

# **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





# 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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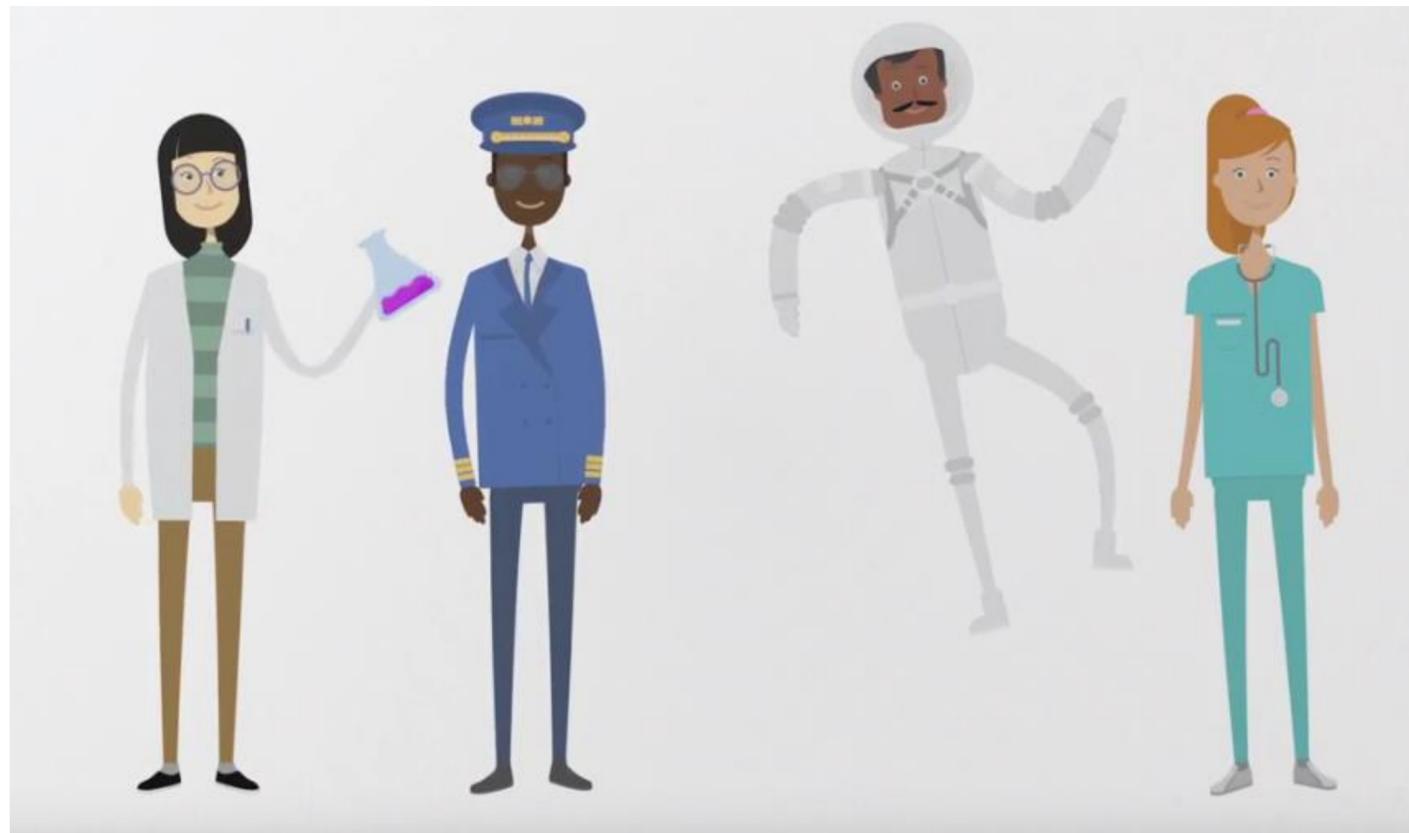
Principal Research Associate  
IMPAQ International

# Why math?

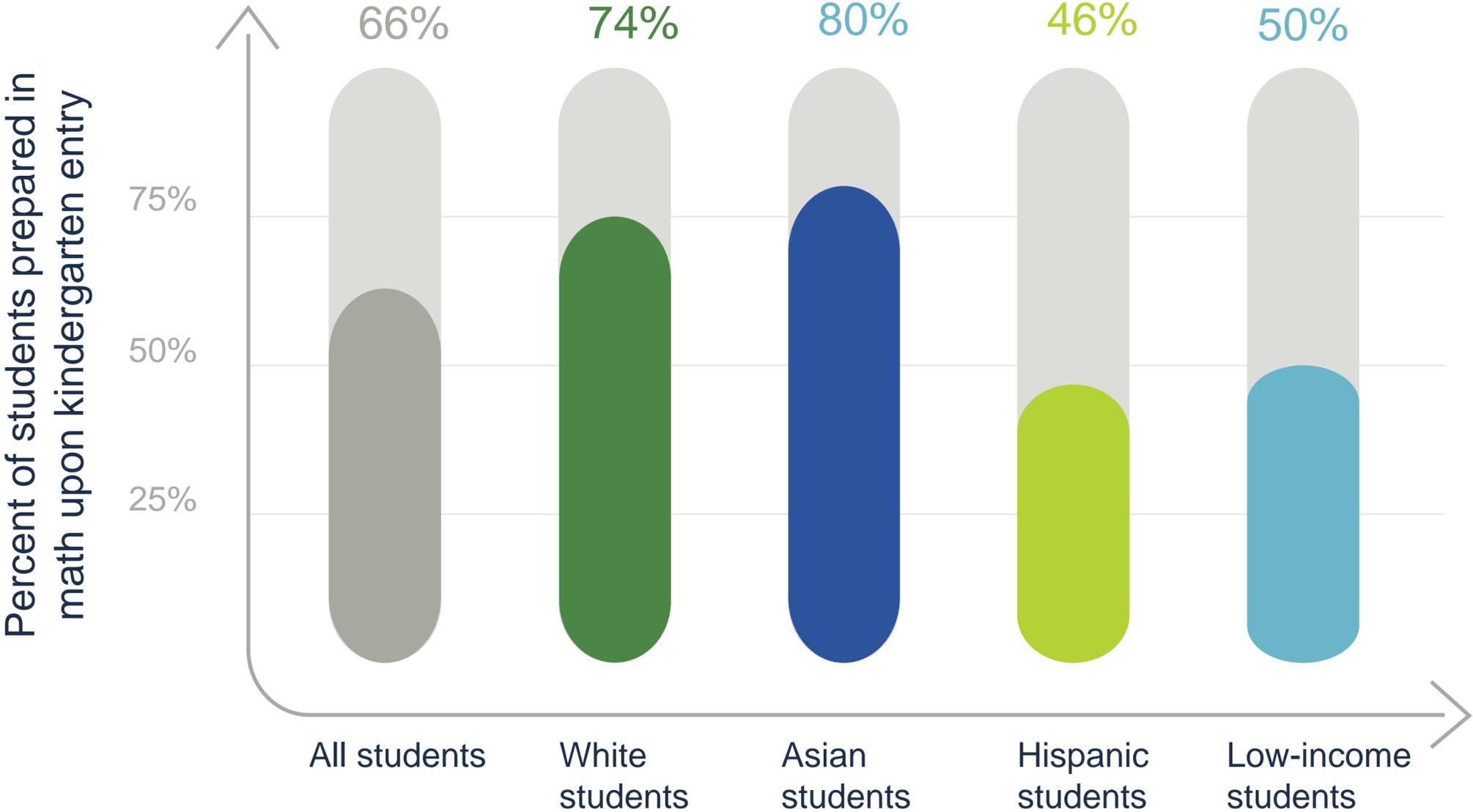
# Math as a Gateway



- 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

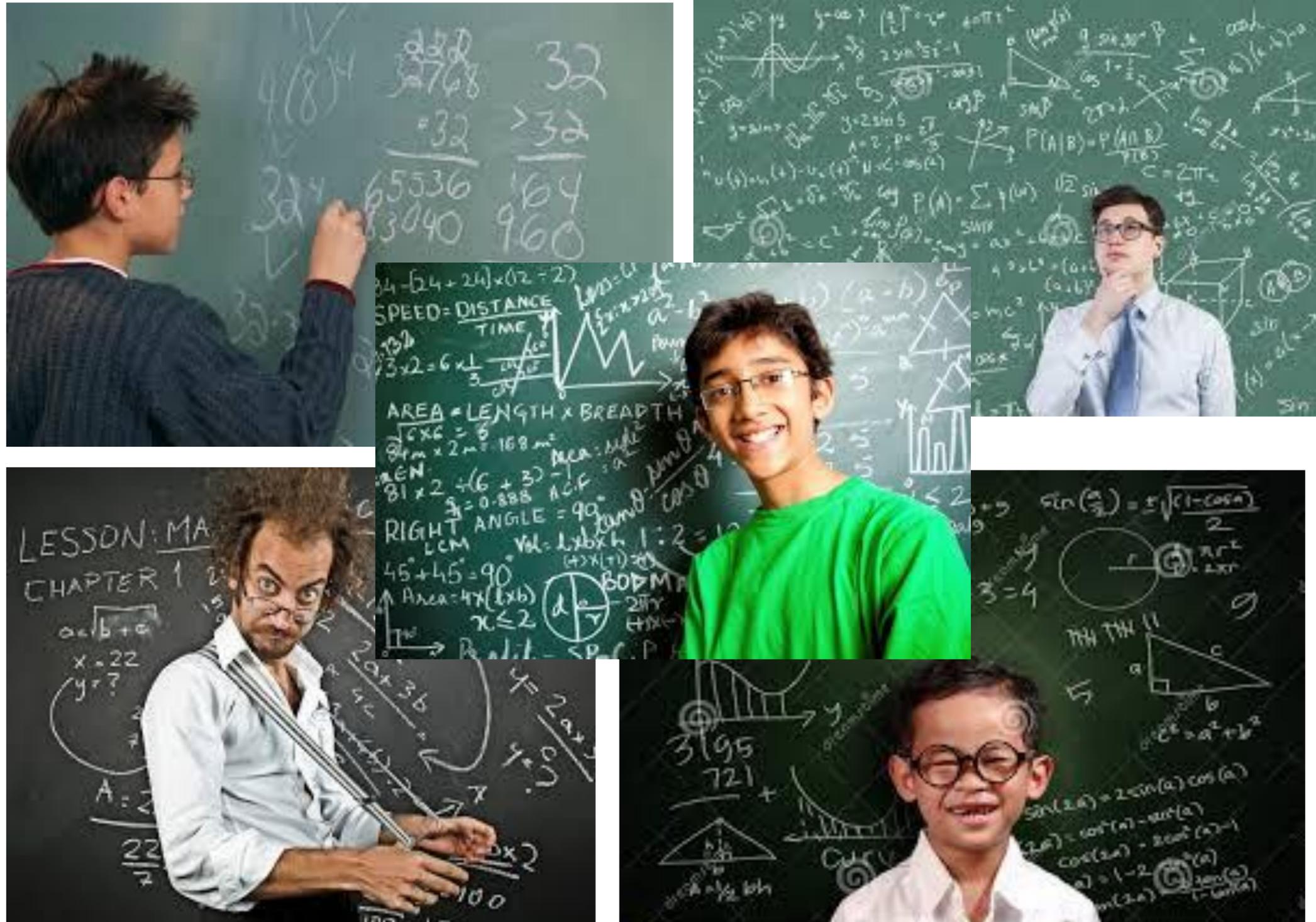
- Math, more than any other domain, carries baggage that can set students up to hold negative attitudes and beliefs

~~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.

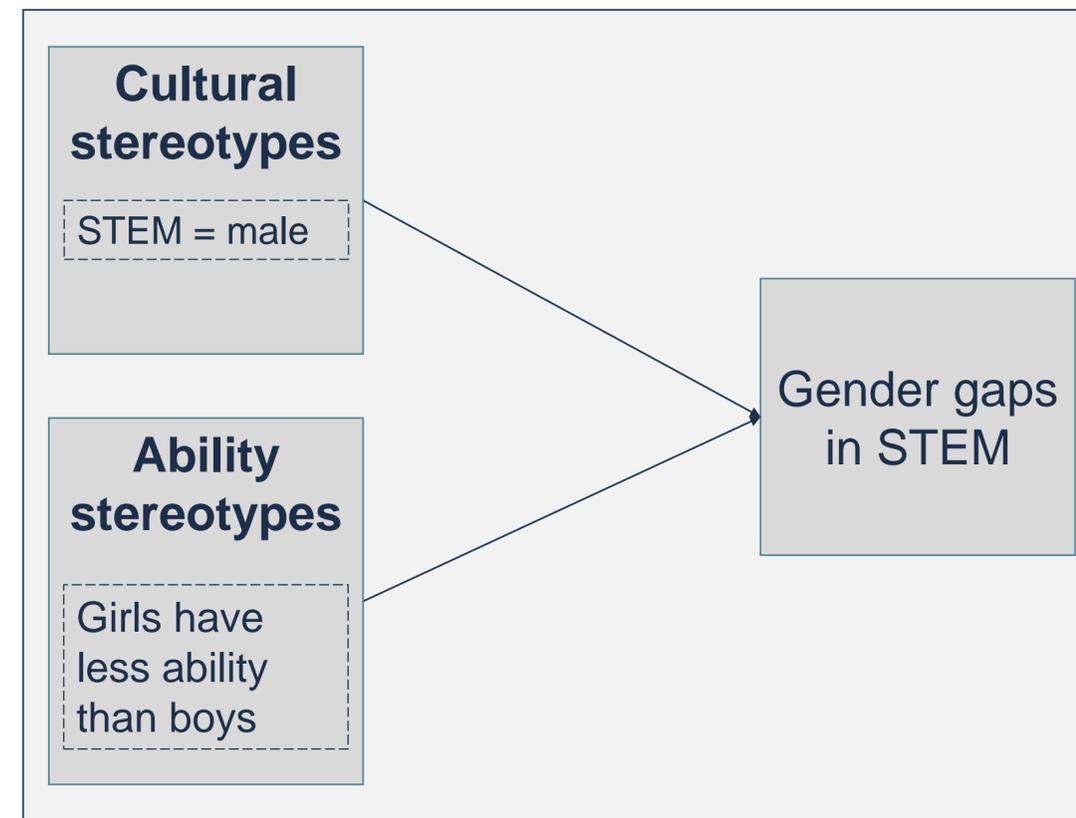
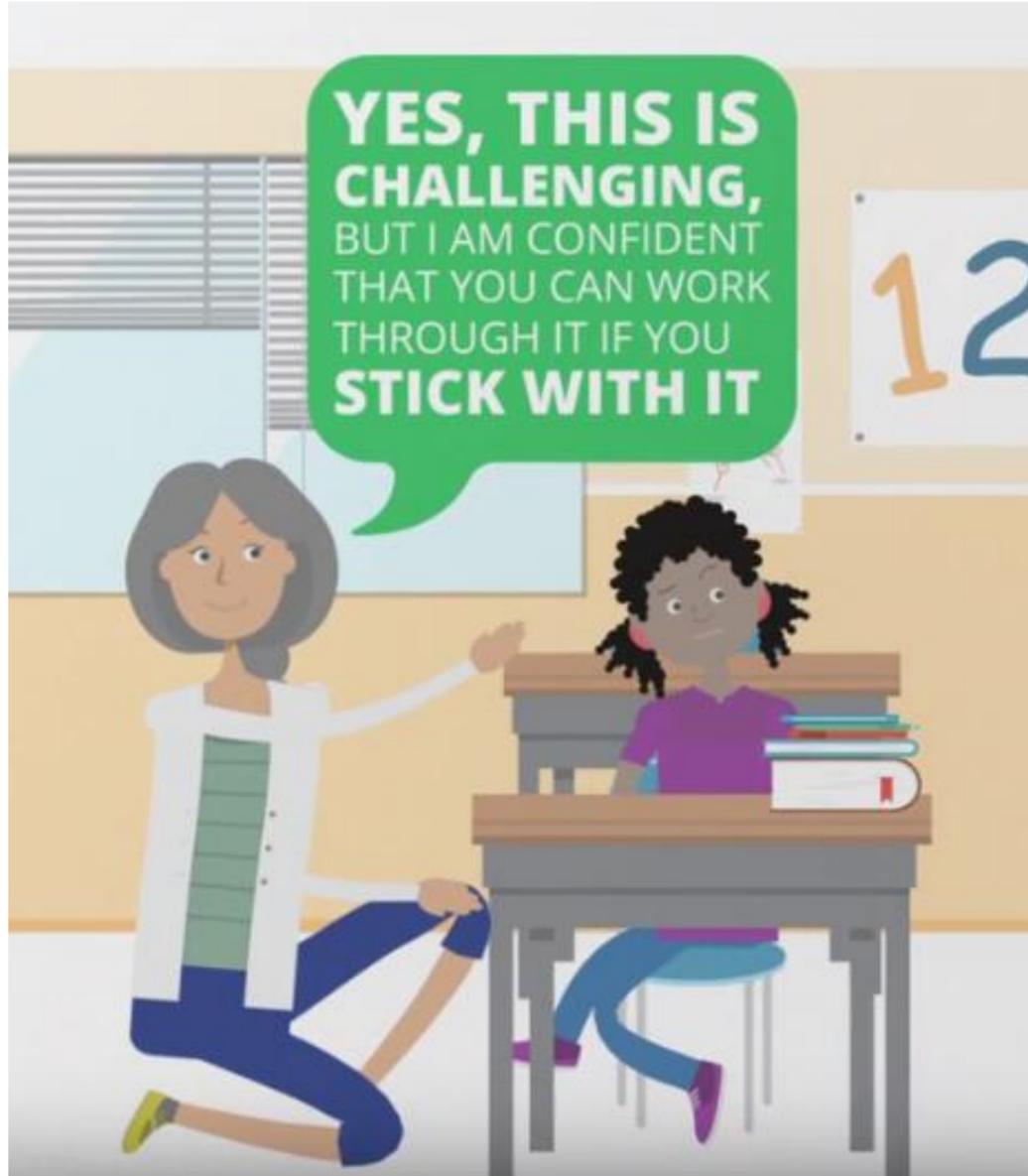


Figure adapted from Cheryan, Master, & Meltzoff, 2015

# 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



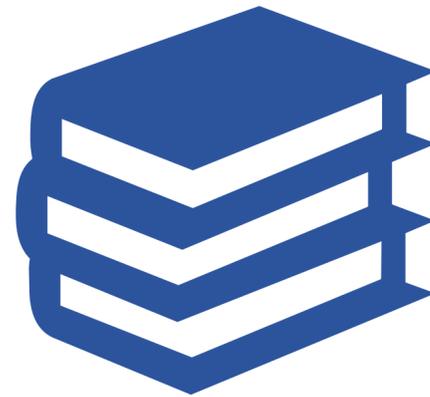
- Through changes to classroom practices and environments, educators can help students build positive math attitudes and beliefs.

**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

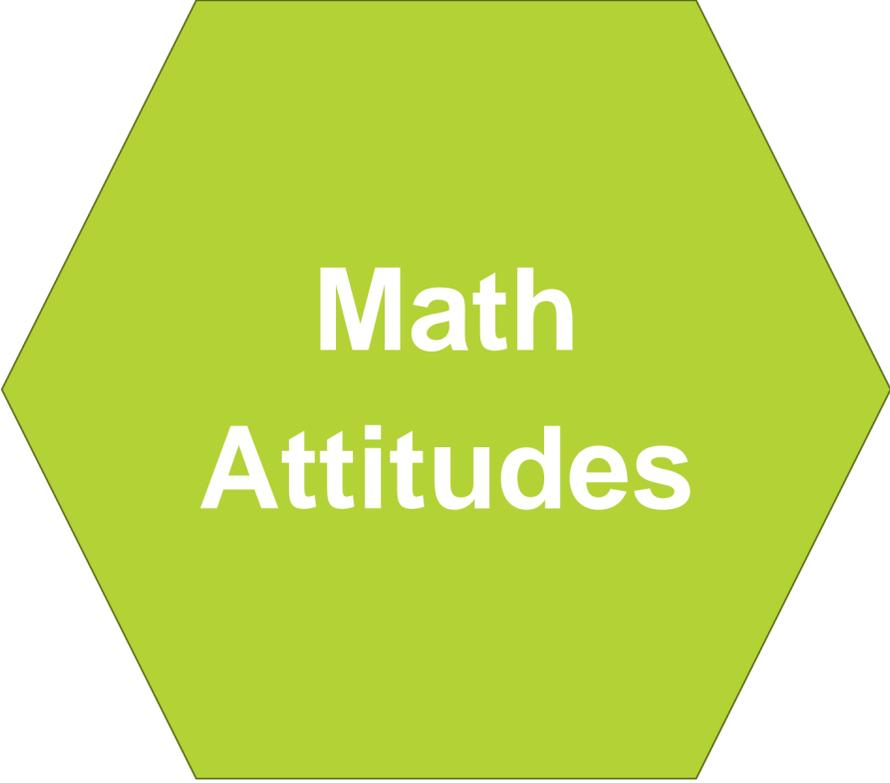
# Students' Mindsets Influence Behaviors and Achievement



Academic  
Mindset

## Farrington's Four Key Academic Mindsets:

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# 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**

### **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
2. I can succeed at this
- 3. My ability and competence  
grow with my effort**

Sense of  
Belonging

Self-Efficacy

Math  
Attitudes

Growth  
Mindset

Math Anxiety

## Farrington's Key

### Academic Mindsets:

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

## 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

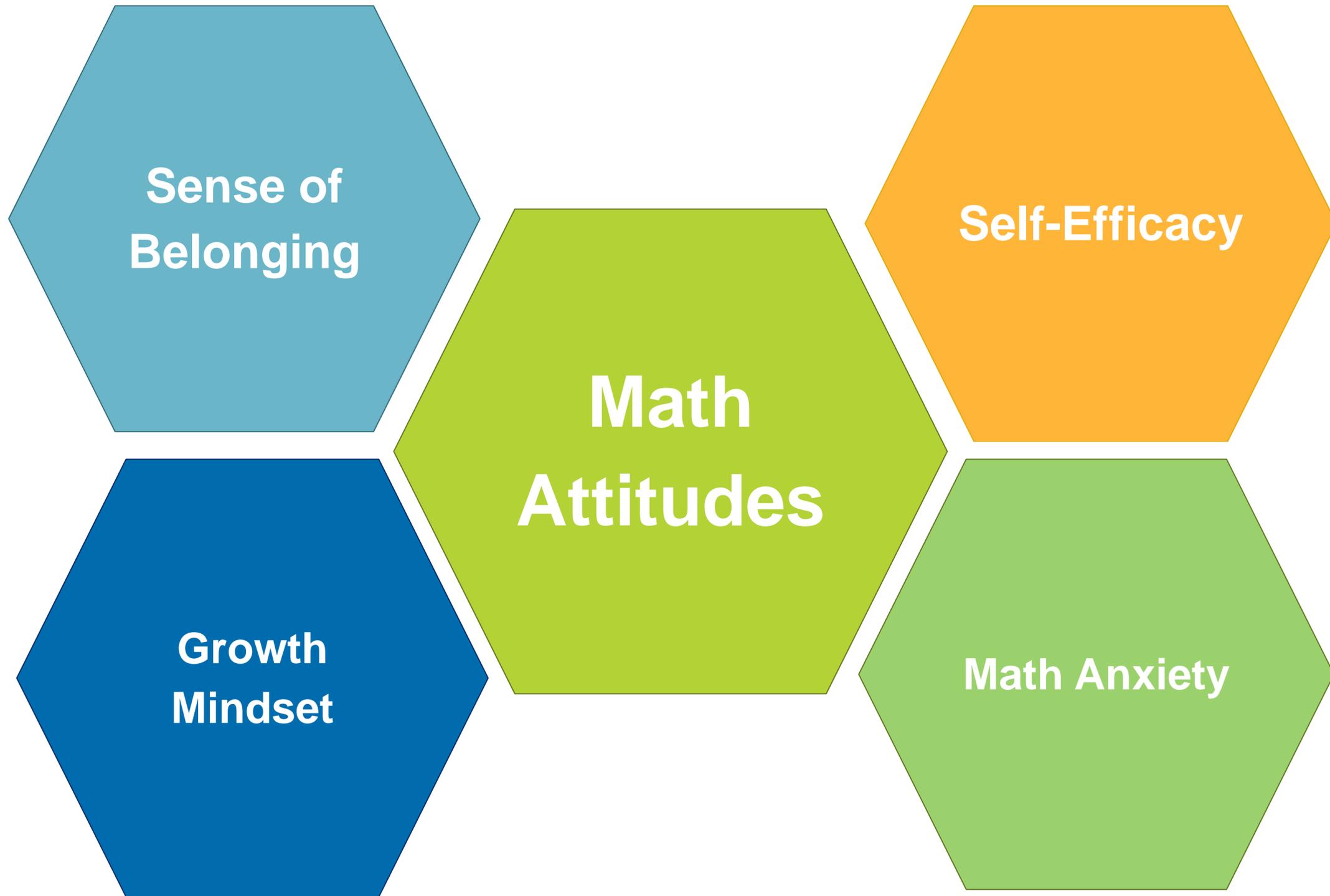
# Key Strategies

## 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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