MATH MINDSETS

Seven Math Mindset Messages

1. All students can learn math to the highest levels.
2. Mistakes are valuable.
3. Questions are important.
4. Math is about creativity and making sense.
5. Math is about connections and communicating.
6. Value depth over speed.
7. Math class is about learning, not performing.

Student Profiles

Amber

- Comes in for non-required tutoring frequently.
- Doesn't always get the best grades but takes initiative to reflect on her mistakes.

> *"Math is really hard—that's why I need to keep practicing. I know one day this will get easier for me."*

1. Can you think of a student who could be "Amber"?
2. Think about your current teaching practices and focuses. What are you doing already to support this student?
3. Which of the seven mindset messages does this student display?
4. Which of the seven mindset messages does this student need more support with?

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Mariah

- Has a 98% average in the class but never asks for help or answers a question.
- Has been labeled as gifted. Does very well but struggles the moment she doesn't understand something.

    "I have to get this done correctly the first time. Otherwise, someone will think I don't know what I am doing!"

1. Can you think of a student who could be "Mariah"?
2. Think about your current teaching practices and focuses. What are you doing already to support this student?
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Alex

- Is always polite and seems to be on task.
- Consistently gets bad grades on assignments and tests.

"I don't get these problems, and I never will. Why should I even bother?"

1. Can you think of a student who could be "Alex"?
2. Think about your current teaching practices and focuses. What are you doing already to support this student?
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Brittany
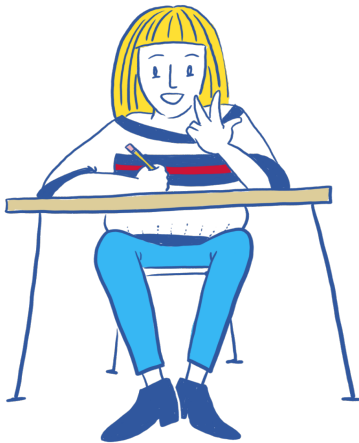
- Does well but makes sloppy mistakes because she wants to rush through her work.
- Understands the concepts easily and gets good grades regularly.

"My teacher said I need to show my work when I am doing math. Although this comes easily to me, I know that I need to work out the problems on paper. This way, if I make a mistake, I can find it and fix it!"

1. Can you think of a student who could be "Brittany"?
2. Think about your current teaching practices and focuses. What are you doing already to support this student?
3. Which of the seven mindset messages does this student display?
4. Which of the seven mindset messages does this student need more support with?

Message for Growth Mindset (from Jo Boaler)	Description	Example Activity
All students can learn math to the highest levels.	• *This is a belief; it builds and builds over time.* • *Every chance you get, encourage students' beliefs that they can succeed.* • *Switch your praise to focus on students' work and effort rather than their "ability" or "smarts."*	Walking the Line: The Math Spectrum
Mistakes are valuable.	• *Deeper learning happens from reflecting on a process to improve.* • *Help students believe that they are on a path of growth and learning. Emphasize mistakes are not signs that they aren't good enough.*	My Favorite Mistake
Questions are important.	• *Students asking their own math questions keeps them engaged and wanting to learn more.* • *However, it can feel intimidating to be asked any math question.* • *Build students' self-confidence in not knowing all the answers to allow space for more of their questions.*	Click Battle: Desmos

Message for Growth Mindset (from Jo Boaler)	Description	Example Activity
Math is about creativity and making sense.	• *Math is more than just remembering formulas.* • *Visual representations of math processes spark connections between topics.* • *Student-constructed representations are the most beneficial.* • *Catchy phrases alone do not deepen knowledge.*	Sum of Exterior Angle Theorem: GeoGebra
Math is about connections and communicating.	• *Every subtopic in mathematics is connected and learning to see that connection is a skill.* • *Communication means more than speaking so be creative in ways that students "show."* • *Student-selected representations of knowledge help both you and them to see their learning.*	Card Sort
Value depth over speed.	• *No matter how the standards are interpreted, depth always matters more than breadth.* • *The things we remember most are those that have deep meaning or high impact—math is no different.* • *Being bold enough to make that your focus can require a scary leap of faith.*	Nine Digit Fraction: NCTM Illuminations
Math class is about learning, not performing.	• *The phrase "show your work" is so frequently used for a reason; the process matters more than the answer.* • *Grade for reflection rather than for achievement. It might take longer, but it is more valuable for your students.*	Math Interview

Wrapping Up

1. Based on your exploration of the activities, which one would you most like to incorporate into your classroom to support the growth mindset of your students?

2. Why did you pick this activity?

Resources

Boaler, J. (2022). Mathematical mindsets: Unleashing students' potential through creative mathematics, inspiring messages and innovative teaching (2nd ed.). Jossey-Bass.

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K20 Center. (n.d.). Card sort. Strategies. https://learn.k20center.ou.edu/strategy/147

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