Math Strength Survey
MathicSTEAM R&D Team
*Last updated 11.5.25*

# Math Strength Survey

This measure assesses students' self-reported beliefs about themselves as mathematics learners and the strengths they bring when doing mathematics.

**Purpose**

- The Math Strength Survey is intended to students' beliefs about themselves as mathematics learners by emphasizing two types of strengths students may bring when doing mathematics:
    - Problem-Solving Skills: strengths that students employ when solving mathematical problems, and
    - Peer Help-Seeking Skills: strengths that students employ when working with their peers in math class

**Measure Details**

- The Math Strength Survey has 16 items across two factors:
    - Problem-Solving Skills: 12 items
    - Peer Help-Seeking Skills: 4 items
- All items are measured on a 5-point Likert scale, where students rate how confident they are in engaging in the specified skill.

**Contribution to the Field**

- Research has shown that students' beliefs about themselves as math learners is critical for their engagement in learning as well as influential on their long term mathematics persistence and achievement. While there is a growing body of tools available for researchers to investigate students' math-related beliefs, these measures often do not investigate these perceptions with respect to specific mathematical activities.
- This measure presents students with a diverse set of strengths that may be used during mathematics learning, and asks them to rate their confidence in that area. The framing of this measure emphasizes and models an asset-based perspective for students to consider their own mathematical capabilities and serves as a reflection opportunity to recognize the strengths that they have and use in their mathematics learning.

**Development History and Previous Uses**

- The current version of the Math Strength survey has been used in several small scale efficacy studies, as well as a large-scale evaluation study of MathFluency+, a math product focused on building fact fluency and executive function skills, with elementary students.
- This survey was created with input from teacher focus groups and used exploratory analyses to investigate how the co-designed items related to each other and determine subscales.

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- Validation of this survey has been conducted using data from the efficacy studies. After initial analyses were completed, the survey was revised and administered in following studies, leading to another round of analysis and confirmation of measurement structure.

## Accessing the Measure

- To access the measure, please contact:
    - Dr. Gillian Grose at gillian.grose@childrens.harvard.edu

**Associated Publications**

Grose, G., Buschkuehl, M., Feng, Y., Jaeggi, S.M., DePascale, M., & Ramani, G. (2023, June 5-8). "In math class, I am confident in solving word problems": Creating a strengths-based mathematics survey. [Poster presentation]. The 6th Annual Meeting of the Mathematics Cognition and Learning Society (MCLS), Loughborough, United Kingdom.