

Faculty Notes

**MTH/215 Version 3**

Quantitative Reasoning I

***Copyright***

Copyright © 2016 by University of Phoenix. All rights reserved.

University of Phoenix® is a registered trademark of Apollo Group, Inc. in the United States and/or other countries.

Microsoft® and PowerPoint® are registered trademarks of Microsoft Corporation in the United States and/or other countries.

All other company and product names are trademarks or registered trademarks of their respective companies. Use of these marks is not intended to imply endorsement, sponsorship, or affiliation.

Edited in accordance with University of Phoenix® editorial standards and practices.

# Week 1

**Mathematics Fundamentals**

* 1. Convert between percentages, decimals and fractions.
  2. Preform addition, subtraction, multiplication and division on fractions.
  3. Solve problems using order of operations.
  4. Determine the solution to square root problems.
  5. Solve real-world application problems using mathematical fundamentals.

## Weekly Overview

This week students review and reinforce the fundamental math skills needed to be successful in quantitative reasoning. To explain their data, students need to convert numbers into different forms. These foundational skills are not only important to this course but also in life in general.

## Assignment: MyMathLab® Orientation

**Purpose**: This assignment helps students become acquainted with MyMathLab®. The assignment takes students through various types of problems, and helps them solve these problems to prepare for the course.

## Assignment: Week 1 Khan Academy Study Plan

**Purpose**: This assignment prepares students for using math within this class and their career. This study plan provides support for missing information in students’ knowledge of the basic mathematics needed to be successful in their everyday lives and careers.

**VERY IMPORTANT:** In Week 1 you need to create a Khan Academy Class so you can assist your students while they work in Khan Academy. For steps on how to create your class read “Creating a Class in Khan Academy” found in the faculty materials of the Khan Academy Study Plan assignment.

Grading Khan Academy: You may use the following guide for percentage of mission completion.

* 4 points – 26% - 33% of mission completion
* 3 points – 18% - 25% of mission completion
* 2 points – 10% - 17% of mission completion
* 1 point – 1% - 9% of mission completion
* 0 points – 0% or has not attempted any problems in the mission

You should encourage students to keep working on Khan Academy throughout the course as it will help them be successful in this course and the second quantitative reasoning course they will be taking.

**Note:** If a student submits the wrong screen shot for Khan Academy, request the student to resubmit the correct screenshot (refer them to the resource) within a reasonable amount of time.

## Assignment: MyMathLab® Week 1 Checkpoint

**Purpose**: Students demonstrate what they have learned this week in a formative assessment. Do not grade this assignment until the week has ended. Students now have unlimited attempts on the weekly checkpoints.

# Week 2

**Numeracy**

* 1. Evaluate exponential equations using the laws of exponents.
  2. Use estimations to determine solutions to problems.
  3. Use basic laws of exponents and scientific notation to solve problems.
  4. Solve application problems.

## Weekly Overview

This week students explore the world of large and quickly increasing numbers. Exponential growth has applications in finance, economics, and even biology. Throughout the week, students solve real-world application problems that are relevant to them. After completing this week’s problems, students should have a better understanding of how to solve real life problems with very large numbers and very small numbers as well as how to make assumptions before solving those types of problems.

## Assignment: Week 2 Khan Academy Study Plan

**Purpose**: This assignment continues to prepare students for using math within this class and their career. This study plan provides support for missing information in students’ knowledge of the basic mathematics needed to be successful in their everyday lives and careers.

Grading Khan Academy: You may use the following guide for percentage of mission completion.

* 4 points – 59% - 66%
* 3 points - 51% - 58%
* 2 points – 43% - 50%
* 1 point – 34% - 42%
* 0 points – 33% or less

You should encourage students to keep working on Khan Academy throughout the course as it will help them be successful in this course and the second quantitative reasoning course they will be taking.

**VERY IMPORTANT**: If a student does not meet the full 33% of completion for Week 1, but earns over 33% in Week 2, it is encouraged to change the student’s grade in Week 1 to 4 points.

**Note:** If a student submits the wrong screen shot for Khan Academy, request the student to resubmit the correct screenshot (refer them to the resource) within a reasonable amount of time.

## Assignment: MyMathLab® Study Plan for Week 2 Checkpoint

**Purpose:** This assignment allows students to get the necessary practice to fully comprehend the weekly learning objectives through guided instructions, videos, and links to the textbook. This assignment also allows students to show mastery in the mathematical skills learned throughout the week.

## Assignment: MyMathLab® Week 2 Checkpoint

**Purpose**: Students demonstrate what they have learned this week in a formative assessment. Do not grade this assignment until the week has ended. Students now have unlimited attempts on the weekly checkpoints.

# Week 3

**Proportional Reasoning**

1. Determine the ratio of the given data.
2. Use dimensional analysis of fractions to convert units.
3. Use percentages to describe change.
4. Use graphs to determine ratios.
5. Use proportional reasoning to determine percentage based outcomes.
6. Use appropriate problem solving techniques to solve application problems that have proportional and non-proportional relationships.
7. Solve application problems using proportional reasoning skills.

## Weekly Overview

Numbers come in many different forms. In Week 2, students analyzed very big numbers and very small numbers. This week students look at proportions of numbers, specifically ratios and fractions. Students determine if a problem is proportional or not, and they will solve the problems based on the information they are given.

They will also look at growth and decline in the form of percent. Percent is misunderstood and abused often, so it is important to have a clear grasp of how it is used (and also abused). Students will use different techniques to solve problems involving percentages.

## Assignment: MyMathLab® Study Plan for Week 3 Checkpoint

**Purpose:** This assignment allows students to get the necessary practice in order to fully comprehend the weekly learning objectives through guided instructions, videos, and links to the textbook. This assignment also allows students to show mastery in their mathematical skills.

## Assignment: Signature Assignment: Selecting a Topic

**Purpose:** In this assignment students think about what types of problems they will be solving in their careers using data. Students select a topic and the associated data to work with for their signature assignment due in Week 5.

## Assignment: MyMathLab® Week 3 Checkpoint

**Purpose**: Students demonstrate what they have learned this week in a formative assessment. Do not grade this assignment until the week has ended. Students now have unlimited attempts on the weekly checkpoints.

# Week 4

**Functions**

* 1. Describe the difference between linear and exponential functions.
  2. Analyze linear and exponential functions.
  3. Create linear and exponential models from data.
  4. Use linear and exponential models to draw conclusions.
  5. Explain the meaning of intercept in real-world scenarios.
  6. Use technology to calculate linear and exponential regression.
  7. Solve application problems.

## Weekly Overview

Our universe can be modeled with functions. The two most common functions we use are linear and exponential functions. This week students learn how to create those models from data and how to analyze the functions they create. This includes the use of modern software (Excel®) to help build visuals and create best fit lines with the best fit regression equation. Students apply what they have learned to their signature assignment to answer a question posed to them in Week 3 that has relevance to their degree program.

## Assignment: MyMathLab® Study Plan for Week 4 Checkpoint

**Purpose**: This assignment allows the student to get the necessary practice to fully comprehend the weekly learning objectives through guided instructions, videos, and links to the textbook. This assignment also allows students to show mastery in their mathematical skills.

## Assignment: MyMathLab® Week 4 Checkpoint

**Purpose**: Students demonstrate what they have learned this week in a formative assessment. Do not grade this assignment until the week has ended. Students now have unlimited attempts on the weekly checkpoints.

## Assignment: Signature Assignment: Creating Visuals from Data

**Purpose:** In this assignment students practice creating visuals using the data associated with the topic they chose in Week 3. This helps students determine an answer to the question associated with the topic they chose. It also shows students how they will be working with data in their own careers.

# Week 5

**Quantitative Reasoning**

* 1. Use Sets and Venn Diagrams to solve problems.
  2. Analyze data using Venn Diagrams.
  3. Rearrange formulas to isolate a specific variable.
  4. Solve for a variable in a given equation.
  5. Analyze arguments to determine validity.
  6. Solve real-world scenarios using quantitative reasoning skills.

## Weekly Overview

This week students visualize, analyze, and evaluate situations and arguments. Sets and Venn diagrams help classify groups.

Example: Are all fish classified as salmon? How about the other way around?

This week also reinforces the skills of rearranging and solving for a variable. These skills comes in handy when working with formulas in situations that students encounter in life. Students should be able to think critically about arguments and situations after completing this week’s assignments. Students also apply these critical thinking skills when finalizing their Signature Assignment.

## Assignment: MyMathLab® Study Plan for Week 5 Checkpoint

**Purpose**: This assignment allows students to get the necessary practice to fully comprehend the weekly learning objectives through guided instructions, videos, and links to the textbook. This assignment also allows students to show mastery in their mathematical skills.

## Assignment: MyMathLab® Week 5 Checkpoint

**Purpose**: Students demonstrate what they have learned this week in a formative assessment. Do not grade this assignment until the week has ended. Students now have unlimited attempts on the weekly checkpoints.

## Assignment: Signature Assignment Presentation

**Purpose:** In this assignment, students use skills they have learned throughout all five weeks of the course. Students apply what they have learned to solve a real-world problem that they could encounter in their future careers. Students analyze their data, draw conclusions, and present what they have learned.