

What Is Math Anxiety and What Can I Do about It as an Instructor?

As an instructor, you can do things which can reduce math anxiety in students who have it. You can also do things which could create or increase math anxiety in your students. In general, things you do which create undue stress or add to students' negative feelings about their ability to do math will create or increase their math anxiety. Things you can do to reduce your students' math anxiety include the following:

Review the tips in the handout *What Is Math Anxiety and What Can I Do about It as a Student?* with students. Do not just give it to them. Periodically remind students of the tips and encourage students to follow them.

Encourage students to memorize their basic math facts if they have not already. For example, they should know, by heart, single-digit addition, subtraction, multiplication, and division. They should not have to stop and calculate the answer to $3 + 9$, or 6×7 . Why? Because research has shown that students who have memorized basic math facts do better on a variety of math problems than students who have not memorized them. Having such facts memorized frees up working memory that can be devoted to solving the more difficult calculations they will need to do on the job. Make sure your students have copies of the multiplication, division, addition, and subtraction *Brush Up* sheets (attached to *What Is Math Anxiety and What Can I Do about It as a Student?*). Encourage students to use those sheets, create flash cards, or use a method of their choice until they have all of those single-digit operations memorized. Make extra copies of the *Brush Up* sheets and make them easily accessible for students who want extra blank copies to practice with.

Not using timed quizzes and tests. Research has shown that math anxiety is more likely to affect students' performance when they have to take a timed test. Instead, schedule quizzes or tests when students have plenty of time to finish at their own pace. Let students know they will have enough time to work through the problems and will not have to worry about finishing on time. Without that worry, students will have more capacity in their working memory to devote to the problems they are trying to solve. While doing math quickly might be necessary on the job, the class can be an opportunity for students to gain or regain confidence in their math ability. Giving them more time can help increase their confidence. As their confidence increases, their math anxiety may decrease. And as their anxiety decreases, their ability to do math should increase.

Help students calm themselves before taking a quiz or test. Researchers who study math anxiety suggest that helping students control their emotions might be the best way to reduce the negative effects of math anxiety.

One way to help students control their emotions is to guide them through a short relaxation exercise, or give them time and encourage them to guide themselves. In one study, when the following instructions were read to students to help them relax before a test, their math anxiety was lower and their performance on the test was better (when compared with students who did not do the relaxation exercise).

Relax your muscles.

Breathe deeply and exhale slowly 3 – 4 times.

Let your body relax, put your arms at your sides, close your eyes, and let your mind go blank.

Now, sitting comfortably and breathing deeply, think of a safe place for you, at the beach, the mountains, a park, wherever you feel relaxed. Continue breathing and paint a picture in your mind of this safe place. Feel the cool breeze against your skin, the sun's warmth, the sound of birds. Create an environment that is calming for you. Feel the quiet.

Another way to help students control their emotions is to have them do some free writing before starting the quiz or test. Research has shown that giving students ten minutes or so to write privately about the emotions they are feeling before taking a test can help them improve their performance. Encourage them to write openly about their thoughts and feelings about the quiz or test they are about to take. Make sure they know that they do not have to turn in or share what they write. The researchers suggest that putting their emotions on paper might free up working memory, especially for students who are feeling anxious about the test. It is also possible that such writing might help students put the test in perspective and understand that it is not as consequential as they thought.

Help students focus more on the process than on the correct answer. Whether or not students get the correct answer, they will learn much more if they focus on how they arrived at their answer. You can help them focus on the process by giving them specific feedback about what they are doing correctly, where they made mistakes, and how to correctly solve the problem. This kind of specific feedback has been shown to be one of the most effective ways to help students learn.

Remind students about the importance of a growth mindset, which is addressed elsewhere in this curriculum.

Take care when talking to students who struggle with math. When a student is struggling, avoid messages such as, "It's OK, not everyone is good at math." The student may hear, "You are right – you are not good in math." even though that is not what you mean. Instead, encourage a growth mindset with messages such as, "These problems are challenging, and even though you haven't solved them yet, I know you will be able to by continuing to work hard and be gritty (persistent)." Of course helping the student see why she is having difficulty with the

problems and giving her specific strategies she can use to solve the problems is important as well.

The information above comes from the following sources:

The article: [Math Anxiety: Can Teachers Help Students Reduce It?](#)

The book: [Why Don't Students Like School?](#)

The journal article: [The Role of Expressive Writing in Math Anxiety](#)

The journal article: [A Simple Visualization Exercise for Reducing Test Anxiety and Improving Performance on Difficult Math Tests](#)

The article: [Inside the Black Box: Raising Standards through Classroom Assessment](#)

