



This course supports a performance assessment. It covers 6 competencies.

## Introduction

### Overview

As a teacher, you must be an agent for removing students' fears, dislike, and lack of confidence about learning mathematics. If you have been in the classroom already, you will find ways to expand your creativity and enhance your effectiveness as a teacher. Do all you can to soak up everything in your WGU mathematics education program. Teaching is all about learning.

### Getting Started

Welcome to Graphing, Proportional Reasoning, and Equations/Inequalities. All of the activities for this course are embedded within two learning resources: a VitalSource electronic textbook, and videos in Mathematics, Yes!. You should go through the course in the order written to prepare for each of the three performance tasks. It is highly recommended that you open the portfolio response sheet that is located within the Assessments tab when you begin the course. Fill it out as you work through the course content.

### Teaching Dispositions Statement

Please review the [Statement of Teaching Dispositions](#).

## Preparing for Success

The information in this section is provided to help you become ready to complete this course of study. As you proceed, you will need to be organized in your studies in order to gain competency in the indicated areas and prepare yourself to pass the final assessments.

### Learning Resources

In the following resources, you may read about No Child Left Behind (NCLB). Please be aware that as of December 2015, President Barack Obama replaced NCLB with the Every Student Succeeds Act (ESSA). This new act reauthorizes the 50-year-old Elementary and Secondary Education Act (ESEA), the nation's national education law and longstanding commitment to equal opportunity for all students. Although not required for this course, you are encouraged to familiarize yourself with the new act. For additional information, please visit the following links from the U.S. Department of Education:

- [Webinar recording](#)
- [Read the ESEA now referred to as the ESSA](#)
- [Fact sheet on ESSA](#)
- [Transition Letter](#)

### Electronic Textbook



The following textbook is available to you as an e-text within this course. You will be directly linked to the specific readings required within the activities that follow.

- Van de Walle, J. A., Karp, K. S., & Bay-Williams, J. M. (2009). *Elementary and middle school mathematics: Teaching developmentally*. Boston, MA: Allyn & Bacon. ISBN-13: 978-0136101420.

*Note: The text references MyEducationLab, which is available as an extra resource. This resource is not provided because it is not necessary for you to gain the competency needed to complete the assessment. You are welcome to purchase this resource if you feel it would be beneficial to your studies.*

## **Mathematics, YES!**

[Mathematics, YES!](#) is the primary learning resource for this course and guides the creation of your tasks.

As you work through the activities throughout Mathematics, Yes!, put yourself in the mindset of a student encountering these concepts for the first time. Consider the following questions:

- What might be confusing?
- What can you, as the teacher, do to make the topics more understandable?
- What prior experiences can you share?
- What hands-on manipulatives can you use to illustrate the concepts?

As you watch the teachers in the videos throughout Mathematics, Yes!, think about which strategies you see working.

- What would you do differently?
- Which games or activities might you modify?
- Are there any educational technologies that might be useful to include in your teaching strategies?

*All your lesson plans should be written at a graduate level, including complete sentences and proper spelling and grammar. Be sure to check your spelling and proofread your responses throughout all response sections. Portfolio response sheets and all of your responses will be submitted for grading.*

## **Supplemental Materials**

There might be times when you feel like you need more information or practice than what has been provided in the course. In addition to consulting with your Course Instructor when you need help, you can access optional and supplemental activities by using the word "supplemental" in the Course Search box. These activities can be enriching, but they are not essential for becoming competent.



## Pacing Guide

The pacing guide suggests a weekly structure to pace your completion of learning activities. It is provided as a suggestion and does not represent a mandatory schedule. Follow the pacing guide carefully to complete the course in the suggested timeframe.

### Week 1 and 2:

- Coordinate Pairs and Graphing

### Week 3 and 4:

- Ratio and Proportional Reasoning

### Week 5 and 6:

- Equations and Inequalities

## Contact a Course Instructor

Your Course Instructor is an important resource for you to take advantage of as you progress through your study of Graphing, Proportional Reasoning, and Equations/Inequalities. Your Course Instructor will help guide your learning, answer questions, and provide valuable information. Be sure to consult your Course Instructor frequently.

## Competencies

This course covers the following 6 competencies:

- **Competency 201.5.1: Coordinate Pairs and Graphing Knowledge**  
The graduate understands ordered pairs, and graphing points and lines in a Cartesian coordinate system, including the following key concepts: slope, intercepts, quadrants, coordinate plane, vertical and horizontal lines, function, and the relationship of ordered pairs to other areas of mathematics and allied fields.
- **Competency 201.5.2: Coordinate Pairs and Graphing Instructional Strategies**  
The graduate analyzes, critiques, modifies, develops and evaluates lessons and instructional strategies concerning coordinate pairs and graphing, analyzes common student errors and misunderstandings, and determines necessary prerequisite skills required for students to complete given activities concerning graphing.
- **Competency 201.6.1: Ratios and Proportional Reasoning Knowledge**  
The graduate understands ratios, proportions, and rates and uses this understanding to model and solve non-algebraic as well as algebraic problems.
- **Competency 201.6.2: Ratios and Proportional Reasoning Instructional Strategies**  
The graduate analyzes, critiques, modifies, develops and evaluates lessons and instructional strategies concerning ratios and proportional reasoning, analyzes common student errors and misunderstandings, and determines necessary prerequisite skills required for students to complete given activities concerning ratios and proportionality.
- **Competency 201.7.1: Equations and Inequalities Knowledge**  
The graduate understands how to solve linear and quadratic equations and linear inequalities and uses this knowledge to model and solve problems.



- **Competency 201.7.2: Equations and Inequalities Instructional Strategies**

The graduate analyzes, critiques, modifies, develops and evaluates lessons and instructional strategies involving equations and inequalities, analyzes common student errors and misunderstandings, and determines necessary prerequisite skills required for students to complete given activities involving equations and inequalities.

## Coordinate Pairs and Graphing

In this unit, you will focus on concepts related to coordinate pairs and graphing and how to teach these concepts effectively. The goal for this module is for you to develop content knowledge and explore instructional strategies for teaching coordinate pairs and graphing.

### Coordinate Pairs and Graphing Knowledge

Graphing concepts can be difficult for students at first, but the visual aspect can give students a deeper understanding of mathematical concepts.

#### Learning Activities for Coordinate Pairs and Graphing Knowledge

Review the following from [Elementary and Middle School Mathematics: Teaching Developmentally](#):

- Chapters 1– 4

#### Coordinate Pairs and Graphing Instructional Strategies

View the following video:

- ["Coordinate Pairs and Graphing: Overview."](#)

View the following video:

- ["Coordinate Pairs and Graphing: A Lesson on Coordinate Pairs"](#)

View the following video:

- ["Coordinate Pairs and Graphing: The Expert Evaluation"](#)

View the following video:

- ["Coordinate Pairs and Graphing: A Lesson on Linear Equations"](#)

### Performance Assessment

Complete and submit Task 1: "Coordinate Pairs and Graphing" portfolio response sheet. This performance assessment is located in Taskstream and can be accessed from the Assessment tab.



If you do not pass, contact your Course Instructor.

## **Ratios and Proportional Reasoning**

In this unit, you will learn key concepts related to ratio and proportional reasoning and how to teach them effectively. The goal for this unit is to help you develop and expand your understanding of ratios and proportional reasoning.

### **Ratios and Proportional Reasoning**

Students often understand the concept of ratios and proportions but might have difficulty with the calculations involved in finding equal ratios. By connecting the content to what they have learned in number sense, integers, and fractions, you can help your students be successful.

#### **Learning Activities for Ratios and Proportional Reasoning**

Read the following in [\*Elementary and Middle School Mathematics: Teaching Developmentally:\*](#)

- Chapter 18

View the following video:

- ["Ratio and Proportional Reasoning: Overview"](#)

View the following video:

- ["Ratio and Proportional Reasoning: A Lesson on Ratios."](#)

Examine the following lesson plan:

- ["Measurement: How Many Noses are in Your Arm?"](#)

View the following video:

- ["Ratio and Proportional Reasoning: The Study of Ratios"](#)

Examine the following activity:

- ["Cooking By Numbers"](#)

### **Performance Assessment**

Complete and submit Task 2: "Ratio and Proportional Reasoning" portfolio response sheet. This performance assessment is located in Taskstream and can be accessed from the Assessment tab.

If you do not pass, contact your Course Instructor.

## **Solving Equations and Inequalities**

In this unit, you will learn key concepts related to equations and inequalities, and how to teach



those concepts effectively.

## **Equations and Inequalities**

Algebraic reasoning must begin in the early grades, and a strong understanding of equations and inequalities is the foundation of algebraic reasoning.

### **Learning Activities for Equations and Inequalities**

Read the following in [\*Elementary and Middle School Mathematics: Teaching Developmentally.\*](#)

- Chapter 14

View the following video:

- "[Equations and Inequalities: Overview.](#)"

View the following video:

- "[Equations and Inequalities: A Lesson on Equations and Inequalities](#)"

View the following video:

- "[Equations and Inequalities: The Study of Equations](#)"

## **Performance Assessment**

Complete and submit Task 3: "Solving Equations and Inequalities" portfolio response sheet. This performance assessment is located in Taskstream and can be accessed from the Assessment tab.

If you do not pass, contact your Course Instructor.

## **Final Steps**

Congratulations on completing the activities in this course! If you have not already completed the assessments, schedule and complete them now.