

Building Positive Math Attitudes in Washington Elementary School Students

Washington STEM Math Attitudes Coaching
Kickoff Webinar

November 16, 2017



Agenda



- 1** Introductions
- 2** Why math?
- 3** Which attitudes and beliefs are important?
- 4** What to expect
- 5** Next steps

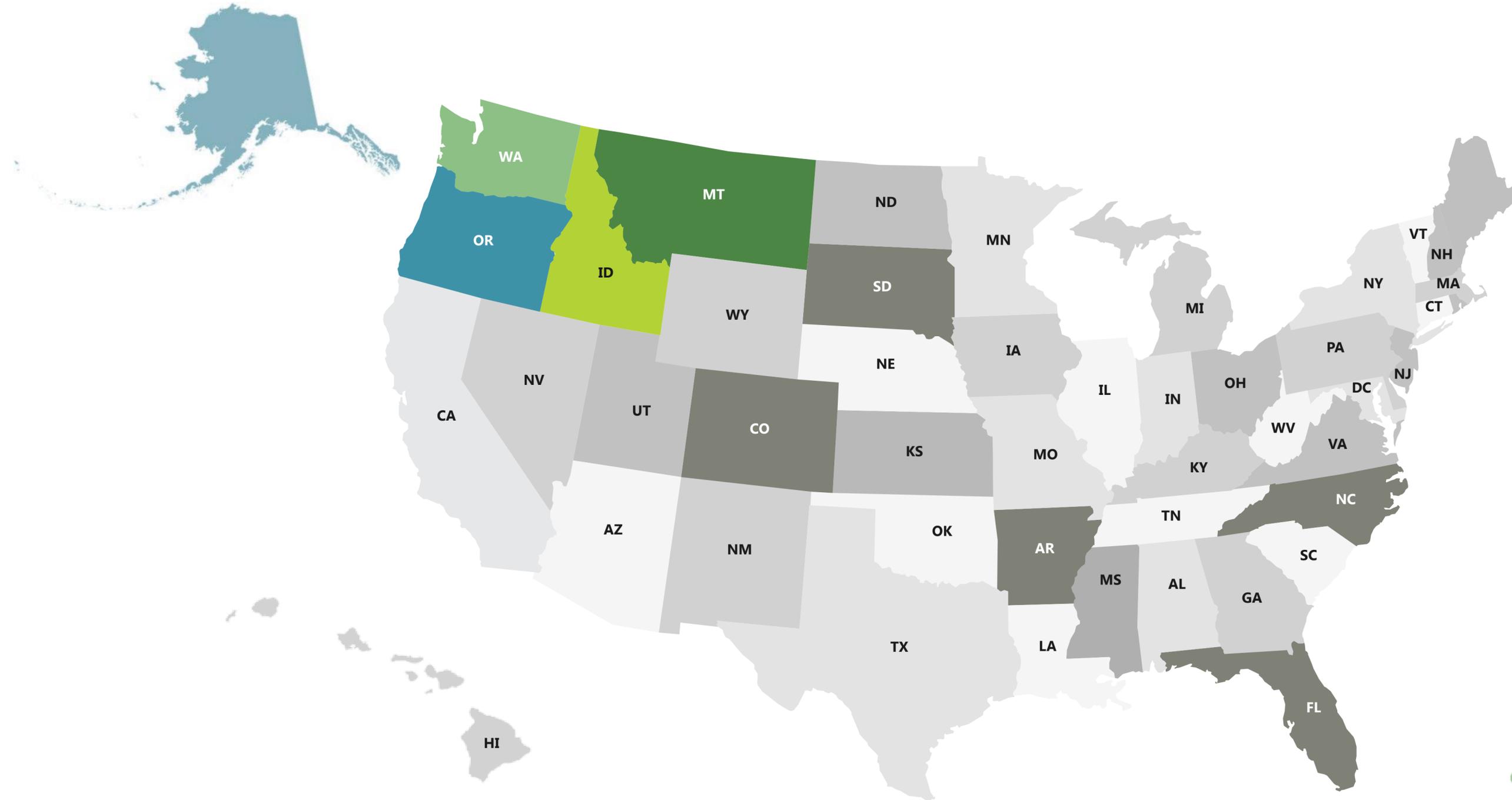
About REL Northwest

Regional educational laboratories (RELs) partner with practitioners and policymakers to use data and evidence to help solve educational problems that impede student success. We do this by:

- Conducting rigorous research and data analysis
- Delivering customized training, coaching, and technical support
- Providing engaging learning opportunities



Our Region



REL Northwest Team



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About Washington STEM

Washington STEM's mission is to advance excellence, equity, and innovation in science, technology, engineering, and math (STEM) for *all* Washington students. Washington STEM focuses efforts on four key initiatives:

- Computer science
- Early math
- Science and engineering
- Career-connected learning



WASHINGTON
STEM

REIMAGINING SCIENCE, TECHNOLOGY,
ENGINEERING + MATH EDUCATION

Washington STEM Team



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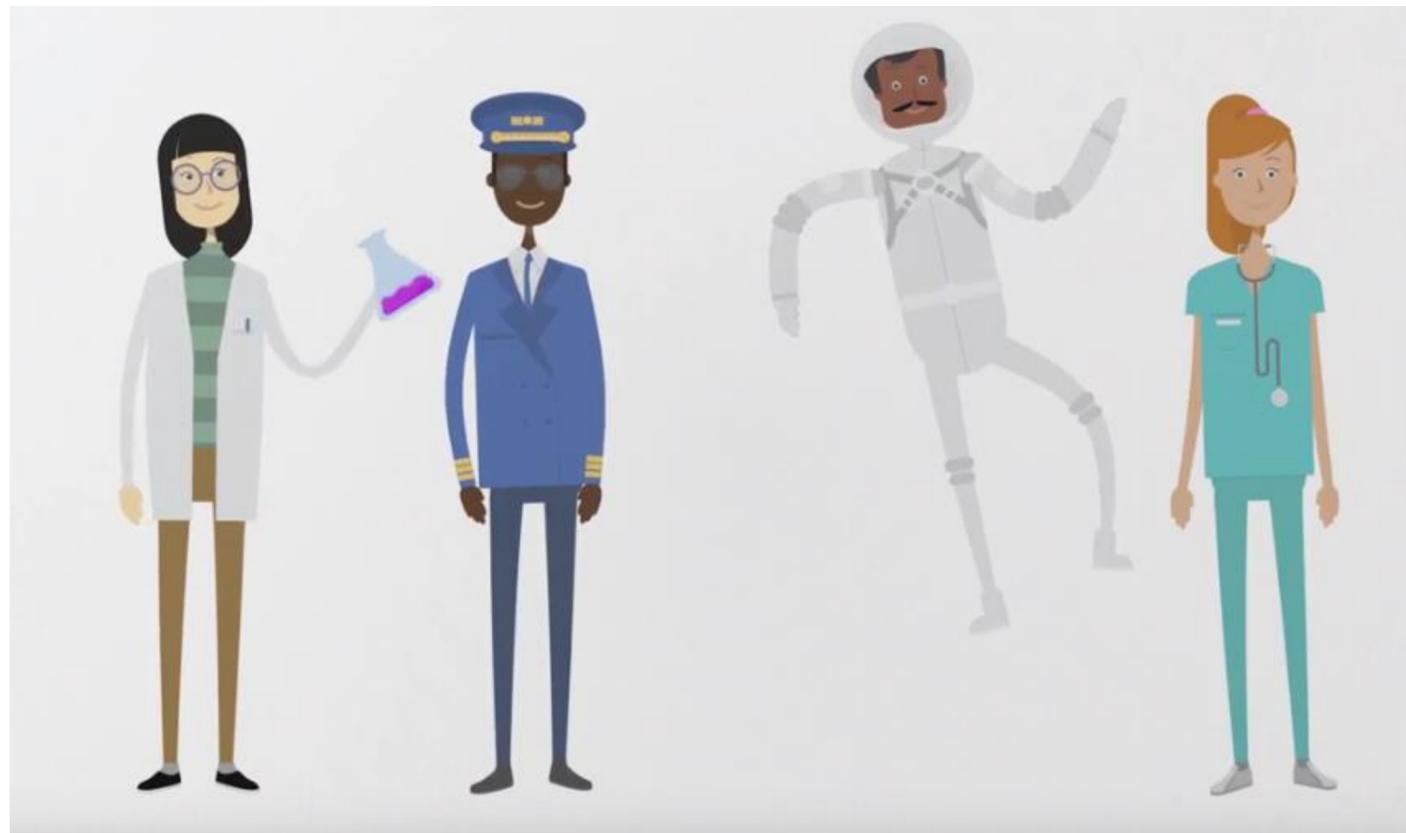
Principal Research Associate
IMPAQ International

Why math?

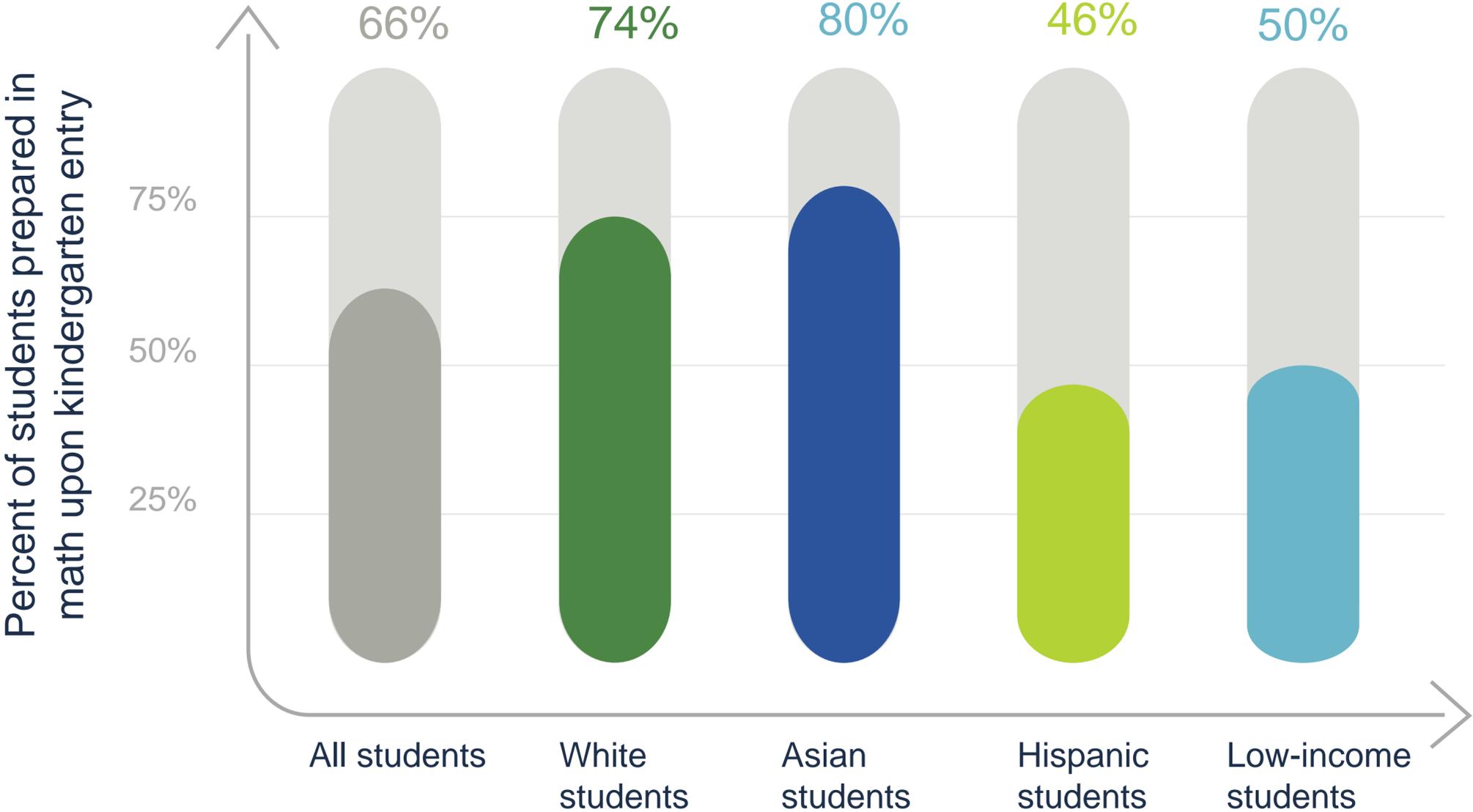
Math as a Gateway



- Early math skills predict success in all other academic domains
- Math skills are important not just for future success in school but for employment in growing sectors of the workforce



Opportunity Gaps in Math: A Concern for Washington



Source: Washington Kindergarten Inventory of Developing Skills (WaKIDS) 2016-17 report card

Math Attitudes and Beliefs

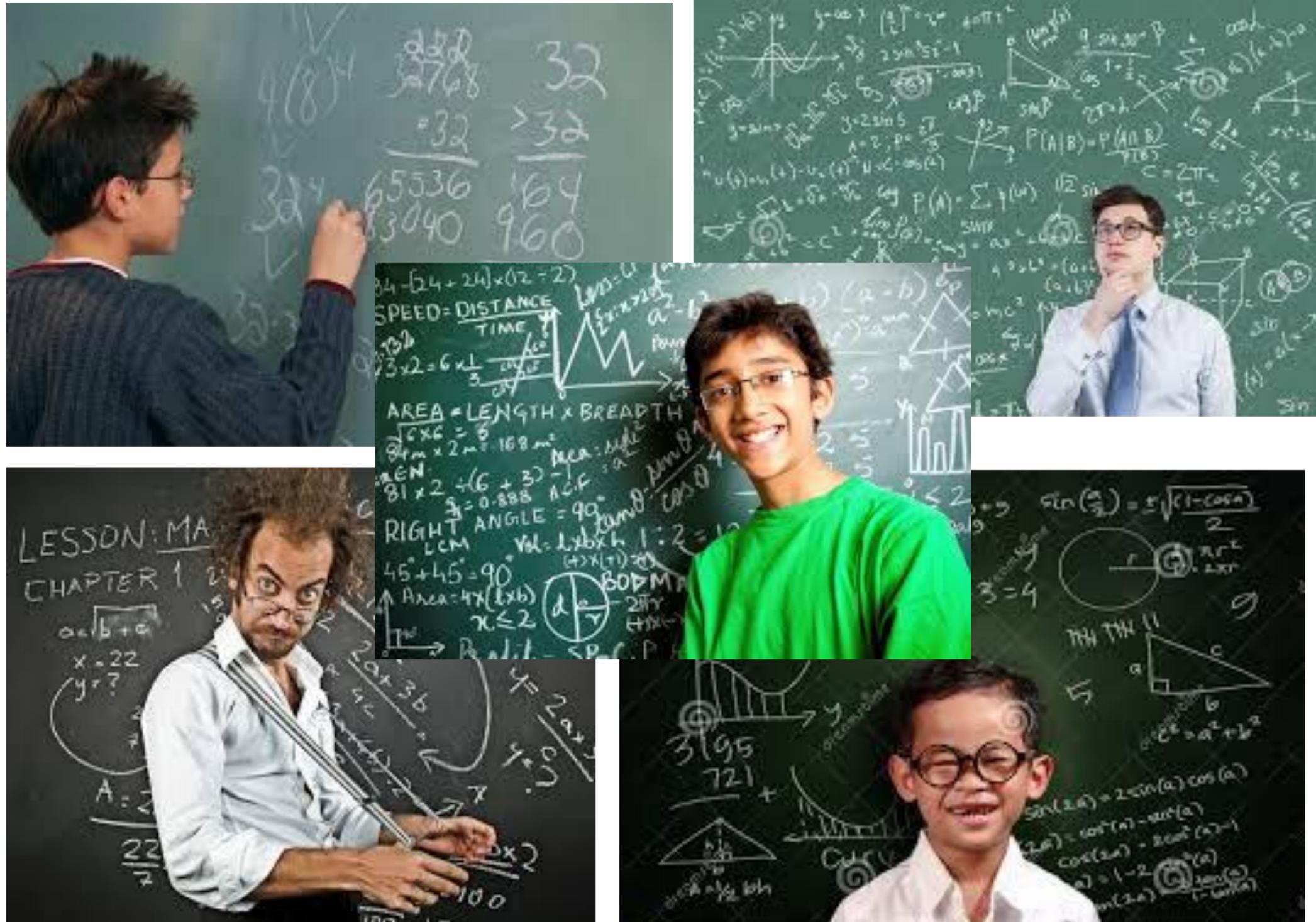
- Math, more than any other domain, carries baggage that can set students up to hold negative attitudes and beliefs

~~I'm just not a
letters person.~~

I'm just not a
numbers person.

~~I'm so bad at
reading.~~

Google Image Search for “Math Genius”



What do you notice about these images?

What cultural assumptions are reflected?

Girls and Math

“Boys do not pursue mathematical activities at a higher rate than girls do because they are better at math. They do so, at least partially, because they *think* they are better.”

Shelley Correll,
Stanford sociologist

Stereotypes and Implicit Messaging

Sociocultural stereotypes associating STEM with boys and men act as barriers that prevent girls and women from developing interests in STEM, and this starts at a young age.

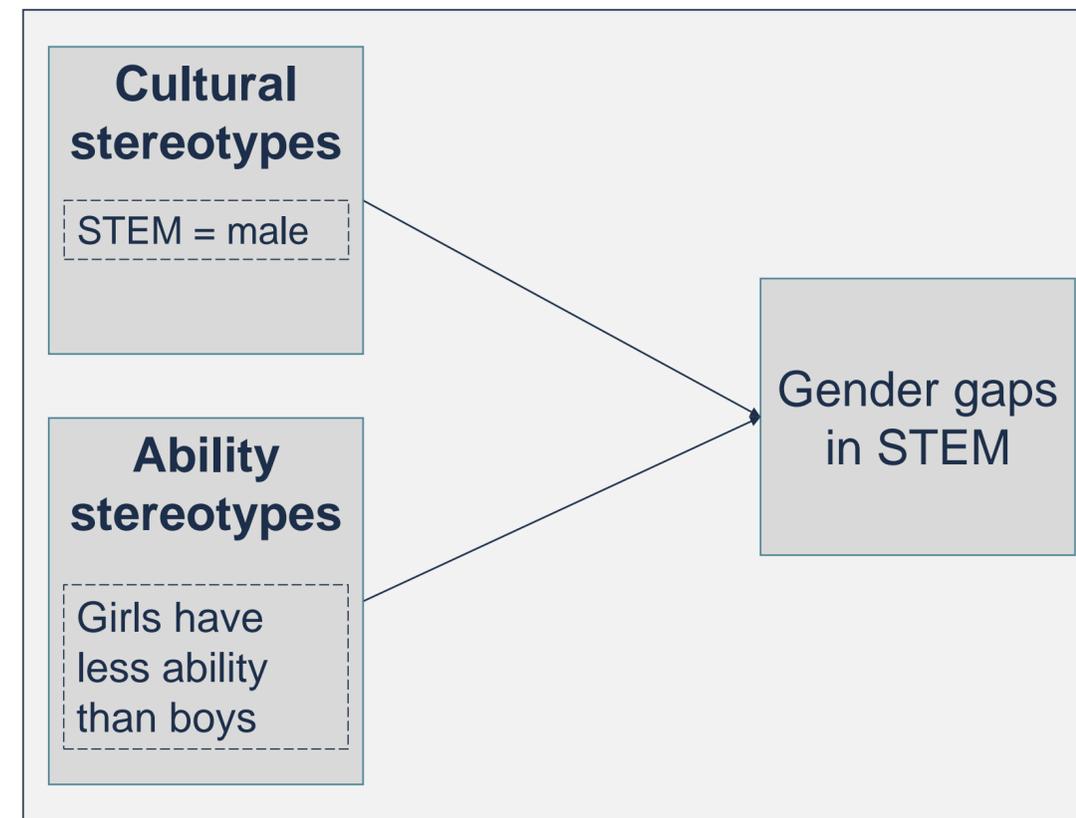
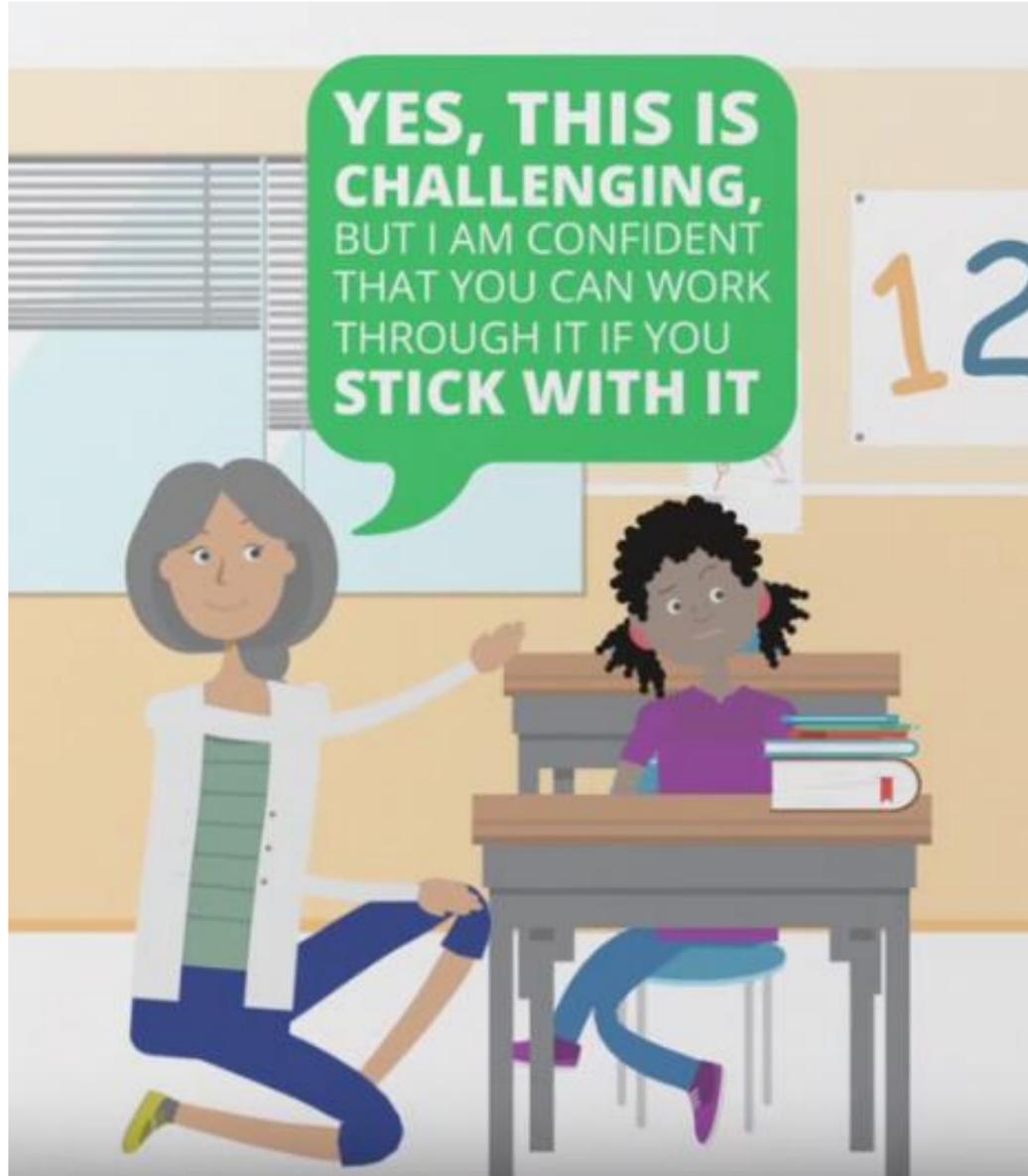


Figure adapted from Cheryan, Master, & Meltzoff, 2015

Adults' Attitudes Matter

- Children whose parents or teachers are anxious about math are more likely to have math anxiety themselves, which impacts achievement.
- Teachers' mindsets influence the feedback they give students.
- Classroom environments can inadvertently signal that only some students belong in math.

Adults Can Help



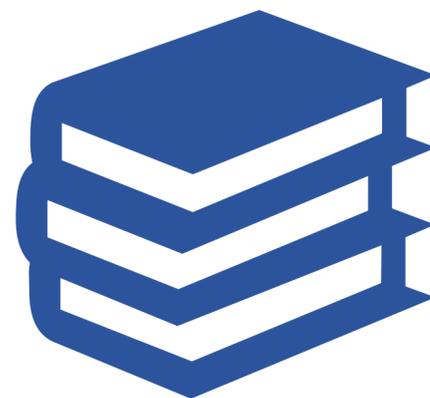
- Through changes to classroom practices and environments, educators can help students build positive math attitudes and beliefs.

**Which attitudes and beliefs are
important?**

Students' Mindsets Influence Behaviors and Achievement



Academic
Mindset



Academic
Behaviors



Academic
Outcomes

Students' Mindsets Influence Behaviors and Achievement



Academic
Mindset

Farrington's Four Key Academic Mindsets:

1. I belong in this community
2. I can succeed at this
3. My ability and competence grow with my effort
4. This work has value for me

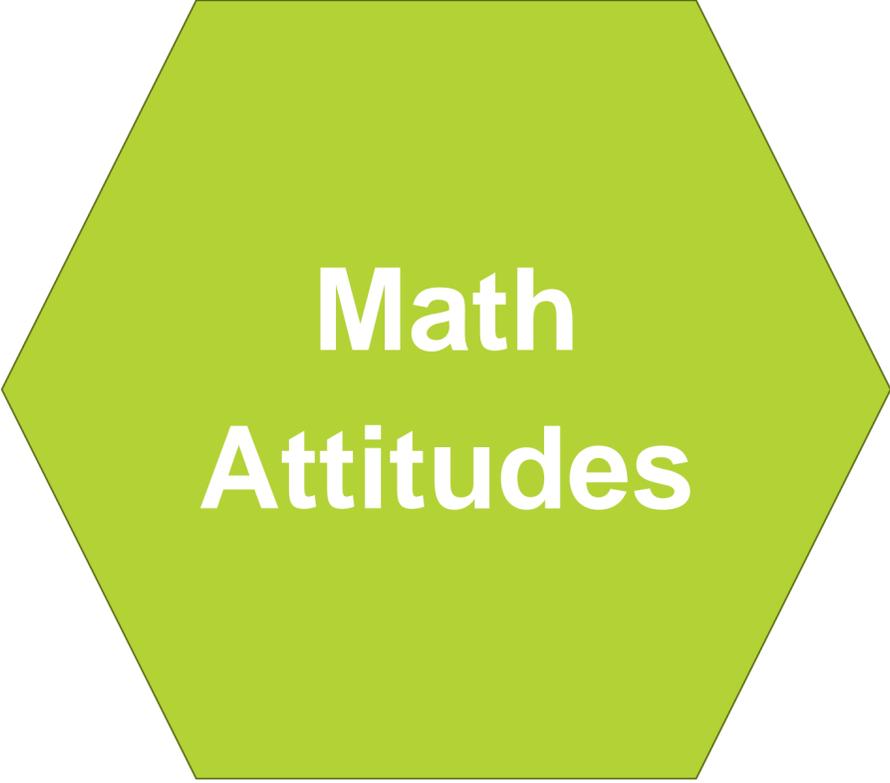
Students' Mindsets Influence Behaviors and Achievement



Academic
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Math Attitudes

Farrington's Key Academic Mindsets:

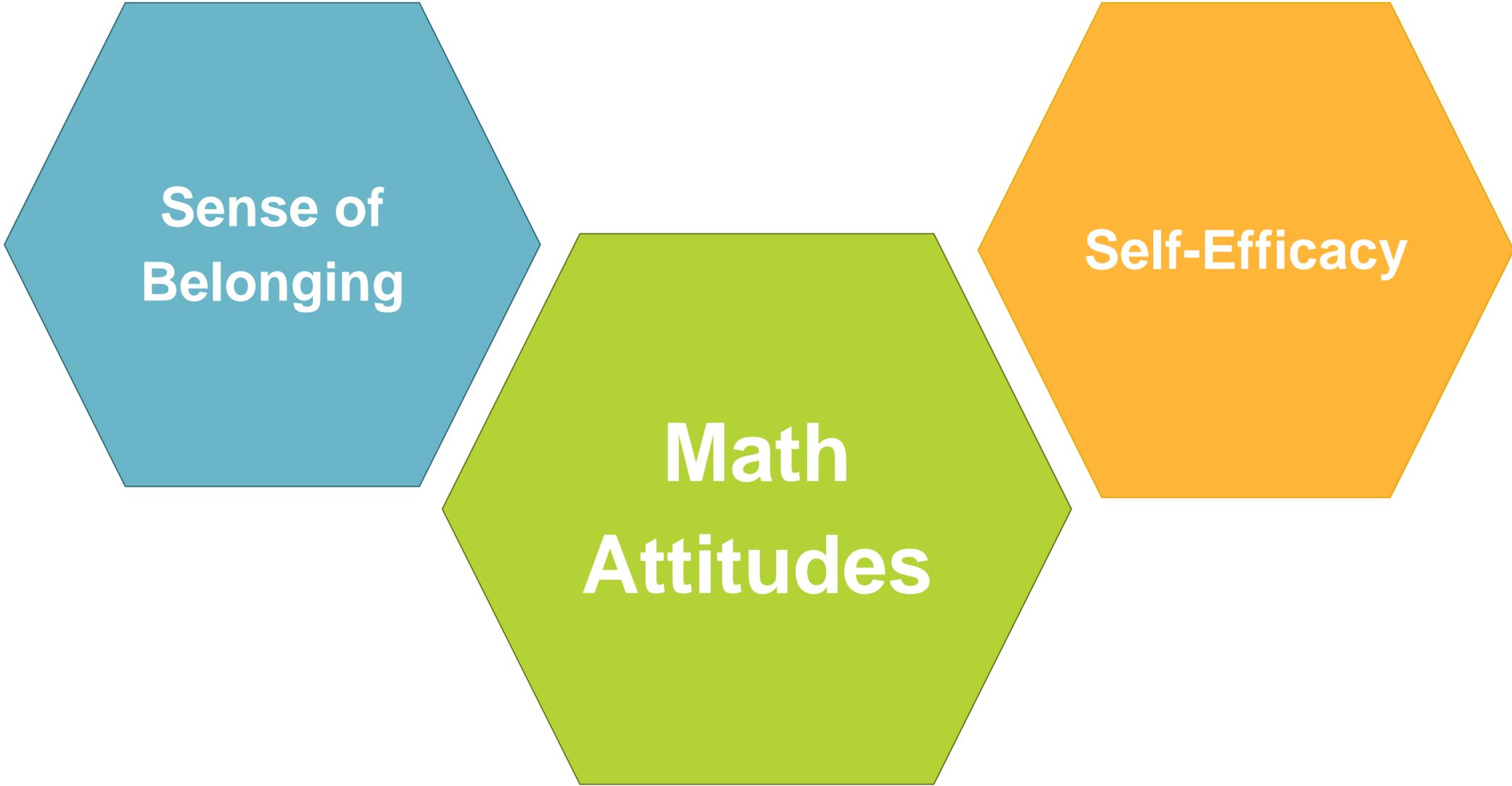
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**Sense of
Belonging**

**Math
Attitudes**

Farrington's Key Academic Mindsets:

- 1. I belong in this community**
- 2. I can succeed at this**
- 3. My ability and competence grow with my effort**



Sense of
Belonging

Math
Attitudes

Self-Efficacy

Farrington's Key

Academic Mindsets:

1. I belong in this community
- 2. I can succeed at this**
3. My ability and competence grow with my effort

Sense of
Belonging

Self-Efficacy

Math
Attitudes

Growth
Mindset

Farrington's Key

Academic Mindsets:

1. I belong in this community
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Sense of
Belonging

Self-Efficacy

Math
Attitudes

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Math Anxiety

Farrington's Key

Academic Mindsets:

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Belonging

- Create inclusive spaces
- Build relationships
- Learn to recognize implicit messages

Self-Efficacy

- Promote success through scaffolding
- Help students set and track goals
 - Help students recognize success

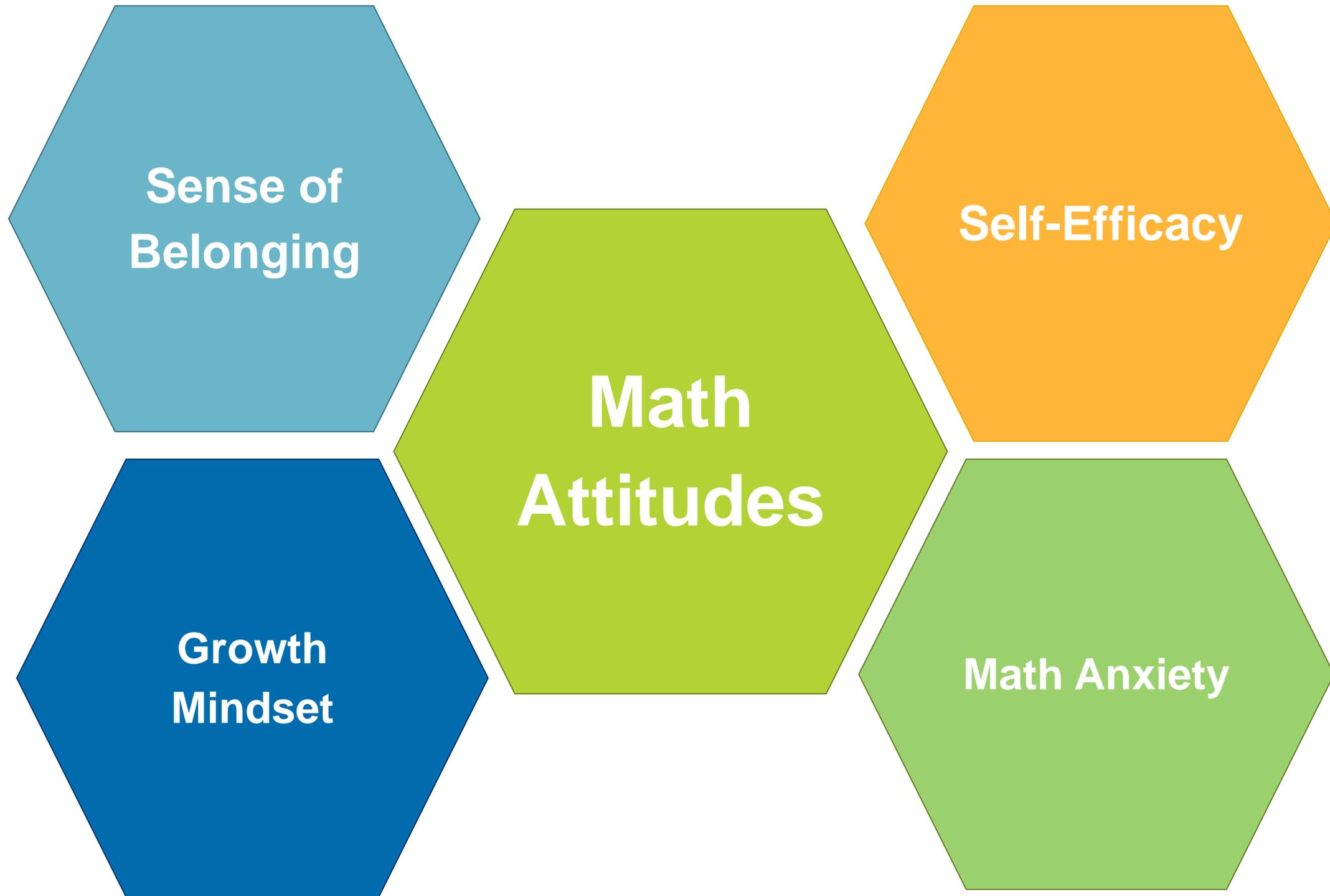
Key Strategies

Growth Mindset

- Cultivate your own growth mindset
- Praise process and effort
- Support students

Math Anxiety

- Cultivate your own self-awareness and skills
- Practice and teach mindfulness
- Celebrate mistakes



Which are you most interested in?

Where do teachers need the most support?

What to expect

What to Expect

Train-the-trainer model

- Our goal is to equip you to use provided materials to train other adults in strategies that promote positive math attitudes

Materials include:

- A PowerPoint slide deck
- An annotated facilitator's guide
- Handouts for implementing strategies
- Measurement resources
- A literature summary

What to Expect

Structure of sessions

- Introduction to research on the topic
- Review of evidence-based strategies that promote positive attitudes
- Opportunities to practice and/or discuss strategies

Content and activities

- Some content may be repeated across sessions
- Materials include activities for a large group, with suggestions for tweaks with smaller groups

Norms

We promise to:

- Respect your time
- Honor your expertise
- Be available between meetings to answer your questions

We ask that you:

- Participate actively and share your expertise
- Be open to new ideas
- Be willing to reflect on your own attitudes and beliefs about math

Session Format

- Mix of in-person (for Wenatchee and Spokane residents) and webinar trainings
- All trainings will be available as recordings after the event (although clock hours can be awarded only for real-time attendance at the webinar since we must verify your participation)
- Contact the REL Northwest team between meetings with questions

Earning Clock Hours

We can award up to six clock hours for participation in all sessions

What we need from you:

- Completion of sign-in sheets
- Real-time webinar participation (log on to the webinar platform from your own computer)
- Completion of evaluation questions

Next steps

Meeting Schedule

1. Growth Mindset (live!)

- **Spokane:** 1/10
- **Wenatchee:** 1/11
- Webinar for those unable to attend: 1/12

2. Math Anxiety

- Webinar on 2/1

3. Sense of Belonging in Math (live!)

- **Spokane:** 2/21
- **Wenatchee:** 2/22
- Webinar for those unable to attend: 2/23

4. Math Self-Efficacy

- Webinar on 3/15

Stay in Touch!



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