



Teaching Mathematical Common Core Standards Successfully

Mathematical Practice #2

Reason Abstractly and Quantitatively

EDUO 9543 One Semester Unit/Credit

Instructor: Julie Sweetman

jsweetman@dominicancaonline.com

Other courses in this series

- Mathematical Practice #1 – Make Sense of Problems and Persevere in Solving Them
- Mathematical Practice #3 – Construct Viable Arguments & Critique the reason of others
- Mathematical Practice #4 - Model with Mathematics
- Mathematical Practice #5 - Use Appropriate Tools Strategically
- Mathematical Practice #6 - Attend to Precision
- Mathematical Practice #7 - Look for and Make Use of Structure
- Mathematical Practice #8 – Look for and Express Regularity in Repeated Reasoning

Course Description

This course guides the teacher towards information that will help in the successful preparation, implementation and evaluation of a classroom lesson that fulfills mathematical practice #2 (Reason Abstractly and Quantitatively.)

Course Goals

Upon completing the class on **Common Core Standard of Mathematical Practice #2**, the teacher will have:

1. developed a greater understanding of the Standard
2. created a teaching lesson plan that teaches the standard
3. critiqued the overall experience

Course Objectives

Relating to the Common Core **Mathematical Practice #2 Standard**, the teacher will be able to:

1. explain the standard to people of varying abilities, ages & education
2. use different materials to teach the standard

3. develop an effective time line within a teaching plan
4. create assessment processes that evaluates the ability of the students to grasp the standard
5. analyze this class experience as to how well it helped prepare to teach the mathematical standard

Materials Needed –No text book is required but the following six websites are required to read and study

Overall information about the eight mathematical standards

- <http://www.corestandards.org/Math/Practice/>
- <http://www.scholastic.com/teachers/top-teaching/2013/03/guide-8-mathematical-practice-standards>
- <http://www.buncombe.k12.nc.us/Page/37507>

Specifically about mathematical practice #2 standard

- <http://www.insidemathematics.org/common-core-resources/mathematical-practice-standards/standard-2-reason-abstractly-quantitatively>
- <http://thinkmath.edc.org/resource/mp2>
- <https://www.google.com/search?q=mathematical+practice+2&biw=953&bih=818&tbm=isch&tbo=u&source=univ&sa=X&ei=i3vVVM2-C-zisATA2oLoAg&sqi=2&ved=0CE4QsAQ>

Grading Rubric

Exceeds Expectations Exemplary: A+ to A-	Meets Standards B+ to B-	Unacceptable: resubmit
<p>Excellent understanding of the mathematical standard is shown</p> <p>Lesson plan is thorough and teaches the standard and provides students the opportunity to use the principals of the standard outside the classroom</p> <p>The assessment processes well easily evaluate the degree in which the students understand the mathematical standard and will indicate specific areas that need improvement</p> <p>The class evaluation is thoughtful , meaningful and memorable</p>	<p>Understanding of the mathematical standard is shown</p> <p>Lesson plan is thorough and teaches the standard</p> <p>The assessment processes evaluates the degree in which the students understand the mathematical standard</p> <p>The class evaluation is adequate</p>	<p>Shows little or no understanding of the mathematical standard</p> <p>Lesson plan is incomplete and does not adequately teach the standard</p> <p>The assessment processes do not relate to the understanding of the mathematical standard</p> <p>The class evaluation is disorganized and meaningless</p>

Assignments

A. Showing Understanding

After reading and studying the following websites answer A1, 2 & 3

- <http://www.corestandards.org/Math/Practice/>
- <http://www.sandi.net/Page/50909>
- <http://www.buncombe.k12.nc.us/Page/37507>
- <http://michellef.essdack.org/?q=node/157>
- <http://www.insidemathematics.org/common-core-resources/mathematical-practice-standards/standard-2-reason-abstractly-quantitatively>
- <http://thinkmath.edc.org/resource/mp2>

Write out a brief but appropriate explanation of Mathematical Practice #2 to each of the following:

A1. the students in your class

A2. a parent of one of your students

A3. a colleague

After looking over the following website, answer A4, 5 & 6

- <https://www.google.com/search?q=mathematical+practice+2&biw=953&bih=818&tbm=isch&tbo=u&source=univ&sa=X&ei=i3vVVM2-C-zisATA2oLoAq&sqi=2&ved=0CE4QsAQ>

A4 - A6 Choose three pictures that (for you) best describe Mathematical Practice #2 and tell why you chose each of the three.

A7. Which one of the seven website resources helped you the most in understanding standard #2 – explain why?

B Planning

Follow the template below #1-6 to create a mathematical practice #2 standard teaching plan.

1. Description of Students/Class

Describe the students for whom this lesson plan is intended. This may be for an actual group of students, or it may be for a future class. This description should include some or all of the following:

- B1.1 Academic and language abilities,
- B1.2 Learning modalities,
- B1.3 Different intelligences,
- B1.4 Cultural differences
- B1.5 Maturity

2. Classroom Management

B2.1 what classroom management and community building strategies will you use for providing a safe classroom that will encourage risk taking?

B2.2 what strategies will you use to increase a sense of belonging and ownership for students?

3. Elements of the Plan

Identify elements listed below that will be used in this teaching plan. Provide description and examples of how each of them will be woven throughout the plan and how each relates with the others in teaching the math standard. In addition, relate each element to B.1 (students), & B.2 (management). If any of the elements listed (except B4.5) below are not used explained why

- B3.1 Text books
- B3.2 Materials and resources (print, video, audio, online, visual, other)
- B3.3 Activities
- B3.4 Discussion
- B4.5 Other

4. Assessment

- B4.1 strategies used to assess pre-knowledge
- B4.2 ongoing techniques used to assess each of the elements as the unit progresses.
- B4.3 culminating assessment methods and or activities

B4.4 how will you use the results of the assessments in 5.1-3 to design future classroom planning?

5. Calendar

Create a calendar (or pacing guide) that details sequence, flow, and timing as you put all the sessions of your teaching plan together. Explain the calendar as it relates specifically to **Elements** and **Assessment**.

6. Instructions

Write out instructions so another teacher can easily follow this unit plan without additional communication.

C. Critique the Overall Experience

You have become known for your ability in teaching the Common Core Mathematical Practice #2 Standard. Your professional organization has asked you to be in a panel of eight teachers. Each would take one Mathematical Practice Standard and give a short talk about it. For assignment **C** write the introduction and conclusion of your address and outline the body of your talk and relate how this class helped you to become a recognized expert.

C1. introduction

C2. outline of the body

C3. conclusion