



MathMatters 3

An Integrated Program

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STANDARDS	PAGE REFERENCES
Number, Number Sense and Operations Standard	
Number and Number Systems	
1. Determine what properties hold for matrix addition and matrix multiplication; e.g., use examples to show addition is commutative and when multiplication is not commutative.	Student Edition: 361 #29-#30
2. Determine what properties hold for vector addition and multiplication, and for scalar multiplication.	Student Edition: <i>Check Understanding</i> 359
3. Represent complex numbers on the complex plane.	This standard can be met in Glencoe's <i>Advanced Mathematical Concepts: Precalculus with Applications</i> © 2006 on pages 586-591.
Meaning of Operations	
4. Use matrices to represent given information in a problem situation.	Student Edition: 360 #18, 361 #31, 365 #37-#38, 372-373 Annotated Teacher Edition: AA 365
5. Model, using the coordinate plane, vector addition and scalar multiplication.	This standard can be met in Glencoe's <i>Advanced Mathematical Concepts: Precalculus with Applications</i> © 2006 on pages 493-499.

STANDARDS	PAGE REFERENCES
Computation and Estimation	
6. Compute sums, differences and products of matrices using paper and pencil calculations for simple cases, and technology for more complicated cases.	Student Edition: 358-361, 362-365, 366 #1-#26, 376 #21-#26 Annotated Teacher Edition: AA 365; CE 367; FG 363; QA 360; TT 358, 362
7. Compute sums, differences, products and quotients of complex numbers.	This standard can be met in Glencoe's <i>Advanced Mathematical Concepts: Precalculus with Applications</i> © 2006 on pages 580-585.
8. Use fractional and negative exponents as optional ways of representing and finding solutions for problem situations; e.g., $27^{2/3} = (27^{1/3})^2 = 9$.	Student Edition: 38 ex 1 – ex 2, 40 #5-#8, 41 #42-#45, 44 #51-#53 Annotated Teacher Edition: CE 39
9. Use vector addition and scalar multiplication to solve problems.	This standard can be met in Glencoe's <i>Advanced Mathematical Concepts: Precalculus with Applications</i> © 2006 on pages 513-519.
Measurement Standard	
Measurement Units	
1. Determine the number of significant digits in a measurement.	Student Edition: 202, 204 #10, 237 #18 Annotated Teacher Edition: I 202
2. Use radian and degree angle measures to solve problems and perform conversions as needed.	Student Edition: 108-111, 112 #13-#33, 113 #40-#41, 114-117 Annotated Teacher Edition: DI 108
Use Measurement Techniques and Tools	
3. Derive a formula for the surface area of a cone as a function of its slant height and the circumference of its base.	Student Edition: 225 ex 4, 226 #6, 228 #17 Annotated Teacher Edition: AA 227; CE 225
4. Calculate distances, areas, surface areas and volumes of composite three-dimensional objects to a specified number of significant digits.	Student Edition: 210 #26-#27, 211 #42, 216-217, 227 #13, 228 #17, 232 #8-#9, 233 #14-#16, 236 #39, 237 #15, 239 #23 Annotated Teacher Edition: ETL 233

STANDARDS	PAGE REFERENCES
5. Solve real-world problems involving area, surface area, volume and density to a specified degree of precision.	Student Edition: 208 #14, 209 #20, 216 #1, 217 #3, 218 #15, 225 ex 3, 226 #10, 231 ex 3, 232 #10 <i>MathWorks</i> 211
Geometry and Spatial Sense Standard	
Spatial Relationships	
1. Use polar coordinates to specify locations on a plane.	This standard can be met in Glencoe's <i>Advanced Mathematical Concepts: Precalculus with Applications</i> © 2006 on pages 553-560.
Transformations and Symmetry	
2. Represent translations using vectors.	This standard can be met in Glencoe's <i>Advanced Mathematical Concepts: Precalculus with Applications</i> © 2006 on pages 493-499.
3. Describe multiplication of a vector and a scalar graphically and algebraically, and apply to problem situations.	This standard can be met in Glencoe's <i>Advanced Mathematical Concepts: Precalculus with Applications</i> © 2006 on pages 513-519.
4. Use trigonometric relationships to determine lengths and angle measures; i.e., Law of Sines and Law of Cosines.	Student Edition: 614-617, 618-621, 622 #14-#22, 633 #47, 637 #18-#23, 639 #11 Annotated Teacher Edition: AA 620; ETL 618; FG 617, 621
Visualization and Geometric Models	
5. Identify, sketch and classify the cross sections of three-dimensional objects.	Student Edition: 223 #19-#20
Patterns, Functions and Algebra Standard	
Use Patterns, Relations and Functions	
1. Identify and describe problem situations involving an iterative process that can be represented as a recursive function; e.g., compound interest.	Student Edition: 52-55, 60 #1-#17, 61 #38-#43, 71 #52-#55, 91 #20-#23, 94 #11-#14 Annotated Teacher Edition: CE 53; ETL 54; FG 52; QA 54
2. Translate a recursive function into a closed form expression or formula for the n th term to solve a problem situation involving an iterative process; e.g., find the value of an annuity after 7 years.	Student Edition: 52-55, 60 #1-#17, 61 #38-#43, 71 #52-#55, 91 #20-#23, 94 #11-#14 Annotated Teacher Edition: CE 53; ETL 54; FG 52; QA 54

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3. Describe and compare the characteristics of the following families of functions: quadratics with complex roots, polynomials of any degree, logarithms, and rational functions; e.g., general shape, number of roots, domain and range, asymptotic behavior.	Student Edition: 603 #44-#48
4. Identify the maximum and minimum points of polynomial, rational and trigonometric functions graphically and with technology.	This standard can be met in Glencoe's <i>Advanced Mathematical Concepts: Precalculus with Applications</i> © 2006 on pages 171-179.
Use Algebraic Representations	
5. Identify families of functions with graphs that have rotation symmetry or reflection symmetry about the y -axis, x -axis or $y = x$.	This standard can be met in Glencoe's <i>Advanced Mathematical Concepts: Precalculus with Applications</i> © 2006 on pages 127-136.
6. Represent the inverse of a function symbolically and graphically as a reflection about $y = x$.	This standard can be met in Glencoe's <i>Advanced Mathematical Concepts: Precalculus with Applications</i> © 2006 on pages 152-158.
7. Model and solve problems with matrices and vectors.	Student Edition: 360 #18, 363 ex 3, 364 #27, 365 #37-#38, 372-373, 376 #31, 377 #11 Annotated Teacher Edition: ETL 372; TT 373
8. Solve equations involving radical expressions and complex roots.	This standard can be met in Glencoe's <i>Advanced Mathematical Concepts: Precalculus with Applications</i> © 2006 on pages 251-257.
9. Solve 3 by 3 systems of linear equations by elimination and using technology, and interpret graphically what the solution means (a point, line, plane, or no solution).	Student Edition: 267 #23-#24, 271 #28-#29
Analyze Change	
10. Describe the characteristics of the graphs of conic sections.	Student Edition: 572-573, 574-577, 578 #1-#19, 579 #20, 599 #38 Annotated Teacher Edition: AA 577; CE 573, 575; QA 576; TT 572
11. Describe how a change in the value of a constant in an exponential, logarithmic or radical equation affects the graph of the equation.	Student Edition: 594-597, 598 #16-#28, 603 #44-#48, 606 #37-#39 Annotated Teacher Edition: CE 595; DI 595; QA 596; TT 594

STANDARDS		PAGE REFERENCES
Data Analysis and Probability Standard		
Data Collection		
1. Design a statistical experiment, survey or study for a problem; collect data for the problem; and interpret the data with appropriate graphical displays, descriptive statistics, concepts of variability, causation, correlation and standard deviation.	Student Edition: 82-85, 86-89, 90 #11-#19 Annotated Teacher Edition: CE 87; DI 82, 91; ETL 83, 86; QA 84, 88	
2. Describe the role of randomization in a well-designed study, especially as compared to a convenience sample, and the generalization of results from each.	Student Edition: 82 Annotated Teacher Edition: GS 82; TT 412	
Statistical Methods		
3. Describe how a linear transformation of univariate data affects range, mean, mode and median.	Annotated Teacher Edition: ETL 83	
4. Create a scatterplot of bivariate data, identify trends, and find a function to model the data.	Student Edition: 406-409, 410 #25-#27, 418 #33-#34, 419 #7-#8 Annotated Teacher Edition: AA 409; ETL 406; FG 408; QA 408	
5. Use technology to find the Least Squares Regression Line, the regression coefficient, and the correlation coefficient for bivariate data with a linear trend, and interpret each of these statistics in the context of the problem situation.	This standard can be met in Glencoe's <i>Advanced Mathematical Concepts: Precalculus with Applications</i> © 2006 on pages 740-748.	
6. Use technology to compute the standard deviation for a set of data, and interpret standard deviation in relation to the context or problem situation.	Student Edition: 412-415, 418 #37-#40, 419 #12 Annotated Teacher Edition: CE 413; ETL 413; FG 415; QA 414	
7. Describe the standard normal curve and its general properties, and answer questions dealing with data assumed to be normal.	Student Edition: 415 #21-#24	
8. Analyze and interpret univariate and bivariate data to identify patterns, note trends, draw conclusions, and make predictions.	Student Edition: 406-409, 410 #25-#27, 418 #33-#34, 419 #7-#8 Annotated Teacher Edition: AA 409; ETL 406; FG 408; QA 408	
9. Evaluate validity of results of a study based on characteristics of the study design, including sampling method, summary statistics and data analysis techniques.	Annotated Teacher Edition: GS 82	

STANDARDS	PAGE REFERENCES
Probability	
10. Understand and use the concept of random variable, and compute and interpret the expected value for a random variable in simple cases.	This standard can be met in Glencoe's <i>Algebra 1</i> © 2008 on pages 672-673.
11. Examine statements and decisions involving risk; e.g., insurance rates and medical decisions.	This standard can be met in Glencoe's <i>Advanced Mathematical Concepts: Precalculus with Applications</i> © 2006 on pages 853-854 examples 3 and 4.