

Clovis Community College

Core Competencies Assessment 2010-2011—Area II: Mathematics—Algebra

Class: MATH 110 College Algebra

Faculty: Mary Caffey

Common Core No.: NMCCN MATH 1113

<u>Competencies</u> (Learning Outcomes Being Measured)	<u>Assessment Procedures</u> (Process/Instrument named or described – rubric attached)	<u>Assessment Results</u>	<u>How Results Will Be Used To Make Improvements</u>	<u>(Optional)</u> Recommendations/Goals/Priorities
<p>1. Students will graph functions Students should:</p> <p>a. Sketch the graphs of linear, higher-order polynomial, rational, absolute value, exponential, logarithmic, and radical functions.</p> <p>b. Sketch a graph using point plotting and analysis techniques, including basic transformations of functions such as horizontal and vertical shifts, reflections, stretches, and compressions.</p> <p>c. Determine the vertex, axis of symmetry, maximum or minimum, and intercepts of a quadratic equation.</p>	<p>The course objectives are distributed to instructors and students at the beginning of each semester. At the end of the semester students are given a course-wide comprehensive final exam correlated to the objectives. A benchmark of 70% is used to determine whether the competency has been met. Results of the assessment are from the spring 2011 semester.</p> <p>Ten objectives were measured for this competency.</p>	<p>The course-wide average on the final exam for Competency 1 was 72%.</p> <p>The average for Competency 1a and 1b was 75% and Competency 1c, 41%.</p> <p>Seven of the ten objectives used to measure Competency 1 were met.</p>	<p>We will continue to provide the following services in an effort to improve student performance on all competencies:</p> <ol style="list-style-type: none"> 1. Use out-of-class testing as a means to utilize class time more effectively. 2. Encourage students to utilize the services provided by the Math Learning Center in an effort to not only improve student performance but to also help improve retention. 3. Give instructors the option to use MyMathLab for homework and/or supplemental instruction/tutorial usage. 4. Supplemental review material covering low scoring objectives will be encouraged. <p>Individual class assessment results will be given to and reviewed with each instructor prior to the next semester so that the instructor (and their students) knows what</p>	<p>We continue to make improvements in College Algebra over the last three assessment cycles. We are above our 70% benchmark on three of the four main competencies which is up from reaching our benchmark on two competencies in 2010. Our overall goal is to improve Competency 4.</p>

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			<p>concepts cause the most difficulty and so that the instructor can plan their course accordingly.</p> <p>Competency 1c is assessed using a question that contains multiple parts. The student must answer all parts correctly in order to receive credit. This question will be re-evaluated so that more specific skills can be assessed.</p> <p>Fundamental characteristics of exponential and logarithmic functions will be emphasized so that students can improve sketching of these functions, including transformations.</p>	
<p>2. Students will solve various kinds of equations. Students should:</p> <ul style="list-style-type: none"> a. Solve quadratic equations using factoring, completing the squares, the square root method, and quadratic formula. b. Solve exponential and logarithmic equations. c. Solve systems of two or three linear equations. 	<p>Seven objectives were measured for this competency.</p>	<p>The course-wide average on the final exam for Competency 2 was 71%.</p> <p>The average for Competency 2a was 80%, Competency 2b was 75%, and Competency 2c, 71%.</p> <p>Four of the seven objectives used to measure Objective 2 were met.</p>	<p>If possible, more time will be devoted to solving equations containing logarithmic expressions.</p> <p>Two other areas needing improvement that are part of our objectives but not of the Area II Core Competencies for Algebra are: Solving equations containing rational exponents and solving third-degree or higher equations. More practice problems will be given to students in these two areas.</p>	

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<p>3. Students will demonstrate the use of function notation and perform operations on functions. Students should:</p> <ul style="list-style-type: none"> a. Find the value of a function for a given domain value b. Add, subtract, multiply, divide and compose functions. c. Determine the inverse of a function. d. Compute the difference quotient for a function. e. Correctly use function notation and vocabulary related to functions, i.e. domain, range, independent variable, odd, even symmetry, etc. 	<p>Nine objectives were measured for this competency.</p>	<p>The course-wide average on the final exam for Competency 3 was 77%.</p> <p>The average for Competency 3a was 84%, Competency 3b was 85%, Competency 3c was 62%, Competency 3d was 73%, and Competency 3e, 73%.</p> <p>Seven of the nine objectives used to measure Competency 3 were met.</p> <p>Of the nine objectives for this competency, all showed improvement.</p>	<p>The campus sections need to spend more time on what an inverse function is and what the graph looks like. Campus sections also need more practice finding the inverse of a function and determining whether a function is odd or even. These concepts will be reviewed several times during the semester as the concept of “function” is developed. Additional problems will be assigned as part of the review.</p>	
<p>4. Students will model/solve real-world problems. Students should:</p> <ul style="list-style-type: none"> a. Use and understand slope as a rate of change. b. Use equations and systems of equations to solve application problems. c. Apply knowledge of functions to solve specific application problems. d. Solve compound interest problems. 	<p>Eight objectives were measured for this competency.</p>	<p>The course-wide average on the final exam for Competency 4 was 64%.</p> <p>The average for Competency 4a was 35%, Competency 4b was 81%, Competency 4c was 41%, Competency 4d was 53%, Competency 4e was 84% and 72% for Competency 4f.</p> <p>Three of the eight objectives used to measure Competency 4 were</p>	<p>Students still do not understand the concept of slope as a rate of change and first introducing this concept in Math 107 might help. More material will continue to be developed to help students better understand this concept.</p> <p>The exam question for Competency 4c will be reviewed to determine if the problem needs to be replaced.</p>	

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e. Solve application problems involving maximization or minimization of a quadratic function. f. Solve exponential growth and decay problems.		met. The assessment results for Competency 4 showed a slight improvement from the last assessment cycle. Competency 4a showed a marked decrease in performance in both the campus and online sections, but especially in the campus sections. Competency 4c also showed a sharp decrease in performance.		

Faculty Member Completing Assessment: Mary Caffey _____

Name

June 20, 2011 _____

Date

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Phone Number

Clovis Community College

Core Competencies Assessment 2010-2011—Area II: Mathematics—Other College-Level Mathematics

Class: Math 113 Math for General Education

Faculty: Mrs. VK Bussen

Common Core No.: NMCCN (Math for General Education)

<u>Competencies</u> (Learning Outcomes Being Measured)	<u>Assessment Procedures</u> (Process/Instrument named or described – rubric attached)	<u>Assessment Results</u>	<u>How Results Will Be Used To Make Improvements</u>	<u>(Optional)</u> Recommendations/Goals/ Priorities
<p>1. Students will display, analyze, and interpret data. Students should:</p> <ul style="list-style-type: none"> a. Discriminate among different types of data displays for the most effective presentation. b. Draw conclusions from the data presented. c. Analyze the implication of the conclusion to real life situations. 	<p>Students were assessed from questions on an objective based test.</p>	<p>The class average for this competency on the exam was 80.5% with a median of 81.5. Scores revealed that application and basic procedures in statistics were the highest along with reading all types of graphs. The lowest scores were from the economics questions especially figuring CPI and rate of inflation.</p>	<p>Revised textbook assignments along with revised video and animated instruction will be used.</p>	
<p>2. Students will demonstrate knowledge of problem-solving strategies. Students should:</p> <ul style="list-style-type: none"> a. For a given problem, gather and organize relevant information. b. Choose an effective strategy to solve the problem c. Express and reflect on the reasonableness of the solution to the problem. 	<p>Students were assessed from questions on two objective based tests.</p>	<p>The class average on the exam over logic was 76% with a median of 75.5. The class average on the exam over conversions was 66.5% with a median of 61. Together this competency had a class average of 71% with a median of 68.5.</p>	<p>Revised textbook assignments along with revised video and animated instruction will be used.</p>	

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<p>3. Students will construct valid mathematical explanations. Students should: Use mathematics to model and explain real life problems.</p>	Students were assessed from questions on an objective based test.	The class average for this competency on the exam over mathematical modeling was 74.5% with a median of 73.	Revised textbook assignments along with revised video and animated instruction will be used.	
<p>4. Students will display an understanding of the development of mathematics. Students should: Recognize that math has evolved over centuries and that our current body of knowledge has been built upon contributions of many people and cultures over time.</p>	Students were assessed from a rubric based written assignment. (attached)	The class average on the written assignment was 61% with a median of 70.	More timely reminders will be implemented and more detailed instructions provided because the reason for low scores is two-fold: students who did not follow directions and those who did not turn in the written assignment.	
<p>5. Students will demonstrate an appreciation for the extent, application, and beauty of mathematics. Students should: Recognize the inherent value of mathematical concepts, their connection to structures in nature, and their implications for everyday life.</p> <p style="text-align: center;">End – Area II Other Math</p>	Students were assessed from questions on an objective based test and from a rubric based written assignment.	The class average for this competency on the exam over fractals & geometry was 67% with a median of 61. The class average on the written assignment 68% with a median of 70.	Revised textbook assignments along with revised video and animated instruction will be used.	

Faculty Member Completing Assessment: VK Bussen _____ June 29, 2011 _____ 575-769-4963 _____
Name *Date* *Phone Number*

All class assessment forms are due to your division chair by July 1.

Written Assignment Rubric for Math 113 (Bussen)		
Student Name:		
Criteria (points possible)	Earned Points	
Topic approved Date: _____		TOTAL: 50 to <u>45</u> A <u>40</u> B <u>35</u> C <u>30</u> D 29 & <u>Below F</u>
Format & Layout (10) 1" margins Indent paragraphs 5 spaces Double Space 12-size font Header Title Page (as shown on sample handout) (2) First Page Layout (3) No plastic covers Staple paper, left top corner		
Body (35) 3.5 pages minimum (-2 per missing page up to -6) No excessive spelling & grammar errors (5) Math topic (15) (specifics attached on sample handout) Personal reflections included (10)		NOTES:
Reference pages (5) As shown on handout (3) Cite references in paper (2)		

All class assessment forms are due to your division chair by July 1.

Clovis Community College

Core Competencies Assessment 2009-2010—Area II: Mathematics—Other College-Level Mathematics

Class: STAT 213

Faculty: Pamela Nelson-Ray

Common Core No.: NMCCN MATH 2314

<u>Competencies</u> (Learning Outcomes Being Measured)	<u>Assessment Procedures</u> (Process/Instrument named or described – rubric attached)	<u>Assessment Results</u>	<u>How Results Will Be Used To Make Improvements</u>	<u>(Optional)</u> Recommendations/Goals/ Priorities
<p>1. Students will display, analyze, and interpret data. Students should:</p> <ul style="list-style-type: none"> a. Discriminate among different types of data displays for the most effective presentation. b. Draw conclusions from the data presented. c. Analyze the implication of the conclusion to real life situations. 	<p>Results of the assessment are from spring 2011 semester.</p> <p>The course objectives are included in the syllabus and distributed to students at the beginning of each semester.</p> <p>Twenty objectives were measured on Competency 1 using various unit tests and a comprehensive final exam that contained free response and multiple-choice questions.</p>	<p>Competency 1, which measured the concrete values and basis of statistics, had the highest level of mastery (78% average over 20 objectives). The averages on the objectives ranged from 39% to 92%.</p>	<p>Objectives 1-5 (Estimate the standard deviation of a given frequency distribution” was the lowest (39%) and must be a focus of more intensive instruction.</p>	
<p>2. Students will demonstrate knowledge of problem-solving strategies. Students should:</p> <ul style="list-style-type: none"> a. For a given problem, gather and organize relevant information. b. Choose an effective strategy to solve the problem c. Express and reflect on the reasonableness of the solution to the problem. 	<p>Twenty-four objectives were measured on Competency 2 using various unit tests and a comprehensive final exam that contained free response and multiple choice questions.</p>	<p>Objective 2-7 and 2-22, “Calculate binomial probabilities” and “Determine the 5-number summary for a data set”, was low (50%). The average of the 24 objectives for Competency 2 was 65%, ranging from 50% to 85% mastery.</p>	<p>Objectives 2-7 and 2-22 must be a focus of more intensive instruction.</p>	

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<p>3. Students will construct valid mathematical explanations. Students should: Use mathematics to model and explain real life problems.</p>	<p>Fifteen objectives were measured on Competency 3 using various unit tests and a comprehensive final exam that contained free response and multiple choice questions.</p>	<p>Competency 3 had an average of 65% over 15 objectives. The averages ranged from 38% to 85%.</p>	<p>Competency 3 contains some of the more difficult concepts taught in beginning statistics and overall the results were “good”. However, more time and explanation will be spent on the application of statistical calculations. Focus must be emphasized on the meaning of calculations and stress that statistics are more useful when the knowledge can be applied to real-life problems.</p> <p>More time will be spent on conducting a hypothesis test for a claim when the standard deviation is</p>	

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Competencies (Learning Outcomes Being Measured)	Assessment Procedures (Process/Instrument named or described – rubric attached)	Assessment Results	How Results Will Be Used To Make Improvements	(Optional) Recommendations/Goals/ Priorities
			unknown (Objective 3-9, 38%)	
<p>4. Students will display an understanding of the development of mathematics. Students should: Recognize that math has evolved over centuries and that our current body of knowledge has been built upon contributions of many people and cultures over time.</p>	<p>Four objectives were measured for Competency 4 using various unit tests and a comprehensive final exam that contained free response and multiple choice questions.</p>	<p>Competency 4 had an average of 68%. The averages on each of the four objectives for this competency ranged from 50% to 87% (with Objective 4-1 and 4-2 being 50%).</p>	<p>Students should better understand that mean and standard deviation are the primary measures of statistics. Must stress the importance of these measures more frequently.</p> <p>More time will be spent on understanding the relationship that the level of significance and p-value have to probability when conducting a hypothesis test (Objective 4-2, 50%).</p>	

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<p>5. Students will demonstrate an appreciation for the extent, application, and beauty of mathematics. Students should: Recognize the inherent value of mathematical concepts, their connection to structures in nature, and their implications for everyday life.</p> <p>End – Area II Other Math</p>	<p>Four objectives were measured for Competency 5 using various unit tests and a comprehensive final exam that contained free response and multiple choice questions.</p>	<p>The mastery level for Competency 5 was 90%. The averages on each of the four objectives for this competency ranged from 88% to 93% (with Objective 5-2 being 80%).</p>	<p>Will continually emphasize and give examples of how our lives are impacted by statistical methods.</p> <p>More time will be spent on criticizing conclusions from a study by noting why conclusions may not be trustworthy (Objective 5-1, 88%).</p>	

Faculty Member Completing Assessment: Pamela Nelson-Ray _____
Name

June 21, 2011 _____
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All class assessment forms are due to your division chair by July 1.