

Closing Ceremony Speech at MathPath 2014
Mr M (Prof Stephen B Maurer), Academic Director
July 26, 2014

Parents and Students,

At the opening ceremony, I told the students what I hoped they would experience at MathPath. They did experience it. Let me review that.

MathPath was the first national camp exclusively about mathematics and exclusively for middle-school aged students. It was founded by George Thomas, after he had already founded a high school age math camp and before he founded Epsilon camp for even younger students and Delta camp for even younger² students.

Now there are competing camps – other national camps exclusively for math that accept middle-school age kids. But MathPath remains unique, not just because it only accepts middle school aged kids, but also because of the variety of mathematics and the amount of fun.

Some of you are very interested in math competitions. That's a good way to get hooked into mathematics, and the competing camps that accept middle school age kids emphasize competition preparation. But professional mathematicians don't do competitions. To be sure, they can get prizes for research, and sometimes for teaching and for writing mathematics, but it's not competition in the same sense. So bringing you into the real world of mathematics must take you beyond competitions.

We do have competition practice here, this year both Prof C and Mr L gave MATHCOUNTS courses, Ms O'Neill and I gave AMC courses, and Dr V gave an Advanced Mandelbrot course. But MathPath does much more.

We have foundation courses – courses on basic mathematical concepts that aren't much emphasized in the North American school curriculum, such as number theory and induction. We have more advanced special topics courses, such as Dr V's Marden's [pause – students shouted the rest of the name] Marvelous Theorem, courses on 4 different geometries: for 5 bonus points each name the courses [a student from the audience correctly answered all 4] Analytic, Hyperbolic, Elliptic and Projective. We have exciting courses that build mathematical ideas based on recreation, as when

Dr B (Prof Jane Butterfield) taught Ramsey Graph Games. And we have plenaries where you see active mathematicians at work, for instance, John Conway explaining some of his many original ideas and Prof Rogness explaining different ideas about distance. And, I am pleased to say, you have learned how to listen to advanced talks that are hard for you to follow and still get something out of them.

Add to that our month long courses on history of mathematics and on writing mathematics and you get a very broad view of the mathematical enterprise.

And that is not all. Let me mention the Problems of the Day, run this year once again by Mr L, with the new twist of instant illustration by Philip. These are thinking out of the box problems. They are only sometimes solved by traditional mathematical techniques; they usually need some sort of clever special idea. But many problems in life as well as mathematics need clever special ideas, so practice in looking for them is very valuable – as well as great fun.

So that's an overview of what we *do* in the official academic program of the camp. Before I go on to the unofficial part, I want to say something about the sense of *community* in the academic part. Let me begin with a statement a student made several years ago on one of our student surveys. He or she wrote: This is the first time I have felt mediocre. Along the same lines, a counselor this year reported to me that some older campers were saying, these young little kids are so smart, what am I doing here?

I want to turn these feelings of mediocrity around. While the *density* of math-smart people in the world is low, in *absolute numbers* we are actually quite large. What this MathPathers were saying was: before now I noticed only the density and felt special; at MathPath I suddenly saw the absolute numbers.

But these absolute numbers are a good thing. There is a vibrant worldwide community of math people; together we accomplish a lot and there is a place for us all, the really smart and the really really smart. At MathPath you began to see the collaborative nature of that community. In all my classes and plenaries there were many students who made good contributions. There were many winners for the Problems of the Day and the various other contests. In most classwork at MathPath you were encouraged to work

together and there were no grades. We are all in this together, and together we should feel proud and accomplished, not mediocre.

So let me go on to the unofficial part of the program. The key aspect is how you students interact with each other. Sometimes you talk math, sometimes you show each other how to solve puzzles, often you just kid around. But as someone said in the 2008 EndCamp Survey, this is a camp where it is ok to be a geeky math kid because there are lots of geeky math kids. As a result, you do all sorts of things that geeky kids like to do.

Among these are all the games and tournaments – chess, Set, other card games, Canadian Parliamentary Debate, but also pool, table tennis, soccer, Frisbee, racketball, tennis and pickleball. And then there are the great trips – hiking, cycling, indoor rock climbing, the Boston Science museum, and Six Flags amusement park.

Throughout, you have a great sense of humor. You had to have a great sense of humor to wear some of the costumes you wore, or made your counselors wear, during Spirit Week. I particularly liked the entries in the limerick contest. The point is, through your geeky natures bouncing off each other, you create a unique spirit and have a lot of fun.

You've made a lot of new friends, from around the country and the world. And today, with email, instant messaging, cell phones, Skype, and online MathPath forums at Facebook and the Art of Problem Solving, you can easily keep up with these friends until you see them again – at this camp next year, or other camps, at national competitions, at college, or later in life.

So keep thinking back on what happened here. A few years from now, even things that that didn't seem so important here may stand out in ways you can't foresee.

I've enjoyed being here with you. This year my interactions with you have mostly be confined to classes, plenaries and meals; I've had a lot of work behind the scenes that has kept me busy during your free time. But I've been watching you have fun and learn, and that gives me great pride. Thank you for making this a great camp. I look forward to seeing you again, or learning of your accomplishments in the years ahead. Thank you.