



TO: UNLV Assessment Office (Bea Babbit, Angelina Hill)
 FROM: UNLV Department of Mathematical Sciences (Carryn Bellomo)
 CC: Department of Mathematical Sciences
 DATE: March 29, 2011
 RE: Calendar Year 2010 Assessment Report for Math 124

General Progress and Plan

Currently, we have an assessment plan in place for Fall 2010 for Math 124, in which we used common learning outcomes and common assessment questions for those learning outcomes. This report contains the summary of that data.

Outcomes and Results

Data was collected on the learning outcomes for Math 124 Fall 2010 only. Instructors were requested to list these outcomes on their syllabus. They are listed in Table 1.

Questions assessing these outcomes were generated, and all sections of the course gave the same 25 questions embedded in the final exam. While the questions themselves will be omitted from the report, they were linked to the outcomes in the following manner:

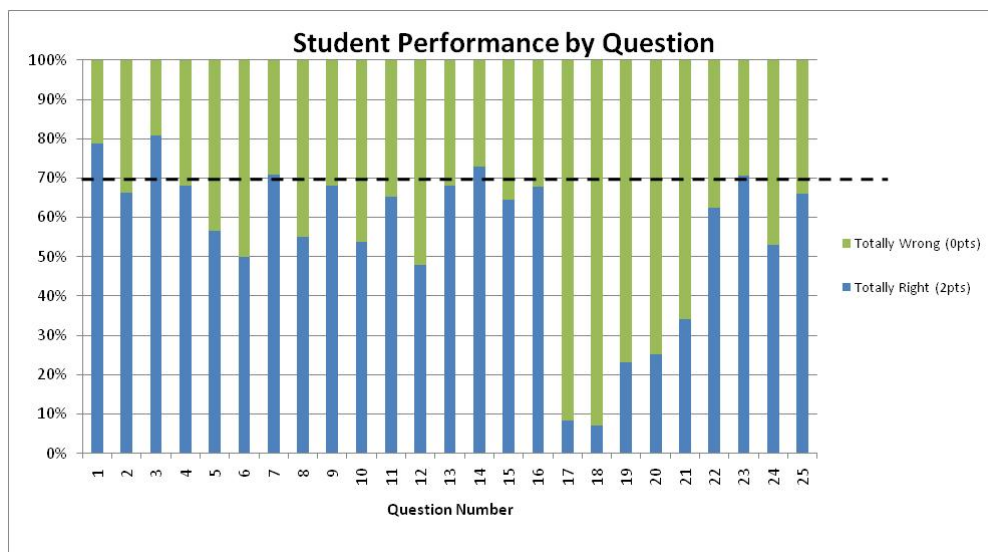
Table 1. Math 124 Learning Outcomes and Item Number (separated by Chapter)

Ch 1	1. Find the equation of a line given two points 2. Identify domain restrictions of square root and rational functions 3. Find the equation of a line that is parallel/perpendicular to another through a given point 4. Be able to evaluate a piecewise function for given inputs 5. Find the composition of two or more functions, along with the domain 6. - Identify when a given functional expression is even, odd or neither
Ch 2	7. Rewrite a given formula, solving for a specific variable 8. Define and use the quadratic formula to find the roots of a quadratic equation 9. Solve equations that are quadratic in form 10. Determine the characteristics of the graph of a quadratic (direction of opening, axis of symmetry, vertex, roots, y intercept) 11. Solve linear absolute value inequalities 12. Solve rational expressions 13. - Solve radical equations
Ch 3	14. Determine what happens to a given polynomial as the independent variable tends to positive and negative infinity 15. Use synthetic division to find the result of a polynomial divided by $x-c$ 16. Solve polynomial and rational inequalities
Ch 4	17. Find an inverse relation of a given relation 18. Solve exponential equations with different bases by utilizing logs 19. Solve log equations by first having to combine logs, then changing to exponential in form 20. Find half life or doubling time given context of model 21. Given equation, find half life or doubling time
Ch 5	22. Solve a system of two linear equations with two unknowns 23. Convert between a linear system and its matrix form
Ch 6	24. Solve a nonlinear system using elimination method
Ch 7	25. Write the terms of a recursive sequence given as a formula

Collectively, the data for Math 124 for Fall 2010 included a total of 436 registered students. Of the 436 students, 41 officially withdrew (9.5%), and 5 audited. A total of 90 (20.6%) did not attempt the final exam (including any withdraws). Since this is the first semester of data reporting, we will continue to monitor the withdraw rate of these courses, including the percentage of students who do not attempt to take the final exam. This 20.6% seems high, but further consideration is needed to make that determination.

When determining whether students meet the stated outcomes of the course, *the DMS had the expectation that 7 out of every 10 students would answer the questions related to these outcomes correctly.* As can be seen from Figure 1, we fall very short of that goal for 20 of the 25 questions.

Figure 1. Student Performance by Question

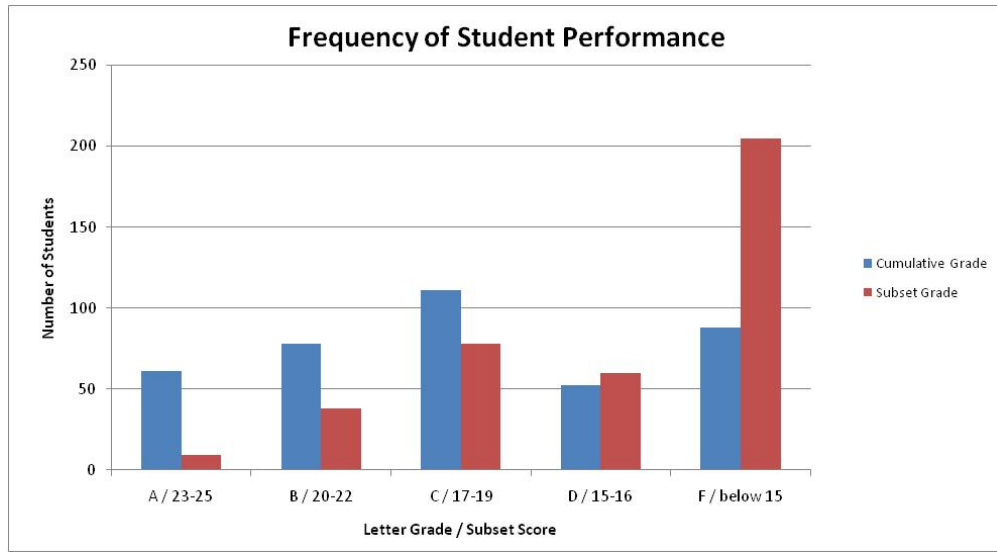


Of particular concern are questions 17 through 21, where less than 40% of students answered these questions correctly. These questions lie entirely in Chapter 4, and are critical components for future success in mathematics courses. We will continue to monitor these questions, and stress this chapter to our instructors Fall 2011.

Most alarming is Figure 2 (next page), which compares students overall grade in the course with their grade on the subset of questions. When considering the 390 students who earned a grade in the course (not W or Audit), 205 or 52.5% *failed* the common set of questions. Of these 205 students, 124 of them actually *passed* the course.

While the overall cumulative grade in the course does follow a somewhat normal distribution, we consider the subset of questions to be more reflective of what we consider to be successful to master the content of the course. This disconnect needs to be examined further. In an initial attempt to remedy this problem, please see the next section.

Figure 2. Frequency of Student Performance



Resulting Changes

We use part time instructors and graduate assistants to teach this course. As a result, our first step is to attempt to provide a common experience and grading scheme in all sections of the course. In an effort to maintain the academic standards, effective Spring 2010 all Math 124 courses have a mandated common course syllabus. This syllabus outlines (among other things):

- Course objectives, prerequisites and learning outcomes
- Homework policies. Now all sections use *MyMathlab* to collect homework, which is mandatory and counts 10% for each section
- Information on the final exam, which is cumulative for all sections

In addition, it is now mandatory that all instructors count the final exam as 30% of the students overall grade. This is our first attempt to determine the issue behind what appears to be grade inflation.

In addition, all instructors are now required to attend a mandatory presentation at the beginning of the semester, where we outline current policies and review a newly drafted memorandum of understanding. This MOU outlines everything we expect of our instructors, from maintaining office hours to effective teaching policies. In addition, we have a newly developed website that maintains all common syllabus frames, student and instructor expectations, homework collection methods and outlines of expected outcomes in each lower level course (including Math 124). Please visit <http://sciences.unlv.edu/Mathematics/Undergrad/CourseInfo.html> for further details.