

## **Quantitative Reasoning**

Students at PLNU can meet their mathematics requirement in one of three ways. Students majoring in STEM disciplines and some majoring in business take calculus (MTH144 or MTH164). These students generally meet this requirement in their freshman year. All other students take a course in quantitative reasoning called Problem Solving. This is taken in their junior or senior year. A series of final exam questions to assess key quantitative reasoning skills has been developed over the last several years. The outcomes are:

### *Learning: Informed by Our Faith in Christ*

- A. Students will demonstrate effective written and oral communication skills, both as individuals and in groups.
  - 1. Students will be able to formulate a mathematical model from a verbal description of a problem.
  
- B. Students will use quantitative analysis, qualitative analysis, and logic skills to address questions and solve problems.
  - 2. Students will be able to solve non-routine problems using logic and quantitative techniques.
  - 3. Students will be able to construct solutions to problems using computational techniques.

These outcomes are tested in ways that are appropriate for each of Calculus and Problem Solving. They are scored on a rubric using a 0-4 scale (with 0 as the lowest). The criterion for success is that the class average should be above a 2.5 for each question.

		Students will be able to formulate a mathematical model from a verbal description of a problem.	Students will be able to solve non-routine problems using logic and quantitative techniques.	Students will be able to construct solutions to problems using computational techniques.
MTH144	Spring 2010	3.27	3.17	3.37
MTH144	Spring 2011	2.05	1.88	3.10
MTH144	Summer 2011	3.67	2.83	3.50
MTH144	Spring 2012	1.79	2.77	3.46
MTH164	Fall 2009	2.92	2.85	1.62
MTH164	Fall 2010	2.48	2.52	1.24
MTH164	Fall 2011	1.30	2.93	3.02
MTH303	Fall 2007	2.19	3.14	2.22
MTH303	Spring 2008	3.32	2.82	3.42
MTH303	Fall 2008	3.63	3.30	3.50
MTH303	Spring 2009	3.37	3.07	2.93
MTH303	Fall 2009	2.78	2.78	3.22
MTH303	Spring 2010	3.16	3.26	3.61
MTH303	Fall 2010	3.28	2.73	3.55
MTH303	Spring 2011	2.66	2.79	2.96
MTH303	Fall 2011	3.02	3.23	3.25
MTH303	Spring 2012	2.69	2.95	2.71

**Scale Used:**

- 0 Unsatisfactory - Completely Incorrect
- 1 Low Satisfactory - Missed more than one key concept or step
- 2 Satisfactory - Missed one key concept or step
- 3 High Satisfactory - Made a minor error
- 4 Outstanding - Completely correct

**Comments:**

The question that we have been using to assess #1 for MTH144 and MTH164 has varied over time. It has produced inconsistent results. We will be changing this question to an interesting problem that more closely matches the financial literacy question in the assessment of #1 in MTH303.