CBMS Teacher Recruitment and Retention Task Force Update

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Purpose

Charge: to gather national data around the crisis in recruiting and retaining teachers of mathematics

Rationale: We are at a critical juncture in maintaining a strong and well-trained mathematics teacher workforce. While we have much anecdotal evidence of the crisis, to move policy, funding, and resources to address it we need national data that provides compelling evidence of the problem.

Deliverable: White paper on needs assessment or state of teacher shortage at this time.

- Actions–How can our various organizations can support?
- Focus on mathematics teachers secondary (7-12) level.
- There is a crisis: We need to persuade people to potentially do things differently. To impact policy. What can we do differently that will make a change–make a difference?

Task Force members

- Gary Martin, Auburn University, GFO
- Lisa Ashe, ASSM, North Carolina Dept. of Public Instruction
- Tyler Kloefkorn, AMS
- John Ewing, Math for America
- Kyle Whipple, University of Wisconsin-Eau Claire
- Peter Ely, Fayetteville State University, NASA
- Shelly Jones, BBA, Central Connecticut State University
- Sol Freidberg, Boston College, National Academy of Science's U.S National Commission on Mathematics Instruction
- Linda Fulmore, TODOS
- Moises Rivera, Senior Financial Analyst, Math For America Teacher Fellow
- Ricardo Moena, University of Cincinnati
- Rachelle Rogers, Association of Teacher Educators, Baylor University
- Charlie Steinhorn, Ex Officio, CBMS
- Trena Wilkerson, Task Force Chair, Baylor University, NCTM

Gates Foundation Grant Ryen Borden

https://tinyurl.com/475asdxw

Key Questions

1. Who is teaching mathematics?
2. What is the state of the mathematics teacher shortage?
3. What is the state of mathematics teacher entry and certification?
4. What are retention rates of mathematics teachers in United States public schools?
5. What are the promising practices of mathematics teacher recruitment and retention?

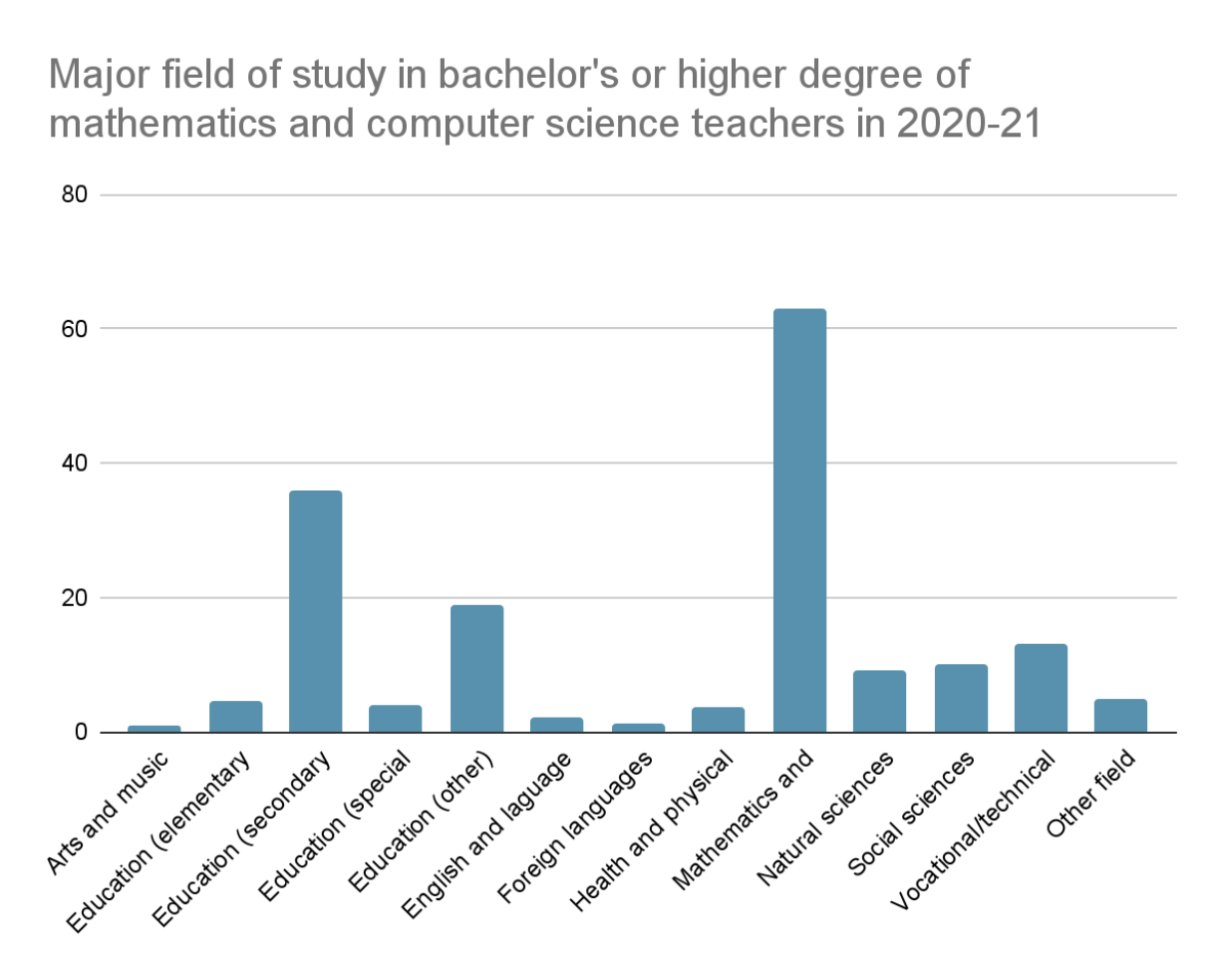
Who is teaching mathematics?

One glimpse….combines math & Computer Science

- National Teacher and Principal Survey by the NCES Reporting 2021-2022
- 169,900 mathematics and computer science high school (grades 9-12) teacher responses
- 58% were female; 80% white with Hispanic following at 7.1%
- Started teaching when they were 25 or younger and had a master's degree
- 38% 10- 20 years of teaching experience
- **mostly** held a degree in their field (~38%) with or secondary ed only (~60% total)
- 23% entered through an alternative preparation route

Majors of mathematics and computer science teachers in 2020-21 school year for their bachelor's degree or higher

NCES 2022

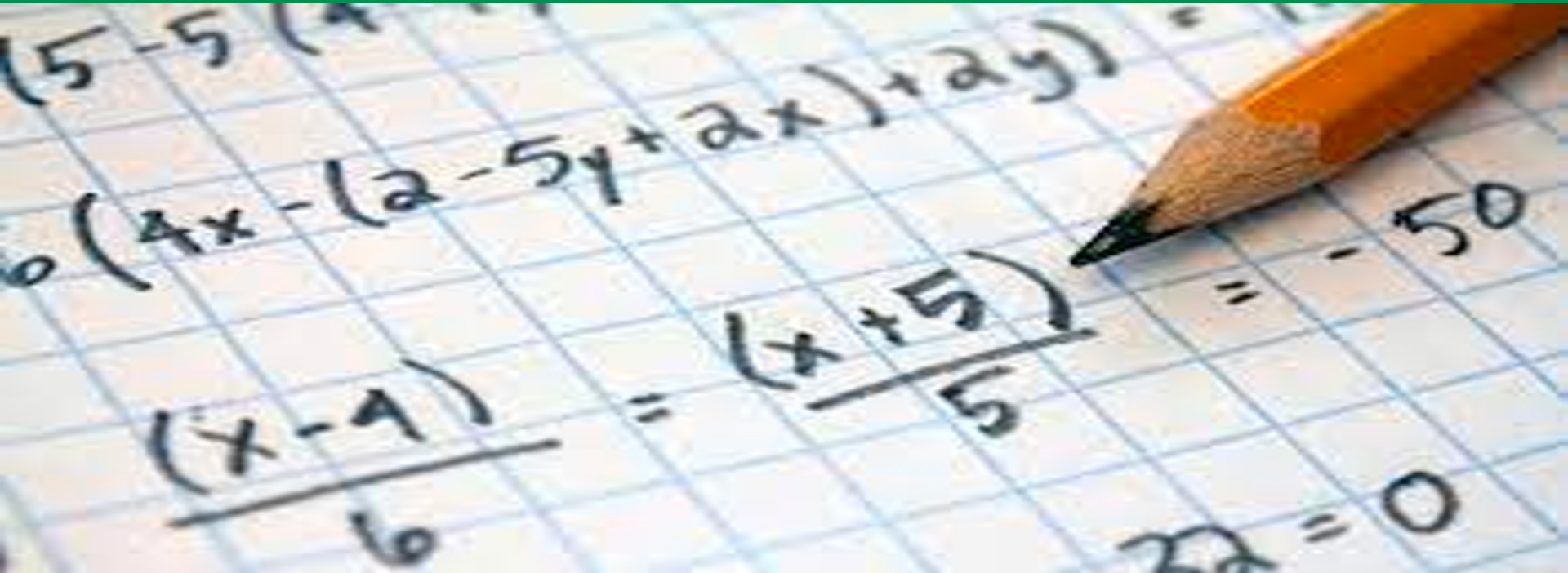


Who is teaching mathematics?

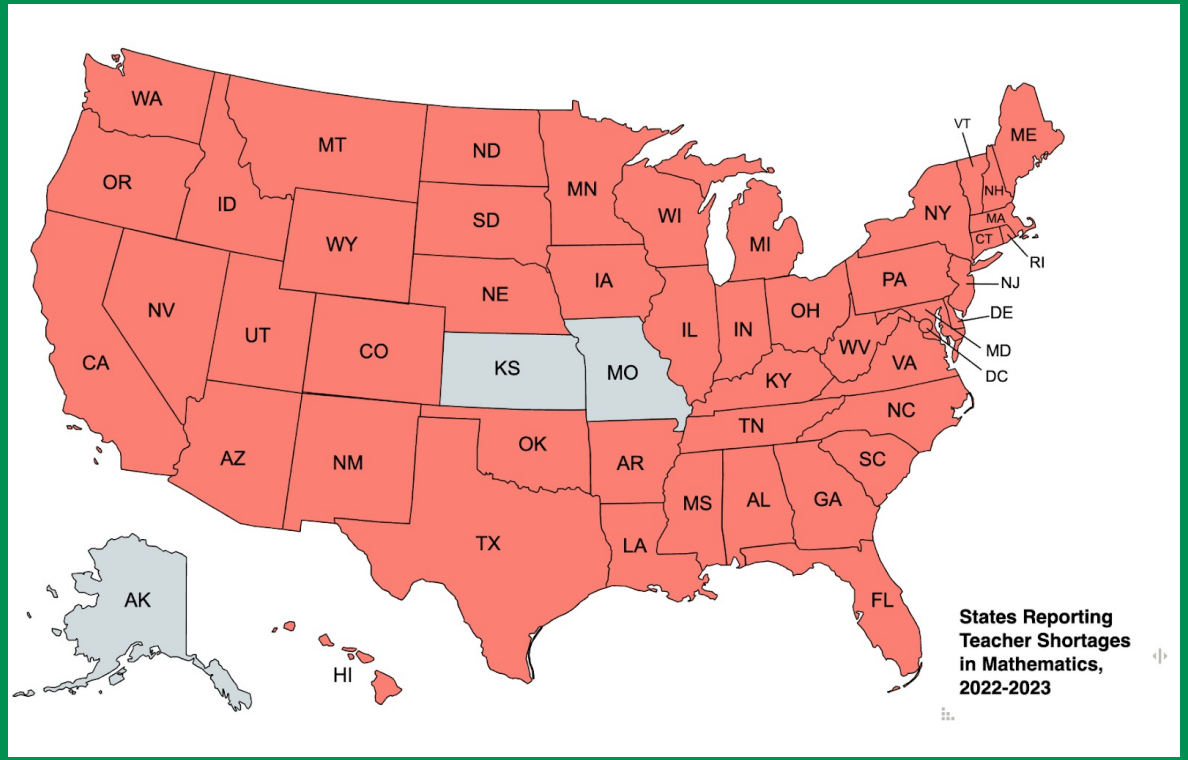
More…

- Seeing some stability in teacher-preparation enrollment and completion but have years of declines
- Trends by state vary—mixed
  - Texas decreasing as of 2022 after sharp increase between 2017 & 2018 but rise in alternative programs
  - California—decrease in 2018-19 but brief uptick in 2020-21

What is the state of the mathematics teacher shortage?



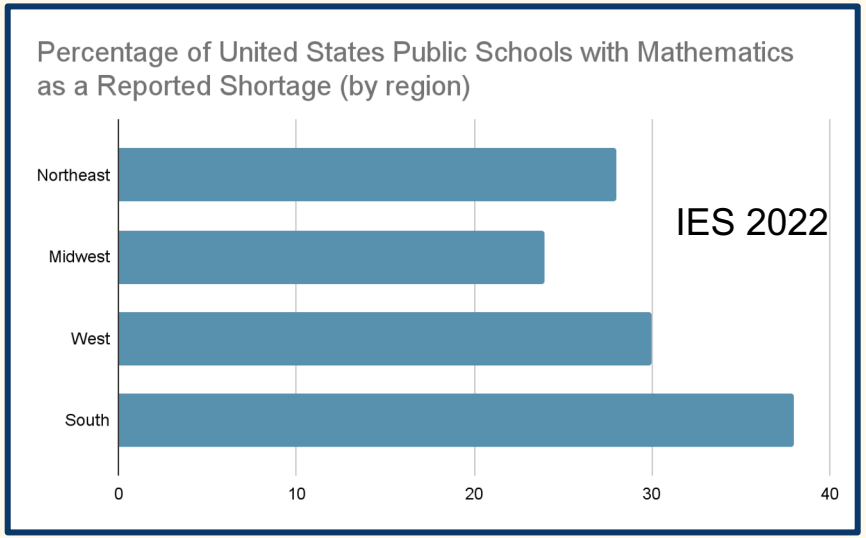
47 of 50 *States Reporting Teacher Shortages in Mathematics, 2022-2023*



(Elsen-Rooney, 2023; National Conference of State Legislatures, 2023; Texas Education Agency, 2023; Zinkand, 2023)

- **Certification is down**
  - past decade, mathematics teacher certification is down 20% (NCSL, 2023)
  - Exodus versus shortage?

- **Too few applicants for open positions**
  - 63% of school districts report too few applications for open positions or not qualified (IES, 2022)
  - NY less than 3 applications for each math vacancy (Elsen-Rooney 2023)
  - Mid West-75% of districts reported lack of qualified applicants (IES 2022)



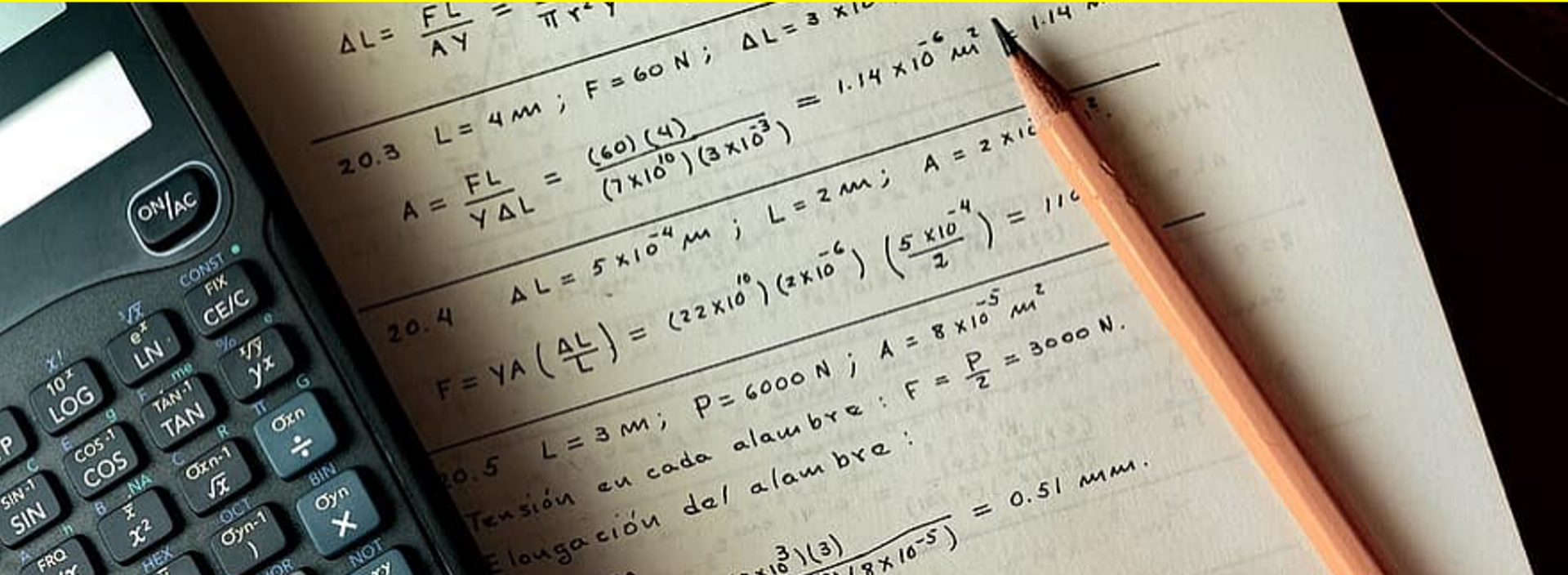
- **Shortages are highly localized**
  - concentrated in areas of high economic need and low academic performance (Sanderson Edwards et al., 2023)
  - 33% of impoverished schools report vacancies (IES 2022)—South is greatest

What is the state of math teacher education entries and certification?

Entry and Certification

- Growing number of Alternate Certification Programs (ACPs) but overall pursuit of math cert decreasing
- 4% college freshmen pursuing ed career-so even less are math
- EX: TX past decade-main producers of math certs
    - ACPs-37% and Public Universities 39%
    - Decline in certification awards by 35% (also true in NY ~1/3 who enroll complete for certification)
    - 11% drop in 4-8 math certs & 17% drop in 9-12 since 2020 (NCSL, 2023)
- EX: OH-Large numbers of courses being taught by uncertified teachers and 19% decrease from 2015-2020 in enrollment in OH teacher prep programs (OH DoE, 2023)

What are retention rates of mathematics teachers in United States public schools?



Retention

- Teachers credentialed through alternative certification programs have less longevity in the field.
- Retention rates vary economically (lower eco lower retention)
- Retention rates vary by teacher experience (1-5 years less retention)
- Retention rates vary by race and ethnicity

Arkansas and Tennessee, teachers of color have a lower retention rate

Not the case everywhere, such as in Texas (Horn, Burnett, Lowery, & White, 2021) where Hispanic teachers have highest retention rate at 60%, Black 50%, and white 45% over 10 years.

TN: early-career teachers, teachers of color, and teachers in schools with high economic need are more likely to leave the profession or transfer schools despite an increase in these teachers reporting intentions to continue teaching in their schools from 2022 to 2023 (Binstead, 2023).

What are promising practices for teacher retention?

Types & Effect

- Teacher Residency Programs

Apprenticeships

Provides partnership between prep providers and school districts-mutually beneficial-addressed recruitment and building capacity
National Center for Teacher Residencies—86% retained after 3 years and 69% ID as people of color

- Grow Your Own

Vary widely across states
High-School pathways is most common
Some are by districts and others by state initiatives

- Mentoring & Induction Programs

U of AZ Ctr for Recruitment & Retention-90% retention rate over last 5 years

Professional Development

One way to address teacher shortages must include providing teachers with strengthened continuous training opportunities that professionalize teaching and support teachers.

Case study: Rural Colorado

Findings: 90% of MSP grant participants remained in the teaching profession the following year, with 85% staying in the same school, and none of the participants leaving their positions due to a specific desire to leave the profession completely, outside of retirement. • 91% of the teachers intended to continue teaching in the following school year, with one participant leaving the field due to retirement.

Recommendation Audiences & Categories

Audiences

- Policy Makers
- Certification Entities
- State/School/District Leaders
- Math Teacher Educators
- Researchers
- Grant Funders

WHO ELSE?

Categories

- Data Collection and Databases
- Partnerships
- Funding
- Teacher Certification
- Teacher Support & Opportunities
- Structures
- Promising Practices

Initial Take-Aways

- Recruitment & Retention of mathematics teachers is complex but a crisis
- Situations differ across & within states, geographic regions
- Marginalization is a mediating factor
- Data gathering is ineffective or at least problematic
- Recommendations for Policy Makers, Certification Entities, schools/district leaders, Math Teacher Educators & Researchers
- Partnerships and Funding are central to potential solutions
- Promising practices for retention are grounded in developing partnerships across varying stakeholders and institutions that support K-12 education

Question To Discuss: What would be the most persuasive data or information?

- for policy makers at the state level? At the national level? At the local level?
- For teacher educators and programs
- For schools and districts

Continued Questions

- How aware are policy makers of the problem?
- What impacts whether someone wants to go into teaching mathematics?
- What are reasons mathematics teachers leave the profession? Why do they stay?
- Would interdisciplinary certification benefit?
- What are ways to assist potential math teachers in funding their education?
- Should certification requirements for math teachers be streamlined across states?
- How are we contributing to a work environment for math teachers that is sustainable?
- How could we build supportive networks for math teachers?

OTHERS?

Timeline
Next Steps

Late Summer/Fall 2023

Unpack Questions
Identify, examine, synthesize resources
Draft Report (1 pagers for questions)

Spring 2024

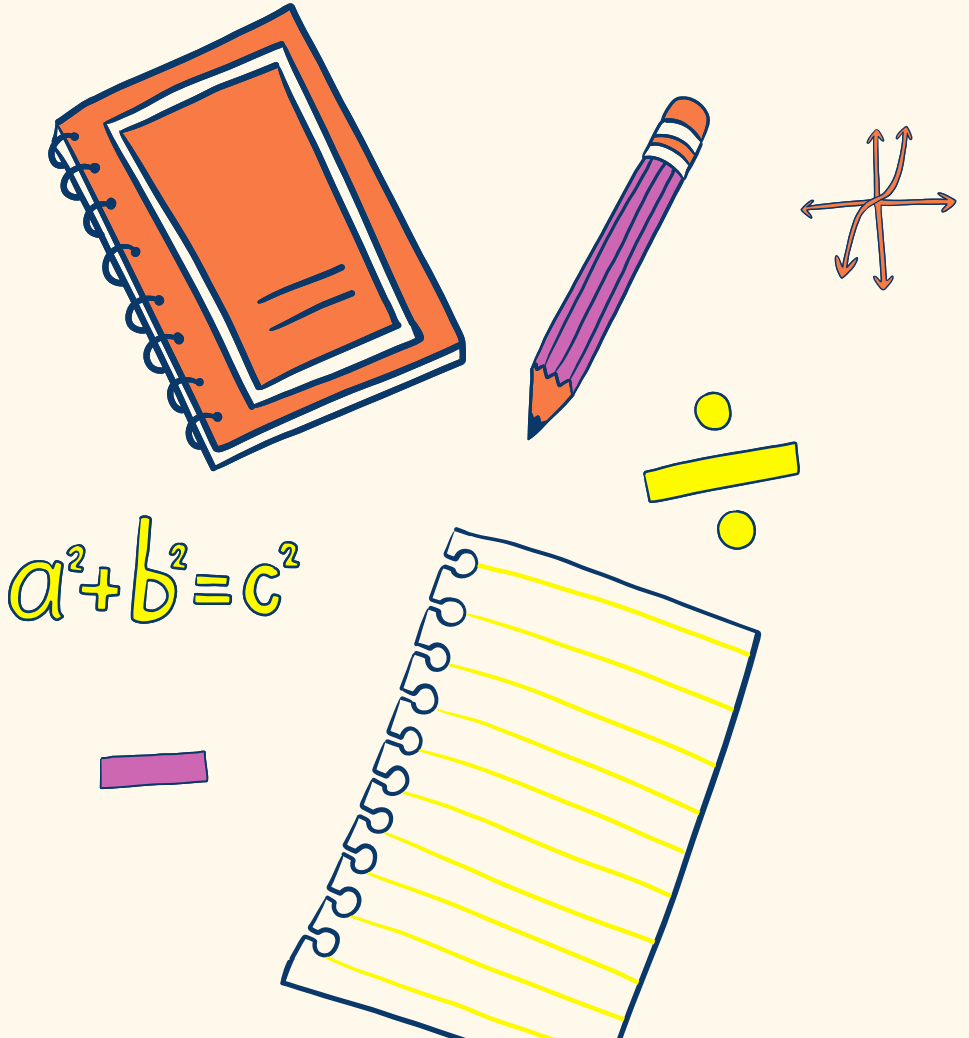
Continue synthesizing and organizing related to questions

Summer 2024

Submit Report for Feedback to Task Force
Submit final report to CBMS

Fall 2024

Disseminate Report



Thank you!

Questions/Comments