Math and Science Tutoring Tips

*Listen*
- Do not assume you know what is causing the student difficulty.
- Be curious, try to put yourself in the student’s shoes.
- Ask questions about their experience.

*Be Honest*
- If you don’t understand something, say so! Or if you don’t clearly remember how to do a problem, but think you can figure it out, let the student know that is the case.

*Model Math as a Process*
- Textbooks often present the subject as a linear neat progression, solving problems by moving from one step to the next.
- Reveal through your own example that math can be messy- guessing, working backwards, etc. all have their place.

*Reveal motivations*
- When solving a problem, help the student see why they are using the method at hand.
- Help them see the overall approach- this makes remembering a method much easier, it isn’t just a sequence of random steps.

*Empathize*
- We’ve all had our own struggles. Let the student know you understand their frustration. This especially helps students that tend to identify themselves as “non-math” people.
- It is also good to empathize that you have had a lot of experience- it’s not just that some people “get it”.

*Non-verbal Communication*
- Most of our communication is non-verbal. Be aware of how body language, tone of voice, etc. reveals our current attitude, whether it be enthusiasm and respect, or frustration and impatience.

*Celebrate Success*
- Many students tend to focus on their mistakes and dismiss their successes. A common example is that problems which the student can do become classified as “easy”. Help them celebrate their successes by pointing out that it is only because of their efforts that they can do such problems.

*Take Care of Yourself*
- Take breaks between students. Walk around some and drink enough water.
- If you find yourself becoming frustrated, say that you need to go to the bathroom, and take a few minutes to regroup.
- In general, be aware of your inner state. If you’re having a bad day, let the student know it’s not them.
Look at the Student’s Notes
- This will show you how the instructor is approaching the subject, and help you know what ways might reinforce or complement what the student has already seen.

Suggest Making a Fact Sheet
- One way to solidify ideas and encourage seeing the “forest as well as the trees” is to make a sheet of important formulas, methods, etc, as a class progresses. This can be an ongoing process between tutor and student. This can be done with a few minutes in each session. It can also serve as a way to encapsulate what you learned to keep around for the next quarter.

Use Different Methods
- Don’t teach one method to the exclusion of others. YOU may like one method the best, but each of us has our own way of understanding. Be flexible to each student’s strengths and weaknesses.

Encourage Doing Extra Problems
- This is especially important in areas where the student is having difficulties.
- It can also help build confidence to work more problems which the student has a good grasp of, or as a warm-up of other exercises.

Draw Connections to Everyday Life
- This helps students to integrate material more fully and hopefully makes it more interesting.

Do Not Do the Problem for Them
- Teach a method rather than working out the details for them.
- Ask questions to see where the gaps are in their understanding.
- Help students become comfortable with “not knowing”- it is part of the process, and it is often a student’s panic around not immediately knowing an answer that is more of a barrier than a lack of understanding.

Demonstrate a Method
- Remembering what was said above, sometimes it helps students grasp the whole process and motivation behind it, if you do a problem smoothly for them. This should not be too common of a technique.

Create Test-like Situations
- Giving the student a short quiz can help them overcome test-anxiety.
- Create a situation where the student can learn to be comfortable with fear and pressure. This is sort of a bridge between doing homework with support, and being in a full class having to face a long exam.

Have Fun
- Try to enjoy your job! If you’re having fun, it is more likely that the student will too, and this may help those who hate math to start generating different attitudes.

Bring Out the Innate Ability
- Many students can do problems in their heads, but don’t know how to explain to themselves or you how they got the answer. A common example is a word problem about sales tax.
Help them see that they already have the ability to do many calculations, but just don’t have the language to describe it.

Memorization is Sometimes Necessary
- Emphasize understanding, but be honest about the need to sometimes memorize certain formulas or methods.
- Help the students find a practical balance between the two.

Use the Book
- If a student doesn’t remember a concept or definition, suggest that they look it up in the book, using the index if necessary. We want to teach habits which allow the student to be more self-sufficient.

Do Not Patronize
- Be careful not to underestimate your students. If you come across this way, make sure to apologize.

Suggest Other Tutors
- We each have different styles of learning and teaching, so make sure to let the student know that they can work with different tutors to find who works best for them.

Encourage Use of Office Hours
Many students are intimidated by instructors, and do not ask questions or go to office hours. Point out that most instructors appreciate the students who do. Plus, they are paying good money for their education, so they should make the most of it.