

The purpose of mathematics, class/Life participation

Instructions: Read the information and answer the questions :)

Mathematics is the language of reality.

Math quantifies/counts how much of a thing exists. We count what's important to us, and use math to manage successful results with what we care about.

The everyday counting using math includes work, money, time, and hobbies. Mastery of math allows creativity and power to:

- Move a countable amount of work to zero.
- Count money to successfully plan for the future and live intelligently in the present.
- Manage time so we have more of it for what we enjoy.
- Play more enjoyably and successfully by understanding basic statistics (such as baseball batting average, soccer team winning percentage, how much of something must be accomplished to move to the next level of a video game).

The good news about math is that real-world applications for most adults is exactly what's described above, and exactly what you practice in your life in the present.

But what if math has been hard sometimes? What does that mean? As we discussed in the introduction of this class, your young teenager brains are getting more powerful every year, and will continue getting faster and smarter until your mid-twenties.

That's great news: your current brain is the most powerful you've had in your life, and will only get stronger! That said, human brains of any age can get confused easily, as you've experienced perhaps many times in trying to understand mathematics.

What this means is we use critical thinking skills in math to exercise and improve your brain's abilities to clearly understand the real world you live upon. Just as any exercise will stretch your abilities and can begin with difficulty, this can also be true in our daily mathematics exercise/workouts!

The great news about this is that math teaches us to lovingly embrace how easily human beings can become confused, develop a sense of humor with this limitation, and then intelligently take a problem step-by-step to get un-confused. This is what critical thinking means.

This is a big deal: we accept confusion, look for something we understand to build upon, and then take a problem one step at a time until we've taken all the steps to solve it. This means that practice in this skill allows students to take any math problem step-by-step and get the right answer each and every time.

Would you like to do that?

Does it make sense that taking one step at a time allows all steps to be taken?

Good! Now the weird news: most adults never use the math we'll learn in class :)

Wait, what? Most adults don't use the math we're learning?! Seriously? Yeah, seriously. Again, as I said in our introduction, my father is a retired mechanical engineer, my wife is a computer systems engineer, my older brother does research in psychology, and my younger brother and I teach math. All of us agree that math teaches clear thinking to solve real-world problems, *and* we rarely use the specific problem-solving in this class such as calculating the area of a figure, creating an algebra problem to solve for x , or finding the slope of a line.

We all do use these skills:

- Work efficiently until a problem is completely solved.
- Accept our human brain's condition to be confused, and then take a problem one step at a time by drawing pictures and/or talking our way through the problem with someone.
- Use math to play more effectively by knowing how to add "points on the scoreboard."

The stated purpose for mathematics in the California State Framework:

Mathematics impacts everyday life, future careers, and good citizenship. A solid foundation in mathematics prepares students for future occupations including the fields of business, medicine, science, engineering, and technology. Students' understanding of probability and the ability to quantify and analyze information enables them to interpret economic data, participate in political discussions, and make wiser personal financial decisions. Mathematical modeling is a tool for solving everyday problems, making informed decisions, improving life skills (i.e., logical thinking, reasoning, and problem solving), planning, designing, predicting, and developing financial literacy.

- California State Framework, Mathematics. [Introduction, pg. 2](#).

What tools do I need to be successful in math? The primary tool you need to be successful in math is your willingness to be successful in math.

That means you do everything you see to do in order to solve each problem correctly. This includes:

- Bring your math notebook and writing implements of choice.
- Be ready to begin when the bell rings. If we get ahead in our math units, I promise I'll give time back to you with fun activities.
- At the very least, copy the problem, make a picture, and/or ask a question so you can begin working.
- Work until you're finished, and have checked your work. That means do not talk in any way that distracts classmates and/or you until you're finished!

Ok, ok, I like this way of learning math. How can I practice my skills through class participation, and how do you pay me with grades? Each unit will have a declared number of participation points (party points), probably five. As I said in the class introduction, the teaching style I've found produces the highest student learning and enjoyment is:

- Brief the entire class on that day's part of our math learning.
- Have the class do a few examples together.
- You do independent work on a few problems to prove you understand. This includes working with others and/or me for your successful learning and work.

You can practice your skills by raising your hand to work with me (you get paid with party points), doing the examples and independent work, and helping others get their work done.

If you'd like to receive the most value, raise your hand every time and work with me (remember the story I told of Hernan/"Lizard" who used this to go from a boy in the hood to a full scholarship and internship with Pixar). Students are responsible to understand the previous class day's material in the unit packets sufficiently well to explain the answers to the class. I promise to provide opportunity for each student to receive full credit for party points.

Consider this: who you are *being* at any given moment, including in class, is your statement to the world and yourself of who you say you are, what you are building, and how important your classmates' success is for you. That is, every moment is opportunity to practice your experience and expression of yourself, on your terms.

Your best responses to those inquiries are what you can practice in class participation, if you choose it. Of course, you live your responses to those questions everywhere at all times. I'm just inviting your conscious responses and recognition of power to live your life as you wish.

Participation will also make the course material far more interesting and easier to understand.

What happens to students who cause trouble in class or don't do their work? As I said in our introduction, successful adults fully recognize and respect the power of teenagers to make their own choices in Life. And that said, if those choices interfere with the learning of anyone (including you), then I'll exercise due process to work with that student, inform family, and then work with school administration whereby the student stops disrupting our class or is removed to an alternative public school environment.

If it helps, I respect and encourage students to be rebels in a healthy way of working to build a brighter future. We all see real-world problems that require solutions, including intelligent rebellion from conditions that should be placed in our past.

As I explained, I use math in my "hobby" to end poverty and improve economic conditions in the real world. My economics research was honored by the Claremont Colleges by inviting me as one of six international guests to write and explain solutions to problems with money and banking. The organization I helped grow (RESULTS.org) is a leading group in the work to end

poverty. This is part of my expression of working with people as a “rebel” to current conditions in a cooperative way to build a brighter future.

I invite you to join all educated adults who do this :)

You say I can earn as much extra credit that I want? How does that work? First: as you know, the specifics of learning mathematics demand attention and time. I suggest that you invest the attention and time to be satisfied and proud of your learning. That said, because you are unique as an individual, I encourage you to go beyond the limits of this course in learning what calls to you. I give extra credit for projects to improve your math knowledge and/or skills. These are points that are added to total points earned and total possible points, not just to total points earned. To receive extra credit, start by giving me a proposal of your project either verbally or in writing that states what you want to improve and your project. For example:

- To succeed better in school, use math to know your class averages. Create a project for improvement.
- To help your family, use math to better manage chores around the house.
- To improve in a hobby, use math to plan getting to the next level through counting a measure for success.
- To feel better, use math to create a project to get enough exercise, sleep, and/or manage your health in some upgraded way.
- To have more time, use math to manage it better.
- To improve your knowledge, research something you’re curious or passionate about regarding a math-related topic. Research can include reading, interviewing, watching documentaries and/or analysis, etc.

A general format that might help for social skills projects is to respond to the following:

1. What is the project?
2. What are the facts of the current condition?
3. How long have I felt the need to upgrade? Does this length of time communicate that I really could enjoy my life more if I more rapidly acted to upgrade my life?
4. What is the outcome/upgrade I want?
5. What is my plan/strategy to move toward my preferred outcome?
6. Go for your plan. Write the facts of what happened.
7. Now that you’ve acted, are you called for follow-up action? If so, what? (If so, you may repeat this process for an additional assignment).
8. What did you gain from this work to improve your life on your terms? Importantly, please note that most people need far more work to experience virtue under challenging circumstances; that is, it’s a human pitfall to feel discouraged and quit rather than learn (especially from mistakes) and take the next steps forward with increased virtue.

Your Choice: I strongly suggest that you make a list of all the social and academic improvements you want for yourself now, and use this year to accomplish them.

I suggest that you keep these four pages for reference. Do and turn-in the following assignment.

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Name: _____

Instructions: Respond to the following questions on your own paper. The assignment is worth 12 points - one point per question. You can take this page off and attach it to your answers for convenience and to get you started!

1. Explain what mathematics is. List five specific ways you've observed math used in the real world (for examples: school, your family, friends, you).
2. Explain the value in learning mathematics for yourself as an individual and citizen.
3. The California State Framework is the context/reasons to learn math. Explain why learning is empowered when the student is in touch with a valuable reason for doing this work. Explain one example from your life of either being in touch with the purpose of some kind of learning that helped you commit to the work, or an example where being out of touch with context made the work an unenjoyable chore.
4. Define "critical thinking." Explain a time in your life that you were confused by something you thought was too complex to understand, and then you used critical thinking to take it step by step until you understood it.
5. Explain an example in your life where you were willing to succeed, and took all the steps you could imagine to be successful.
6. Explain an example in your life where you gave up, and stopped trying. Did you tell the truth that you quit, or did you tell a whiny sad story like, "It's too hard!" "This is stupid!"
7. Explain an example in your life where you participated and learned to enjoy something. This might be something at first you didn't think you'd like (perhaps a sport, dancing, art).
8. Explain an example where your doing your best work helped you. Did you feel proud of yourself?
9. Explain the rules for party points in class.
10. Explain how life is a continuous "test" of who you say you are in your Life. In your experience, is the Hernan/"Lizard" story mere coincidence, or point to an untapped power within human beings with bold declaration and action?
11. Explain the rules for extra credit.
12. Explain what you learned of value from this assignment, or explain your power to reject learning anything of value.