1 Weverton: All right, So, Miriam to start with I have a very broad question for you. And it relates to your program. So I would like to know, can you tell me what motivated you to pursue a PhD in mathematics?

2 Miriam: So I have always been interested in science in general, like that was the main reason to start undergrad in mathematics. And then as I kept going doing math, I start I did a research project, the summer of my second year of undergrad. And I really enjoyed that experience, I really enjoyed the type of work I was doing with the professor was working with the psyche, working with him for the following two years. So the end of my undergrad. And I mean, the my undergrad was technically three years plus one year masters. So it's probably comparable to a four year undergrad program here. And so I really enjoyed that type of work, and sort of wanted to keep doing something like that and keep studying, and didn't really have anything else in mind that I would have liked to do at that point. So I just applied for a PhD.

3 Weverton:

4 Can you tell me more about the research project, like tell me exactly like how it was set up or like structure like, Can you give me more information. about that?

5 Miriam: So when I started, and to this will be the end of my second year of undergrad. So I applied for the summer research project in general, my second year of undergrad, so that I would do it in like five months from there. I didn't really know at that point what I wanted to do, I was actually not not succeeding in math as much as I would have liked. So I was a bit frustrated by that. And I was a little bit behind I did undergraduate not in my own country. So I was, I was very behind with respect to other people when I started. So it was a it was a very rough start. But I also knew that there would have been my original plan. So I kind of wanted to verify that. So I started doing the research project. I also at that time, had not very pleasant experiences with some of the professors as in their technique was like their strategy was to humiliate students. So they would do better not like not, not like just telling them the stupid question, for example, but I took it very, like, I didn't take it the right way. So for me, that was not the way I want it to work. So the choice of Professor for me was entirely based of I like this professor, as a person, I know that I will have a pleasant summer, I was like, it's the summer I want to enjoy my summer, I don't want to be frustrated and stressed the whole summer, I want to figure out if I like this. And so I narrowed it down to two professors that I liked, like because have been good teachers. And so I was like, there's a teacher I could work with. And and then I ended up looking up a little bit of what they did and choosing one of them. But it was a very, like, it wasn't really based in the argument, it was more like I want to figure out for like math in a sort of relaxed environment. And then he I was very honest. And I told him because like, I didn't have anything to lose, or like I was like, honestly, like, I think I would work well with you. So he was okay with that. So he gave me seven books. And he told me read the first chapter of each of them. And then we'll keep going with what you like. And so I read the first chapter of each of them, and they kept going with one of them. And then every week, he was kind of the same story. He was like, okay, read this three things, and then we'll keep going in the direction you like, and I ended up completely by, like, not knowing what he did going exactly, and direction of the things he did. So that worked out really well, even if I had no idea because I like I just said, because I just chose him because I thought he was a nice guy, then. So then, that summer was a lot of fun. So then I did my final undergrad thesis with him and my master's project with him. And at that point, also based on the fact that I really liked the topic he was doing research in. So that was

6 Weverton: so you mentioned that you're not succeeding. And maybe that was because you're not in your country.

7 Miriam: So I think there was, so what I did in high school got to up to like, limits and derivatives. And that was in Italy already my high school. But when I went to England, most students have already seen had already seen integrals and differential equations like basic differential equations. So there was a big gap there. Like I was not familiar with complex numbers, and we matrices with a lot of other things that other students that have already mastered. So I could definitely notice

that I was bottom of that class. And I was intimidated. I didn't want to ask questions, because I was repeatedly told that my questions are not good questions. And I was sure my questions that are very basic, but also if you notice in the matrix asking what's the matrix, maybe that's not basic, maybe we just don't know. So that definitely was a rough start to my the end of my first year, I had very low grades. And also, I failed thing. In England, you take finals once a year. So I had to retake one of them, which is, I mean, it's pretty common, but also not good. Because then if you retake it, you can only score a minimum score. Like if you cannot retake it for anything more than the minimum grade, that that's allowed. So that was definitely not like a successful year, when you went to the bathroom after there because then like I started catching up, but

8 Weverton: so can you tell me about the strongest feeling you have experienced as a mathematics student?

9 Miriam: That's an Interesting question. I mean, I think there's, it's hard to say stronger, because, like, there are two days that you really enjoy what you're doing, and you really enjoy studying. But somehow I feel like the disruptor frustrated, it's like, it's easier to feel that more strongly. So I think, at the end of my Masters one of my, there was one particular exam, it was reminding geometry, that really didn't go well. I like I remember how disappointed that was like, I felt like I failed as a mathematician entirely because of because I felt like that would put my average so low that I will never get to grad school. So that's definitely like, I feel like that's stronger, because it only happens in one moment while enjoy, which is studies like distribution.

10 Weverton: So it feels like you are telling me a strong negative feeling. Was there any strong positive feeling?

11 Miriam: I mean, I think the like, for example, working on that research project that I did in undergrad and also now here, like I really enjoy some of my classes, I really enjoy reading certain books. But I feel like that's more like something that continues over time. So maybe there isn't one moment when you're like, that's the best moment of my life. One mantra, like many moments, which are happy as well, like, I feel like negative feelings tend to come in one day and so day really hit you, positive feelings, maybe, like I'm really happy doing what I do. But that's less of like, oh, there was that one day when I realized I was very happy.

12 Weverton: can recall the last time we talked to someone about being a PhD student in mathematics.

13 Miriam: When I'm here, I mostly interact with people that already know, at this point, so they kind of already know the students. I remember when I first applied, I was telling everyone who's gonna move to the US and do this. And people were telling me not to. And I remember feeling annoyed, because that was like a huge decision. I'm summarizing it to you in a second. And you're just telling me No, that's wrong. I was like, how do you know that? Now that I'm here, like, I talked to someone last week. We just had a very long conversation, she's she works at singtel, which is the local parish where I go to, and she like she's a campus minister. So she has lots of conversations with students. And so we were both sharing in Europe as a PhD student, but she was like saying how like, talking about some of the qualities you need to do a Ph.D. and comparing them with other things I was doing at the parish as he was like, Yeah, I can see you using that skill to serve here. But that wasn't a very, very much like it wasn't sharing. She knew I was a Ph.D. students, so it wasn't me telling her.

14 Weverton: And if you meet up with a student who was thinking about taking a PhD in math, what advice or experience could you share with that student to make them make up their mind?

15 Miriam:um, I would Probably, I mean, so PhD in math is a very long thing to undertake. So I think you definitely need motivation, you definitely need to know that it's something you like, I don't think it's necessarily around to try things out. Like, honestly, when I came here, I had never been to the US. So I in my mind, I was thinking, I'll go there for a year. And I'll see if I like this because I wasn't like committing to stay here for seven years and in my mind. So I don't think it's necessarily

wrong to try things out. But I would say to keep going, you definitely need to enjoy it. Because no one wants to take seven years just to get a degree. Like, I think we're all here because we like what we do daily basis. So let's say that's the, I would say for me, the most important piece of advice would be do it if you like it, if not find something you like because of that. I mean, there are many late nights during work that you have to take into account. So I'd say that's very hard to do it if you don't enjoy the process.

16 Weverton: I see. So usually, how long does it take for a student to finish the PhD seven years?

17 Miriam: So technically, the standard length of the program is six years. But I can't remember anyone that actually did like most people ask for a seventh year. Yeah, I know that there are people in Applied Math usually takes less time are working pure math. And so that's where I, I can't think of anyone on top of my head that like graduated last year and six years older, the people I can think of that graduated last year were all seventh or eighth, even eighth years.

18 Weverton: Wow, that's so long. So so far, what has been the most memorable aspect of your time in the PhD program in mathematics?

19 Miriam: For me, it's just like, really enjoying studying on the daily bases. So like I really enjoy doing my work, I have, I started working with my office mates, and then they became my friends. And now we're really good friends. So that was definitely we did homework together every day for three years. And we were taking classes. So the pitch is kind of divided in. We could say two parts, you have to pass your quals and then the advanced topics. But then I would say that's the first part in which you take classes. And then there's a second part, which I just began first my advanced topics in April. So now like started to, I know I'm supposed to start to do research, I'm still looking for a problem. So I think that is like, there was a definitely a big difference there. But for this first three years, I've been doing homework with my office mates and a few other friends every single day. And so you grow really close to them. And it was it was really fun to do those problems. And it was, it wasn't even for the grade. Because after a certain point as basically every person in the class gets an A as long as they submit homework. So it wasn't me, we're all doing it together. So we knew that we were we would all get the same results. So it wasn't just we're doing this because we need to get a good grade it was this we're doing this because we want to solve this problems, because we honestly think that these problems are fun. And then there is now I'm like trying to transition into that second phase. So I'm working more with my advisor with his other students that I have not worked much with in the past. No. So enjoy that. So I think I think for me, what I think I'll remember in like 30 years is just like, this afternoon studying with friends were we had fun doing it together.

20 Weverton: Nice. So you talked about the office mates? Can you tell me more about them? Like Tell me who they are, you don't need to tell names, but like who they are like, what's the relationship? Like? How do you guys work together.

21 Miriam: So I call them officemates. But technically, I only have two Office mates. But then there's five or six people that regularly work in my office. So like, basically my office mates even if they're not officially my office mates. So we started working there because we were taking classes together. So the relationship started as classmates. But then we started going out together invite you to get in that or like, just like do other activities. And then like most of us are also roommates this in some way. So like two of them are living together. The girl I'm living with is not working with us because she's an applied math. But in practice, he's also like part of that group. So it's like, I guess living together definitely brothers even closer because we go and find the same people.

22 Weverton: Nice. And so can you tell me about one class that you took in your PhD? And I want to know like, what was the course about? And what was it like? I just want to hear the basic description? And maybe how did you prepare for the class?

23 Miriam: Just any class? So like, for the so all of last year, the all of my second year in the first semester, my three years, it took three classes and commutative algebra which are basically the same. So it was the same small group of about 10 students attending. It went from like 10 in the first class. So like six in the last class with a couple of people decided not to take the following

one. But they were all very, very similar in style, the professor was writing the theorems and proofs in the board and giving us homework every 10 days, the homework was usually five or six problems, but they were especially challenging. So it would take us those 10 days to do them. And sometimes we will not be done until like the night before that and like 1am

24 Weverton: without procrastinating or with procrastination?

25 Miriam: No we were actually working that they're just really hard. So like it just said like on the other nights it would go home. But then the very last night we were all in the library lounge until they close it at like 11, so at 11 they were kicking us out and they were moving upstairs. And that Professor works through throughout the night. He just likes to get here at around two in the afternoon and stay in till two nights he likes. not convenient until the afternoon is staying here late. So we could go to his office at 11pm and he would still be there. He was very helpful. He had office hours earlier in the day that we could also go through and he would always help us. And so the dynamics of that was that we needed to come together because it was hard for one person to do this. There were there were usually like really hard theorems to prove. Sometimes they would be like, theorems that someone has published and made a paper out of. So it's not, we weren't expected to be able to solve them easily. They were supposed to be challenging questions. And so usually the older students that have taken the class before would help us. So they would give us hints. And that's like it. So the professor is encouraging this type of atmosphere here not he doesn't consider cheating, it's how he wants us to get there. So we, they would give us hints, like try to use these other theories or try to look at this object. And then professor will be painting office hours, and then five or six of us will try to put them together. That was definitely one of the class enjoyed the most. Because solving those problems is fun was just like we will really enjoy the process. I was really I felt kind of empty when I was done with that sequence was like No, there isn't a fourth class that I can take.

26 Weverton: And, and how was like in general, the interaction with the professor, like you said, he had office hours, you could go to the office, could you describe more like how was the interaction in that couse with the professor who was teaching?

27 Miriam: So he has got 10 PhD students, he needs to be 11. One just graduated. And he's doing his own research. And he was teaching two classes. So he was a really busy person. But still like so I'm not one of his students, but I know that his students can just like, could always go talk to him and he would somehow find time. For us, we would mostly just go to his office hours, and just show up unannounced because we know that he's busy. But he's particularly close to us. He has he does dinners with his students every Friday that I was just used to go to when I was taking the class, but then they continue throughout the years. So he's definitely one of the professors that are closest to his students. I wouldn't say that's common. I mean, I don't know of any other professor that meets with his students outside of office hours every Friday for dinner, I would say that's kind of special. I think it's also what made those classes so enjoyable, that he cared for all of us and wanting to spend time with us.

28 Weverton: And so if you could give a ranking for this class, would you rank it as a good class, average class, bad class?

29 Miriam: No i would say it was a very good class,
30 Weverton: it was a very good class,can you now tell me one that was the opposite? not so good.

31 Miriam: So there is the same type of sequence for algebraic geometry, which also happens to be my area of interest. And that definitely is not, has not been that good. I actually stopped attending this semester, it's like, most of these classes keep going year after year, they just like they take like, five or six semesters to complete the whole sequence. But I, I cannot stop the now read the book myself and my advisor was okay. Because they just, there wasn't that type of connection. The other students were interacting, we mean that much like with each other even that much. So it wasn't at that point that was like, Okay, I can read the book myself, my advisor agreed with that.

He actually suggested it himself. But he didn't even say I would like to stop taking he was like I think you're ready to move on. Yeah, it was just I mean, the professor also definitely care a lot, because he was always by word prepared and had notes. But it just his exposition wasn't as clear. And doing their homework by yourself isn't as much fun. He definitely had office hour, but he didn't have a personal connection with anyone there. So that also was different I would say.

32 Weverton: So this connection between students you do you ever thought about why that happened that way? Like why there was no connection? Like

33

Miriam: In the, wether there was no connection so I think in the commutative of algebra class, which is the previous one I was describing. We were encouraged to work together. And also the I mean, the professor actively spends time taking his students out for dinner, so of course, they will become friends. And then if they are all friends, it's normal. It's a there to join in the already formed group of friends. Well, with, with the algebraic geometry, the second one, we weren't really encouraged to work together. It was. And I mean, I'm sure it also in a group of six people, it depends a lot on how people are. So if three of them don't want to work together, it's hard to change that. So like, maybe the people that were just spontaneously less inclined to work as a group. But it just never happened. Like we we weren't particularly encouraged to do it. And just and try to convince some people have the first class to work with me and the second class but that didn't work.

34 Weverton: So you talked a bit about connections and working with a peers? Is there any particular reason why you think that is important for you?

35 Miriam: um, I mean, I think it helps me learned but it's basically more enjoyable, because it's always nice to have people around and have friends you can turn to when you're struggling, but also think it helps their learning. Like the main reason we were forced to work together in commutative algebra was that those problems were too hard for one person. But putting all of us together, we had the better chance of succeeding. I think sometimes we see things in different ways. So talking to one of my office mates that real officemates few weeks ago about a problem. And he was asking me how I would approach it. And I drew a couple of pictures that represented to me, and he was like, wow, I never thought of it that way. But he thought about like he had like pages and pages written down. So he did think about it. But just sometimes another person can brings a different point of view that could help you. So it's not just fun. It also I think makes us do better working in the end.

36 Weverton: Nice. Can you tell me a moment, you felt like you did not belong to the program?

37 Miriam: um, I mean, So happened a lot, because I was not doing very well, here if you like those. At the beginning, I didn't have a lot of confidence. And the like the first year, there were ups and downs. So we have to pass four qualifying examinations. And there's two sessions every year. And I had three semesters to pass them all. So then in January, I took two and only past one of them. And that was definitely a bit disappointing. And also, I came back, I went home to Italy for Christmas. And I came back before New Year's Eve. Remember, those first few days in January studying, I was jet lagged, tired, didn't know if I could pass those, which I guess I had good reasons to worry because I did fail one. So it was a bit? It was I was like maybe I'm not. Maybe this is not my thing, we should do something else. But yeah, then I guess then things become better. I was also really busy that first semester. So I was struggling to keep up. I think not because I had too much work, but just I needed to learn how to get organized.

38 Weverton: Nice. I mean, if it feels like this connection to not belonging came because of maybe a lack of knowledge or something related to achievement.

39 Miriam: Um, Yeah, I would say. So I really, I, I liked Frank University and its enviroment from the start. So that was never a Like a factor of my decision, it was more like I mean, I didn't, I didn't feel strongly like it didn't belong. But I was just like, there were ups and downs. And sometimes in the

dance, it would be like maybe I shouldn't be doing a PhD in math, but. And then I guess in that algebraic geometry class, I've consistently been the only girl there. And that's sometimes like, sometimes it was like, do I really belong here? And also, like, I had never had like evidence of this. But sometimes I felt like I was look at differently. And then my homework were graded differently. But I never, I didn't really worry too much about it. Because we were all going to get an A in the end. So as long as I learned I didn't carry that much, so more so like, I would like a female friend to talk to about things. And there are many around that was something that sometimes was like before it started me with. So right now I live with that person, that's part of our group that I really like, but she wasn't really part of my life my first year. And then I felt a bit isolated like anyone I could talk to about certain things, but also was new in a new completely new places. I made sense that I didn't have those connections yet.

40 Weverton: So So this fact of being consistently the only girl that only happened in algebraic geometry? Yes, in all, in all other areas. There are at least a few, but yeah, I don't know why, but in that algebraic geometry class I was the only one and I'm the only girls working in that area in this department. It's not a huge area like there is maybe, I don't know, 10 to 15 students working on it. But I don't know why this, I think maybe like, maybe friendships play a bigger role than we think. And when people like, stick where they often because I mean, I also really like commutative algebra. I think it could work there. So for like maybe just all the girsl stick stuck together, there

41 Weverton: So there are more girls for communitave algebra?

42 Miriam: Yes like this professors, 10 students, and, you know, three of them are girsl, no, yeah, it's still not a majority, but there's like a group, four of them workers.

43 Weverton: One may you feel like maybe you were being graded differently?

44 Miriam: Um, I was thinking, I was taking this class with the same Professor learned that on my algebraic geometry class. And on one of my, on the midterm, there were our names on top. And my office mate the one I just mentioned that we talked about a lot of things sometimes had my same answer with less details and would get more points. And so I was like, I mean, I figured that maybe, even if I had more details, his explanation could have been more clear. But then on the qual, I got, which is blind graded, I got a much higher grade, which is only one thing, see the secret just have had a bad day. So it's not it's not evidence of anything. But somehow I felt like I was looked at differently. But it's not necessarily a gender thing. It could be anything else. Or it could just be a coincidence. But like that, that somehow it's like, I didn't even think about the gender thing back then I just thought maybe the professor likes him more.

45 Weverton: And what are you thinking about doing after your doctoral program? So I would like to, like so the dream would be to keep doing research and teach in some sort of combination at some school, then like, reality is always more. So the problem is that in reality, there are many dreams that one has. So I would also like a family. And I really like so if the PhD seven years. And I started when I was 23, that means I will end when I am 30. So at that point, I probably wouldn't wanna like do long distance for four more years, since I can do a postdoc, or like, I don't know. So I think they're like, there may be other factors that could go into my decision. And I could be one to go to a specific place. That's not like four states away from my boyfriend. And I feel like that could play a role. And I don't think I would be unhappy doing another job. Because to be to the postdoc, you need to be very flexible from the point of view of where you're gonna go, because usually people to, like, do a postdoc for a couple of years in one place, and then get hired in yet another place, but then by then I'm like, 34. So I haven't been, I don't like to plan that far ahead. So I will see what happens at that point, I will just send applications, and then we'll decide, but then the idea is how I would like to apply for a postdoc. But then I will also see pros and cons of things.

46 Weverton: So what attracts you to a job that includes both researching and teaching?

47 Miriam: Um, so I really like math and I like solving kinda problems, like I mean, trying to solve our problems, they should say, like I was mentioning earlier, but I also really like teaching, which is something I didn't know something I found out here that I never taught before, but then here to get funding I need to be a TA, and actually really enjoy doing that too. And I like that type of. So I like

having some sort of a human connection in my work, because I think just the researches can be a bit, you're just by yourself in your office all the time, sometimes. Like sometimes teaching is a lot of work. So like maybe it would be nice to be able to take a break from it. So I don't think I will ever complain if like for one year I get a grant to teach or something. But then like, I enjoy teaching and would like to stop completly.

48 Weverton: Nice. Okay, so this question does not relate to you. Maybe? Maybe does. So I'm interested about if you're able to describe what would be a typical day, in the life of a strong student of your program? How would that look like? What would that be like?

49 Miriam: So a person that's good at math?

50 Weverton: A strong student in your program.

51 Miriam: I mean, I guess. So strong student usually also work very hard. Because at a certain being smart helps a little bit. But then you also need to put a lot working it. So I actually. So I think they would like go their office to make start working on that research. Usually like Usually, the people that are the strongest there are also less teaching oriented, it's not always the case, but usually like to get lighter. Because here there is a certain flexibility in teaching assignments. And you can express preferences. So usually there are people that may be preferred to have assignments more based on grading, so they can do like late at night or when they tired whenever they're tired. And that takes a little less time. So I wouldn't, it's not always the case. I mentioned them working very hard. I don't usually go to class, every single time because they can afford to skip it sometimes and work on other things instead. But then I think people in this program also find time for their own life and different time. Like, we have groups going back to the gym together, for example. And, or, yeah, or like hanging out during the weekend. And I can also see that happening.

52 Weverton: Are you including yourself in those groups? [Miriam: oh Yes] yeah.Okay, I see. Cool. All right. And can you tell me about a mathematician, you know, in your department, that you admire.

53 Miriam: So I really admire my advisor. I know he's done. Really incredible work. I mean, he's, he just turned 60. They're just had a conference celebrating that. So it's public domain information. So I mean, he's, he's had many years to work on things, of course. So like, he naturally has many papers out. But he's also he's very versatile, which is something I admire very much like he's, he can grasp the concepts of problems in very different areas of math more easily than others. And he's also very good at making it down to earth and explaining it to people. So he'll address the main concept, and he will explain it to seven years old, if he needs, he will just reduce it down to media. So that's definitely something I admire. I also admire his character. So like, He's a very shy person. So sometimes, like, it's, it's probably not easy to talk to him at first, because actually, like I , I talk to him that much, because like, he's now one of those people that will just start a conversation in the hallway with anyone. But it doesn't. I think that the I think he's still a person that cares a lot about his students. And he's got his ways to show that very clearly, in a way that it's really evident to us. So I admire how such good mathematician can also come down to earth and care about us. And he actually also is a really good teacher like he, I took classes from him. And he's not the type of person that is. Sometimes some really good mathematicians, like I was saying earlier tend not to care that much, but teaching so like they spent, they put the minimum little resources there. I feel like he's good enough. Like his he's got enough experience that he doesn't need to prep that much. But he will do everything he needs to do to ensure top quality classes. So definitely, I think he's got the whole package. I would say.

54 Weverton: And why do you think the average PhD student in math decide to pursue a PhD?

55 Miriam: People have different reasons, I feel like most people, so some people started and then drop after one year, so maybe, like, maybe the third people that weren't really sure. And like started, went to grad school, because they were like, not sure what to do. Maybe I'll see if I like this. But most of the people that then keep going had a passion for the subject. Just enjoyed studying it and wanted to study further. Because been as a career choice, yeah, it can lead to successful career, but you're kind of postponing that, like seven years. So fairly, fairly ambitious, that you can be really ambitious in terms of wanting to do really good research. But you also must

like that, if you're just ambitious, career wise, you're probably going to do something else that that comes faster in time.

Weverton: And if you were accepting a student to mentor in math, what qualities would that student have?

Miriam: So if I was,

Weverton: if you were accepting,

Miriam: like, if I was in charge of making admissions,

Weverton: yeah. And you expect a student to, to mentor in math. So what qualities would that student have?

Miriam: I mean. So I would look I would definitely look for some one with basic requirements, like I wouldn't, I wouldn't say he is predicted math before, but seems like a responsible person. But then I would, I would value showing like that he likes basically never over something my undergraduate advisor told me when I was applying, he was like, yeah, you need to be good, you also need to be motivated enough that you can get through seven years of that. So I will look for someone that can show me a commitment the last time so maybe like the deep projects in the previous like, year or so. So that like, it's not just something they came up with in that morning. And that way, it's totally something that's going to last for a few years. And then there are those qualities of you and in general in life, like being organized and being respectful being good element in your working environment, like a good presence for people around you. Like they're all those qualities that don't necessarily just apply to math, but making pursuing whatever environment cheering.

Weverton: And what are your impressions of the professors in the math department?

Miriam: I think everyone, I mean, most people here are very friendly. Everyone has been really kind to me, really useful advice. And just

Weverton: so you didn't encounter any hard experience with faculty.

Miriam: I mean, outside from like that exam that I felt like maybe wasn't graded super fairly, but I never cared too much about grades. So didn't impact me that much. But there have been better worse classes so like updating, like there have been people that I thought were less good of a teacher than others. But not people that intentionally did something bad for students, I would say.

Weverton: I see what changes should be made in the Ph.D. program?

Miriam: So there are structural changes that are being debated right now. In like the qual system and what classes students are required to take. I'm not sure how much detail should I go there there. But they're like they're trying to shorten the length of the program a little bit, which seems like a good idea. Because Frank has been the longest in the US, like seven years in a big much. So like they're trying to make us take less classes so that maybe we can take five or six.

Weverton: Do you agree with those changes?

Miriam: Yeah, I think seven years is a bit much. And I think some of the classes we take at the beginning, maybe aren't that necessary. So I think that's where you can save some time.

Weverton: And how do you think we could encourage more students to pursue a Ph.D. on math?

Miriam: So I think, like, there's this cultural issue there, which is that if I go for meet a new person, that I've never met, and like, this is our very first interaction, introduce myself or say or do math. They tell me, I hate math. And that's okay. We think that's fine. But if they tell me like, Oh, I study medicine, and I don't like it would be crazy to reply, oh, I find that we don't see blood, for example, that's not something we do. That would be weird. While same people that we hate math

is normal. But then I feel like that. And apparently effort, I've taken a sort of a teaching workshop where they mentioned the fact that there is research about this, about how we have this attitude towards math that was supposed to be hard. And it's, it's okay for kids to be bad at math, because probably the parents are bad at math. And so if if you come back home with a bad grades, your mom's gonna tell you, it's just math, she's not gonna tell you math is beautiful, you should enjoy this, she's gonna tell you math is hard. And it's okay. We don't we don't need math in our life. So often, like our schools, even like elementary school teacher, who is a person that I deeply admire and love, and I'm still good friends with, she didn't like math. So like, I feel like it's acceptable for an elementary school teacher to make it clear that she doesn't like math. And like, and then, of course, children are not gonna like she'd like that. If you tell them.. So I feel like that thing keeps going. Because then it goes through high school. And again, here, and perhaps the calculus and math is that bad subject that everyone tries to survive. So I'm not sure how we can fix that. But I feel like starting to tell our elementary school teachers don't tell your students you hate math, because that wouldn't be a good start.

72 Weverton: Did you have the experience yourself with your elementary teacher?

73 Miriam: Yeah, but she didn't explicitly tell us, she told my parents. My mom later told me how she went to talk to my teacher, that she didn't really like math. And so of course, she, I think she did a good job teaching us. But I don't remember learning that much math from her Actually, I remember learning more math from the teachers I had later on, I think she was like reducing the minimum amount required. Because she was teaching us all subjects. That was the type of school system.

74 Weverton: So why do you think some students give up obtaining the PhD in mathematics?

75 Miriam: so some people just aren't sure from the start if they want to do a PhD, or masters. So it is fairly common for people to stop after a couple of years and just graduated with the masters. For other people that are like that. Maybe have kept going for a few years, there could be life events that make them change their minds. Like, like, there's a girl in this department that comes to mind that she just had a baby and decided that maybe we should graduate with a Master's. So like, so that are just random things that happened that could make you want to change your career path. But then I feel like usually people that start for lack of motivation stop in the first few years, people will stop later, maybe something externally that happened, it's very rarely happens that people don't manage to complete their research. And usually, it has happened in the past, we've been told by the chair that it has happened that people after like six years couldn't produce a thesis. And so they had to graduate with the masters. But usually people that get there then manage to finish.

76 Weverton: So about research, I'm a little bit curious about what does that mean to you? Like research? Like, what's your idea about it, like, when you think about research.

77 Miriam: So the only experience I've had was through my Masters, when I had write a thesis, it wasn't, it was only one year. So it wasn't a very big project. But the experience I had was just starting with this problem. And just really thinking a bit more about it, and try to make, try to read related things and try to live even if I couldn't solve a completely which I didn't, it turned out to be a really big problem that couldn't be solved in like, but it was it was part of the plan that my advisor had, he was like this really big problem, big problem tried to make progress for like, try to study some case of this. So I studied some sub cases. And that was my advisors plan for like, so even if I couldn't solve it completely, like try to learn something about it. And like, I think of a very slow process in which like, on any given day, it seems like you're not making much progress. But then you put them all together. And after a year, you're like, Well, yeah, I did solve something.

78 Weverton: Nice. So now let's go back a little bit, maybe, maybe not that much. I would like to know, what's your earliest significant memory of doing something that involved the use of math?

79 Miriam: I mean. I remember, like doing my homework, throughout my education? Back to

definitely remember, middle school, I remember what kind of homework I had to do.

80 Weverton: Was there any very significant memory?

81 Miriam: Um, like, not sure. If you mean like, like something outstanding or like, [Weverton:yeah]. I mean, I guess the earliest outstanding thing would be added math competitions in high school, like the math Olympiads. So I guess that would be I didn't do very well, like so in that sense. It wasn't like I didn't win. But that like, I guess, going there couldn't have been like, the earliest extra curricular thing I've done involving math.

82 Weverton: And so usually, like you mentioned that there are some maybe negative experiences in mathematics, how do you usually overcome those experiences? What do you do to overcome that?

83 Miriam: So, like. sometimes there's frustration when you For example, yesterday was very humbling day, because I went to meet with my advisor, and I had made very silly mistake, like I had to ignore, I miss, I miss read something. And that completely threw me off. So like, after five minutes, it was clear, I misread it. And and I was like, okay, that's emberrasing. I haven't got anything else that like I was only working on the wrong result or week. And I definitely went back to my office and there felt a bit disappointed. But then I know, it happens. I know that everyone makes mistakes. And I think I was I just wanted to get back to this morning so that I could like, keep going and try to better next time. So I feel like for me, like the way to get over that disappointment was, well, let's try to do this again. And hopefully do better.

84 Weverton: I am going to ask you. I wanna you to do something for me. you don't need to worry about your drawing skills, but I want you to draw. Whatever comes to your mind about, if you're asked to draw the ideal mathematician. What would that be?

85 Miriam: Whatever comes to my mind? Okay. I am not very good at drawing. Can I just scatch. [Weverton: no worries] Okay. Do I have to explain this?

86 Weverton: Are you done?

87 Miriam: I mean, I think …

88 Weverton: So what were you thinking when you draw it?

89 Miriam: I was thinking of a really successful mathematician. I know.This is her husband and her child. And they're Switzerland. So there's the mountains and the lake. And they go for hikes. Three, three.

90 Weverton: Nice, what do you think she?

91 Miriam: Maybe I should put her math department here?

92 Weverton: So Why did you think about her.

93 Miriam: I mean, she's an incredibly successful mathematician. Like she's like, world class, top tier, mathematician type person. But she's also got, like, she's, I feel like she's also a happy person. So like, if I wanted to be, like, success, as successful as her would work for me, like, she's got her family and her friends and they go for hikes in the mountains in Switzerland. And she also works really hard. She's not like, she's not a person doesn't take our job seriously. She's a person that published like 10 papers during her PhD. She's like, she's, and her PhD was only three years. So she did incredible amount of work. And she worked really hard on it. But she's also got a very enthusiastic approach to it. So every time she talked to me about it, she was very excited about what she was working on. And you could see the joy of working at it. But you could also see that that was in 100% of her life, which I think is as much as I like math. I don't think the math can

completely fulfill anyone. And certainly for her like her family and her mountains and her friends also have their own something that I would like, like, if I had to be successful, I like to be a successful that way.

94 Weverton: Nice, interesting. All right. I think we are done for today. [some more audio after this that is not very relevant].