DE in Math with Equity and Open Resources

Jennie Graham & Ashley McHale

10:00-11:50am

Fall FLEX Day

October 20, 2020

Open Educational Resources

Open Educational Resources

What are you using? Have you used anything in the past?

Let’s discuss! Jamboard

Math Emporium and AB705

- Math 107, 110 and 55 enrollments dropped.
- Why take a class if you don’t have to?
  - Builds a stronger foundation!
- Let’s make it more attractive to take these classes by making them completely FREE!
  - Already non-credit!
- The goal is to have all foundational classes using Open Educational Resources by Fall 2021 (stretch goal of some of them by Spring 2021.)
- But what about our other populations of students?

OER

While we're at it, let's make the textbooks AND online homework FREE for our **ALL** of our students!

Publisher content is EXPENSIVE.

The OER resources are rich…

- Community College Consortium for OER has a list of links to repositories.
- The OpenTextbookStore is specifically for Math OER books

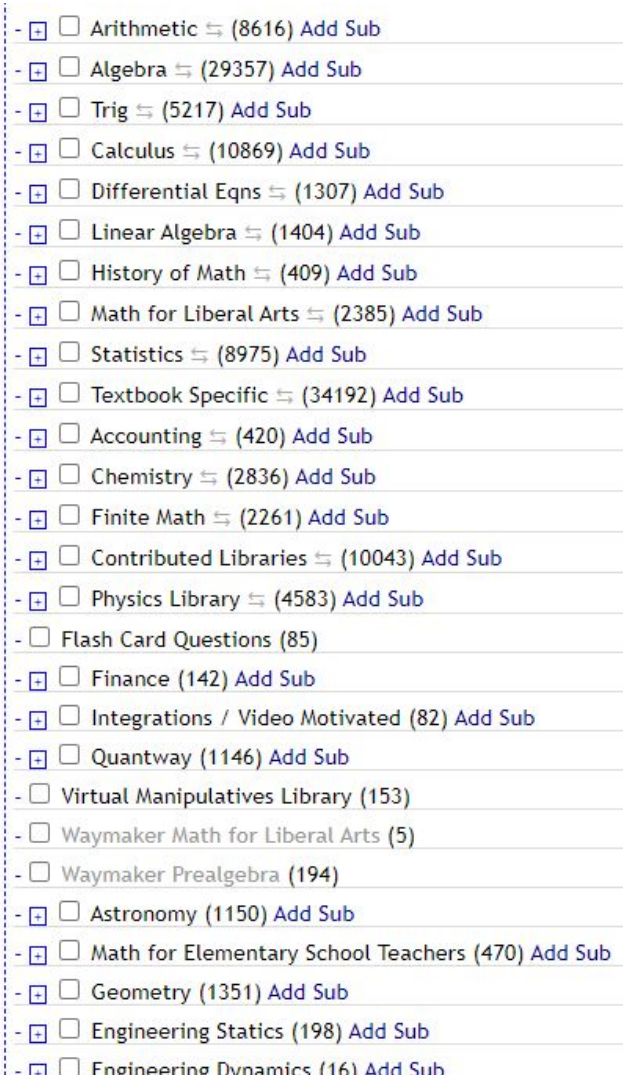
- LibreTexts allows custom OER textbooks to match YOUR class content.
- MyOpenMath is customizable to any course and any textbook.

The Math Department is working so that ALL our course materials are free and allows you to continue using a lot of your already-created content.

- Piloting Math 40 Statistics & Probability
- Piloting "Foundational Mathematics" (Math 55, and eventually 50, 110, 107)
- Curating Math 100C/101C Concurrent Support
- Curating Math 27: Number Systems for Educators (new course, Spring 2022)
- In the queue:
    - Math 30/39: College Algebra & Trigonometry
    - Math 47: Math for Liberal Arts
    - Math 1, 2, 3 Calculus

myOpenMath

- Fall 2020 - Piloting Math 40
  - Added Stats to Emporium and all 8 Emporium sections are using MOM.
  - Three traditional sections are also using MOM.
- Wealth of questions already written for most topics.
  - Not all created equal.
- Questions are fully customizable (even these ->)
  - Customize the directions.
  - Customize the answers.
  - Customize the help available to students.
  - Customize due dates, extensions, late passes, and more!
- Fairly seamless integration into Canvas.



Engagement

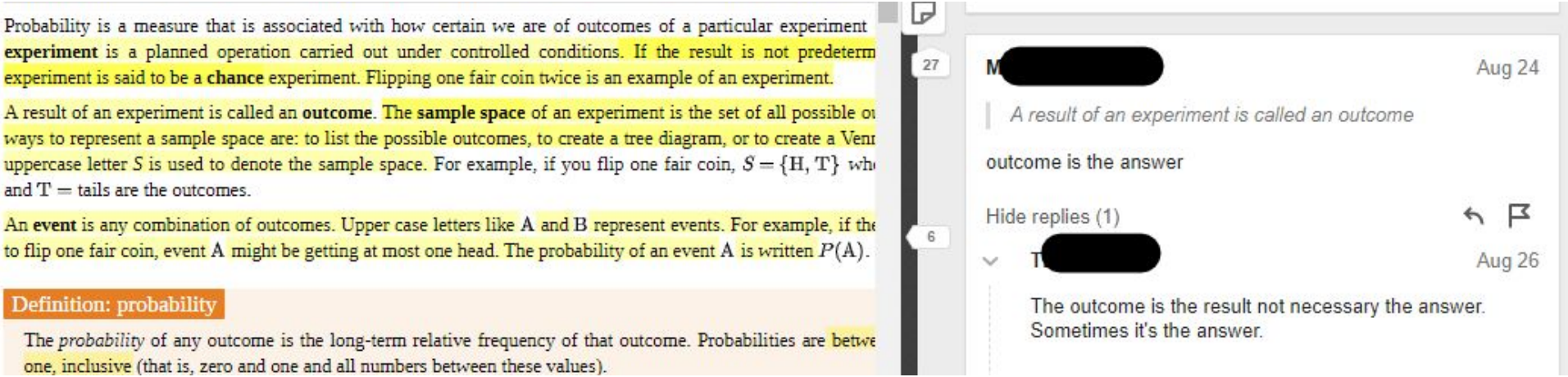
Do you ever wish your students would read the textbook?

Math and other technical (science-y) textbooks are hard to read!

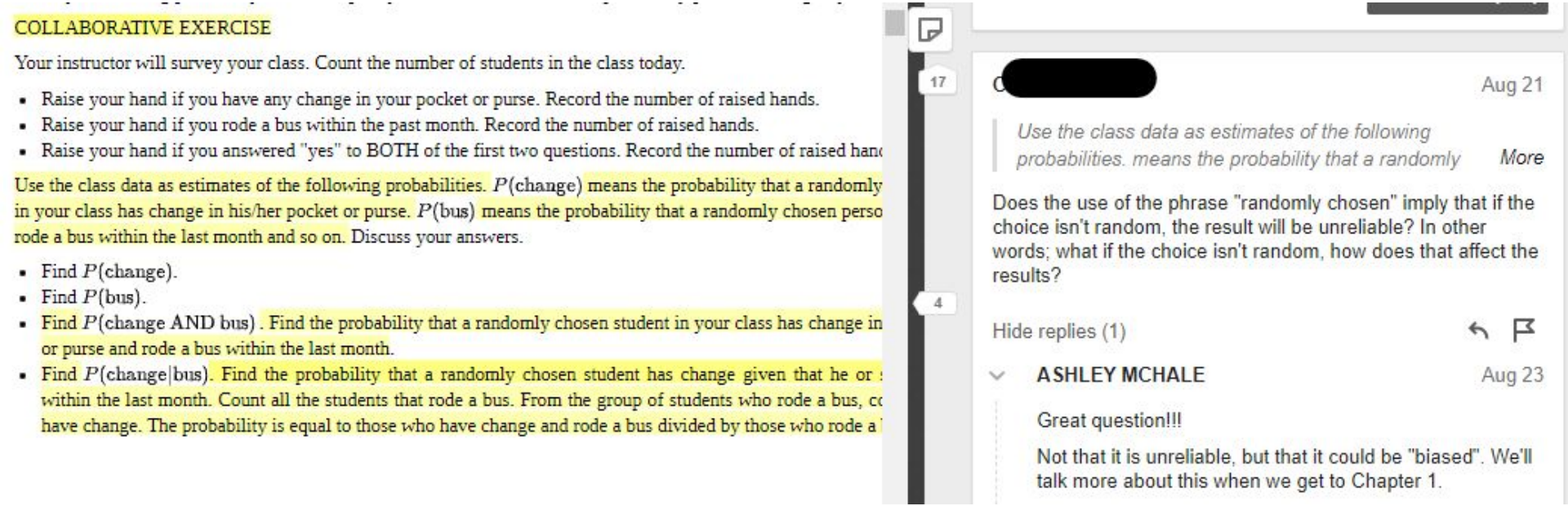
We need to model that for our students and make the reading visible.

Hypothesis: online annotation tool can be a great way to encourage reading and student-student interaction.

Hypothesis Annotation Tool



Hypothesis Annotation Tool



COLLABORATIVE EXERCISE

Your instructor will survey your class. Count the number of students in the class today.

- Raise your hand if you have any change in your pocket or purse. Record the number of raised hands.
- Raise your hand if you rode a bus within the past month. Record the number of raised hands.
- Raise your hand if you answered "yes" to BOTH of the first two questions. Record the number of raised hand

Use the class data as estimates of the following probabilities. $P(\text{change})$ means the probability that a randomly in your class has change in his/her pocket or purse. $P(\text{bus})$ means the probability that a randomly chosen perso rode a bus within the last month and so on. Discuss your answers.

- Find $P(\text{change})$.
- Find $P(\text{bus})$.
- Find $P(\text{change AND bus})$. Find the probability that a randomly chosen student in your class has change in or purse and rode a bus within the last month.
- Find $P(\text{change}|\text{bus})$. Find the probability that a randomly chosen student has change given that he or within the last month. Count all the students that rode a bus. From the group of students who rode a bus, c have change. The probability is equal to those who have change and rode a bus divided by those who rode a

17

[redacted] Aug 21

Use the class data as estimates of the following probabilities. means the probability that a randomly More

Does the use of the phrase "randomly chosen" imply that if the choice isn't random, the result will be unreliable? In other words; what if the choice isn't random, how does that affect the results?

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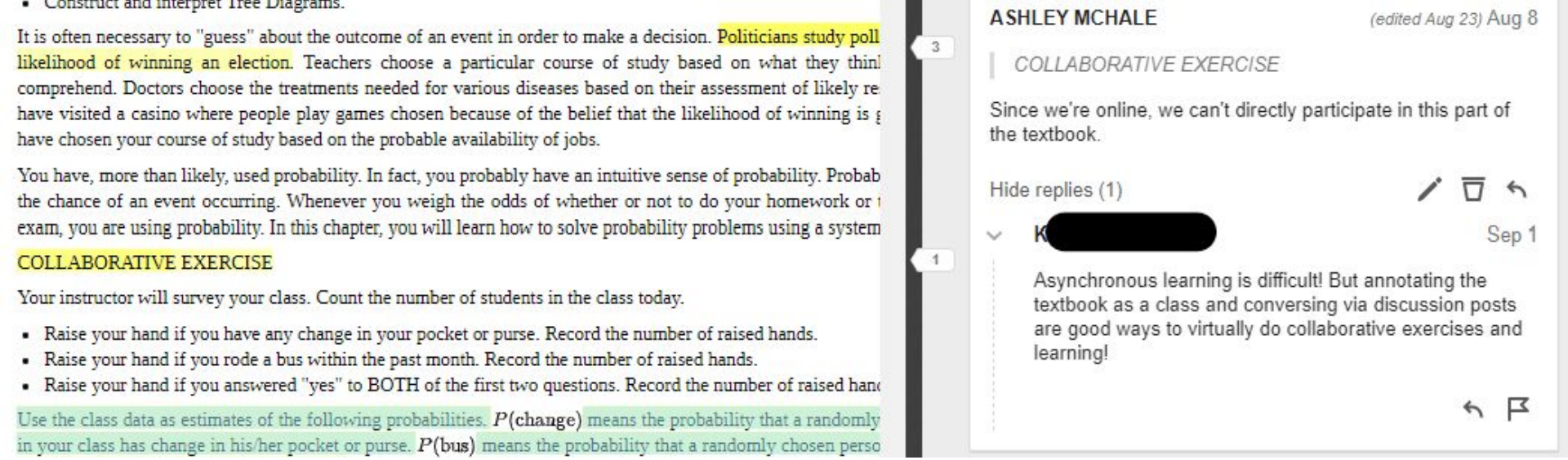
Hide replies (1)

ASHLEY MCHALE Aug 23

Great question!!!

Not that it is unreliable, but that it could be "biased". We'll talk more about this when we get to Chapter 1.


- Construct and interpret Tree Diagrams.

It is often necessary to "guess" about the outcome of an event in order to make a decision. Politicians study poll likelihood of winning an election. Teachers choose a particular course of study based on what they thin comprehend. Doctors choose the treatments needed for various diseases based on their assessment of likely re have visited a casino where people play games chosen because of the belief that the likelihood of winning is g have chosen your course of study based on the probable availability of jobs.

You have, more than likely, used probability. In fact, you probably have an intuitive sense of probability. Probab the chance of an event occurring. Whenever you weigh the odds of whether or not to do your homework or t exam, you are using probability. In this chapter, you will learn how to solve probability problems using a system

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1

ASHLEY MCHALE (edited Aug 23) Aug 8

COLLABORATIVE EXERCISE

Since we're online, we can't directly participate in this part of the textbook.

Hide replies (1)

K[redacted] Sep 1

Asynchronous learning is difficult! But annotating the textbook as a class and conversing via discussion posts are good ways to virtually do collaborative exercises and learning!

"Asynchronous learning is difficult! But annotating the textbook as a class and conversing via discussion posts are good ways to virtually do collaborative exercises and learning!"

More FREE Stuff!

Math Department Canvas Site, “Free Resources/Apps for Students and Teachers”
(Must be enrolled to view; all math faculty have access.)

Duplicate content on Ashley’s website

Equity

Equity

How do you incorporate Equity into your classes?

Equitable contributions by students?

Equity-minded assignments?

Let’s discuss! Jamboard

Discussion Boards

- Not only do we need to engage students and have student engage each other for maintaining Regular Effective Contact, but it is also in our students' best interests to get them engaged with each other.
- Discussion Boards are native to Canvas and are easy to use by both faculty and students.
- Have an opening day Discussion Board that helps the students learn the tools they'll need to use them effectively.
- Have multiple due dates for the Discussion Boards to encourage call and response behavior.
- Have Discussion Boards and other participation assignments have a higher weight in the course.
- SAMPLE BOARDS AND STUDENT RESPONSES

Class Work - Participation

- Keeping students engaged with you and with their classmates during class time (or even asynchronously) is not limited to discussion boards.
- Use Quizzes native to Canvas.
  - Keep it short - set a time limit
  - Set two attempts - first is just to try it on their own. It is okay if they don't finish it!
  - Use the Moderate Quiz feature to see that they are all engaged in the assignment.
  - Looks through responses as they are turned in so you know what to focus on as you review it.
  - Go through the questions together and get them engaged by sending responses through the chat either publicly or privately just to you.
  - Their second attempt is to fill it all in again with the correct answers to earn 100%
    - If they still miss something, let them comment on the error and still give them 100%.
- Use Jam Boards (you're getting to play with those during this talk!)
  - Have Breakout room specific Jam boards for students to work in groups and discuss questions and Monitor the boards outside of the breakout rooms. Jump into a room when needed!

Research Assignment - Math Related Careers

STEP 1: Watch this video "Why Math Matters - 30 High Paying Jobs of the Future"

For more information, read the "What can you do with a Math Degree" from US News and World Report.

STEP 2: Click Reply, and in paragraph form per question, answer the following questions (8 points). Have this done by Thursday at 11:59 p.m. so others have time to reply to it.

1. What careers interest you? Why? What interests you about it?
2. What is your academic goal? What degree, certificate or reason are you taking classes at LPC? (Please remind us, even though you answered this question on the first discussion board).
3. What would you like to know more about in terms of careers that use mathematics?

Click Post Reply when done.

STEP 4: Read your classmates' posts.

STEP 5: For the final 2 points of the assignment, find a post that you identify with or interests you. Respond to that person's post, using their name, and with a comment about why this particular entry caught your attention. Example: "Navi, your post on careers that require mathematics had me thinking about options that I had never thought of before because . . ."

Research Assignment - Math Related Careers

[redacted]

Aug 25, 2020

A math related career I am interested in is graphic design. Some types of graphic design require coding. Graphic design interests me because the job involves art and math. I think it would be fun to design websites. My academic goal is to complete my high school requirements and find a career I would like to pursue. I'm taking classes at LPC because I wanted to take the opportunity and there are more classes here. In terms of careers that use mathematics, I'm wondering how math is used in jobs on a daily basis.

Edited by [redacted] on Aug 25 at 3:58pm

Reply

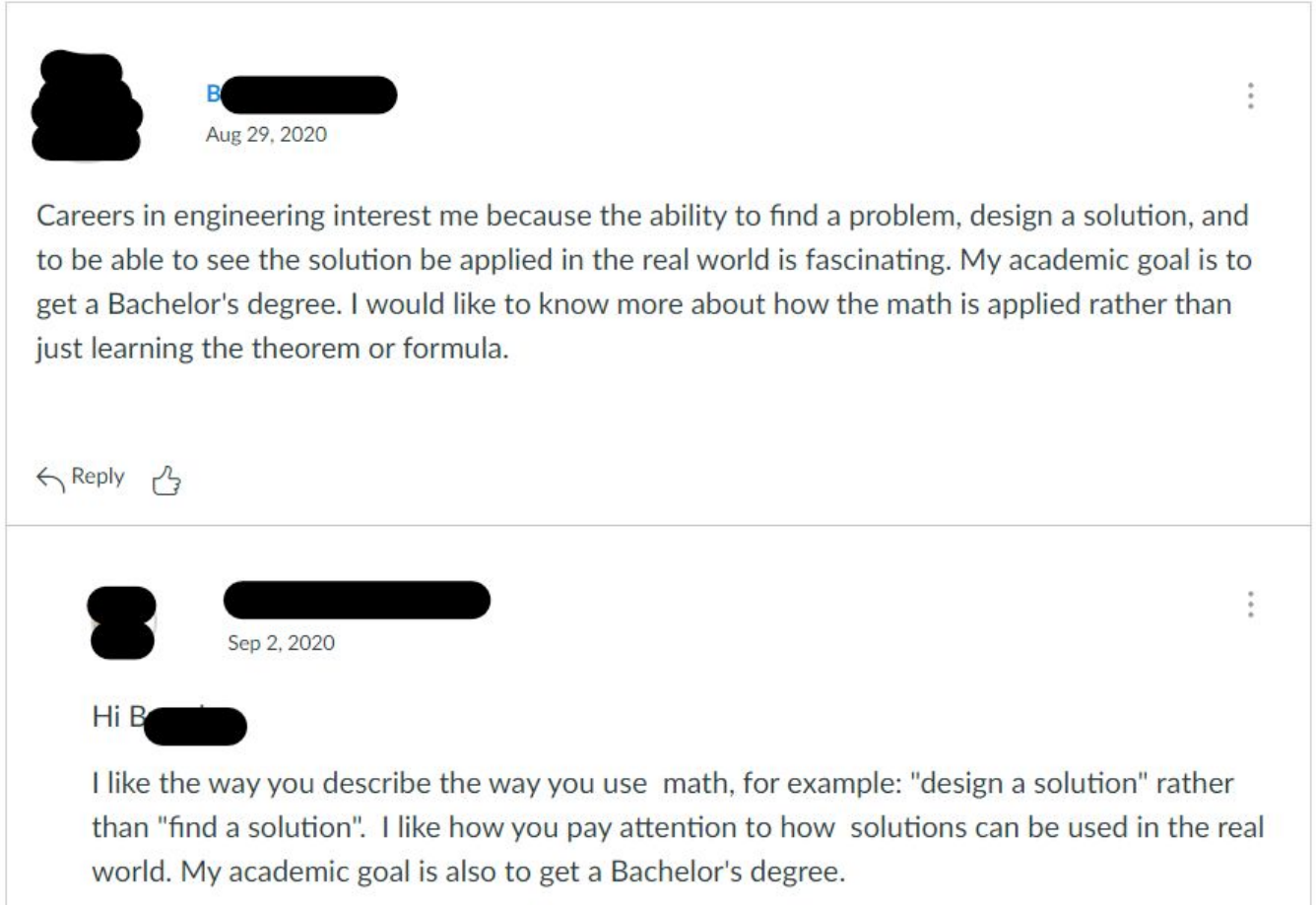
[redacted]

Aug 25, 2020

I think your comment almost changed my mind about my future. I started this assignment with the attitude of researching a high-paying job I've shortly considered in the past and just going with that. But then I read your comment and realized that I always liked graphic design-I used to do it for fun all the time. It was just a nice reminder to me that you don't have to be miserable when working.

Reply

Research Assignment - Math Related Careers



[redacted]

Aug 29, 2020

Careers in engineering interest me because the ability to find a problem, design a solution, and to be able to see the solution be applied in the real world is fascinating. My academic goal is to get a Bachelor's degree. I would like to know more about how the math is applied rather than just learning the theorem or formula.

Reply

[redacted]

Sep 2, 2020

Hi [redacted]

I like the way you describe the way you use math, for example: "design a solution" rather than "find a solution". I like how you pay attention to how solutions can be used in the real world. My academic goal is also to get a Bachelor's degree.

Research Assignment - Mathematicians

Link to Website with Instructions and Example

Al-Battānī was one of the greatest Muslim astronomer and mathematician during his time and was very well known in Middle age Europe and the Islamic World. He was known as the Father of Trigonmentry and he used trigonometry do make discoveries on astronomy. Al Battani's full name was Abū ʿabd Allāh Muḥammad Ibn Jābir Ibn Sinān Al-battānī Al-ḥarrānī As-ṣābi, his Latin name was Albatenius, Albategnus, or Albategni. He was born c. 858, in or near Haran, near Urfa, Syria, and died 929, near Sāmarrāʾ, Iraq.

One of the reasons why I choose to write about Al-Battani was because he was one of the greatest astronomer and mathematicians during his time and he borrowed many European and Indian ideas (he also made things purely from himself like the Trignonmentry relationships) and he took them and he improved upon them. He was well known in Europe and in the Islamic world, many people had respect for Al-Battani. During this time Europe was suffering from the black plage and corruption from Church states, but Ironically enough during this time period, the Muslim world was totally different. Muslims were making large advancements, in Medicine, Science, and technology. Unfortunately, in this modern-day world, the Muslim world is in turmoil mainly because of muslims themselves, but the main reason why I chose to write about Al-Battani is to sort of prove that it doesn't matter what religion or belief you have anyone can improve and become great scholars of knowledge if they take the time and learn things. Muslims have always been portrayed in the media as "back-words" or "don't progress society" this is false, being Muslim has no relationship to not being an intellectual.

A response:

I love the point you made on how religion or race has no relationship with intellect. I definitely agree, Muslims and specifically Arabs are seen as quite "backwards" and violent . I know because I am both Muslim and Arab and have seen how people only know of arabs like Osama Bin-Laden and not ones like Al- Battani. Al-Battani was neither violent nor backwards and has made great influences to mathematics today, and I am happy you chose to research about him.

Research Assignment - Think Like A Mathematician

Math 30 and Math 39 instructors in the Community of Practice are currently using this assignment in their classes!

Assignment Instructions

Equity in Grading

Late work policy

- Have one, but there can always be exceptions to the rule.

Make up test / Final Exam replacement

- Example: Test 1, Test 2, Test 3, Midterm, Test 4, Test 5, Test 6, Final.
  - Midterm replaces one of the first three scores, if higher, and final could replace any of the six scores.

Corrections / Retakes for points back

- Use not just for testing but other assignments as well.
  - If student takes the time to reflect on an error in a classwork or lab, then it should be acknowledged and points adjusted.

Equity in Grading

How do you grade for Equity?

What would you like to try?

Let’s discuss! Jamboard

THANK YOU FOR COMING!