1 Interviewer: Awesome, so today we're going to do a life story interview.

2 Heather: Okay
3 Inteviewer: So I'm going to try to, with your help, I'm going to try to construct your whole story of life.
4 Heather: Okay
5 Interviewer: From very little until today. Okay? So let's go back to elementary and middle school.
6 Heather: Okay.
7 Interviewer: Let's just start there. So can you tell me about your elementary school math experiences?

8 Heather: Sure.
9 Interviewer: Whatever you remember.

10 Heather: I don't remember much, but I'll tell you a few things that I remember. So I guess I was in the accelerated math program probably starting in third grade or something like that. So we would go to a separate room. And then we had a teacher who do a lot of more activity type of things in class we would have a lot of like here's a story let's figure this out together group work kind of things like that. That might be about all I remember.

11 Interviewer: How did it happen for you to end up in a, in an accelerated class?

12 Heather: I think, I think there must have been a test at some point it must have been nominated by our teachers I really don't remember.

13 Interviewer: Uhum, okay. Do you remember what was the best thing about elementary school experience?

14 Heather: Huh, in math specifically? I think we had one activity where they wanted to, I think surrounding the school with flags or something like it was a real world experience and so we had to try to figure out how to use like the ticker measure and go around the school and figure out like how many feet, we would need or something like that I don't remember exactly but it was fun.

15 Interviewer: What about the worst?
16 Heather: Um, so one time I came back from my math class and the regular instructor was talking about fractions which we hadn't covered yet. And so she asked you know, what do you guys think this is I don't remember what it was maybe multiplying them or something. And so I just said something and it was wrong and she was like no of course not, why would you. I don't think she actually said why would you not know that but you know that was how I interpreted it I was like oh no how could I not know that even though we hadn't learned it.

17 Interviewer: So did you take it, like, forward or did you let it go? I mean that feeleing that.
18 Heather: I don't know, I guess it bothered me that she thought I should have known it and I didn't. So probably I looked into it more later to make sure that I knew it, but I don't really remember.
19 Interviewer: Okay. So, you've mentioned you're in an accelerated class so were you identified as be an early achiever in math?

20 Heather: Yeah, I guess so.

21 Weverton: Uhum, Okay, cool. And, maybe you might not remember how you overcame the negative experience with the fraction problem.

22 Heather: Yes, I really don't.

23 Weverton: It's going to be hard. Okay, so can you give me some positive impressions of some of your teachers in elementary, middle school.

24 Heather: Sure. So the one who did the math class she was just really fun. So she made learning interesting there was a lot of stories, a lot of you know us trying to figure things out on our own not so much her just telling us things. So we also did like some kind of I did or odd. I don't even remember what exactly the project was but we picked like a few of the racers and tried to figure out like where they would be at certain points and things like that and I don't remember exactly what it was, but it was a very fun class and very engaging. I guess most of the other teachers that I remember were more from like the specials from PE or music or something like that, because I had them more consistently throughout multiple years.

25 Weverton: Was there any specific reason for this consistency or no?

26 Heather: I think it was just to had like one music teacher and one PE teacher and so we had them, you know, all five years or whatever instead of one year.

27 Weverton: Can you give me some negative impressions of some of your teachers in Elementary School or middle school?

28 Heather: Yeah, I guess in, it was from like third or fourth grade or something I was a quiet kid, I was not talking in class but one of my friends was. And so the teacher yelled at me instead. For talking and I was like, I am not talking like. I would never talk. I don't know, something like that.

29 Weverton: Why did he or she did that?

30 Heather: um, I think it was because it was one of my friends who was talking and so either they said the wrong name or they thought I was also talking or something like that I'm not really sure what it was.

31 Weverton: All right, okay, so let's talk a little bit about your early experiences at home. Sure. So can you tell me about your relationship with your parents or guardians, and how they thought about your mathematics learning?

32 Heather: um, how they thought about it? I know he did flashcards and things like that. So from a young age they were interested in making sure that I knew what I needed to know for school. But as for homework and things I think mostly I did that on my own. I could ask them for help if I needed to I guess. But I didn't usually. Yeah, so I guess for me it was a separate for them but I knew that they would be willing to help me if I asked them.

33 Weverton: Okay. So, did they ever mentioned about the expectations of you in mathematics?

34 Heather: No, no.

35 Weverton: Okay, and you so you said that. Okay, let me, let me just ask you. So how have your parents influenced your school success? Did you grow up with your parents?

36 Heather: Yes. Yeah, yeah.

37 Weverton: So how did they influence you school success?

38 Heather: um, I mean I knew it was always a priority to get homework done, and to learn things in school. They never explicitly say like you need to get a good grade or you need to do this thing, I think that was more for me. So one time, this isn't a math thing but one time that I had. I don't even know it was like ah, like ah, magnifying glass or something and drawn on a sheet of paper and you're supposed to fill it in. Like, minerals, and so you're supposed to cut out a bunch of things with paper clips or paper clips of like a bunch of little different colored papers and then glue them all on there so it looks like minerals. And so I was like just going to keep going. This was an elementary school right and I was like taking forever on this thing because I was going to fill this entire thing, and my mom was like Heather, like, it's fine. You get the idea. Then I was like no it's not. And then she convinced me that it was fine. And then my teacher, I don't know gave me a bad grade on it or something because I didn't entirely filled with it. Oh, mom this is terrible. And

she was like Heather, it's fine. You'll be okay. So I think I knew from a young age like. They wanted me to do well in school but it wasn't the only thing that mattered. Like if I got a bad grade they weren't going to be upset or anything like that like if I put my best effort in.

39 Weverton: Interesting. And did your parents or other close family members or friends have careers or exposure to math?

40 Heather: Um, so my dad works in risk analysis, which is somewhat mathematical but there's a lot of spreadsheets and things involved. Other family and friends, I don't know. But a lot of my dad's family works in somewhat mathematical ish areas.

41 Weverton: Do you think from back then, did it influence in your interest in math or no?
42 Heather: I don't think I really knew what they did at that point. So I don't think it did but it might have.

43 Weverton: Interesting, okay let's transition to high school. So can you tell me about your experiences in mathematics during high school?

44 Heather: Yeah, so I was still kind of in the Honors math courses. And I think for the most part, those are more engaging than a lot of the other math classes. So in particular, I had one teacher who did a lot of activities in class. So we had a graphing calculators and I think this must have been like, I don't know what class it was. So we graphed a bunch of things on our graphing calculators like polar coordinates and things right and then like determined oh if we have this many things like if it's 2 delta then this thing happens and if it's four delta, and this thing happens and so a lot of like experimentation and things like that. So that was a fun class and then he also had us. Maybe it was geometry, I had him for geometry at the very least, though he would do also what he called German problems which were. They came from a German source and so there was some German written on him so that's why they were German problems. But it was, it was a little like not proofs exactly but just kind of learning like okay if we have this thing here and we know this thing about this other thing like what can we say about this third thing and things like that so it's a bunch of puzzles, basically, I thought that was fun. So that was one specific teacher. I think for geometry pre-calculus was not exciting. It was a bunch of like lecture and so I just did the homework in advance and then during class was just like I already know this material.

45 Weverton: I see. So, how did you end up in the honors class?
46 Heather: I think it was just a continuation from elementary school. So I'd already been in the accelerated classes and so I was still in them.

47 Weverton: Okay good. So what is the worst thing about your high school experience?

48 Heather: In math? [think for a long time] um, I don't know I guess just the pre calculus was not excited.
49 Weverton: Just because of the way it was instructed right?
50 Heather: Yeah, yeah, it wasn't, it wasn't interesting. It was very much like okay if you have this thing then this other thing happens like just memorize it.

51 Weverton: What about your best experience?
52 Heather: Um, I didn't think it was my best experience at the time, but I think it really helped me later in life. So in calculus we would have to present problems, homework problems so each person would have to present. And you would have to go talk to the teacher, I guess you didn't have to but you did you want to talk to the teacher before school when you did that to make sure that you knew what you were doing before you presented in front of everyone else. And so I hated that. But I think it was really good for me to learn how to present things and how to actually talk to teachers and things like that.
53 Weverton: Nice, and in what ways have to be encouraged to excel in math in high school?

54 Heather: Um, I guess, the teachers just always kind of assumed that you would do well, that you would put the effort in. But I don't know if there was ever explicitly someone that came up to me and said hey you should do well on this. I think it was more internal for me most of the time.
55 Weverton: and did anyone ever discouraged you from pursuing math?
56 Heather: Discouragement. um, not that I remember.
57 Weverton: No. All right. So college, can you talk about your experiences?
58 Heather: Yeah, I went to a small undergrad, so the liberal arts school.

59 Weverton: Can you give me more like just an idea like that maybe like where it is located…

60 Heather: Yeah, it's kind of in Central Illinois it's between Chicago and Champaign Urbana so kind of in the middle of nowhere. And it's smaller I think there's two to 3000 students, I don't remember if that includes grad students or not. So the department was pretty small I think there was probably five math professors, only one of them was female while I was there and I didn't take any classes with her.

61 Weverton: Uhum.
62 Heather: So that kind of gives you an idea of what the department was like. So I took you know all the courses that they offered basically because I was a math and actuarial science and so I had to take all of the probability and statistics courses and I had to take all of their like actual math courses as well. I remember for some of the classes as we kept going. They got harder until you would have study groups of people that would work together one-on-one the problems when we could.The first year to, especially in calc three. I basically just did the homework in class. Again, I think the instructor for that class kind of just read the examples from the textbook and so I just read on my own and was like okay whatever I'll just do this homework problem now. But then I'll take out more challenging. Once the problems weren't straight from the book, and all of those things that we, we started working together more. I had a few projects that one of the professors gave. So things like. I think one of them was kind of a Rubik's Cube type of thing. And so he gave us all like colored cubes and we had to manually remember what the project was maybe figure out how many combinations there were maybe it was something was rotations I don't exactly remember but it was for an algebra class. So some kind of thing about probably permutations or something like that. So there were a few more hands on projects. And the probability classes. I guess more specifically in the statistics classes, there would be projects where we would have to collect our own data about some projects that we created so I think some people were like how many. I don't know brown m&ms are there in a bag of m&ms they like bought a bunch of bags of m&ms or whatever I don't remember what our project was I think we like asked people I don't even know what their favorite, something was or something so they collected some data and then did analysis on it.

63 Weverton: So is there a very memorable experience in college math classroom that you remember?

64 Heather: um, in the classroom itself. Apparently not. I guess on one of my algebra exam. One of the questions was, what is your favorite group, and why. And so that stood out to me.
65 Weverton: And about the study groups that you described, can you tell me more about them?

66 Heather: Yeah, so it was, it wasn't really a specific set of people that met at a specific time it was kind of more when people were like I am not sure how did you this problem, then one person would say oh I already figured that out and so they would say Oh great, can you like meet and I don't remember what it was called. And then we called it the treehouse, but it was just, it was not a treehouse. You know, like a lunch or something. So we went to meet there and talk about it and if someone had already figured it out then we would try to explain it and if nobody had figured out that we would all work on it together, but usually it was just to me it was free at that time. So we all had all kinds of different activities. So it just depended who was available.

67 Weverton: Nice so changing gears let me ask you something about yourself. So how how confident are you in mathematics. So if you could grade yourself from zero to 10 zero not confident, and 10, the most confident. How would you see yourself?

68 Heather: um, I guess it depends on the subject a lot. So for basic algebra, like arithmetic, unfortunately would probably be kind of low, maybe like a five or something like I can definitely do the basics, but it's going to take me a while to figure out what like 73 times 82 is or something like that.

69 Weverton: So yeah, so let's go back like, and you trying to identify yourself as mathematical confident like throughout like, for example, elementary school, middle school. How would you tell?

70 Heather: Um, I guess in elementary school I was pretty confident. I don't know if I necessarily really compared myself to other people. It was more we're all working as a group together to try to accomplish something. In middle school. Yeah, I don't really have any outstanding memories from middle school. I always did math. So I guess I thought I was on par with everyone else, if I thought about it at all. In high school, high school I definitely knew there were some people struggling in the classes. I'm more than I was. But I also knew that there were some people who seems to get the material a lot faster, specifically in calculus, I think. And so I guess, I guess I probably thought I was around the middle of the road for that.

71 Weverton: Nice. So what about, you didn't talk about high school yet right? Oh that was high school, what about college?

72 Heather: College, I guess I thought I had a pretty good mathematical background in college, so I was pretty confident, most of the time, but if I wasn't getting it then probably a lot of other people also weren't getting it.

73 Weverton: Nice, and what about you PhD program?

74 Heather: And then I got to my PhD program, and I came from a small school and I had only taken so many classes. And then it felt like everyone was ahead of me. And so then I think I was much less confident about what I knew and what I didn't know.

75 Weverton: So what that this less confident mean? So we could could like put it on a scale of zero to 10.

76 Heather: um, I don't know exactly maybe three or four. It helps I think that I was teaching calculus at the time. And so I was like, Dude I definitely know this way better than my students, um, but then I was taking you know these other math classes and seeing like, oh, everyone else knows this, and I don't until I'm somehow like very behind.

77 Weverton: And do you feel comfortable asking, or answering the questions in mathematics class.

78 Heather: I don't usually ask questions in class just in general, I think it takes me a while to like process the material and make sure that I actually understand it or really don't understand it. I'm definitely wanting to ask my professor questions after if I don't understand something.

79 Weverton: So if you have a question during class would you ask a question would you ask a question about it or? [Heather: no]

80 Heather: Yeah, I usually just say, I don't understand that right now like all started and then I'll try to look back at it later and try to understand it.

81 Weverton: Alright, so let's change gears again, I think we're done in this first part. So I'll give you a little bit about background in gender , and what I think about gender. And how these whole study came to become alive. So pretty much. I believe that gender is socially constructed. So, it's the characteristic is a construct that we created to differentiate certain norms and rules, and performance and acting that different sexes should have as a normative. So pretty much I believe

that we have two normative genders, which is a man and a woman. And those align perfectly with the sexes of being a female or male. So that's the way I see it, and today I'm going to be asking you to think about genders I want to pretty much know what does that mean to you, there is nothing that is right or wrong. It's like, how do you see yourself in that gender, if it influences or not in your life. How does it influence? Things like that. Okay? And I'll try to connect back to math. So can you tell me about your understanding of gender in the context of the American society?

82 Heather: hum Well, that's a big question. [laugh] I guess traditionally women have been in the home and men who've been in the workforce. Obviously that's not true for everyone. For instance, the lower classes usually everyone worked. And then I think over time. More and more women have entered the workforce, I guess, specifically, World War Two was a big defining time for that one all of the men were away. And so then it became a little less normative to have women staying at home. But I think even today it's more standard for the woman to stay home right if there's a question of who's going to stay home with the kids or who's going to take care of the housework or whatever. Usually it's the woman.

83 Weverton: Have you ever thought about why? Why we would still do that these days.

84 Heather: I think to some extent it makes sense, right, especially for the first month to a year or something. If you're breastfeeding and definitely like the woman has to be there for that. Or it's a lot of extra work on her anyways. I think that's part of it I think part of it is just society ingrained like we've done it this way for so long. Yeah, I don't know.

85 Weverton: Do think there might be some maybe economic factors that is influencing on it.

86 Heather: Oh, well, sure, yeah, I mean like. Usually if a guy has the same jobs and he'll get paid more right and so if you're just thinking financially like why would the person who's getting more money not be the one who's working like if you're going to be online income, then why not make it a bigger income?

87 Weverton: Interesting. What does your gender mean to you?

88 Heather: I don't know, I guess I don't think about it most of the time. I am Christian. And so the idea of women submitting to their husbands I think it's something that people frequently struggle with right? for me I see that in the larger context of literally a sentence before that he says everyone should submit to each other out of love. And so I don't think that's really ever bothered me.

89 Weverton: So are you saying that you have a different interpretation?

90 Heather: Yeah, yeah, I think traditionally people have kind of used that first to say. Women should be in the home women should be submissive to their husbands, the husband should be in charge and in control. And I don't think that's necessarily what is that saying.

91 Weverton: And how do you feel when talking about gender with people who don't know very well?

92 Heather: I don't know if I usually do. I guess it could be uncomfortable if I didn't know where they stood on things.

93 Weverton: Any specific reason why?

94 Heather: Because I think it can be a very defining issue for some people. And so if their views are significantly different than mine, then there can just be controversy there and I don't like having controversy with people.

95 Weverton: I see. Can you tell me more about that like, about this maybe the views are different. can you tell me more about what are you thinking specifically?

96 Heather: Sure, so I guess specifically like if I was talking to someone who was much more

conservative and said you know like, you should be at home or something like that, then that would be uncomfortable for me. I don't think that's ever come up. But, you know, it could and so if I thought they might have that view and that could be uncomfortable. On the other hand, I guess if someone was all the way on the other extreme and said you know like I don't even know what they would say that would make me uncomfortable but it could be uncomfortable. Right?

97 Weverton: Yeah. So you talked a little bit about like the broad gender context in the US, can you tell me, what does it mean for you to be a woman in the US society?

98 Heather: um, so I guess it means potentially I'll get paid less than my husband work for the same job. It means that it's more expected that I would stay home. If one of us did that for my husband and I, I think we both plan to work. So I guess it just puts certain expectations on me that I'll be more compassionate, more friendly more emotional, I guess.

99 Weverton: Nice, interesting. And what does it mean to you to be a woman doing a PhD in mathematics? I mean, my hope is that it doesn't mean anything different than being anyone else doing a PhD in mathematics. But realistically I think it means them potentially a little less likely to have that encouragement along the way, not necessarily because anyone's explicitly trying to prevent me from doing that because I don't think that's true of most people here. They're just those implicit biases that might affect things.

100 Weverton: Can you talk more about those implicit biases?

101 Heather: Yeah. So I guess the one that stands out to me is I was at a conference and there was a very famous mathematician there. I know it's his, I was a conference in his honor. And so he ended up being in the same like ride as we were to go to a place. And so he turned to one of my male colleagues and said, Oh, what do you study right and then he turned to me and said, And you are a mathematician or, you know, kind of was implied like maybe you're not here for the math maybe you're just here to tag along or something like that. So just small things like that right like instead of asking you what do you study what are you working on things more like, are you working on something. I've heard other people say, to some older women in their department say you know i conferences I get asked who I'm working with instead of what I'm working on. So things like that.

102 Weverton: That's a very interesting idea. I never really thought about it this way to ask people to approach people to ask. Considering that they already have those implicit bias and probably he was not conscious about it.

103 Heather: No right like he's very friendly he's worked very hard to promote women in mathematics, so it was just very strange coming from him specifically to be like, Oh, that was a weird question. That's not the same question you just asked.

104 Weverton: Yeah, I was observing a class in Bloomington, and the class was a math class taught by a male professor, and he had a very interesting classroom setup. So in one side of the classroom only boys, the other side maybe two or three girls, because it was like an accelerated class, [Heather: right,] so most of the kids were boys. And now observed him for an hour. The whole one hour. He talked for the boys. He never looked at the girls. The whole hour only interaction with boys. And I was like,what is happening?

105 Heather: That's so weird, right.

106 Weverton: I was really like, that was a really different experience.

107 Heather: Do you think he realized he was doing that?
108 Weverton: He didn’t Yeah, for him he was interacting with everyone.[Heather: Yeah] He was not

conscious of that, it was very interesting experience. Oh, right. So, can you tell me a moment you felt frustrated about being a woman in mathematics?

109 Heather: So probably after that one incident when I was like, yeah, of course I'm here for the conference so what do you mean what am I am I am mathematician? But I think other people are actually more frustrated for me in that moment that I was for myself like I was just kind of like, Oh, that's a weird question and I really can't believe he asked you that and I was like, Oh, right. Yeah, that was weird wasn't it. But until other people also said that was strange. I think the most frustrating thing for me was I was at a conference giving a talk once. And someone talks to me afterwards, so he asked a question. And there wasn't really a question was basically he just said, I think you're wrong. And it was like, Oh, okay. Can you elaborate on that? So I had said something in the background it was basically just motivation for why we cared about what I was talking about. That said, you know, there's like no current method and a certain program to do this. And so he said I think you're wrong. I have a program and that or I have a method in that program that does that exact thing, and I was just like, Okay, well, to my knowledge, it doesn't exist. So maybe we can talk later. But he was very aggressive about it. And so that was incredibly frustrating. But I basically just said okay, like, how about we talked about any other questions that people have. And then we can talk more later because I'd be very interested in hearing about this method that you have that supposedly does exactly what we want it to do. And so when you talk to me later and he was, he was a nice about it when we talked one-on-one but he was very aggressive in front of everyone else. So fortunately everyone afterwards came up to me there were a lot of women in the room as well. Pretty much I learned come up to me afterwards it was like, Who was that guy like what just happened, why did he do that. But in the moment is very much all too aggressive.

110 Weverton: So two questions. The first one, about the people that noticed the question the weird question that professor asked who were those people can you tell me more about like Exactly.

111 Heather: So there were some older women, there were older male professors in the room as well I can't remember at that point, I talked on the first day so there was only certain people who were there and so, several of the women who had already talked that day came up to me and said you know that was weird. I had a few male colleagues who also talk to me and so that was strange. And then my female colleagues as well.

112 Weverton: and ah, no let's jump for another question, so can you tell me a moment you felt positively about being a woman in mathematics?

113 Heather: Yeah. So probably it was during some AWM event, I guess, usually when I'm talking about mathematics to younger women and you're saying you know like, this is the support that we have for each other. things like that.

114 Weverton: How would you describe the gender makeup of your department?

115 Heather: Here specifically. So for the grad students I think it's about 30% female. For the faculty I think it's probably last, but I'm not sure because they've been hiring more women recently. Overall in my area I think we talked to Laura yesterday right so she talked about commutative algebra. So in commutative algebra, there's the faculty here is still entirely male. I think there's four, maybe five depending on how you draw the lines of what it is, professors in the area and they're all male but there's a lot of female grad students, and when you go to conferences. There's definitely more females in the audience. So closer to like a 5050. Definitely not actually 5050 but a lot closer.

116 Weverton: Nice and how do you feel about this gender makeup in your department?

117 Heather: um, Most of the time it doesn't bother me. Except when I'm looking at like the professor's and seeing that almost all of them are men. Or if I go to a conference and see that

almost all of the speakers are men I think that bothers me more. Especially when I know that there's plenty of really good speakers who are female.

118 Weverton: So, okay, so in your department why does that bother you? When you see that most of them are men, why is that?

119 Heather: um, I don't know exactly, Yeah.

120 Weverton: but there is a certain discomfort?

121 Heather: Yeah. Yeah.
122 Weverton: And the conference might just be because you know there's so many good like women who could be speaking and they weren't invited
123 Heather: Right, right, right.

124 Weverton: Interesting. And would you say that these gender makeup is typical or atypical acrros different departments?

125 Heather: You mean like outside of math.

126 Weverton: No, I mean like other math department
127 Heather: Oh I see, I think it's fairly standard Yeah, there's definitely less women in math. And then, also when you look at the Faculty there's less female mathematicians and female professors on there are male ones.

128 Weverton: What are the things that you think people from a different gender than yours would be surprised to know about your experience as a math PhD student?

129 Heather: Um [thinking] I mean I guess I talked to most people about these things. I guess. So one time AWM had a Female Speaker come and her boyfriend also came and he kept talking about how it was very important to have the best person for a postdoc or position or whatever. He never clarified how you find the best person. Right. But so he kept saying like, do I have to pick the woman like even if the man is clearly the better choice or whatever, it was strange. And so we had another male grad student who had come to that specific talk. And so they just debated back and forth for a long time about like what it means to be the best and like how you would. It was very weird. It was a weird perspective. And then afterwards the male grad student who was there was kind of just like. That was a weird perspective right and we were all like. Yep. It was like that was definitely more of an outlier from the perspective but I think you kind of get more. You hear more about the strange perspectives as a female then you necessarily do. As someone else right like those opinions might come out more to you, I'm not sure.

130 Weverton: So you think like. So, I was curious about. If there is anything. You feel like men would be very surprised to know about your experience, you feel like it's more like you have seen all these surprising things happening. and it's like Men doing those, is there exactly what you are saying?

131 Heather: Yeah, something like that. I think i think we hear more of the strange perspectives about whether women should be in mathematics or not and what it means to be a woman in mathematics from from males great potentially they don't talk about with other men.

132 Weverton: If you could guess. What do you think, what do you think of things that women would be surprised to know about men experiencing Ph.D. in math?

133 Heather: Well that's a hard question to answer. Um, I don't know, I guess I would be surprised. Maybe if if they receive a lot more encouragement or something.That would, So if the tables

flipped and you suddenly received much more encouragement, I think that would be surprising to me

134 Weverton: encouragement to?

135 Heather: Anything right like encouragement to conferences encouragement to do a certain project encouragement to work with someone on something, anything like that,

136 Weverton: So do you think usually men are are more encouraged

137 Heather: I think so, Yeah, but I don't know.

138 Weverton: It's just a

139 Heather: Right.

140 Weverton: Okay, All right, so who do you think are the mathematically strongest people in your department?

141 Heather: professors, grad student. Anything?

142 Weverton: Uhum.

143 Heather: mathematically strongest? Uhh, it's a big department. um,[thinking] I guess. Shehely is probably the big star of the department so he's a professor here. He works in number theory so he has people come grad students come from really around the world to try to work with him. And then a few of his students. So Daniel Shankman and john. Have I think done. Excellent work. They've worked very hard all they've done here they've got kind of like what I talked about yesterday they've kind of been those people who eat sleep and breathe math. And so they, they, I would say are exemplary grad students

144 Weverton: Why do you think they are seem this way?

145 Heather: I think some of it has to do with the work that they've done. They've put out. Good papers and worked on things that people care about a lot in those areas and things like that.

146 Weverton: Let's see. So, as I interviewed undergrad students, my undergrad students, they always noticed a kind of ranking in the math department like faculty ranking. And the way that ranking played out was that different professors were assigned to teach different lessons.

147 Heather: Oh I see. Here the professors are allowed to ask for which courses they want to teach. And so some of them request undergraduate courses because they think, I think. Some of them are class specifically like calculus courses because they're easier to teach because there's a course coordinator and so it's very structured. So there are people who. It's their first year are here to teach that and then there are also people here who have been here. You know 30 or something years who teach that same class because that's what they want. I guess there are some classes that a lot of topics courses are offered. And so if the professor wants to teach that specific topic course and the different Professor wanted to teach that specific topic course and then we would see, you know, this is the person who has preference in the department but usually that doesn't happen. Usually, I think the only way that would happen is if there was like the same course number or something and then probably department would just say, well, your course numbers this and your course number is this and you guys can both like. See if you can get enough students to get that class to run. So I think it's maybe less clear here. Always to the grad students because we don't see oh this person requested this and actually got this thing instead, but specifically for the topics courses, the ones that the grad students usually teach, or that the grad students usually take. I think that's less clear because the professor's pick those specific topics to teach.

148 Weverton: And what would you do to improve women's experiences in the math deparment?

149 Heather: What would I do? [Weverton: uhum] it's a Good question. Um, what I would like to see is I would like to see more encouragement and support. I would like to see people saying, hey, you can do this. I'd like to see people saying, you know, why don't you go to this conference Why don't you talk to this person. Why don't you work on this specific thing that I'm interested in. But that's not something you can mandate right that's not a program that you can say okay now, all of you have to do this. So that's what I would like to see increased I don't know how to do that. I know some people talked about like maybe having some kind of diversity training. I think all the grad students kept out when they come in. And I think all the professors do as well. And it's mandatory but I think the people who are going to do that are already know. And the people who aren't going to do that are possibly not paying attention. So I don't know how helpful that is.

150 Weverton:uhum

151 Heather: So I guess things that you could actually put in place to support women. I already appreciate that the department, gives money to AWM that they specifically pair women together so they have another female colleague to talk to. I'd really like to see more female faculty and the department because I think that helps a lot but I think they're working on that as well. So I guess I don't know what things I would try to change them they're not already working to change.

152 Weverton: I see. Good, And what do you think works well for women in the math department?

153 Heather: What do I think works well.um, I guess it depends a lot on the person. So what would be helpful for one person might not be helpful for another person. What works well for me is people specifically saying hey like we should talk about things like what questions do you have instead of saying oh if you have questions, because then I won't ask questions, because specificaly setting aside time saying like we're meeting now. And we're going to talk about the questions that you have. So come with questions, but I don't know if that would work for everyone necessarily.

154 Weverton: Okay. Is there any reason why you would like to see more encouragement and support for women?

155 Heather: Yeah, I think it's just kind of missing just based on my experience. I don't think that's necessarily true for everyone either I think there are some, some professors that I just haven't had who worked very hard to encourage students, but I think as a general norm in mathematics, you don't really encourage students you just say like, yes or no. Right. Yes, that's true. No, that's not true okay answered your question and here's why it's true or not true. It's. It hasn't seen as the last emotional

156 discipline and so there's, there's lots of those emotional supports that are expected.

157 Weverton: Nice. Can you tell me about a faculty member that contributed to your academic success?

158 Heather: um, here specifically or. I mean, I suppose that would be My thesis advisor. So I started meeting with him before. I was officially his student, just to ask questions about whatever was happening in the class. So he was already meeting with a group of students who were his students who are also taking the class. And so then I just joined them. But that was very helpful for me to get that extra time with him. During the questions that other students had and also being able to get my questions answered. That was very beneficial for me, and then continuing to meet with him throughout. I don't know if that really benefits my academic career at this point because I'm basically taking taking research credits so it's not really changing like migrating classes or anything. But yeah, it's been very helpful to have a consistent life.

159 Weverton: And what advicewould you give to a woman who's trying to major in mathematics?

160 Heather: um, it might be hard but you have to persevere through it

161 Weverton: is there any specific reason why you tell her that it might be hard?

162 Heather: so I think mathematics gets hard for everyone at some point. And this is just speculation but I think when, when a woman reaches that point, a lot of times she thinks this is because I'm not good at it. And so I want to encourage them to say, you know, this happens to everyone. But if you work through it you can't get through

163 Weverton: Did that ever happened to you that it felt like you were not getting it? And it was assimilated to the gender or,

164 Heather: I don't know if it was or not, but I've definitely had times where I was like I am not getting this and other people are. And that's really easy at that moment to be like fine I'm just not good at this, like, who knows why. But I'm not. But if you push through it then usually you can figure it out.

165 Weverton: All right. So, I want to ask you to do a task for me. [Heather: Sure.] So it's pretty much. I just want you to draw, and you don't need to be good at drawing. It's fine. [Heather: Okay, good. because I am not] I just want your to draw what would be the ideal mathematician for you.

166 Heather: I gues it would be a person right. They should have a Blackboard, actually have lots of ideas on it, so they, and they should also be working with other people, because I think that's pretty important nowadays. So this other person is also talking to them and they're working together, and putting ideas. What else should they be doing? Well, they should clearly be thinking. And then they should be able to connect ideas but I don't know how to draw that. They have a graph of connected ideas in their head. So pulling all of these various ideas together into one thing that they're working on. And then, not only should they work with other people but they also should be teaching other people. So these little people over here are the learners. So they're working to make sure that other people also understand things. The great picture. so They're talking to these people over here. And then these people are thinking and learning.Yeah.

167 Weverton: Were you picturing some specific moment or something or how did it happen?

168 Heather: um, Okay, well the blackboard thing is like a weird math thingh where it's just supposed to be a blackboard instead of a whiteboard, very important. Clearly, and then this I guess I'm just picturing me working with other people, or my advisor collaborating with other people he usually does that via Skype, but a lot of people come in to work with him and so they always you know talk about things and working work at the blackboard, so I'm not picking a picture in a specific moment but this is like a whole lot of moments where people are working together. And then this, I just feel like it's very important that you don't just do your own work and yeah and not advance that at all not teach other people about it. So that's what this is here,

169 Weverton: nice, all right cool. I want to take a photo. Would you mind if we take a photo?
170 Heather: of this.
171 Weverton: Yeah,
172 Heather: Sure.

173 Weverton: I am trying to come up with pictures. So we had done. [Not important conversation afterwards]a