshop</i> 3
03. Estimate and judge reasonableness of results.	
a. Apply number sense to everyday situations.	SE: 37 #4, 171 #2, 267 #34, 347 #7, 414 #2, 416 #8, 417 #23-24, 479 #1-2 <i>Math In the Workplace</i> 41, 623
348. MATHEMATICAL REASONING AND PROBLEM SOLVING	
01. Understand and use a variety of problem-solving skills.	
a. Use a variety of methods, including common mathematical formulas, to solve problems drawn from daily life.	SE: 421 #4, 444 #22, 484 #3, 487 #26, 508 #4, 521 #15, 525 #7, 533 #23, 619 #2 <i>Math In the Workplace</i> 431
02. Use reasoning skills to recognize problems and express them mathematically.	
a. Use inductive and deductive reasoning to set up a problem.	SE: 4-7, 8 #15-26, 638-640, 642 #11-14, 646 #5, 648 #18, 649-651, 653 #16, 654-656 <i>Problem-Solving Workshop</i> 3
b. Use logic to make mathematical proofs.	SE: 632-635, 644-645, 647 #12-14, 648 #17, 649-651, 652 #8, 653 #9, 654-656, 658 #15, 660-663 <i>Investigation</i> 666-667

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c. Make and evaluate logical arguments.	SE: 636 #13, 637 #34, 638-640, 642 #11-14, 643 #28-30 <i>Investigation</i> 666-667 <i>Problem-Solving Workshop</i> 631
03. Apply appropriate technology and models to find solutions to problems.	
a. Understand the purpose and capabilities of appropriate technology.	SE: 758-761 <i>Graphing Calculator Exploration</i> 32, 79, 112, 290, 316, 371, 426, 608, 700
b. Understand the nature and use of mathematical models.	SE: 56, 122-123, 128-129, 150, 162-164, 195-196, 211-212, 215-216, 230 TWE: OEA 127
04. Communicate results using appropriate terminology and methods.	
a. Select the appropriate means to communicate mathematical information.	SE: 26 #1-2, 196 #1-3, 319 #1-3, 456 #1-3 <i>Investigation</i> 10-11 TWE: OEA 9, 17, 22, 373, 539
349. CONCEPTS AND PRINCIPLES OF MEASUREMENT	
01. Understand and use customary and metric measurements.	
a. Determine length, area, capacity, weight, time, and temperature, with appropriate units.	SE: 57-58, 59 #10, 60 #29, 61 #35, 414 #2, 429 #15, 444 #22, 482 #29, 512 #4, 566 #3
02. Apply concepts of rates and other derived or indirect measurements.	
a. Understand equivalent units, comparable units, and conversions.	SE: 58 #3, 59 #8-9, 60 #23-28, 61 #5, 72 #36, 532 #15
03. Apply the concepts of ratios and proportions.	
a. Understand and use proportions, ratios, and scaling.	SE: 350-352, 358 #3, 389-390, 398, 534-537, 564-567, 572-574 <i>Graphing Calculator Exploration</i> 478 <i>Investigation</i> 380-381, 570-571
04. Apply dimensional analysis.	
1. Understand units and their relationship to one another and to real-world applications.	SE: 57-58, 59 #8-9, 60 #29, 96-97, 109 #24, 354 #44, 358 #3, 444 #22, 512 #4, 532 #15
05. Perform error analysis.	
a. Understand tolerance, precision, and their applications.	SE: 58 #3, 59 #3, 428 TWE: EC 418
b. Understand that error accumulates in a computation when there is rounding at intermediate steps.	TWE: TT 480 Note: See Glencoe's <i>Geometry</i> © 2004 page 378.
350. CONCEPTS AND LANGUAGE OF ALGEBRA	
01. Use algebraic symbolism as a tool to represent mathematical relationships.	
a. Understand and use variables, expressions, equations, and inequalities.	SE: 40 #29-30, 174-176, 178 #19-24, 243 #25, 279, 510-512, 618-619, 676-678, 718, 722-725
02. Evaluate algebraic expressions.	
a. Understand and use procedures for operating on algebraic expressions.	SE: 57, 272, 279, 591 #32, 649-651, 680 #31, 718
03. Solve algebraic equations and inequalities.	
a. Understand and use appropriate procedures to solve linear equations and inequalities such as $3x - 4 = 2$ or $3x - 4 > 2$.	SE: 94 #32, 168-171, 174-176, 177 #3-5, 373 #30, 515 #28, 563 #24, 649, 722-725

OBJECTIVES	PAGE REFERENCES
b. Use appropriate procedures to simplify and solve polynomial equations and inequalities such as $x^2 + 3x = 7$ or $x^2 + 3x \leq 7$.	SE: 161 #39, 715 #3
04. Solve simple linear systems of equations or inequalities.	
a. Understand and use appropriate procedures to solve simple linear systems of equations and inequalities such as $x + y = 7$ $2x + 3y = 21$ or $x + y < 7$ $2x + 3y \geq 21$.	SE: 611 #27, 676-678, 679 #11-19, 681-683, 684 #9-10, 685 #27, 686 #31, 702 #19, 714
351. CONCEPTS AND PRINCIPLES OF GEOMETRY	
01. Apply concepts of size, shape, and spatial relationships.	
a. Understand congruence and similarity as they apply to reflection, rotation, and translation.	SE: 198-200, 203-205, 207 #29-31, 210-212, 215-217, 219 #23 <i>Investigation 208-209</i>
b. Understand scaling as it relates to size variations in one, two, and three-dimensional objects, while shape is maintained.	SE: 358 #3, 360 #25, 388-390, 533 #27, 534-536, 538 #17-19, 705 #11, 706 #22
02. Apply the geometry of right triangles.	
a. Understand the basic concepts of right triangle trigonometry (e.g., basic trigonometry ratios such as sine, cosine, and tangent).	SE: 564-567, 568 #8-11, 569 #22, 572-573, 575 #4-8, 576 #12-15, 577 #35, 580 #28-30 <i>Graphing Calculator Exploration 574</i>
b. Use trigonometric ratio methods to solve problems.	SE: 566 #3, 568 #5-7, 569 #20, 573 #2, 575 #11, 576 #34, 577 #36-38, 580 #35 <i>Investigation 570-571</i>
c. Know and apply the Pythagorean Theorem to solve real world problems.	SE: 256-258, 259 #1-2, 260 #38, 261 #39, 263 #1, 264 #3, 265 #11, 266 #27 <i>Hands-On Geometry 262</i>
03. Apply graphing in two dimensions.	
a. Understand concepts of the Cartesian Coordinate System.	SE: 68-70, 71 #2, 72 #24-33, 73 #37, 94 #28, 174-176, 262-264, 660-662, 676-678 <i>Graphing Calculator Exploration 79</i>
b. Understand the characteristics and uses of vectors.	SE: <i>Investigation 74-75</i>
352. DATA ANALYSIS, PROBABILITY, AND STATISTICS	
01. Understand data analysis.	
a. Read and interpret tables, charts, and graphs (e.g., scatter plots, line graphs, 3-dimensional graphs, and pie charts).	SE: 7 #5, 9 #36, 133 #32, 179 #39-40, 184-185, 219 #29, 267 #34, 332 #55, 653 #16, 680 #30
02. Collect, organize, and display data.	
b. Collect and organize data, and display the data in tables, charts, and graphs (e.g., scatter diagrams, frequency tables, bar graphs, or pie charts).	SE: 7 #5, 9 #36, 133 #32, 179 #39-40, 184-185, 219 #29, 267 #34, 332 #55, 653 #16, 680 #30

OBJECTIVES	PAGE REFERENCES
03. Apply simple statistical measurements.	
a. Understand basic statistical concepts including mean (average), median, mode, range, and standard deviation.	SE: 224, 225 #7, 298 #4, 305 #25, 307 #5, 583 #8, 665 #32, 715 #4
04. Understand basic concepts of probability.	
a. Understand experimental and theoretical probability.	SE: 138, 438 #29, 484
b. Distinguish between independent and dependent events.	See Glencoe's <i>Algebra 1</i> © 2003 pages 769-770.
c. Know that probability ranges from 0% to 100%. Understand randomness and chance.	SE: 138 See Glencoe's <i>Algebra 1</i> © 2003 page 96.
05. Make predictions or decisions based on data.	
a. Use appropriate technology to employ simulation techniques, curve fitting, correlation, and graphical models to make predictions or decisions based on data.	SE: 133 #32, 267 #34, 347 #7 <i>Problem-Solving Workshop 89</i>
b. Design, conduct, and interpret results of statistical experiments.	See Glencoe's <i>Algebra 1</i> © 2003 pages 782-784.
c. Analyze the effect of biased data on statistical predictions.	See Glencoe's <i>Algebra 1</i> © 2003 pages 708-710.
353. FUNCTIONS AND MATHEMATICAL MODELS	
01. Understand the concept of functions.	
a. Solve problems that involve varying quantities with variables, expressions, equations, inequalities, and absolute values.	SE: 72 #36, 133 #32, 174, 178 #35, 202 #33 <i>Problem-Solving Workshop 89</i>
02. Represent equations, inequalities, and functions in a variety of formats.	
a. Represent a set of data in a table, as a graph, and as a mathematical relationship.	SE: 7 #5, 9 #36, 133 #32, 179 #39-40, 184-185, 219 #29, 267 #34, 332 #55, 653 #16, 680 #30
03. Apply functions to a variety of problems.	
a. Model real-world phenomena using polynomial, rational, and basic exponential functions, noting restricted domains.	SE: 714-715

Codes Used for TWE Pages

5MC	5-Minute Check
EC	Extra Credit
OEA	Open-Ended Assessment
TT	Teaching Tip