

### MITOCW | 3. Tell us about what happens during a typical class day.

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**PROFESSOR:** So I usually start out by handing out a sheet of usually three to five questions that I give to everybody. These are questions that I'm eventually going to answer in the course of the lecture, but I give the questions out at the beginning because I want people to have something to think about while I'm talking, especially when-- it's not uncommon for people to go off into a daze, and it's good for them to have something to think about. And also, ideally, they answer the question themselves before I get to the answer.

Then we proceed to-- depending on the day-- in a day when we're doing lectures, I'll proceed to present material, ask questions, and then, when I get to an appropriate breakpoint, try to give people a chance to solve the problems that I've handed out, and occasionally have people come up to the boards, and give their solutions on the board. Sometimes I'll bring in materials. Like if we're doing polytopes, I might bring in an icosahedron, or a dodecahedron, or some more sophisticated shapes. Or we might be working with tiles or various other pieces we might be using to investigate combinatorial problems.

And then on some of the days-- of least two or three days of the course are devoted to nothing more than problem solving, so I don't do any talking during those days at all other than to answer questions that people may have. And people work either individually or in groups on solving problems. And then the last day of the course, we actually had a contest, where the students had an opportunity to pit their brains against some of the more challenging problems that are out there.

And actually I should mention, a lot of the students who take the course are very interested in mathematics, and one of their motivations for doing the course is to better prepare themselves for some of the math contests that are out there-- contests like the AMC, the AIME, and the US Math Olympiad. And I think a lot of kids find the combinatorics questions on those tests to be some of the most challenging, whereas my attitude is always when I look at those tests, about half the problems, I have no idea how I would solve them.

But when I look at the combinatorics problems, they're gimmes. And my hope is that by the end of the course, the kids who take the course think the same thing, but the nice thing about the existence of these contests is it gives me a wonderful source of problems to throw at the kids.