



**North Dakota Mathematics Content and
Achievement Standards
Grades 11-12
Contemporary Mathematics in Context
A Unified Approach Course 3 © 2003**

North Dakota Department of Public Instruction

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Standard 1: Number and Operation

Standard 1: Students understand and use basic and advanced concepts of number and number systems.

Benchmark Expectations	PROFICIENCY DESCRIPTOR			
	ADVANCED PROFICIENT	PROFICIENT	PARTIALLY PROFICIENT	NOVICE
Grades 11-12				
NUMBERS, NUMBER RELATIONSHIPS, AND NUMBER SYSTEMS 11-12.1.1. Translate between radical expressions and expressions involving rational exponents	<p>Students translate between radical expressions and expressions involving rational exponents with no errors.</p> <p>This benchmark can be met in Glencoe's <i>Contemporary Mathematics in Context Course 2</i> © 2003 in Unit 4, Lesson 4.</p>	<p>Students translate between radical expressions and expressions involving rational exponents with no significant errors.</p> <p>This benchmark can be met in Glencoe's <i>Contemporary Mathematics in Context Course 2</i> © 2003 in Unit 4, Lesson 4.</p>	<p>Students translate between radical expressions and expressions involving rational exponents with a few significant errors.</p> <p>This benchmark can be met in Glencoe's <i>Contemporary Mathematics in Context Course 2</i> © 2003 in Unit 4, Lesson 4.</p>	<p>Students translate between radical expressions and expressions involving rational exponents with many significant errors.</p> <p>This benchmark can be met in Glencoe's <i>Contemporary Mathematics in Context Course 2</i> © 2003 in Unit 4, Lesson 4.</p>
11-12.1.2. Describe the hierarchal relationships (e.g., explain why real numbers are complex) among subsets of the complex number system, i.e., complex, real, and imaginary	<p>Students describe with great detail hierarchal relationships between subsets of the complex number system.</p> <p>This benchmark can be met in Glencoe's <i>Advanced Mathematical Concepts</i> © 2004 in Chapter 4, Lesson 1 (page 206).</p>	<p>Students describe with adequate detail hierarchal relationships between subsets of the complex number system.</p> <p>This benchmark can be met in Glencoe's <i>Advanced Mathematical Concepts</i> © 2004 in Chapter 4, Lesson 1 (page 206).</p>	<p>Students describe with some detail hierarchal relationships between subsets of the complex number system.</p> <p>This benchmark can be met in Glencoe's <i>Advanced Mathematical Concepts</i> © 2004 in Chapter 4, Lesson 1 (page 206).</p>	<p>Students describe with minimal detail hierarchal relationships between subsets of the complex number system.</p> <p>This benchmark can be met in Glencoe's <i>Advanced Mathematical Concepts</i> © 2004 in Chapter 4, Lesson 1 (page 206).</p>

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Benchmark Expectations	PROFICIENCY DESCRIPTOR			
	ADVANCED PROFICIENT	PROFICIENT	PARTIALLY PROFICIENT	NOVICE
11-12.1.3. Use imaginary numbers to express square roots of negative numbers	<p>Students use imaginary numbers to express square roots of negative numbers with no errors.</p> <p>This benchmark can be met in Glencoe's <i>Contemporary Mathematics in Context Course 4</i> © 2003 in Unit 6, Lesson 2, Investigation 3 (pages 390-395).</p>	<p>Students use imaginary numbers to express square roots of negative numbers with no significant errors.</p> <p>This benchmark can be met in Glencoe's <i>Contemporary Mathematics in Context Course 4</i> © 2003 in Unit 6, Lesson 2, Investigation 3 (pages 390-395).</p>	<p>Students use imaginary numbers to express square roots of negative numbers with a few significant errors.</p> <p>This benchmark can be met in Glencoe's <i>Contemporary Mathematics in Context Course 4</i> © 2003 in Unit 6, Lesson 2, Investigation 3 (pages 390-395).</p>	<p>Students use imaginary numbers to express square roots of negative numbers with many significant errors.</p> <p>This benchmark can be met in Glencoe's <i>Contemporary Mathematics in Context Course 4</i> © 2003 in Unit 6, Lesson 2, Investigation 3 (pages 390-395).</p>

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	ADVANCED PROFICIENT	PROFICIENT	PARTIALLY PROFICIENT	NOVICE
11-12.1.4. Justify the steps of an algebraic process using the properties of the real number system; e.g., write an algebraic proof	<p>Students justify the steps of an algebraic process in great detail, using the properties of the real number system.</p> <p>Student Edition: 241 #1, 242 #4c, 244 #1b, 246 #4d, 248 #1a, 249 #4, 250 #3c, 252 #4c <i>On Your Own</i> 243</p> <p>Teacher's Guide: JE T246</p> <p>Teacher Resources: <i>Teaching Resources</i> Master 82, 83, 84, 85b</p>	<p>Students justify the steps of an algebraic process in adequate detail, using the properties of the real number system.</p> <p>Student Edition: 244 #1a, 245 #3c, 246 #4c, 248 #1c, 250 #3b, 251 #3, 252 #4d <i>Checkpoint</i> 243, 257 <i>Think About This Situation</i> 240</p> <p>Teacher Resources: <i>Teaching Resources</i> Master 82, 83, 84, 85b</p>	<p>Students justify the steps of an algebraic process in some detail, using the properties of the real number system.</p> <p>Student Edition: 241 #2, 242 #4b, 245 #3b, 246 #4b, 249 #3, 256 #13</p> <p>Teacher Resources: <i>Teaching Resources</i> Master 82, 83, 84, 85b</p>	<p>Students justify the steps of an algebraic process in minimal detail, using the properties of the real number system.</p> <p>Student Edition: 242 #3, 244 #1c, 245 #3a, 248 #1b, 249 #2, 250 #3a, 251 #1a, 252 #4a</p> <p>Teacher Resources: <i>Teaching Resources</i> Master 82, 83, 84, 85b</p>

Standard 1: Students understand and use basic and advanced concepts of number and number systems.

Benchmark Expectations	PROFICIENCY DESCRIPTOR			
	ADVANCED PROFICIENT	PROFICIENT	PARTIALLY PROFICIENT	NOVICE
OPERATIONS AND THEIR PROPERTIES				
11-12.1.5. Determine which properties of the real number system hold for matrices; e.g., matrix multiplication is not commutative	<p>Students determine which properties of the real number system hold for matrices with no errors.</p> <p>Student Edition: 205 #5</p> <p>Teacher Resources: <i>Teaching Resources</i> Master 155a #4</p>	<p>Students determine which properties of the real number system hold for matrices with no significant errors.</p> <p>Student Edition: 205 #5</p> <p>Teacher Resources: <i>Teaching Resources</i> Master 155a #4</p>	<p>Students determine which properties of the real number system hold for matrices with a few significant errors.</p> <p>Student Edition: 205 #5</p> <p>Teacher Resources: <i>Teaching Resources</i> Master 155a #4</p>	<p>Students determine which properties of the real number system hold for matrices with many significant errors.</p> <p>Student Edition: 205 #5</p> <p>Teacher Resources: <i>Teaching Resources</i> Master 155a #4</p>
11-12.1.6. Apply basic properties of exponents and logarithms to rewrite algebraic expressions; i.e., power of a product, power of a power, products and quotients of powers, zero and negative exponents, and log of a product, quotient, or power	<p>Students apply basic properties of exponents and logarithms to rewrite algebraic expressions with no errors.</p> <p>Student Edition: 195 #8d, 213 #5, 217 #3, 249 #4, 256 #13 <i>Checkpoint 257 #e</i> <i>On Your Own</i> 214, 218</p> <p>Teacher Resources: <i>Teaching Resources</i> Master 76</p>	<p>Students apply basic properties of exponents and logarithms to rewrite algebraic expressions with no significant errors.</p> <p>Student Edition: 195 #8d, 213 #5, 217 #3, 249 #4, 256 #13 <i>Checkpoint 257 #e</i> <i>On Your Own</i> 214, 218</p> <p>Teacher Resources: <i>Teaching Resources</i> Master 76</p>	<p>Students apply basic properties of exponents and logarithms to rewrite algebraic expressions with a few significant errors.</p> <p>Student Edition: 195 #8d, 213 #5, 217 #3, 249 #4, 256 #13 <i>Checkpoint 257 #e</i> <i>On Your Own</i> 214, 218</p> <p>Teacher Resources: <i>Teaching Resources</i> Master 76</p>	<p>Students apply basic properties of exponents and logarithms with many significant errors.</p> <p>Student Edition: 195 #8d, 213 #5, 217 #3, 249 #4, 256 #13 <i>Checkpoint 257 #e</i> <i>On Your Own</i> 214, 218</p> <p>Teacher Resources: <i>Teaching Resources</i> Master 76</p>

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Benchmark Expectations	PROFICIENCY DESCRIPTOR			
	ADVANCED PROFICIENT	PROFICIENT	PARTIALLY PROFICIENT	NOVICE
COMPUTATIONAL FLUENCY AND ESTIMATION				
11-12.1.7. Add, subtract, and multiply complex numbers	<p>Students add, subtract, and multiply complex numbers with no errors.</p> <p>This benchmark can be met in Glencoe's <i>Contemporary Mathematics in Context Course 4</i> © 2003 in Unit 6, Lesson 2, Investigation 3 (pages 390-395).</p>	<p>Students add, subtract, and multiply complex numbers with no significant errors.</p> <p>This benchmark can be met in Glencoe's <i>Contemporary Mathematics in Context Course 4</i> © 2003 in Unit 6, Lesson 2, Investigation 3 (pages 390-395).</p>	<p>Students add, subtract, and multiply complex numbers with a few significant errors.</p> <p>This benchmark can be met in Glencoe's <i>Contemporary Mathematics in Context Course 4</i> © 2003 in Unit 6, Lesson 2, Investigation 3 (pages 390-395).</p>	<p>Students add, subtract, and multiply complex numbers with many significant errors.</p> <p>This benchmark can be met in Glencoe's <i>Contemporary Mathematics in Context Course 4</i> © 2003 in Unit 6, Lesson 2, Investigation 3 (pages 390-395).</p>
11-12.1.8. Multiply matrices containing no more than three rows or columns without the use of technology	<p>Students multiply matrices with no errors.</p> <p>Student Edition: 517 #2g</p> <p>Teacher Resources: <i>Teaching Resources</i> Master 155c #4b-#4c</p>	<p>Students multiply matrices with no significant errors.</p> <p>Student Edition: 517 #2g</p> <p>Teacher Resources: <i>Teaching Resources</i> Master 155c #4b-#4c</p>	<p>Students multiply matrices with a few significant errors.</p> <p>Student Edition: 517 #2g</p> <p>Teacher Resources: <i>Teaching Resources</i> Master 155c #4b-#4c</p>	<p>Students multiply matrices with many significant errors.</p> <p>Student Edition: 517 #2g</p> <p>Teacher Resources: <i>Teaching Resources</i> Master 155c #4b-#4c</p>

Standard 2: Geometry and Spatial Sense

Standard 2: Student understands and applies geometric concepts and spatial relationships to represent and solve problems in mathematical and nonmathematical situations.				
Benchmark Expectations	PROFICIENCY DESCRIPTOR			
	ADVANCED PROFICIENT	PROFICIENT	PARTIALLY PROFICIENT	NOVICE
Grades 11-12				
<p>TWO- AND THREE-DIMENSIONAL SHAPES, GEOMETRIC PROPERTIES AND RELATIONSHIPS</p> <p>11-12.2.1. Use trigonometric relationships to determine side lengths and angle measures in triangles; i.e., right triangle trigonometry, Law of Sines, and Law of Cosines</p>	<p>Students use trigonometric relationships to determine side lengths and angle measures in triangles with no errors.</p> <p>Student Edition: 26-27, 28-31, 32-35, 43 #4, 44 #3, 246 #4</p> <p>Teacher's Guide: CMT T27, T33; I T28, T32</p> <p>Teacher Resources: <i>Teaching Resources</i> Master 10, 11, 12, 13</p>	<p>Students use trigonometric relationships to determine side lengths and angle measures in triangles with no significant errors.</p> <p>Student Edition: 26-27, 28-31, 32-35, 43 #4, 44 #3, 246 #4</p> <p>Teacher's Guide: CMT T27, T33; I T28, T32</p> <p>Teacher Resources: <i>Teaching Resources</i> Master 10, 11, 12, 13</p>	<p>Students use trigonometric relationships to determine side lengths and angle measures in triangles with a few significant errors.</p> <p>Student Edition: 26-27, 28-31, 32-35, 43 #4, 44 #3, 246 #4</p> <p>Teacher's Guide: CMT T27, T33; I T28, T32</p> <p>Teacher Resources: <i>Teaching Resources</i> Master 10, 11, 12, 13</p>	<p>Students use trigonometric relationships to determine side lengths and angle measures in triangles with many significant errors.</p> <p>Student Edition: 26-27, 28-31, 32-35, 43 #4, 44 #3, 246 #4</p> <p>Teacher's Guide: CMT T27, T33; I T28, T32</p> <p>Teacher Resources: <i>Teaching Resources</i> Master 10, 11, 12, 13</p>
<p>COORDINATE GEOMETRY</p> <p><i>No further expectations</i></p>				
<p>TRANSFORMATION AND SYMMETRY</p> <p><i>No further expectations</i></p>				
<p>VISUALIZATION, SPATIAL REASONING, AND GEOMETRIC MODELING</p> <p><i>No further expectations</i></p>				

Standard 3: Data Analysis, Statistics, and Probability

Standard 3: Students use data collection and analysis techniques, statistical methods, and probability to solve problems.				
Benchmark Expectations	PROFICIENCY DESCRIPTOR			
	ADVANCED PROFICIENT	PROFICIENT	PARTIALLY PROFICIENT	NOVICE
Grades 11-12				
<p>DATA COLLECTION, DISPLAY, AND INTERPRETATION</p> <p>11-12.3.1. Choose, construct, and interpret a display to represent a set of data</p>	<p>Students choose and construct a display for a set of data, and interpret the visual representation with no errors.</p> <p>Student Edition: 492 #3c, 493 #1d, 501 #2, 506 #1a, 508 #6a, 521 #1a, 522 #3a, 524 #7d <i>On Your Own</i> 494</p>	<p>Students choose and construct a display for a set of data, and interpret the visual representation with no significant errors.</p> <p>Student Edition: 492 #3c, 493 #1d, 501 #2, 506 #1a, 508 #6a, 521 #1a, 522 #3a, 524 #7d <i>On Your Own</i> 494</p>	<p>Students choose and construct a display for a set of data, and interpret the visual representation with a few significant errors.</p> <p>Student Edition: 492 #3c, 493 #1d, 501 #2, 506 #1a, 508 #6a, 521 #1a, 522 #3a, 524 #7d <i>On Your Own</i> 494</p>	<p>Students choose and construct a display for a set of data, and interpret the visual representation with many significant errors.</p> <p>Student Edition: 492 #3c, 493 #1d, 501 #2, 506 #1a, 508 #6a, 521 #1a, 522 #3a, 524 #7d <i>On Your Own</i> 494</p>
<p>PROBABILITY</p> <p>11-12.3.2. Make predictions based on theoretical probabilities and experimental results</p>	<p>Students make predictions based on theoretical probabilities and experimental results with ease.</p> <p>Student Edition: 406 #1, 407 #2, 408 #3, 409 #7, 410 #8, 412 #3, 413 #4, 414 #4 <i>Checkpoint</i> 419 <i>On Your Own</i> 411</p> <p>Teacher Resources: <i>Teaching Resources</i> Master 148, 151</p>	<p>Students make predictions based on theoretical probabilities and experimental results with minimal difficulty.</p> <p>Student Edition: 406 #1, 407 #2, 408 #3, 409 #7, 410 #8, 412 #3, 413 #4, 414 #4 <i>Checkpoint</i> 419 <i>On Your Own</i> 411</p> <p>Teacher Resources: <i>Teaching Resources</i> Master 148, 151</p>	<p>Students make predictions based on theoretical probabilities and experimental results with difficulty.</p> <p>Student Edition: 406 #1, 407 #2, 408 #3, 409 #7, 410 #8, 412 #3, 413 #4, 414 #4 <i>Checkpoint</i> 419 <i>On Your Own</i> 411</p> <p>Teacher Resources: <i>Teaching Resources</i> Master 148, 151</p>	<p>Students make predictions based on theoretical probabilities and experimental results with great difficulty.</p> <p>Student Edition: 406 #1, 407 #2, 408 #3, 409 #7, 410 #8, 412 #3, 413 #4, 414 #4 <i>Checkpoint</i> 419 <i>On Your Own</i> 411</p> <p>Teacher Resources: <i>Teaching Resources</i> Master 148, 151</p>

Standard 3: Students use data collection and analysis techniques, statistical methods, and probability to solve problems.

Benchmark Expectations	PROFICIENCY DESCRIPTOR			
	ADVANCED PROFICIENT	PROFICIENT	PARTIALLY PROFICIENT	NOVICE
<p>STATISTICAL METHODS</p> <p>11-12.3.3. Select, calculate, and use appropriate measures of central tendency and spread (i.e., mean, median, mode, range, and quartiles) to draw meaningful conclusions about a set of data</p>	<p>Students select, calculate, and use measures of central tendency and spread with no errors.</p> <p>Student Edition: 347 #2a, 349 #7-#8, 352 #2a, 353 #7, 356 #2a, 358 #1, 359 #2 <i>On Your Own</i> 350, 354</p> <p>Teacher Resources: <i>Teaching Resources</i> Master 128, 130, 135</p>	<p>Students select, calculate, and use measures of central tendency and spread with no significant errors.</p> <p>Student Edition: 347 #2a, 349 #7-#8, 352 #2a, 353 #7, 356 #2a, 358 #1, 359 #2 <i>On Your Own</i> 350, 354</p> <p>Teacher Resources: <i>Teaching Resources</i> Master 128, 130, 135</p>	<p>Students select, calculate, and use measures of central tendency and spread with a few significant errors.</p> <p>Student Edition: 347 #2a, 349 #7-#8, 352 #2a, 353 #7, 356 #2a, 358 #1, 359 #2 <i>On Your Own</i> 350, 354</p> <p>Teacher Resources: <i>Teaching Resources</i> Master 128, 130, 135</p>	<p>Students select, calculate, and use measures of central tendency and spread with many significant errors.</p> <p>Student Edition: 347 #2a, 349 #7-#8, 352 #2a, 353 #7, 356 #2a, 358 #1, 359 #2 <i>On Your Own</i> 350, 354</p> <p>Teacher Resources: <i>Teaching Resources</i> Master 128, 130, 135</p>
<p>PREDICTIONS, DATA ANALYSIS, AND INFERENCES</p> <p>11-12.3.4. Given a set of data exhibiting a linear trend, approximate an equation for the line of best fit (with or without technology) and use that model to make predictions</p>	<p>Students approximate an equation for the line of best fit and use the resulting model to make predictions with no errors.</p> <p>Student Edition: 50 #3, 52 #1, 53 #2, 401 #3, 459 #3, 561-564 <i>Checkpoint</i> 51</p> <p>Teacher's Guide: I T561</p> <p>Teacher Resources: <i>Teaching Resources</i> Master 157</p>	<p>Students approximate an equation for the line of best fit and use the resulting model to make predictions with no significant errors.</p> <p>Student Edition: 50 #3, 52 #1, 53 #2, 401 #3, 459 #3, 561-564 <i>Checkpoint</i> 51</p> <p>Teacher's Guide: I T561</p> <p>Teacher Resources: <i>Teaching Resources</i> Master 157</p>	<p>Students approximate an equation for the line of best fit and use the resulting model to make predictions with a few significant errors.</p> <p>Student Edition: 50 #3, 52 #1, 53 #2, 401 #3, 459 #3, 561-564 <i>Checkpoint</i> 51</p> <p>Teacher's Guide: I T561</p> <p>Teacher Resources: <i>Teaching Resources</i> Master 157</p>	<p>Students approximate an equation for the line of best fit and use the resulting model to make predictions with many significant errors.</p> <p>Student Edition: 50 #3, 52 #1, 53 #2, 401 #3, 459 #3, 561-564 <i>Checkpoint</i> 51</p> <p>Teacher's Guide: I T561</p> <p>Teacher Resources: <i>Teaching Resources</i> Master 157</p>

Standard 4: Measurement

Standard 4: Students use concepts and tools of measurement to describe and quantify the world.				
Benchmark Expectations	PROFICIENCY DESCRIPTOR			
	ADVANCED PROFICIENT	PROFICIENT	PARTIALLY PROFICIENT	NOVICE
Grades 11-12				
MEASURABLE ATTRIBUTES, MEASUREMENT SYSTEMS AND UNITS <i>No further expectations</i>				
MEASUREMENT TOOLS, TECHNIQUES, AND FORMULAS <i>No further expectations</i>				

Standard 5: Algebra, Functions and Patterns

Standard 5: Students use algebraic concepts, functions, patterns, and relationships to solve problems.				
Benchmark Expectations	PROFICIENCY DESCRIPTOR			
	ADVANCED PROFICIENT	PROFICIENT	PARTIALLY PROFICIENT	NOVICE
Grades 11-12				
PATTERNS, RELATIONS, AND FUNCTIONS 11-12.5.1. Perform advanced operations (i.e., composition and finding inverses) on algebraic functions	Students perform advanced operations on algebraic functions with no errors. Student Edition: 186 #3, 209-211, 212-214, 215-218, 440 #1, 446 #1	Students perform advanced operations on algebraic functions with no significant errors. Student Edition: 186 #3, 209-211, 212-214, 215-218, 440 #1, 446 #1	Students perform advanced operations on algebraic functions with a few significant errors. Student Edition: 186 #3, 209-211, 212-214, 215-218, 440 #1, 446 #1	Students perform advanced operations on algebraic functions with many significant errors. Student Edition: 186 #3, 209-211, 212-214, 215-218, 440 #1, 446 #1

Standard 5: Students use algebraic concepts, functions, patterns, and relationships to solve problems.

Benchmark Expectations	PROFICIENCY DESCRIPTOR			
	ADVANCED PROFICIENT	PROFICIENT	PARTIALLY PROFICIENT	NOVICE
11-12.5.2. Generate graphs of a variety of functions (i.e., linear, quadratic, polynomial, absolute value, and exponential), using technology when appropriate	<p>Students generate graphs of a variety of functions with no errors.</p> <p>Student Edition: 176 #3, 425 #3, 431 #3, 436 #3, 438 #1, 439 #1, 440 #1 <i>Checkpoint 427, 433</i> <i>Think About This Situation 441</i></p> <p>Teacher Resources: <i>Teaching Resources</i> Master 159a, 159b, 159c, 160</p>	<p>Students generate graphs of a variety of functions with no significant errors.</p> <p>Student Edition: 176 #3, 425 #3, 431 #3, 436 #3, 438 #1, 439 #1, 440 #1 <i>Checkpoint 427, 433</i> <i>Think About This Situation 441</i></p> <p>Teacher Resources: <i>Teaching Resources</i> Master 159a, 159b, 159c, 160</p>	<p>Students generate graphs of a variety of functions with a few significant errors.</p> <p>Student Edition: 176 #3, 425 #3, 431 #3, 436 #3, 438 #1, 439 #1, 440 #1 <i>Checkpoint 427, 433</i> <i>Think About This Situation 441</i></p> <p>Teacher Resources: <i>Teaching Resources</i> Master 159a, 159b, 159c, 160</p>	<p>Students generate graphs of a variety of functions with many significant errors.</p> <p>Student Edition: 176 #3, 425 #3, 431 #3, 436 #3, 438 #1, 439 #1, 440 #1 <i>Checkpoint 427, 433</i> <i>Think About This Situation 441</i></p> <p>Teacher Resources: <i>Teaching Resources</i> Master 159a, 159b, 159c, 160</p>
NUMERIC AND ALGEBRAIC REPRESENTATIONS				
11-12.5.3. Solve quadratic equations involving complex roots	<p>Students solve quadratic equations involving complex roots with no errors.</p> <p>This benchmark can be met in Glencoe's <i>Contemporary Mathematics in Context Course 4</i> © 2003 in Unit 6, Lesson 2, Investigation 3 (pages 390-395).</p>	<p>Students solve quadratic equations involving complex roots with no significant errors.</p> <p>This benchmark can be met in Glencoe's <i>Contemporary Mathematics in Context Course 4</i> © 2003 in Unit 6, Lesson 2, Investigation 3 (pages 390-395).</p>	<p>Students solve quadratic equations involving complex roots with a few significant errors.</p> <p>This benchmark can be met in Glencoe's <i>Contemporary Mathematics in Context Course 4</i> © 2003 in Unit 6, Lesson 2, Investigation 3 (pages 390-395).</p>	<p>Students solve quadratic equations involving complex roots with many significant errors.</p> <p>This benchmark can be met in Glencoe's <i>Contemporary Mathematics in Context Course 4</i> © 2003 in Unit 6, Lesson 2, Investigation 3 (pages 390-395).</p>

Standard 5: Students use algebraic concepts, functions, patterns, and relationships to solve problems.

Benchmark Expectations	PROFICIENCY DESCRIPTOR			
	ADVANCED PROFICIENT	PROFICIENT	PARTIALLY PROFICIENT	NOVICE
11-12.5.4. Use transformations (i.e., reflection, translation, dilation) to graph linear, quadratic, and absolute value functions	<p>Students graph linear, quadratic, and absolute value functions using transformations with no errors.</p> <p>Student Edition: 444 #5-#6, 446 #1a-#1c, 457 #2, 458 #5b, 459 #4, 460 #1, 464 #2b <i>Checkpoint 448</i> <i>On Your Own 445</i> <i>Think About This Situation 441</i></p> <p>Teacher Resources: <i>Teaching Resources</i> Master 162, 163, 164, 165, 168</p>	<p>Students graph linear, quadratic, and absolute value functions using transformations with no significant errors.</p> <p>Student Edition: 444 #5-#6, 446 #1a-#1c, 457 #2, 458 #5b, 459 #4, 460 #1, 464 #2b <i>Checkpoint 448</i> <i>On Your Own 445</i> <i>Think About This Situation 441</i></p> <p>Teacher Resources: <i>Teaching Resources</i> Master 162, 163, 164, 165, 168</p>	<p>Students graph linear, quadratic, and absolute value functions using transformations with a few significant errors.</p> <p>Student Edition: 444 #5-#6, 446 #1a-#1c, 457 #2, 458 #5b, 459 #4, 460 #1, 464 #2b <i>Checkpoint 448</i> <i>On Your Own 445</i> <i>Think About This Situation 441</i></p> <p>Teacher Resources: <i>Teaching Resources</i> Master 162, 163, 164, 165, 168</p>	<p>Students graph linear, quadratic, and absolute value functions using transformations with many significant errors.</p> <p>Student Edition: 444 #5-#6, 446 #1a-#1c, 457 #2, 458 #5b, 459 #4, 460 #1, 464 #2b <i>Checkpoint 448</i> <i>On Your Own 445</i> <i>Think About This Situation 441</i></p> <p>Teacher Resources: <i>Teaching Resources</i> Master 162, 163, 164, 165, 168</p>
11-12.5.5. Given the graph of a transformed linear, quadratic, or absolute value function, write its equation	<p>Given a graph of a linear, quadratic, or absolute value function involving a single transformation, students write its equation with no errors.</p> <p>Student Edition: 443 #2, 446 #1, 451 #7, 457 #2, 460 #1, 463 #2 <i>Checkpoint 445, 448, 452</i> <i>Think About This Situation 441</i></p> <p>Teacher Resources: <i>Teaching Resources</i> Master 168</p>	<p>Given a graph of a linear, quadratic, or absolute value function involving a single transformation, students write its equation with no significant errors.</p> <p>Student Edition: 443 #2, 446 #1, 451 #7, 457 #2, 460 #1, 463 #2 <i>Checkpoint 445, 448, 452</i> <i>Think About This Situation 441</i></p> <p>Teacher Resources: <i>Teaching Resources</i> Master 168</p>	<p>Given a graph of a linear, quadratic, or absolute value function involving a single transformation, students write its equation with a few significant errors.</p> <p>Student Edition: 443 #2, 446 #1, 451 #7, 457 #2, 460 #1, 463 #2 <i>Checkpoint 445, 448, 452</i> <i>Think About This Situation 441</i></p> <p>Teacher Resources: <i>Teaching Resources</i> Master 168</p>	<p>Given a graph of a linear, quadratic, or absolute value function involving a single transformation, students write its equation with many significant errors.</p> <p>Student Edition: 443 #2, 446 #1, 451 #7, 457 #2, 460 #1, 463 #2 <i>Checkpoint 445, 448, 452</i> <i>Think About This Situation 441</i></p> <p>Teacher Resources: <i>Teaching Resources</i> Master 168</p>

Standard 5: Students use algebraic concepts, functions, patterns, and relationships to solve problems.

Benchmark Expectations	PROFICIENCY DESCRIPTOR			
	ADVANCED PROFICIENT	PROFICIENT	PARTIALLY PROFICIENT	NOVICE
MATHEMATICAL MODELING				
11-12.5.6. Determine and write an equation for a function (i.e., linear, quadratic, polynomial, absolute value, and exponential) that models a mathematical relationship	<p>Students determine and write an equation for a function with ease and with no errors.</p> <p>Student Edition: 431-433, 434 #1, 436 #3, 439 #3b 440 #2-#5, 447 #2, 453 #1, 455 #4, 461 #4</p> <p>Teacher Resources: <i>Teaching Resources</i> Master 168</p>	<p>Students determine and write an equation for a function with minimal difficulty and with no significant errors.</p> <p>Student Edition: 431-433, 434 #1, 436 #3, 439 #3b 440 #2-#5, 447 #2, 453 #1, 455 #4, 461 #4</p> <p>Teacher Resources: <i>Teaching Resources</i> Master 168</p>	<p>Students determine and write an equation for a function with difficulty and with a few significant errors.</p> <p>Student Edition: 431-433, 434 #1, 436 #3, 439 #3b 440 #2-#5, 447 #2, 453 #1, 455 #4, 461 #4</p> <p>Teacher Resources: <i>Teaching Resources</i> Master 168</p>	<p>Students determine and write an equation for a function with great difficulty and with many significant errors.</p> <p>Student Edition: 431-433, 434 #1, 436 #3, 439 #3b 440 #2-#5, 447 #2, 453 #1, 455 #4, 461 #4</p> <p>Teacher Resources: <i>Teaching Resources</i> Master 168</p>
RATES OF CHANGE				
<i>No further expectations</i>				