

Self-Reflective Response

As a math teacher, I am confident in my ability to prepare my students to solve math problems. As a student, I have successfully completed many writing assignments in courses such as English, History and Science. Unfortunately, I have never had to complete writing assignments in math as a student and have not seen them included in the math curriculum that I have taught. Decades ago, I saw a math lab workbook in the teacher's kit at school. However, the message from our superiors at that time was to "teach to the middle." Textbooks collected dust on the shelves while photocopied worksheets became the preferred method of math instruction.

What are you doing well? My vision for my developmental math course is to create tasks that will require students to download their thought processes in writing. I can then help them (or their peers can help) organize their thinking so they produce a written version of their problem-solving strategy using their own words. Currently, I do well with having students verbally explain the steps they take to solve problems and to state any challenges or questions they had along the way. Usually, once one student states their challenges other students chime in to say that they also struggled at the same point or struggled at a different point. Prior to the discussion, I inform the class that I will be silent during the discussion so that they can communicate with their peers. The conversation helps provide the language that students need to understand the concepts. After our discussion, I remind students to take a few minutes to write in words what was discussed. These student-led discussions also serve to build community. I inform students of the benefits of forming study groups with their online peers in order to discuss challenging math concepts outside of class. By increasing their discussions, they acquire more language to use in their writing.

In which areas would you like to improve? An area of improvement for me is to provide a forum for students to begin writing the thoughts that were shared during our discussions. So far I have used the Discussion Board to provide resources and to allow students to post questions and communicate with their classmates. I will begin creating prompts in the Discussion Board for students to write their discoveries and struggles within each unit. I would also like to create erroneous writing samples where a fictional student has written their thought processes. Students could then practice reading someone else's written response in order to identify the errors in their math thinking. In addition to erroneous samples, I can provide exemplars to show students a model of how to structure their writing and a detailed rubric to outline exactly what I will look for in their written work.

What are the biggest obstacles impacting your ability to help your students become better writers? The biggest obstacle impacting my ability to help my students become better writers is creating authentic writing tasks for math. In all my years of teaching math, the curricular focus has been on solving problems and providing only a brief written justification. In Geometry, students create two-column proofs to provide a more in-depth justification. Unfortunately, none of the tasks provided in the curriculum require extensive writing. So I find myself in a unique position to create writing tasks for math but not having models of how to do it successfully. As mentioned

above, I recall math lab workbooks from my early years of teaching that required lengthy written responses. I will research the availability of these types of workbooks or more current math writing tasks online to see if there are materials and tasks that can be easily integrated into my courses.

CCBC, Spring 2021

School of Mathematics and Science

Mathematics Department

Pre-Algebra, MATH 081 Section ZDA, CRN 22368

Description

MATH 081 – Pre-Algebra begins with a review of integers and rational numbers and then proceeds to the study of algebraic expressions, first degree equations and inequalities in one variable, formulas, proportions, and percent. Another major focus is linear equations, which covers graphing points, determining slope, writing linear equations, and graphing lines. Successful participation in and completion of this course requires that student skills be at the secondary level.

Prerequisite

ASE MATH or a satisfactory score on the mathematics placement test.

Co-requisite

ACLT 052 or ESOL 044

I. Basic Course Information

A. **Instructor's Name:** Tasheena Harris

B. **Office Number:** Virtual (Teams)

Email Address: harr66804@ccbcmd.edu

C. **Office Hours:**

Wednesdays 12:10 – 1:10 p.m. on Teams

Expected Response Time:

Within 24 hours on weekdays

D. **Mathematics Department Phone Number:**

Catonsville 443-840-4251

E. **Class Meeting Day(s), Time(s), Location(s):**

Instruction is offered **remotely** during the scheduled days and times indicated below (synchronously). A physical presence on-campus is not required. This course must be accessed from any location using a computer with internet access and a camera feature.

Mondays, Wednesdays & Fridays 10:10 a.m. – 12:10 p.m. 3/24 – 5/14

F. **Statement of Student Out of Class Work Expectations:**

This is a three-credit/billable hour course offered over 7 weeks. You are expected to complete at least 12 hours of work per week outside of class including reading, course preparation, homework, studying, etc.

G. **Materials:**

Textbook: Students can access the [Math 081 Pre-Algebra Textbook, Fall 2017 Edition](#) online for free through Blackboard or through CCBC's website. A printed copy of the textbook can be purchased from CCBC's bookstore.

Calculator: Calculator use in this course is permitted during class and assessments, but not required. Basic, scientific, and graphing calculators are suitable. Calculators with advanced capabilities, such as the TI-89 or TI-92, are not permitted during examinations. Cell-phone calculators, or other devices with internet capabilities, are also prohibited. When completing assessments, all algebraic steps must be shown to receive full credit.

H. **Technical Requirements:**

To learn in a remote format at CCBC, you will need:

- A reasonable level of computer literacy.
- Regular access to a reliable computer desktop, laptop, netbook, etc.
 - Mobile devices cannot be used.
 - Must have a camera feature.
- A stable broadband Internet connection.
- A CCBC email account (free when you enroll).
- Access to Blackboard learning management system.
- Respondus Lockdown Browser (accessible through Blackboard)
- Access to MyOpenMath
 - Course ID: 106165
 - Enrollment Key: 22368

For the full list of technical requirements, check CCBC's [Online Learning Technical Requirements](#).

Students must notify the instructor immediately if technical difficulties occur at any time during the semester. Have a plan in place for backup arrangements if technical difficulties occur.

II. **Course Goals Overall**

A. **Course Objectives as listed on the official Common Course Outline**

Upon completion of this course the student will be able to:

1. perform arithmetic operations on rational numbers;
2. evaluate the absolute value of rational numbers;
3. evaluate rational numbers with exponents;
4. evaluate roots of perfect squares, cubes, and fourths;
5. simplify arithmetic expressions using order of operations;
6. evaluate algebraic expressions;

7. simplify algebraic expressions;
8. solve first degree equations in one variable;
9. solve first degree inequalities in one variable;
10. graph first degree inequalities in one variable on a number line;
11. evaluate and solve formulas;
12. solve proportions;
13. solve percent problems;
14. plot points on the coordinate plane and write ordered pairs for plotted points;
15. determine if an ordered pair is a solution of a linear equation;
16. determine the x and y intercepts of a line;
17. interpret and calculate slopes of lines;
18. determine equations of lines;
19. graph linear equations;
20. solve systems of linear equations by graphing; and
21. solve application problems by translating English sentences into algebraic equations and solving them.

B. Major Topics as listed on the official Common Course Outline

1. Real Numbers
 - a. Operations with Integers
 - b. Operations with Rational Numbers
 - c. Absolute Value
 - d. Numbers in Exponential Form
 - e. Roots of Perfect Squares, Cubes, and Fourth Roots
 - f. Order of Operations
2. Algebraic Expressions
 - a. Variables
 - b. Evaluating Algebraic Expressions
 - c. Simplifying Algebraic Expressions
 - d. Translating English Phrases to Algebraic Expressions
3. First Degree Equations in One Variable
 - a. Solving One and Two Step Equations
 - b. Solving Multi-Step Equations
 - c. Solving Equations with Rational Numbers
 - d. Application Word Problems
4. First Degree Inequalities in One Variable
 - a. Solving Inequalities
 - b. Graphing Inequalities
 - c. Interval Notation
 - d. Application Word Problems
5. Applications of Equations
 - a. Evaluating and Solving Formulas
 - b. Proportion Problems
 - c. Percent Problems
6. Linear Equations
 - a. Points on the Rectangular Coordinate System

- b. Intercepts of a Line
- c. Slope of a Line
- d. Equation of a Line
- e. Graph of a Line
- f. Solving Systems by Graphing
- g. Application Problems

C. Rationale

Mathematics is the foundation of science and technology. Everyone needs mathematics in order to function in society and the world of work, therefore, this course is designed to reflect the understanding that mathematical literacy is important for all students to possess and apply. The curriculum, based on the National Council of Teachers of Mathematics Standards and the National Common Core Mathematics Curriculum as adopted by MSDE, will allow our students to explore, discover, analyze and apply mathematics. Students will learn from a variety of teaching techniques and strategies which utilize all modes of learning, involving various resources, hands-on activities, and the use of computer technology and calculators. Upon completion of this course, students will be better prepared to function in a global society through the use of problem solving, communication, and reasoning by integrating the mathematical concepts across the curriculum areas in real-world situations.

This is a writing-infused math course. In addition to understanding math concepts we will learn to communicate our understanding of those concepts through writing activities. The objective is for math to become more than a series of steps and formulas. By the end of this course you should be able to explain the “why” of the mathematical steps and formulas.

III. Evaluation

A. Requirements

Requirements: out-of-class assignments, tests, final exams

B. Instructor’s Grading Policy

The course grade will be determined as follows:

- a. MyOpenMath assignments are worth 50% of your grade.
- b. Proctored assessments (tests/quizzes) are worth 20% of your grade.
- c. The final exam is worth 30% of your grade.
- d. The final exam review is online at: <https://www.cbcmd.edu/Programs-and-Courses/Schools-and-Academic-Departments/School-of-Mathematics-and-Science/Mathematics/Final-Exam-Reviews.aspx>
- e. All Assessments will be proctored through Respondus. You will need to install Respondus on your device prior to our first exam.

| Course Requirements | Weight/Points |
|------------------------|---------------|
| MyOpenMath Assignments | 50% |

| Course Requirements | Weight/Points |
|-----------------------|---------------|
| Proctored Assessments | 20% |
| Final Exam | 30% |
| Total | 100% |

Exam Dates

- Monday, April 12th – Unit 1 Exam
- Wednesday, April 21st – Unit 2 Exam
- Friday, April 30th – Unit 3 Exam
- Friday, May 14th – Final Exam (NOTE: no exam for Unit 4)

A final course grade will be assigned using the following criteria:

| Course Average | Course Grade |
|--------------------------------|--------------|
| At least 90% | A |
| At least 80% and less than 90% | B |
| At least 70% and less than 80% | C |
| Less than 70% | F |

C. Mathematics Department Attendance Policy

1. You are expected to attend all scheduled classes.
2. Attendance is critical to student success in college.
3. Satisfactory attendance is defined to be at most six hours of unexcused absences.
4. Documentation of the reason for your absence(s) may be required.
5. The instructor may count each unexcused tardy arrival as an absence and each unexcused early departure as an absence.

D. Mathematics Department Audit Policy

Students may change from credit to audit only during the published 50% refund period, as indicated in the CCBC academic calendar. Students who audit are required to attend class, participate in course activities, and complete assignments (except for tests and the final exam) in accordance with instructor guidelines and due dates. For students who do not meet these requirements, the instructor may change their grade from AU to W.

E. Other Material Related to Evaluation

If you are absent on the day of an exam, you will have one opportunity to make it up during the scheduled makeup session. If you miss the make-up session, you will earn a 0% on that exam.

IV. Course Procedure

A. Course Related Policies and Procedures

- a. Students must not receive or make phone calls (or have side conversations with others in your environment) within the online classroom. Please turn off your camera and microphone before conducting other conversations.
- b. In order to be prepared for each lesson, students will need to complete assignments (assigned video lessons, problems...) prior to attending class.
- c. Missed assessments must be made up during the scheduled makeup session.
- d. This course will utilize small group collaboration, whole-group discussions, student-led instruction... in class. Please respect the learning environment using the following strategies:
 - (a) Listen to other students' questions, comments, explanations...
 - (b) Include all group members in the dialogue
 - (c) Be patient with students who need additional assistance
 - (d) Use supportive, encouraging language
 - (e) Prepare a list of questions/concerns with specific concepts or problems in advance (Ex. In problem #17 I know that I need a common denominator of 20 to add the fractions, but I don't know how to rewrite the new fractions.)

B. College-wide Syllabus Policies

Refer to the Syllabus Tab on the [MyCCBC](#) page for college-wide syllabus policies such as the Code of Conduct related to Academic Integrity and Classroom Behavior or the Audit/Withdrawal policy.

C. Contact Information for Course-Related Concerns

Students should first attempt to take concerns to the faculty member. If students are unable to resolve course-related concerns with the instructor, they should contact the Mathematics Department Coordinator at the Catonsville Campus: Neeraj Sharma at 443-840-4826 or NSharma@ccbcmd.edu.

D. Course Calendar/Schedule and Final Exam Schedule

Refer to the CCBC website for the complete [Academic Calendar and Final Exam schedule](#) for the semester.

E. Final Exam

The Final Exam date/time for this course is Friday, May 14, 2021 10:10 a.m. – 12:10 p.m.

This syllabus may be changed with notification to the class.

Links in this document:

[Math 081 Pre-Algebra Textbook, Fall 2017 Edition](#)

<https://www.ccbcmd.edu/Programs-and-Courses/Schools-and-Academic-Departments/School-of-Mathematics-and-Science/Mathematics/MATH-081-Textbook.aspx>

[Online Learning Technical Requirements](#)

<http://www.ccbcmd.edu/Programs-and-Courses/CCBC-Online/Online-Services-Resources/Online-Learning-Technical-Requirements.aspx>

[MyCCBC](#)

https://myccbc.ccbcmd.edu/layouts/ccbc/default.aspx?ReturnUrl=%2f_layouts%2fAuthenticate.aspx%3fSource%3d%252F&Source=%2F

[Academic Calendar and Final Exam schedule \(our Final Exam is Friday, May 14th\):](#)

<http://www.ccbcmd.edu/Resources-for-Students/Registering-for-Classes/Academic-Calendar.aspx>

The following problem was assigned to students in Math 081 from lesson 2-3 in the online textbook:

- 3. A reception hall does not charge a rental fee if at least \$3500 is spent on food. For their wedding reception at the hall, a couple plans to serve a dinner that costs \$28 per person. How many people must attend the reception for the couple to avoid paying the rental fee?*

Revised Assignment Instructions:

Imagine that you are the sales coordinator at a reception hall. Your reception hall does not charge a rental fee of \$500 if at least \$3500 is spent on food. The couple plans to serve a dinner that costs \$28 per person. As coordinator, you must write a single-page, flier-style proposal explaining the costs to host their wedding at your facility. It is your company’s policy to provide a mathematical formula and visuals (a table and a chart) that potential customers can use to calculate their rental fee according to the number of people who are served. Be sure to include the following information in your proposal:

- Dinner cost per person
- A mathematical formula the couple can use to calculate their rental costs
- The step-by-step calculation showing how many people must attend for the rental fee to be waived.
- An input-output table showing several combinations of people served and rental costs
- A coordinate graph showing the feasibility area to have the rental fee waived

RUBRIC: REVISED ASSIGNMENT

| | 3 | 2 | 1 | 0 | Score |
|------------------------------|--|---|---|--|--------------|
| Style & Content | Submission is a single-page flier that includes the dinner cost per person AND an explanation of the costs to host their wedding at the facility. | Submission is a single-page flier that includes the dinner cost per person OR an explanation of the costs to host their wedding at the facility. | Submission is NOT a single-page flier but includes the dinner cost per person OR an explanation of the costs to host their wedding at the facility. | Submission is NOT a single-page flier and does NOT include the dinner cost per person OR an explanation of the costs to host their wedding at the facility. | |
| Mathematical Formula | Includes a completely accurate equation/inequality to represent the scenario. | Includes a mostly accurate equation/inequality to represent the scenario. | Includes a partially accurate or inaccurate equation/inequality to represent the scenario. | Does not include an equation/inequality to represent the scenario. | |
| Step-by-Step Solution | Includes a completely accurate step-by-step solution showing how many people must attend for the rental fee to be waived. | Includes a mostly accurate step-by-step solution showing how many people must attend for the rental fee to be waived. | Includes a partially accurate or inaccurate step-by-step solution showing how many people must attend for the rental fee to be waived. | Does not include a step-by-step solution showing how many people must attend for the rental fee to be waived. | |

| | | | | | |
|---------------------------------|---|---|---|--|--|
| Input-Output Table | Includes a completely accurate step-by-step input-output table showing several combinations of people served and rental costs (at least two combinations with the rental fee charged AND two combinations with the rental fee waived). | Includes a mostly accurate step-by-step input-output table showing several combinations of people served and rental costs (at least one combination with the rental fee charged AND one combination with the rental fee waived). | Includes a partially accurate or inaccurate step-by-step input-output table showing one combination of people served and rental costs (one combination with the rental fee charged OR one combination with the rental fee waived). | Does not include an input-output table showing one or more combinations of people served and rental costs. | |
| Coordinate Graph / Chart | Includes a completely accurate coordinate graph/chart showing the feasibility region to have the rental fee waived. | Includes a mostly accurate coordinate graph/chart showing the feasibility region to have the rental fee waived. | Includes a partially accurate or inaccurate coordinate graph/chart showing the feasibility region to have the rental fee waived. | Does not include a coordinate graph/chart showing the feasibility region to have the rental fee waived. | |
| TOTAL | | | | | |

Informal Writing Assignment

For this 30-point writing assignment, use Canva (or other tool) to design an infographic to briefly describe the types of math that are used in your desired career field. This assignment will allow you to research your field to learn the types of math you may need to focus on while completing your college math courses.

What to Include:

- At least 4 math concepts that are used in your desired career field
- Layout: Title and a dedicated “bubble” or section for each of the 4 math concepts (12 points)
- Content: A brief description explaining how each concept is used within your field (12 points)
- Visuals: Graphics and images related to your career field (3 points)
- Correct spelling and grammar (3 points)

Resources:

You can use the resources provided below or search for your own. There are no requirements for which program you need to use to create the infographic.

<https://www.canva.com/create/infographics/>

Free online infographic creator

<https://www.youtube.com/watch?v=W1v3ILOnfGs>

How to Create Infographics in Minutes (Canva)

<https://www.youtube.com/watch?v=bX4TWRMZBIE>

How to Create an Infographic in PowerPoint

RUBRIC: INFORMAL WRITING

| | 12 | 9 | 6 | 3 | 0 | Category Totals |
|----------------|--|--|--|--|--|-----------------|
| Layout | Includes 4 distinct topics with a title and a section/bubble for each of the 4 topics. | Includes 3 distinct topics with a title and a section/bubble for each of the 3 topics OR Includes 4 distinct topics with most parts of a title and a section/bubble for the 4 topics. | Includes 2 distinct topics with a title and a section/bubble for each of the 2 topics OR Includes 3 distinct topics with most parts of a title and a section/bubble for the 3 topics. | Includes 1 topic with a title and a section/bubble for the topic OR Includes 2 distinct topics with most parts of a title and a section/bubble for one of the 2 topics. | Does not include a topic OR Includes 1 topic with parts of a title and a section/bubble for the topic. | |
| Content | Includes a brief description in each of the 4 sections/bubbles explaining how each concept is used within your career field. | Includes a brief description in each of 3 sections/bubbles explaining how each concept is used within your career field. | Includes a brief description in each of 2 sections/bubbles explaining how each concept is used within your career field. | Includes a brief description in only 1 section/bubble explaining how the concept is used within your career field. | Does not include a brief description explaining how the concept is used within your career field in any of the sections/bubbles. | |
| Visuals | | | | Includes at least 3 visuals (images, graphics, charts...) relevant to your career field | Does not include at least 3 visuals (images, graphics, charts...) relevant to your career field | |

| | | | |
|-------------------------|---|--|--|
| Spelling/Grammar | Includes no more than 3 spelling/grammar errors | Includes more than 3 spelling/grammar errors | |
| TOTAL POINTS | | | |

PEER REVIEW CHECKLIST

Anonymous Infographic ID #: _____

Anonymous Peer Reviewer ID #:

Check each box that applies to the infographic you are peer reviewing.

Layout

- The infographic includes 4 distinct topics.
- The infographic does **NOT** include 4 distinct topics.

- The infographic includes 4 sections or bubbles for the topics.
- The infographic does **NOT** include 4 sections or bubbles for the topics.

- The infographic includes a title in each of the 4 sections or bubbles.
- The infographic does **NOT** include a title in each of the 4 sections or bubbles.

Content

- The infographic includes a brief description in each of the 4 sections or bubbles to explain how each concept is used within their career field.
- The infographic does **NOT** include a title in each of the 4 sections or bubbles to explain how each concept is used within their career field.

Visuals

- The infographic includes at least 3 visuals (images, graphics, charts...) relevant to their career field.

- The infographic does **NOT** include at least 3 visuals (images, graphics, charts...) relevant to their career field.

Spelling/Grammar

- The infographic contains no more than 3 spelling/grammar errors.
- The infographic contains **MORE THAN 3** spelling/grammar errors.

Final Pedagogical Reflective Statement

Completing the Writing Fellows Program has prepared me to improve my students' writing in developmental math courses. Since I am not an English teacher, I relied heavily on the detailed presentations to learn about different types of writing and writing assignments. The long list of informal writing assignment ideas truly opened my eyes to what I have been missing in my journey to incorporate writing in my math courses. I was able to use the ideas to develop an informal and a formal writing activity for use in my future courses.

For an informal writing assignment, I designed a task that requires students to design an infographic to describe the types of math that are used in their desired career field. The most popular questions that students tend to ask about math is "When will I ever use this?" It is my hope that by researching and designing an infographic students will be able to answer that age-old question on their own. Maybe the task will even inspire them to give more attention to those specific concepts since they'll know in advance that their future career will rely on those skills.

For a formal writing assignment, I designed a task that requires students to produce a single-page flier to explain the costs of hosting a wedding at a rental facility. The criteria include generating a mathematical formula, an input-output table, and a feasibility graph to help the couple calculate the costs on their own. In addition to the formula, table and graph, students will need to include an explanation of how the facility calculates the cost. Even if students have no intention of working in the wedding or rental industry, they may be able to apply this flier design in future courses or in their career to present a well-organized, detailed proposal.

As mentioned in my self-reflective response at the beginning of the course, I would like to improve in the area of online discourse between students. Even with the transition to Brightspace, I plan to create an online forum where students can discuss concepts learned in the course. By creating rubrics to assign a grade for the forum participation, I hope more students

will be compelled to contribute. I was inspired by the online blog created by another CCBC professor for students to make regular written contributions. Even though writing can be a daunting task, math tends to be even more of a challenge for many students. Hopefully I can continue to incorporate writing activities into my developmental math courses that will help students see that writing can help improve their understanding of math. In turn, maybe writing in math will help improve their confidence to write in other courses as well. This class relevant to my goals as an instructor and it was time well-spent!