

THE



CAPSTONE PROJECT

PRE-AP ALGEBRA 2
THE ACADEMY FOR GLOBAL STUDIES
MR. KIKER ★ 2011–2012

DUE: FRIDAY, MAY 18, 2012 BY 8:54AM

Comprehensive List of Project Tasks:

The ShowMe! Video Production..... 100 points

The ISSN Mathematics Portfolio..... 100 points

The Mathematical Mastery Presentation..... 50 points

Total Project Worth: 250 points

Project Timeline & Due Dates:

Project Item Due	Where/How	When	Point Value
Producer's Topic Request Form	Submitted IN-CLASS via project website link.	A Day: April 18 B Day: April 19	5 points of total Project Evaluation Score
ShowMe! Production Storyboard/Script	Submitted IN-CLASS using template with handwriting from all team members.	A Day: May 4 B Day: May 7	25 points of total Project Evaluation Score
ShowMe! Video Guide & Solutions	Submitted by E-MAIL to william.kiker@austinisd.org in PDF format ONLY as two separate documents .	A & B Day: Friday, May 11 before 11:59pm	20 points of total Project Evaluation Score
Five-Question Quick Quiz & Solutions	Submitted by E-MAIL to william.kiker@austinisd.org in PDF format ONLY as two separate documents .	A & B Day: Tuesday, May 15 before 11:59pm	20 points of total Project Evaluation Score
ShowMe! Video Production	Uploaded to the ShowMe! class account via the iPad. See description for login.	A & B Day: Friday, May 18 before 8:54am	30 points of total Project Evaluation Score
ISSN Mathematics Published Portfolio	Submitted by E-MAIL to william.kiker@austinisd.org as link to portfolio website.	A & B Day: Friday, May 18 before 8:54am	100 points of total Project Evaluation Score
Mathematical Mastery Presentation	Presented IN-CLASS on one of the presentation days.	A Day: May 18/22 B Day: May 21/23	50 points of total Project Evaluation Score

The ShowMe! Video Production (100 points)



Visit the academy online at: <https://sites.google.com/a/austinisd.org/ahs-academy/>

Many Maroons visit the Khan Academy (<http://www.khanacademy.org>) for assistance with academic topics, or for extra practice. Sometimes, however, topics available from Khan Academy do not always align with topics taught here in Austin High classes.

Enter the AHS Academy! Unfortunately, it is somewhat useless at the moment as there are no videos or practice problems for our specific subject. Enter the Algebra 2 students!

Project Task Mission

Your mission will be to create a **video production** based on Algebra 2 topics covered this year.

To support the learning that will ensue when people watch your video, you will also create:

- a video production guide the viewer can complete while watching the video production, (NOTE: This video guide should contain between 7-10 well-crafted, practice problems)
- an answer key for practice problems (including *worked-out*, step-by-step solutions done by YOU),
- a five-question quiz compiled of solely free-response problems (however, please note that each problem can have multiple parts, if necessary) that the viewer can download, and
- an answer key for five-question quiz (including *worked-out*, step-by-step solutions done by YOU).

The table below contains the sections from the book that cover topics we have encountered this year. You and a partner(s) MUST choose a topic from THIS list to create your ShowMe! video production.

NOTE: Your topic will be ultimately approved by Mr. Kiker and may be subject to change.

Pre-AP Algebra 2: Video Production Topics

2.8 Solving Absolute Value Eqn/Inequalities	5.9 Operations with Complex Numbers	8.1 Variation Functions	10.3 Conic Sections: Ellipses
3.2 Solving Systems of Linear Equations	6.3 Dividing Polynomials	8.2 Multiplying/Dividing Rational Expressions	10.4 Conic Sections: Hyperbolas
3.3 Solving Systems of Linear Inequalities	6.4 Factoring Polynomials	8.3 Adding/Subtracting Rational Expressions	10.5 Conic Sections: Parabolas
3.4 Linear Programming	6.5 Finding Real Roots of Polynomials	8.4 Rational Functions	10.6 Identifying Conic Sections
3.6 Solving 3-Variable Linear Systems	7.1 Growth/Decay, Exponential Functions	8.5 Solving Rational Equations/Inequalities	11.1 Permutations and Combinations
4.5 Matrix Inverses and Solving Systems	7.3/7.4 Logarithms and Logarithm Properties	8.6 Radical Expression & Rational Exponents	11.2 Theoretical & Experiment Probability
5.4 Completing the Square	7.5 Exponential/Log Equations/Inequalities	8.8 Solving Radical Equations/Inequalities	11.3 Independent & Dependent Events
5.5 Complex Numbers and Roots	7.6 Natural Logarithms and the base e	10.2 Conic Sections: Circles	11.4 Compound Events

Description of Project Tasks

* Producers' Topic Request Form (5 points)

Submit ONE online form per project team from the project webpage to indicate your team's top three topic requests. You should provide a hefty description of why your team should be given priority on your first topic choice. Please note that this does NOT guarantee you any particular production topic. Mr. Kiker reserves the right to make the ULTIMATE topic assignment decisions.

* ShowMe! Production Storyboard/Script (25 points)

Use the storyboard/script document to plan and organize EACH and EVERY thing you will say or write during your ShowMe! Video Production. This document needs to have the handwriting of each of your team members to show equal team participation. You will need to indicate using quotes whenever someone is to say something and include explicit details for the mathematics that will be written during the production. If something is not written in on the storyboard, it cannot be said or written on the final video production. You will submit this document to Mr. Kiker for approval. This does not guarantee that all errors will be found – that is the job of the producers! Follow this storyboard/script document carefully when you record the ShowMe! video production. **WARNING! You should NOT use your notes as a problem source—they are copyrighted!**

* ShowMe! Video Production (30 points/NO CREDIT if unpublishable)

Each production team will generate a **12-15 minute** video production using the ShowMe! App on the class set of iPads available for recording use during all posted tutoring times. There will be some limited project workshop timeslots during class time that will be available but the majority of the recording will most likely need to occur outside of class time. The voices of ALL team members must be audible on the final video production to demonstrate equal team participation. **WARNING! Your production must be PERFECT for publishing. You will receive NO CREDIT for the video production if your video contains ANY errors (either in what you write or say).**

* ShowMe! Video Production Guide (10 points/guide, 10 points/solutions)

Produce a video production guide that will accompany everything that you do or say in your final video production. You have plenty of examples of exceptional-looking video guides so it is expected that your video production guide look professional. Equations MUST be typed using Equation Editor on Microsoft Word. If you need help with this program, please seek guidance during tutoring times. Equations not typed using this program are distracting, look unprofessional, and will reduce your grade. Use a standard Arial or Times New Roman 12-14 point font for text. Remember that your video production guide should include 7-10 well-crafted, practice problems. You will provide a SEPARATE document that contains the worked-out solutions to the problems. Once you finalize your ShowMe! video production, you will upload it to the ShowMe! class account using this login information: **Username: kikersipads@yahoo.com Password: kiker1112**

* Five-Question Quick Quiz (10 points/quiz, 10 points/solutions)

Create a five-question (no more and no less, please) quick quiz that will help the video viewer test their mastery of your video topic. These five questions should NOT be multiple-choice in nature. You will need to employ the use of Equation Editor on Microsoft Word to type all equations used in the quiz. Failure to do so will result in an unprofessional-looking quiz and large deduction of points. You will provide a SEPARATE document that contains the worked-out solutions to the problems.

Due to the timeframe of this project and of the proximity of the due date to the week of final exams, there will be ABSOLUTELY NO LATE PRODUCTIONS ACCEPTED!

The ISSN Mathematics Portfolio (100 points)

What is The ISSN Graduate Portfolio?

The graduate portfolio is an artifact that YOU, the student, compile over the course of your time within AGS. It should reflect sufficient evidence of the following TWO major components:

1. You are globally competent.
2. You are college ready.

In other words, you need to fill your own professional portfolio with evidence that over the four years you are in AGS, you have successfully accomplished these two goals.

Why a Portfolio?

The portfolio is good for TWO reasons. One, it will serve as a reminder to you and evidence to your teachers, peers and parents that you have engaged in a rigorous program during high school that encouraged you to be globally competent. It should also reinforce to you that your teachers have been working to design a program that will make you both globally competent and prepared to excel in your post-high school pursuits.

What goes in my portfolio?

Ideally, you will be able to include in your final ISSN portfolio samples of all course projects that you have completed for all classes during your time at AGS. Luckily, your teachers have been designing projects throughout your high school life that meet the needs of the ISSN portfolio. **However, for this particular project, we will only be working on the sections of the portfolio for mathematics.**

Project Task Details

For this task, you will construct a **WEBSITE** where you will publish the mathematics portfolio section. You should create a SEPARATE page on your portfolio website for each of the following:

1. “About the Mathematician” Page

- In this section, you will include a brief description about who you are, what interested you most about this course, what you were able to gain from the course projects, your college/post-secondary plans, your *current* resume, and a professional photo of yourself.

2. “Mathematics in a Global Context” Page

- In this section, you should write a brief, yet well-crafted 2-3 paragraph reflection about why the subject of mathematics is meaningful in a global context. Be cautious about your tendency to be redundant – this is going to be published for the world to see. Be specific enough in your reflection that readers can take away an understanding of your perspective.

3. “Graduate Profile Category I: Investigate the World” Page

- Select a course project or problem-based scenario from the course that shows that you have satisfied **at least two** of the following:
 - *Identify a locally, regionally or globally focused issue and frame researchable questions.*
 - *Use a variety of international and domestic sources, media and languages to identify and weight relevant evidence to address a globally significant, researchable question.*
 - *Analyze, integrate and synthesize evidence collected to construct coherent responses to globally significant, researchable questions.*
 - *Develop an argument based on compelling evidence that considers multiple perspectives and draws defensible conclusions.*
- For **EACH** of the **TWO characteristics** that you select from above, generate a well-crafted 2-3 paragraphs specifically explaining *how* the item validates proficiency for that criterion.
- Upload the actual piece of evidence (i.e. course project or problem-based scenario) as a downloadable **PDF** attachment to this page to satisfy the category requirements.

4. “Graduate Profile Category II: Recognize and Weigh Perspectives” Page

- Select a course project or problem-based scenario from the course that shows that you have satisfied **at least two** of the following:
 - *Recognize and express your own perspective on situations, events, issues or phenomena and identify the influences on that perspective.*
 - *Examine perspectives of other people, groups, or schools of thought and identify the influences on those perspectives.*
 - *Explain how cultural interactions influence situations, events, issues or phenomena, including the development of knowledge.*
 - *Articulate how differential access to knowledge, technology and resources affects quality of life an perspectives.*
- For **EACH** of the **TWO characteristics** that you select from above, generate a well-crafted 2-3 paragraphs specifically explaining *how* the item validates proficiency for that criterion.
- Upload the actual piece of evidence (i.e. course project or problem-based scenario) as a downloadable **PDF** attachment to this page to satisfy the category requirements.

5. “Graduate Profile Category III: Communicate Ideas” Page

- Select a course project or problem-based scenario from the course that shows that you have satisfied **at least two** of the following:
 - *Recognize and express how diverse audiences may perceive different meanings from the same information and how that impacts communication.*
 - *Listen to and communicate effectively with diverse people, using appropriate verbal and non-verbal behavior, language and strategies.*
 - *Select and use appropriate technology and media to communicate and collaborate with diverse audiences.*
 - *Reflect on how effective communication impacts understanding and collaboration in an interdependent world.*
- For **EACH** of the **TWO characteristics** that you select from above, generate a well-crafted 2-3 paragraphs specifically explaining *how* the item validates proficiency for that criterion.
- Upload the actual piece of evidence (i.e. course project or problem-based scenario) as a downloadable **PDF** attachment to this page to satisfy the category requirements.

6. “Graduate Profile Category IV: Take Action” Page

- Select a course project or problem-based scenario from the course that shows that you have satisfied **at least two** of the following:
 - *Identify and create opportunities for personal or collaborative action to address situations, events, issues or phenomena in ways that improve conditions.*
 - *Assess options and plan actions based on evidence and the potential for impact, taking into account previous approaches, varied perspectives and potential consequences.*
 - *Act, personally or collaboratively, in creative and ethical ways to contribute to improvement locally, regionally or globally and assess the impact of the action.*
 - *Reflect on their capacity to advocate for and contribute to improvement locally, regionally or globally.*
- For **EACH** of the **TWO characteristics** that you select from above, generate a well-crafted 2-3 paragraphs specifically explaining *how* the item validates proficiency for that criterion.
- Upload the actual piece of evidence (i.e. course project or problem-based scenario) as a downloadable **PDF** attachment to this page to satisfy the category requirements.

Project Task Resources

There are several free resources available on the web that you can use to create and host your portfolio website. These include: <http://www.webs.com>, <http://www.weebly.com>, <http://www.wix.com>, <http://sites.google.com> and many more! You are NOT required to use one of these resources.

The Mathematical Mastery Presentation (50 points)

Project Task Overview

The final presentation you will make in this course is not the familiar Pythagorean Presentation where you present the mathematics and reasoning behind a problem. Instead, your presentation will demonstrate your mastery of all the content in this course by reflection upon a specific portfolio criterion. This presentation will be scored based on communication and the effectiveness of the piece of evidence you select to demonstrate the mathematical mastery that you claim to have obtained.

Project Task Guidelines

Prepare a **3-5 minute presentation** in which you describe select one of the four categories and piece of evidence from your completed mathematics section of your ISSN Graduate Portfolio and use it to explain your mastery of the criterion itself as well as the mathematical content within the evidence.

I. Your presentation needs to address, at minimum, all of the following questions:

- How have you grown as a learner of mathematics? Describe your journey.
- What is something that you came into this course apprehensive about that you can now leave feeling confident about? What is something you look forward to still mastering?
- How does your piece of evidence show mastery of mathematical content and of the specific graduate profile category requirements?
- How has this course pushed YOUR learning ability and YOU as a mathematics student?

II. Your presentation needs to be professional and you need to **dress to impress.** Your appearance matters in a professional world. Believe it or not; people tend to pay more attention to a presentation when the presenter is well-dressed (yes, this has been proven). On the day of your **scheduled** presentation, you are expected to wear **professional attire**.

- For guys, this includes a nice, collared shirt, slacks or khakis, and dress shoes.
- For girls, this includes a nice top, slacks or a skirt, and heels or nice flats.

III. When you present, you should have something behind you containing the material that you will reference. You may create a short Prezi or brief PowerPoint to show with the SMART Board.

IV. Your 3-5 minute presentation should also include a **VERY brief showing (45-60 seconds) of your published portfolio website.** Make sure to give all of your audience a link to the website!

V. You are welcome to have note cards, but they are NOT required for your presentation.

VI. *Practice!* You MUST stay within the STRICT time limit. If you go over, I will cut you off and your presentation will end abruptly. It will be VERY noticeable if you have not rehearsed your presentation. Please don't make us listen to an unrehearsed, awkward presentation.

Presentation Dates

The Mathematical Mastery Presentations will occur over a span of the last two block days of the semester. You will be RANDOMLY assigned to a presentation timeslot on one block based on blind lottery (coincidentally, the same way you were selected to be in the AGS program in the first place).

If you have a documented, excused reason (such as a funeral, family emergency, etc.) that conflicts with this time, you MUST notify me by TUESDAY, MAY 15 by e-mail or in person. Please attempt to have all appointments and doctor visits NOT scheduled during this period.

“A” Day Presentations: Friday, May 18 and Tuesday, May 22

“B” Day Presentations: Monday, May 21 and Wednesday, May 23
