

## Group 1

**In-class engagement:** The ways in which students visibly show and teachers encourage engagement. These occur mostly in the classroom, but could also show up in study halls, afterschool programs, or at home when students are learning math.

<b>Completes work</b>	<p><i>In my math class...</i> I put effort into learning the material presented. I complete work that is assigned.</p>
<b>Works with peers or friends / Helps others / Prefers to work alone / Feels isolated</b>	<p><i>In my math class...</i> I try to understand how other students solve math problems. I try to work with other students who can help me. I try to help other students who are struggling. I try to consider other students' suggestions on how to solve math problems. I have other students I can talk to in my math class. I have other students I can turn to for help in my math class.</p>
<b>Distracted in class / Pays attention / Focused in class</b>	<p><i>In my math class...</i> I stay focused. I do other things when I am supposed to be paying attention. (Reverse coded)</p>
<b>Basic resources</b>	<p><i>In my math class...</i> I have the technology resources (for example, internet, computer) that I need to learn. I have the materials (for example, pencil, calculators) that I need to learn. I have study sheets and notes that my teacher provides for me to learn.</p>
<b>Asks questions (or for help)</b>	<p><i>In my math class...</i> I ask questions. I participate.</p>
<b>Listens in class</b>	<p><i>In my math class...</i> I listen to what the teacher says.</p>
<b>Thinks through math problems</b>	<p><i>In my math class...</i> If I don't understand, I give up right away. (Reverse coded) I enjoy solving hard math problems. I check my work to make sure it is right. I think about different ways to solve a problem.</p>
<b>Learns from mistakes</b>	<p><i>In my math class...</i> I try to understand my mistakes when I get something wrong.</p>
<b>Answers questions</b>	<p><i>In my math class...</i> I answer questions that my teacher asks.</p>

**External resources:** The ways in which external factors (for example, school structure or family obligations) outside of the classroom

<b>Impacts of COVID-19</b>	<p>I fell behind in math due to COVID-19. (Reverse coded) I found it harder to understand math taught during COVID-19. (Reverse coded)</p>
<b>School and class schedule</b>	<p>I have too much math homework to complete. (Reverse coded)</p>
<b>Disparities in representation in and access to math</b>	<p>I see myself as a math person. Others see me as a math person. People like me can be successful at math.  My work schedule makes it hard to find time to work on math after school. (Reverse coded)</p>

**Family obligations**

After school it is hard to work on math because I need to take care of my family (for example, siblings, grandparents). (Reverse coded)  
After school it is hard to work on math because I need to help my family with chores. (Reverse coded)

**Group 2**

**Classroom culture:** The ways in which classroom instruction, rules, norms, expectations, setting, and relationships shape engagement. These are often created by both students and teachers.

**Teacher-student relationships**

My math teacher shows me that I matter to them.  
My math teacher encourages me to be my best.  
My math teacher helps me complete my work.  
My math teacher listens to my ideas and takes them seriously.  
My math teacher introduces me to new math opportunities.

**Instruction style**

Lecturing is a big part of my math class. (Reverse coded)  
My math teacher provides clear guidelines for how and what to do to complete tasks.  
My math teacher shows examples of how to complete problems.  
My math teacher uses a variety of activities to help me learn.  
My math teacher lets me decide how I want to learn.

**Teacher personality**

My math teacher is patient.  
My math teacher is fun.  
My math teacher has an attitude. (Reverse coded)  
My math teacher is nice.  
My math teacher is strict. (Reverse coded)  
My math teacher is loud. (Reverse coded)

**Differentiated learning strategies**

My math teacher helps me understand how I can get better at math.  
My math teacher answers my questions.

**Classroom management and structure**

*In my math class...*  
It is too disruptive for me to learn. (Reverse coded)  
My math teacher has to wait a long time for students to quiet down. (Reverse coded)  
Students interrupt the teacher. (Reverse coded)  
  
My math teacher has to keep telling students to pay attention. (Reverse coded)

**Supports from peers or friends / Family and community support**

*People (for example, family members, peers, teachers, other school staff, or community members) in my life...*  
Tell me that I can do math.  
Talk to me about how things are going in your math classes.  
Pressure me to do well in math. (Reverse coded)  
Talk about college majors and careers in math.  
Tell me how important doing well in math will be for my future.  
Praise me for my math grades.  
Help me feel better when math is hard.  
Help me with my homework in math.  
^ Where do you get this type of support? (check all that apply)  
Family members // Friends // Peers // Teachers // Other school staff // People in my community

**Receives rewards**

My parents reward me for doing well in math.  
My math teacher rewards me for doing well in math.

**External resources:** The ways in which external resources (for example, family, programs, or technology) outside of the classroom shape engagement. These resources often support engagement. Students or teachers can choose to use them, if they are available. The availability of these resources is not necessarily controlled by students or teachers.

**Need for multiple instructors**

There are multiple adults in my math classroom to help me learn.  
  
I attend an afterschool program within my school where I get help with math.

**School-based programs**

I attend an afterschool program outside of my school where I get help with math.  
I have a math tutor.

**Technology resources**

I use online tools (for example, YouTube, Khan Academy, photomath) to help me learn math.

I use artificial intelligence tools (for example, ChatGPT) to help me learn math.

**Group 3**

**Feelings:** The feelings students have towards math or their math classrooms that shape engagement. While these are held within students, they can be influenced by teachers and peers.

**Understands math / Feels like math is enjoyable**

I enjoy solving hard math problems.  
I look forward to math class.  
I am confident that I can do well in math.  
I understand what I am learning in math.

**Feels discouraged / Feels dumb**

*In my math class,*  
I feel frustrated. (Reverse coded)  
I don't care about learning math. (Reverse coded)  
I feel discouraged. (Reverse coded)  
I feel stressed. (Reverse coded)

**Feels motivated / Feels bored**

*In my math class,*  
I want to understand what we are learning in class.  
I think that math class is boring. (Reverse coded)  
I do just enough to pass. (Reverse coded)

**Mental and physical capacity**

*In my math class,*  
I feel good about myself.  
I feel tired. (Reverse coded)  
I feel hungry. (Reverse coded)

**Sense of belonging / Feels safe / Feels comfortable**

*In my math class,*  
I feel comfortable.  
I feel safe.  
I can be myself.  
I am treated fairly.

**Feels judged**

*In my math class,*  
I am treated with the same amount of respect as others.  
I am treated as if I am capable.  
No one thinks that they are better than me.

**Future aspirations:** The ways in which students' future hopes and dreams (for example, ideas for success or future careers) shape

**Feels math is relevant**

I think about how I will use the math I learn.  
The math I learn is relevant to my everyday life.

**Personal motivations for academic performance**

The math I learn is more important to me than the grade I receive.  
Understanding math gives me a sense of accomplishment.

**Engagement for future aspirations**

The math I learn relates to my personal goals.  
I think about how learning math can help me get a good job.  
I think about how learning math can help me with going to college.