

## Introduction to Student Tips of the Week

This tip can be used whenever you have an extra week or two partial weeks and you need another one: *“Mistakes are a way of learning. Don't give up when you make a mistake. Persevere. Try another strategy, think outside the box, talk it over with someone.... Struggling helps brains to grow and you to become smarter. It is a good thing to struggle and that is what the new curriculum will help you do. You don't need to be fast at math. You need to think deeply about it. This is also true when responding. Think about your answer. Does it make sense?”* Jo Boaler

### Quarter 1

Week 1:

#### **Mindset**

Success in math is all about your mindset. Having a growth mindset and believing you can learn anything if you work hard instead of a fixed mindset where you believe you are either good at math or not, will be important for success in school and life. Your brain is a muscle that gets stronger at math by practicing math.

[https://www.youtube.com/watch?v=4S1i-jxNAg8&feature=youtube\\_gdata\\_player](https://www.youtube.com/watch?v=4S1i-jxNAg8&feature=youtube_gdata_player)

Week 2:

#### **Review & Preview**

Make sure that you are spending time each day doing your Review & Preview problems. They are there not only to help you practice prior skills that you will continue to need, but to help preview content of future lessons. Keeping up with the Review & Preview problems and asking questions as they arise, will make your homework time more efficient. If you are struggling, check out

<http://www.cpm.org/students/homework/> for extra help!

Week 3:

#### **Teamwork**

Make sure that everyone in your team is getting the most out of each problem. To ensure the best learning occurs for everyone, do not let teammates work ahead or fall behind! “Talent wins games, but teamwork and intelligence wins championships.” -Michael Jordan

Week 4:

#### **Make Sense of Problems and Persevere in Solving Them**

After you read a problem, discuss it with your team before starting to solve the problem. Then if you are struggling, try using different strategies to get to the solution. It is important to keep persevering and not to let your team give up! “It's hard to beat a person who never gives up.” -Babe Ruth

Week 5:

#### **Organization**

Are you keeping all of your work organized? Is it easy to locate answers to your questions by looking at your own materials? If not, take time today to organize your materials and use a system of organization for all future work. Don't be afraid to ask if you need help.

Week 6:

#### **Failure**

The most successful people have failed multiple times in their lives. When you make a mistake, think of it as just another way that doesn't work and a motivation to continue trying. Struggling helps brains to grow and you to become smarter. You don't need to be fast at math. You need to think deeply about it. <https://www.youtube.com/watch?v=45mMioJ5szc>

Week 7:

### **Showing Work**

When doing math problems, it is important to show your work in an organized fashion. Try jotting down information about the problem and possibly drawing a diagram first so that you can look back at your paper and know what the problem is about. Then show all steps so that you'll have an example to look at later. Showing all steps is one way to justify your answer. Make sure that your answer is easy to see and easy to find.

Week 8:

### **Math Vocabulary**

Try to use the correct terminology when explaining your work and asking questions. For example, instead of saying "these angles are the same" try saying "these angles are congruent because they are vertical angles." If you know how to use the vocabulary in this class, your confidence in math will increase.

Week 9:

### **Reason Abstractly and Quantitatively**

When you create an algebraic equation (abstract) from a situation, take time to pause and think about the following questions. Does the equation make sense with the situation? What do the variables represent in this situation? For example,  $x$  = time (number of minutes) and  $y$  = height (measured in inches).

## **Quarter 2**

Week 1:

### **Use your Resources**

When your team is struggling, try different ideas. First, reread the problem, then look back at your previous days' work. Can you find help in a Math Notes box? Will your teacher allow you to do an I Spy (looking over the shoulder of another team)? When everyone on your team has tried and struggled, and has looked at all your resources, then call the teacher over.

Week 2:

### **Collaboration**

Collaboration is much more than everyone working individually and then checking answers with each other. Make sure that everyone stays on the same step and discusses the process. Just having work written on your paper does not mean that everyone in the team understands, so ask questions and explain everything.

Week 3:

### **Struggling is Learning**

Take the time to struggle, but make it a productive struggle. It is okay to feel frustrated, but then the best and deepest understanding comes from continuing to work through the frustration.

[https://www.youtube.com/watch?v=fGLQRfEyLs&feature=youtube\\_gdata\\_player](https://www.youtube.com/watch?v=fGLQRfEyLs&feature=youtube_gdata_player)

Week 4:

### **Construct Viable Arguments and Critique the Reasoning of Others**

Look at each other's work and critique their reasoning. Can you push your teammates to explain their work to you? Ask them to explain it in another way and think about if the explanation makes sense to you.

Week 5:

**Class work**

Make sure that your team is working efficiently to get through the class problems each day during class. Being aware of which problems are the main ideas can help you focus your time and energy. Make sure that at the end of every lesson you can share what you learned for that day.

Week 6:

**Practice**

Are you keeping up with your practice problems outside of class? The best way to get better at anything is to practice! Make sure you are doing your homework nightly. The more practice, the more successful you will be in math class.

Week 7:

**Model with Mathematics**

Focus on modeling with mathematics this week. You can make a complex problem easier by making assumptions. Use symbols, diagrams, and vocabulary to represent the math in a real world situation. When you are finished, reflect on your answer to see if it makes sense in the context of the situation.

Week 8:

**Make Connections**

Math is always building; many of the concepts can be combined to solve a problem. Think about how concepts are related and think about your previous knowledge as you attack any math problem. Each new thought makes a neural connection in your brain. Watch the first 41 seconds of this video: [https://www.youtube.com/watch?v=8NA\\_o1jOjsQ](https://www.youtube.com/watch?v=8NA_o1jOjsQ)

Week 9:

**Finish Strong**

Can you put all the big ideas of this semester together? If you've been putting in daily effort in class and outside of class, this will come naturally. Where do you think you will use these ideas outside of class? See how many ideas you can come up with this week.

**Quarter 3**

Week 1:

**Goal Setting**

Set a goal for the second semester, but break it down into achievable steps. Share your goals and steps with your teammates. Focus on step one this week. Your teammates can help keep you accountable.

Week 2:

**Use Appropriate Tools Strategically**

Determining when to use a calculator, draw a sketch, or use technology is important in mathematics. Think about your prior work to figure out which tool to use. A tool should help you strengthen your understanding, not just give an answer.

Week 3:

**Think First**

Use a quick Think-Ink-Pair-Share in your team each day this week. It will help you think about a problem individually first, before sharing as a whole team. You'll bring more ideas to the table.

Week 4:

### **Read Carefully**

When reading math problems, mathematicians read slowly and look for details. Take it one sentence/idea at a time and break it down as you go. Reread often to help clarify.

Week 5:

### **Make Predictions**

As a team, predict what will happen before attacking a problem. Then investigate and check that your answers make sense. Think back to your prediction. How close were you?

Week 6:

### **Attend to Precision**

Are you rounding appropriately? Can you leave your answer in exact form? Did you include units? Are you using correct mathematical vocabulary? Make sure you are being precise in your answers!

Week 7:

### **Practice Number Sense**

Can you do most of your calculations without a calculator? You may be surprised at the short-cuts you can take when calculating! For example, when multiplying  $12 \times 8$ , we know that  $10 \times 8 = 80$  and  $2 \times 8 = 16$ , so adding the two sums ( $80 + 16$ ) will give you the same answer as  $12 \times 8 = 96$ . This is called decomposing numbers, or you might recognize the Distributive Property.

Week 8:

### **Practice Patience**

At this point in the year, you will be combining multiple math concepts. It may take a long time to come to a conclusion about one problem. Keep your patience, trust the process, and be proud of what you can accomplish.

Week 9:

### **Explain Your Thinking**

Teaching others is one of the best ways to remember and understand what you are learning. What you can explain to someone else, and can explain using different methods and approaches, will give you the deepest understanding. Take a look at the picture in this link:

<https://nikkimantyla.files.wordpress.com/2011/07/learning-pyramid.jpg>

## **Quarter 4**

Week 1:

### **Team Roles**

Pick a phrase/question that fits your team role and use it at least once everyday this week. Example: If I am the task manager, I'll tell my team how much time we have left to finish the problem. Keep your focus by only talking within your team and only talking about math. The more focus, the more you can learn.

Week 2:

### **Be a Problem Solver**

Each new idea learned will make a connection in your brain. See this link for further details; watch the first 1:09 minutes: <http://www.youtube.com/watch?v=P0E-9uJgDZU>

Week 3:

### **Innovation**

Sometimes people think that doing one thing leads directly to another, but innovation comes from multiple steps to get to a final outcome; it is not  $a = b$ , it is going through  $a$  to get to  $b$  to get to  $c$ ... and so on. View this link from time 2:28 to the end: <http://www.youtube.com/watch?v=P0E-9uJgDZU>

Week 4:

### **Look For and Make Sense of Structure**

Looking for patterns is a key idea in all mathematics. You can see patterns in geometric relationships, tables, graphs, equations, and expressions. Sometimes using an equivalent expression/equation can be more useful in a specific situation.

Week 5:

### **Mistakes**

Most scientific discoveries are mistakes. It's a great week to make a mistake. Take note of your mistakes and what you learned from them. Here are two quotes from Thomas Edison: "*I have not failed. I have just found 10,000 ways that won't work.*" And "*Many of life's failures are people who did not realize how close they were to success when they gave up.*"

Week 6:

### **Curiosity**

Being curious about the world around you is a natural way of thinking that often requires math. For example: How many gallons of gas can I purchase for a certain dollar amount? How many times do a hummingbird's wings flap in a minute? How many stars are in the sky?

Week 7:

### **Look For and Express Regularity in Repeated Reasoning**

Can you notice when calculations are repeated? Then can you find short-cuts or make generalizations?

Week 8:

### **Prepare for your Final**

The best way to prepare for any assessment in math is to keep up with the current homework. If you need more help or are struggling with the homework problems, go to your teacher for help.

Week 9:

### **Congratulations**

Celebrate your success and your hard work in class this year. When you meet another challenge in life, think back on your mistakes that have led to success before. Keep the same attitude of hard work leading to success. Remember to try different strategies and persevere when solving any of life's problems.