

# Secondary Mathematics - Looking Forward

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# Duluth Background

- 8th grade must select Intermediate Algebra to reach Calculus in 12th grade
- Historically, approximately 50% of OEMS 8th graders that took Intermediate Algebra did NOT enroll in Calculus
- Students of color disproportionately represented in lowest tracks; ie. special education math class or Trans Math
- With the exception of Asian students - no students of color were in Calculus a decade ago



# Background

Past 30 years - national high school mathematics outcomes have remained flat while increases have been noted in 4th and 8th grade (NAEP) scores\*


2018 - NCTM released ***Catalyzing Change in High School Mathematics: Initiating Critical Conversations***

2019-20 - Twelve 8th grade and high school teachers attended a News & Views book study, all secondary sites were represented.

\* <https://my.nctm.org/blogs/my-nctm/2018/03/21/catalyzing-change-in-high-school-mathematics>




# Catalyzing Change - 4 Recommendations to Address Inequities

- explicitly **broadening the purposes for teaching high school mathematics** beyond a focus on college and career readiness;
  - **dismantling structural obstacles** that stand in the way of mathematics working for each and every student;
  - **implementing equitable instructional practices**
  - **identifying Essential Concepts** that all high school students should learn and understand at a deep level and **organizing** the high school **curriculum** around these Essential Concepts in order **to support students' future personal and professional goals.**
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## Why Change?

*Catalyzing Change addresses the fact that significant numbers of high school students develop **unproductive mathematical identities** and see little value in mathematics, while the **need** for mathematical skills is increasing to meet the **workplace**, **postsecondary education requirements**, and to ensure active **participation in our democratic society**.*



# Dismantling Structural Obstacles - Tracking

Delay acceleration until junior year.

Examples

[San Francisco Unified School District](#) - failure of first HS course 51% to 8%

DPS Book Study - compact Intermediate Algebra 2 and Pre-Calc to take Calculus Senior Year



# Teach Essential Concepts

## Colorado's Use of the Essential Concepts



# Closer to Home - MN Example SPSS

## Essential Concepts For All Students

Year 1: Intermediate Algebra with Inquiry & Justification

Year 2: Algebra 2 with Reasoning & Proofs

Core Year 3-4

Statistics & Data Analysis Pathway

CTE Pathway

STEM-Prep Pathway

Optional Year 3-4


Coding/CSci Pathway

Finance and Investing



# Looking Forward

NCTM Makes Key Recommendations in Catalyzing Change:

1. Eliminate student and teacher tracking
  2. Teach all Essential Concepts in mathematics
  3. Provide engaging and empowering mathematics instruction for every student
  4. Offer high school students continuous and meaningful four-year mathematics instruction
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# Catalyzing Change

No time like the present to begin the conversation to improve mathematics outcomes for all students.

[Catalyzing Change in School Mathematics Key Recommendations](#) pre-k-12

Questions?

