

GLENCOE CORRELATION
MATHMATTERS 3
OHIO
Mathematics Benchmarks and Indicators
Grade Eleven

BENCHMARKS AND INDICATORS	PAGE REFERENCES
Number, Number Sense and Operations Standard	
<i>Number and Number Systems</i>	
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.	SE: 358-361, 362-365, 366 ATE: TS 363, 366
2. Determine what properties hold for vector addition and multiplication, and for scalar multiplication.	This objective can be met during teacher/class discussion.
3. Represent complex numbers on the complex plane.	This objective can be met during teacher/class discussion.
<i>Meaning of Operations</i>	
4. Use matrices to represent given information in a problem situation.	SE: 359, 360 #18, 362, 365 #37-#38, 372-373, 377 ATE: CE 373 EL 372 TS 361, 365, 373
5. Model, using the coordinate plane, vector addition and scalar multiplication.	This objective can be met during teacher/class discussion.
<i>Computation and Estimation</i>	
6. Compute sums, differences and products of matrices using paper and pencil calculations for simple cases, and technology for more complicated cases.	SE: 358-361, 362-365, 366, 375 ATE: CE 359, 363
7. Compute sums, differences, products and quotients of complex numbers.	ATE: TS 542
8. Use fractional and negative exponents as optional ways of representing and finding solutions for problem situations; e.g., $27^{2/3} = (27^{1/3})^2 = 9$.	SE: 38-41, 43 #19-#21, 687 ATE: CE 39 LW 40
9. Use vector addition and scalar multiplication to solve problems.	This objective can be met during teacher/class discussion.
Measurement Standard	
<i>Measurement Units</i>	
1. Determine the number of significant digits in a measurement.	SE: 202, 204 #10
2. Use radian and degree angle measures to solve problems and perform conversions as needed.	SE: 101 #10-#19, 108-111, 140 #7, 692 ATE: TS 111
<i>Use Measurement Techniques and Tools</i>	
3. Derive a formula for the surface area of a cone as a function of its slant height and the circumference of its base.	SE: 225, 226 #6, 235 #17, 236 #16 ATE: CE 225

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4. Calculate distances, areas, surface areas and volumes of composite three-dimensional objects to a specified number of significant digits.	SE: 105-107, 198-199, 206-209, 224-227, 230-233, 422, 699, 701 ATE: EL 206 LS 230
5. Solve real-world problems involving area, surface area, volume and density to a specified degree of precision.	SE: 206-209, 224-227, 230-233 ATE: CE 207, 225, 231
Geometry and Spatial Sense Standard	
<i>Spatial Relationships</i>	
1. Use polar coordinates to specify locations on a plane.	This objective can be met during teacher/class discussion.
<i>Transformations and Symmetry</i>	
2. Represent translations using vectors.	This objective can be met during teacher/class discussion.
3. Describe multiplication of a vector and a scalar graphically and algebraically, and apply to problem situations.	This objective can be met during teacher/class discussion.
4. Use trigonometric relationships to determine lengths and angle measures; i.e., Law of Sines and Law of Cosines.	SE: 604-607, 608-611, 624-625, 629, 728, 729 ATE: CE 605, 609
<i>Visualization and Geometric Models</i>	
5. Identify, sketch and classify the cross sections of three-dimensional objects.	SE: 572-573, 579 #20, 594 #17-#18 ATE: CE 573 TS 572
Patterns, Functions and Algebra Standard	
<i>Use Patterns, Relations and Functions</i>	
1. Identify and describe problem situations involving an iterative process that can be represented as a recursive function; e.g., compound interest.	SE: 53, 55 #18-#21, 60 #17 ATE: CE 53 EL 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.	SE: 52-55, 60 #1-#17, 71 #52-#55, 81 #63-#68, 91 #20-#23, 94 #5-#7 ATE: CE 53 TS 52
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.	SE: 520-523, 524-527, 530-533, 550-551, 552, 566-569, 584 ATE: IL 584 LW 568 TS 567
4. Identify the maximum and minimum points of polynomial, rational and trigonometric functions graphically and with technology.	SE: 524-527, 539 #33-#38, 552 #7-#9, 566 ATE: IL 520
<i>Use Algebraic Representations</i>	
5. Identify families of functions with graphs that have rotation symmetry or reflection symmetry about the y -axis, x -axis or $y = x$.	SE: 520-523, 524, 566-569, 722, 725 ATE: IL 520, 524

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6. Represent the inverse of a function symbolically and graphically as a reflection about $y = x$.	SE: 584-587, 588 #17-#24, 595 #24-#27, 725 ATE: EL 584
7. Model and solve problems with matrices and vectors.	SE: 358-361, 362-365, 369, 371 #20-#23, 372-373, 375 #18, 377 ATE: CE 363, 369
8. Solve equations involving radical expressions and complex roots.	SE: 673
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).	SE: 267 #23-#24, 271 #28-#29
<i>Analyze Change</i>	
10. Describe the characteristics of the graphs of conic sections.	SE: 572-573, 574-577, 579 #21-#26, 595 #19-#20, 726 ATE: CE 575 TS 577
11. Describe how a change in the value of a constant in an exponential, logarithmic or radical equation affects the graph of the equation.	SE: 673
Data Analysis and Probability Standard	
<i>Data Collection</i>	
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.	SE: 82, 86-89, 90 #11-#19, 92-93, 95 #27-#29, 97, 406-409, 412-415, 417 #18-#20 ATE: EL 83
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.	SE: 82, 388-389, 390 #31-#36, 391 #40, 401 #49, 411 #36, 416 #7-#8 ATE: LW 389
<i>Statistical Methods</i>	
3. Describe how a linear transformation of univariate data affects range, mean, mode and median.	SE: 82-85, 90 #1-#10, 95 #25-#26, 690 ATE: EL 83
4. Create a scatterplot of bivariate data, identify trends, and find a function to model the data.	SE: 406-409, 410 #25-#27, 417 #15-#17, 713 ATE: CE 407 IC 406
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.	SE: 406-409, 410 #27, 417 #15, 713 ATE: EL 411 TS 408
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.	SE: 412-415, 417 #18-#20, 418 #12, 714 ATE: CE 413 TS 414, 415

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7. Describe the standard normal curve and its general properties, and answer questions dealing with data assumed to be normal.	SE: 415 #21-#24 ATE: TS 415
8. Analyze and interpret univariate and bivariate data to identify patterns, note trends, draw conclusions, and make predictions.	SE: 82-85, 406-409, 412-415, 713, 714 ATE: CE 407, 413 IC 406 TS 414, 415
9. Evaluate validity of results of a study based on characteristics of the study design, including sampling method, summary statistics and data analysis techniques.	SE: 82, 86-89, 92-93, 95 #27-#29, 97, 412-415 ATE: IL 82, 412 LW 414 TS 412
<i>Probability</i>	
10. Understand and use the concept of random variable, and compute and interpret the expected value for a random variable in simple cases.	SE: 388-389, 390 #31-#36, 391 #40, 401 #49, 411 #36, 416 #7-#8 ATE: LW 389
11. Examine statements and decisions involving risk; e.g., insurance rates and medical decisions.	SE: <i>Career</i> 411

Codes Used for ATE Pages

CE	Chalkboard Examples
EL	Extend the Lesson
IC	Interdisciplinary Connection
IL	Introduction to Lesson
LS	Learning Styles
LW	Lesson Wrap-up
TS	Teaching Strategies