

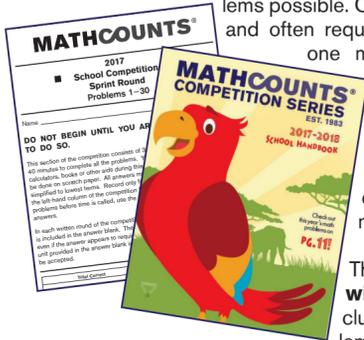
resources

# THAT MAKE MATH FUN & PREPARE YOUR MATHLETES TO COMPETE

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## LOTS OF PRACTICE PROBLEMS

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We created 2 free resources to give every coach access to lots of math problems:

This year's **Handbook with full solutions** includes 250 math problems, plus an answer key and step-by-step explanations of how to solve each one.

Last year's **School, Chapter and State Competitions**, including answer keys, are available for free online. Use these competitions as practice so your Mathletes know what to expect on Competition day!

Register at: [www.mathcounts.org/compreg](http://www.mathcounts.org/compreg)

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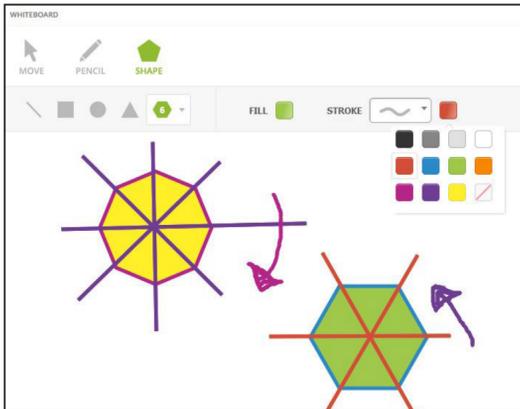
## EASY WAYS FOR MY STUDENTS TO COLLABORATE

Whether you're preparing your students for the Team Round of the Competition Series or just want to give them the opportunity to work together to solve math problems, the **Interactive MATHCOUNTS Platform** is a fantastic resource!

Powered by NextThought, this resource includes multiple current and past handbooks and competitions—all for free!

This resource features awesome tools for students to track their progress, communicate with each other and get instant feedback on their work. From helpful whiteboards and written solutions to group forums and comment boards, the Interactive MATHCOUNTS Platform is a great way for you and your Mathletes to work together.

Both students and teachers can create an account for free online. Register for the Competition Series at [www.mathcounts.org/compreg](http://www.mathcounts.org/compreg) so your students can put their teamwork to the test!



I'd love...

## A FUN WEEKLY PRACTICE ACTIVITY

Check out the **Problem of the Week** each week for a new, multi-step math problem related to current events.

This **free** resource is a great warm-up for your math class or team meeting. You also can use this as a take-home exercise for your students. Solutions to the previous week's problem are posted each Monday.

Register for this year's MATHCOUNTS Competition Series to make your students star problem solvers! Go to [www.mathcounts.org/compreg](http://www.mathcounts.org/compreg).



## COACHING OVER MY HEAD

Math teacher **Ralph Banasiak** reflects on his time as a national-level coach

"Your son has the potential to go far in MATHCOUNTS," I told Kinllen's mother that year. It was clear Kinllen was very special. One half of my brain congratulated me on my good fortune. The other half warned, "Don't blow it." I wondered if I were up to the task.

Many math coaches harbor similar doubts. Many potential math coaches don't even make it to this point. "I know what I am supposed to teach in math class," they tell themselves. "But how can I possibly coach competitive math?" Many give up before they even try. The deep end of the pool looks scary.



Ralph Banasiak and Kinllen at the National Competition.

My issue was different. Confidence I had in spades, having led a math team for 10+ years. Binders of challenging math resources stood neatly on my shelf. I had even taken two teams to the MATHCOUNTS State Competition. Until I met Kinllen, however, I had not coached anyone whose talent far, far exceeded my own.

I was not even sure how to coach someone to nationals, but was willing to give it my best. I would engage the help of an adjunct math professor from the local community college. I would schedule extra practice sessions. I would email my own engineering son for help. In short, it would be a team effort.

That spring Kinllen earned one of the spots on our state's national team, taking first place in the State Competition. At the National Competition, he placed in the top 20% of students in the country. The talent, dedication and many hours of practice he devoted to solving problems paid off: Kinllen's journey ended in triumph.

**"Self-awareness and self-reflection—so important in day-to-day teaching—are critical to a coach."**

What did I discover as a coach in over my head? I realized my dearth of experience motivated me. I learned more math that year than ever before. What I lacked in knowledge, I made up for in resources. When problems stumped me, I found others who solved them.

I discovered self-awareness and self-reflection, so important in day-to-day teaching, are critical to a coach when the stakes are high. Moreover, successful coaching, like teaching, cannot depend on me alone.

Read Ralph and Kinllen's full story at [www.mathcounts.org/newsletters](http://www.mathcounts.org/newsletters).

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Designed to give Mathletes a fun additional way to practice, the MATHCOUNTS Trainer features thousands of MATHCOUNTS competition and handbook problems—all for **free!**

Created by Art of Problem Solving, the Trainer is available as a computer game, as well as an iOS app from the App Store. Students can track their progress, compete with other app users and see real-time leaderboards.

Train up and then register for the Competition Series at [www.mathcounts.org/compreg](http://www.mathcounts.org/compreg).

**Don't forget! Register for the MATHCOUNTS Competition Series by December 15, 2017.**

## I'd love... TO SPICE UP MY TEAM MEETINGS WITH SOME ENGAGING VIDEOS

Break up your MATHCOUNTS team meetings or math class instruction with one of our MATHCOUNTS Minis! Each Mini gives problem solving tips about a particular math topic and walks through how to solve a few sample math problems. Each Mini comes with a worksheet, so your students can follow along and test out their own skills.

Starring Richard Rusczyk from Art of Problem Solving, Minis are an ideal way to reinforce or introduce a specific math skill in a different way. A new video is released each month, and years of archived Minis are available on the MATHCOUNTS website.

Watch MATHCOUNTS Minis for free and participate in the Competition Series by registering online today at [www.mathcounts.org/compreg](http://www.mathcounts.org/compreg).



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# COACHING OVER MY HEAD

**Math teacher *Ralph Banasiak* reflects on his time as a national-level coach**

We both had tears in our eyes. It was March 2015 and the state MATHCOUNTS official had read aloud the names of the top 16 Mathletes. My seventh grader wasn't among them. Disappointed, I sat frozen in my seat, not sure what to do. Without looking at him, I sensed Kinllen felt just as upset. After a moment of self-pity, I realized that—win or lose—I was still the coach, Kinllen was still my student and right now he needed reassurance. Out of the hotel ballroom where hundreds of Mathletes, coaches and parents were still applauding the top 16, he and I slipped into the hallway in search of privacy.

It's been over a year now, so I don't recall what I said to him. I don't remember if my words brought any comfort. I don't even know if any consolation was possible at that point. Disbelief and discouragement competed for control of our spirits, both Kinllen and me. Our joint goal, to earn a spot on the Illinois National MATHCOUNTS Team, had eluded us. Given all that year's intense efforts in preparation, the dream seemed out of reach entirely.

***Every coach—academic or athletic—has faced this situation sooner or later.*** In fact, every teacher,



er, to one degree or another, faces it on a daily basis. Whether it is a 10-point quiz, a semester exam or the AMC 8 contest, what do you do when results fall short? How do you pick up the pieces and start fresh? How do you prepare your student when you believe you've already done all you could? What does it mean to be a coach? In essence, what does it mean to be a teacher?

Questions like these flooded my head. One question in particular pressed itself on my spirit: how do you coach a student with more talent than you? I mean, here's a student who knows more math than I do, who can explain solutions more simply and elegantly than I can on my best days. With Kinllen, I felt I was in way over my head. Was I even the right coach for this gifted Mathlete? I had only one more chance to find out. Kinllen was not about to give up. Neither was I.

I had met Kinllen 3 years earlier when the fifth grader enthusiastically joined my public school's math club in a northwest Chicago suburb. I had coached some outstanding junior high Mathletes in my white-haired years. I had worked with other very talented students as a volunteer prior to teaching. But there was something special about this fifth grader. Even back then I saw the gifts he had as a Mathlete—curious, talented and willing to work hard. On top of that, he articulated solutions very clearly—straight to the point, concise in explanation and clever in approach.

"Your son has the potential to go far in MATHCOUNTS," I told his mother that first year. I tried not to elevate her hopes too high. But in my own mind, I saw "nationals" written all over him. It was clear that Kinllen was very special. He was the Mathlete that every math coach dreams of. One half of my brain congratulated me on my good fortune. The other half warned, "Don't blow it." I had a big responsibility on my hands and wondered if I were up to the task.

***"Many math coaches harbor doubts about coaching competitive math...Many give up before they even try. The deep end of the pool looks scary."***



Many math coaches harbor similar doubts. Many potential math coaches don't even make it to this point. "I know what I am supposed to teach in math class," they tell themselves. "But how can I possibly coach competitive math?" Many give up before they even try. The deep end of the pool looks scary.

My issue was different. Confidence I had in spades, having led a math team for 10+ years. Binders of challenging math resources stood neatly on my shelf. I had even taken two teams beyond regionals to the state MATHCOUNTS competition. ***Until I met Kinllen, however, I had not coached anyone whose talent far, far exceeded my own.***

So the stakes were high for Kinllen and for me. As an eighth grader he only had one more shot at nationals. I did not want to be the obstacle standing in the way of this gifted Mathlete. I wanted him to make the cut. Yet I had no experience taking a student beyond the State Competition. My own internal stress was palpable. I was torn between rushing full steam ahead on one hand and acknowledging, on the other hand, that I was in some ways an impostor. I could not pretend to be the math coach his parents hoped I would be.

That fall, I emailed Kinllen's parents and laid out the internal conflict I was having. In so many words, I admitted my fear of not being able to measure up. I had never coached anyone to nationals, I wanted them to know that up front. I was not even sure how to do it, but I was willing to give it my best. I would engage the help of an adjunct math professor from the local community college who had assisted our math club. I would schedule extra practice sessions every week. I would email my own engineering son for help solving the most difficult problems. In short, I would call in the cavalry. ***It would be an all-out team effort. I did not have to face this by myself.***

Kinllen's parents placed their trust in me. So I put my plan into action. During normal weekly club sessions, Kinllen worked harder problem sets than the other Mathletes. On the extra practice days, Kinllen solved problems that I had not finished working myself. Even if I had the key with the correct answer, I was often stumped actually trying to solve many of the problems. I relied on the community college professor to assist, as well as my son in Denver. For some problems, Kinllen and I would put both our heads together to noodle the solution in tandem. For others, I would explain how the same math concept could be used on very different types of problems. Still others, I was not able to solve at all—denested radicals, centroids, mass points? Huh?

***“Math teachers are, at their very core, problem solvers. This was just one more problem to solve.”***

Fortunately, Kinllen's family knew a friend who was brilliant at math and who spent time with him every weekend solving problems. I had not known about his help until one Saturday I happened upon both of them working problems at the public library. At first I was taken aback, but rather than feeling jealous about this new coach, I was relieved. Here was another resource to fill in my math gaps.

Kinllen's preparation for the February MATHCOUNTS Chapter Competition was excellent. His effort earned him a third try at the State Competition and his final shot at making the national team. In the run-up to the state contest, however, I began to exhaust my supply of practice materials. My big plan was starting to unravel. But math teachers are, at their very core, problem solvers. This was just one more problem to solve.

I contacted the Indiana coach who had 20 years experience at the national level in MATHCOUNTS, and who was a good friend. He obliged by promptly emailing me several past National Competition tests and answer keys. It was all we needed to get ready for state.

That spring Kinllen earned one of the four spots on our state's national team, taking first place in the State Competition. Tears welled up in both our eyes again—this time for a very different reason. At the 2016 Raytheon MATHCOUNTS National Competition in Washington, DC, he placed in the top 20% of Mathletes in the country. The talent, dedication and many hours of practice that he devoted to solving problems of all kinds paid off handsomely for him. ***Kinllen's journey ended in triumph.***

So despite all my self-doubts, what did I discover about coaching in the deep end? Of course, being able to motivate your charges is essential for any coach. Celebrating their achievements, leading the cheers—these are key to successful coaching. But then setting even higher goals, for your Mathletes as well as for yourself, is all part of the role.

As a coach in over my head, I also realized that my dearth of experience motivated me. I learned more math that year than ever before. What I lacked in knowledge, I made up for in resources. When problems stumped me, I found others who solved them. When materials grew scarce, I sought others who shared. Ego was not allowed to get in the way.



*Ralph Banasiak and Kinllen at the 2016 Raytheon MATHCOUNTS National Competition.*

***“Self-awareness and self-reflection—so important in day-to-day teaching—are critical to a coach.”***

Finally, what I discovered about the deep end was that self-awareness and self-reflection—so important in day-to-day teaching—are critical to a coach when the stakes are high. ***Moreover, successful coaching, like teaching, cannot depend on me alone.*** In the deep end, it is easy to feel overwhelmed, to consider quitting and to slowly start sinking, sinking, sinking into self-doubt. What leads to success is reaching out to colleagues, to parents and to experienced others when the challenges feel way over your head.

**Learn more about the MATHCOUNTS Competition Series at [www.mathcounts.org/competition](http://www.mathcounts.org/competition).**