Re: Gifted math student

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- *From*: "Karl M. Bunday" <kmbunday@xxxxxxxxxxxx>
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Larry wrote, in reply to latichever@xxxxxxxxxxx's thread−opening questions (to which I will also reply directly):

> I have an 8 year old son who is a bit of a math prodigy. We're currently working our way through an algebra text.

When my son was that age, the only algebra textbook I showed him was Gelfand and Shen's beguiling Algebra, published by Birkhauser,

http://www.amazon.com/gp/product/0817636773/

which my son would ask for more of after each lesson. He learned all of the usual content of a beginning high school algebra course in the United States a few years later, using the EPGY algebra course.

http://epgy.stanford.edu/courses/math/M011/

> I'd be interested in any other thoughts about how to work with him.

I have a whole FAQ about this subject posted on the Art of Problem Solving Web site already mentioned in this thread.

http://www.artofproblemsolving.com/Forum/viewtopic.php?p=33140#p33140

> I wonder if math competitons, if they existed for his age, would provide some focus.

There are a few math competitions aimed at children as young as yours. One is Mathematical Olympiad for Elementary and Middle Schools (MOEMS),

http://www.moems.org/

which also has a specialized forum on the Art of Problem Solving (AoPS) site.

http://www.artofproblemsolving.com/Forum/index.php?f=343

Another one I've heard of, but haven't tried myself, is the ABACUS International Math Challenge

http://www.gcschool.org/pages/program/Abacus.html

which appears to have interesting problems.

Of course, reasonable minds can differ about how much competition experience is enough for the budding mathematician. My son prefers, at his current age, the AMC competition programs

http://www.unl.edu/amc/index.html

to MATHCOUNTS

http://www.mathcounts.org

(for which he has just lost age−eligibility), but some young math−likers do no competitions at all, and some do quite a few. I personally think a moderate amount of competition math is good for kids, like mine, whose own families know little about math and who also have strong and accelerated standard curriculum instruction, because competition math goes beyond the standard curriculum.

> I'm concerned that in a few years he'll be beyond my ability to help
> him. ...

I'm already there, with my thirteen−year−old taking calculus I and having qualified for the American Invitational Mathematics Examination for the third year in a row. Fortunately, there is third−party help for young people who get ahead of their parents' math level.

> From what I've seen and experienced, a person keen on math _will_
>
> pursue it, with no need for prodding and little need for guidance by
> others. Just make stuff available to him, would be my suggestion.

The basis on which I partially disagree with this laissez faire advice is that most public libraries in the English−speaking world don't have enough good math books for the browsing reader to be able to keep up to an international level of math development, especially if the parents are not mathematicians. But, yes, one does have to keep the child's learning process largely self−motivated. I have bought a LOT of books about math over the years so that my son can find interesting reading matter in the house as he turns to it.

One thing that may sap motivation over the long haul is not having the social support of a peer group of math−liking kids, unless the parent goes looking for those. I am continually recruiting for my gifted homeschooling support group's math team, so that my son and the other kids on the team have buddies to sustain their interest. Online communities help for that, and you have recommended the best one, but face−to−face friends are helpful too.

> But he's only 8; maybe it's a little early to be counting the chickens.

It's quite plain, as a historical matter, that not all precocious math students become able adult mathematicians, and some able adult mathematicians were not at all precocious as young people. But (as you note below), school mathematics instruction in much of the English−speaking world is sufficiently lousy that a parent would do well to be open to the possibility of supplemental education if a child shows early interest in mathematics−−lest that interest be crushed.

> http://www.mathlinks.ro/Forum/forums
> −− remarkably good resource and forum for youngsters up to university
> level.

Yes. Once upon a time Art of Problem Solving (AoPS) and MathLinks were completely separate Web sites. They still have kept their separate URLs, but their forum databases and most operations have merged. I think to the typical computer user the distinct URLs just lead to distinct "skins" on the same forum database, which I agree is a treasure−trove of useful information.

> This organization called MathPath might be worth a look:
> http://www.mathpath.org/student.htm
> It's a nonprofit outfit for talented middle−school kids. The website
> has some links that might help.

My son attended MathPath last summer. I recommend it highly. The director is very thoughtful about how to look after middle−school−age kids and how to guide their mathematical development. How many summer programs for young people allow one to hear lectures by Robin Hartshorne on projective geometry? Cool.

Several MathPath alumni are going off the Phillips Exeter Academy

http://www.exeter.edu

for its very rigorous math program.

http://math.exeter.edu/

> Here's a great little book I recommend for highschool afficionados:
> "Ingenuity in Mathematics" by Ross Honsberger
> http://www.amazon.com/gp/product/0394709233/

Yep. Most anything by Honsberger, or most any other book published in the same series his books are published in, is very good.

> I wouldn't expect much help from the public schools of the USA or
> Canada.

Alas, we homeschool because we have reached the same conclusion about availability of appropriate education for our children.

For the OP, and anyone else with a similar "problem," a possible resource is the Davidson Institute for Talent Development (DITD) Young Scholars program

http://www.ditdservices.org/Articles.aspx?ArticleID=24&NavID=0_0

can be very helpful. Check the program's eligibility requirements to see if you'd fit in; hundreds of families have joined in the last few years, and the families help one another above and beyond the help provided by the DITD staff.

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