

# Math for Justice: Empowering Communities Through Mathematical Literacy

## Introduction

Math has long been recognized as a tool for understanding the world around us, from the intricate patterns of nature to the complexities of human society. However, math has also been used as a tool for oppression, exclusion, and discrimination. In *Math for Justice: Empowering Communities Through Mathematical Literacy*, we explore the transformative power of math as a force for social justice, equity, and liberation.

This book is intended for an American audience and written in English.

Throughout history, math has been used to justify racism, sexism, and other forms of discrimination. For example, in the 19th century, phrenology, a pseudoscience that claimed to measure intelligence by the shape of the skull, was used to argue that Black people were intellectually inferior to white people. In the early 20th century, eugenics, a movement that aimed to improve the genetic quality of the human population, was used to justify forced sterilization of people with disabilities and other marginalized groups.

Today, math continues to be used to perpetuate inequality. For example, standardized testing, which is often used to make decisions about educational opportunities and job placement, has been shown to be biased against students from marginalized backgrounds. Algorithmic bias, which occurs when algorithms are trained on data that is biased, can lead to unfair and discriminatory outcomes in areas such as criminal justice, employment, and housing.

By demystifying math and making it accessible to all, we can challenge the systems of oppression that have been built upon it.

However, math can also be a tool for liberation. By empowering people with the mathematical skills they need to understand the world around them, we can create a more just and equitable society. Math can be used to expose injustice, challenge discrimination, and advocate for change. It can be used to create new technologies that solve social problems and build more sustainable communities.

This book brings together the voices of scholars, activists, and practitioners who are using math to make a difference in the world. They share their stories, their insights, and their strategies for using math to create a more just and equitable society.

We hope that this book will inspire you to use your mathematical skills to make a positive impact in your community. Whether you are a teacher, a student, a

policymaker, or simply a concerned citizen, we believe that you can use math to make a difference.

## Book Description

In *Math for Justice: Empowering Communities Through Mathematical Literacy*, we explore the transformative power of math as a force for social justice, equity, and liberation. This book brings together the voices of scholars, activists, and practitioners who are using math to make a difference in the world.

Math has long been recognized as a tool for understanding the world around us, from the intricate patterns of nature to the complexities of human society. However, math has also been used as a tool for oppression, exclusion, and discrimination. Throughout history, math has been used to justify racism, sexism, and other forms of discrimination. Today, math continues to be used to perpetuate inequality, for example, in standardized testing and algorithmic bias.

However, math can also be a tool for liberation. By empowering people with the mathematical skills they

need to understand the world around them, we can create a more just and equitable society. Math can be used to expose injustice, challenge discrimination, and advocate for change. It can be used to create new technologies that solve social problems and build more sustainable communities.

This book is divided into ten chapters, each of which explores a different aspect of the relationship between math and social justice. The chapters cover topics such as:

- The legacy of discrimination in math education and the importance of creating inclusive classrooms.
- The role of math in economic opportunity, including math skills for a changing workforce and math and entrepreneurship.
- The use of math in environmental justice, such as math and climate change and math and sustainability.

- The importance of math literacy for health equity, including math and public health and math and clinical research.
- The role of math in civic engagement, such as math and voting rights and math and redistricting.
- The use of math in social justice advocacy, such as math and criminal justice reform and math and housing discrimination.
- The portrayal of math in the media and popular culture, such as math in the news and math in movies and television.
- The impact of math on the future of work, such as math and artificial intelligence and math and the gig economy.
- The role of math in achieving global goals, such as math and sustainable development and math and peacebuilding.

We hope that this book will inspire you to use your mathematical skills to make a positive impact in your community. Whether you are a teacher, a student, a policymaker, or simply a concerned citizen, we believe that you can use math to make a difference.

# Chapter 1: Math as a Tool for Empowerment

## Math as a Language of Justice

Math is not just a collection of abstract symbols and equations. It is a language, a powerful tool that can be used to communicate ideas, solve problems, and make sense of the world around us. And just like any other language, math can be used to promote justice or injustice.

Throughout history, math has been used to justify discrimination and oppression. For example, in the 19th century, phrenology, a pseudoscience that claimed to measure intelligence by the shape of the skull, was used to argue that Black people were intellectually inferior to white people. In the early 20th century, eugenics, a movement that aimed to improve the genetic quality of the human population, was used to

justify forced sterilization of people with disabilities and other marginalized groups.

Today, math continues to be used to perpetuate inequality. For example, standardized testing, which is often used to make decisions about educational opportunities and job placement, has been shown to be biased against students from marginalized backgrounds. Algorithmic bias, which occurs when algorithms are trained on data that is biased, can lead to unfair and discriminatory outcomes in areas such as criminal justice, employment, and housing.

But math can also be a tool for justice. By empowering people with the mathematical skills they need to understand the world around them, we can challenge the systems of oppression that have been built upon it.

Math can be used to expose injustice, challenge discrimination, and advocate for change. It can be used to create new technologies that solve social problems and build more sustainable communities.

One example of how math is being used to promote justice is the work of the Sentencing Project, a non-profit organization that works to reduce mass incarceration in the United States. The Sentencing Project has used data analysis to show that mass incarceration is not only unjust but also ineffective. The organization's research has helped to raise awareness of this issue and has led to changes in sentencing policies.

Another example of how math is being used to promote justice is the work of the American Civil Liberties Union (ACLU). The ACLU has used data analysis to show that racial profiling by law enforcement is widespread and has a devastating impact on communities of color. The ACLU's research has helped to raise awareness of this issue and has led to changes in policing practices.

These are just two examples of how math is being used to promote justice. As we continue to develop new

mathematical tools and techniques, we can expect to see even more ways in which math can be used to create a more just and equitable world.

# Chapter 1: Math as a Tool for Empowerment

## Unraveling the Barriers to Math Literacy

Math literacy is essential for success in the 21st-century workforce and for active participation in a democratic society. However, millions of Americans struggle with math, and this has serious consequences for their lives and their communities.

There are many factors that contribute to the math literacy gap. One factor is poverty. Children who grow up in poverty are more likely to attend underfunded schools with less qualified teachers and fewer resources. They are also more likely to experience trauma, which can interfere with learning.

Another factor that contributes to the math literacy gap is race and ethnicity. Black and Hispanic students are more likely to be placed in lower-level math classes, even if they have the same math skills as their white

peers. They are also more likely to be suspended or expelled from school, which can further disrupt their education.

Gender stereotypes also play a role in the math literacy gap. Girls are often told that they are not good at math, and this can lead them to avoid math classes and careers. This is a self-fulfilling prophecy: if girls believe that they are not good at math, they are less likely to try hard in math class, and they are more likely to fail.

The math literacy gap has serious consequences for individuals and for society as a whole. People who lack math literacy are more likely to be unemployed or underemployed. They are also more likely to be incarcerated and to experience poverty. The math literacy gap also makes it difficult for people to understand important issues facing our society, such as climate change and the economy.

There are many things that can be done to address the math literacy gap. One important step is to increase

funding for early childhood education. Studies have shown that high-quality early childhood education programs can help children develop the math skills they need to succeed in school.

Another important step is to improve the quality of math instruction in schools. This means providing teachers with the resources and professional development they need to be effective. It also means creating a classroom environment that is supportive and encouraging.

Finally, it is important to change the way we think about math. We need to stop seeing math as a difficult and boring subject. We need to start seeing math as a powerful tool that can be used to solve problems and make a difference in the world.

By working together, we can close the math literacy gap and ensure that all Americans have the opportunity to succeed.

# Chapter 1: Math as a Tool for Empowerment

## The Case for Universal Math Education

Math is essential for understanding the world around us. It is the language of science, technology, engineering, and medicine. It is also used in everyday life, from balancing a checkbook to calculating a tip. Unfortunately, not everyone has access to a quality math education. This is a problem that has serious consequences for individuals and society as a whole.

For individuals, a lack of math skills can limit their opportunities for education, employment, and economic security. Students who struggle with math are more likely to drop out of school. They are also less likely to pursue higher education or careers in STEM fields. This can lead to lower earnings and fewer job opportunities.

For society, a lack of math skills can have a number of negative consequences. It can lead to a less productive workforce, a less innovative economy, and a less informed citizenry. It can also make it more difficult to address social problems such as poverty and crime.

The good news is that there is a growing movement to promote universal math education. This movement is based on the belief that all students can learn math, regardless of their background or abilities. Universal math education means that all students have access to high-quality math instruction, from preschool through college. It also means that students are held to high standards and are expected to master challenging math content.

There are a number of benefits to universal math education. For individuals, it can lead to higher earnings, better job opportunities, and a more fulfilling life. For society, it can lead to a more productive

workforce, a more innovative economy, and a more informed citizenry.

There are a number of challenges to achieving universal math education. One challenge is the lack of qualified math teachers. Another challenge is the negative attitudes that some students have towards math. However, these challenges can be overcome with the right policies and investments.

The benefits of universal math education far outweigh the challenges. By investing in math education, we can help all students reach their full potential and create a more just and equitable society.

Universal math education is a moral imperative. All students deserve the opportunity to learn math and to use their math skills to improve their lives and the lives of others.

**This extract presents the opening three sections of the first chapter.**

**Discover the complete 10 chapters and 50 sections by purchasing the book, now available in various formats.**

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