**Robert: Factoring**

Teacher: You ready? Alright. Here’s the deal. Is this like what we did yesterday?

Students: [various]Yeah. No. Not at all.

Teacher: It depends. Alright, at face value is it? What’s different about it?

Student: It has x .. [various]

Teacher: I don’t have x squared, x, and a number. I have x to the fourth, x squared, a number. It turns out they behave the same, similar to what was saw today with the y squared thing. Now, if I’m going to make x to the fourth, what could these two things be? What times what?

Students: [various]

Teacher: X squared, x squared. They could also be x cubed and x, but that’s a whole different story, I don’t want to get into that can of worms right now. What’s x, x could be, but the problem is then we have a lot more terms. If it’s going to be three terms, they have to be the same. Now, what are the signs going to be? I am surprised you guys struggled with this, you were so good with this before.

Student: Plus and plus

Teacher: Yeah, and Nora, I don’t know if Jamie made the same mistake, but Nora, don’t look at the middle term yet, look at the last one and say ‘hey, I’ve got to get to positive three, it’s got to be plus and plus. What’s the nice thing about this problem?

Student: It’s small numbers

Teacher: But how do you get to three?

Student: One and three.

Teacher: So now, our only options right now, for me to get three, is one and three, and x to the fourth, that’s feasible is x squared, x squared. Now, let’s just check and make sure the middle term works out. First, this term is easy. X squared times x squared is x to the fourth. Last term’s easy. The middle term. Three x-squared plus one x-squared. What’s three x-squared plus one x-squared?

Students: 4x squared.

Teacher: So is this a proper factoring?

Student: Yeah.

Student: That’s easier than I thought it was.

Teacher: But that’s the idea. Like today was saw the extra y in there. They behave the same way, but instead of doing x and x, we get x-squared and x-squared. Now, let’s see. We’ve got three minutes left.

Student: Wait. Can I tell you my struggle?

Teacher: Yeah, go ahead.

Student: Okay.

Student: I thought that, for some reason I thought that the three was a four and it that was a three, so I thought it had to be negative.

Teacher: You couldn’t do it that way. Yup.

Student: So, I

Teacher: So what’s my advice to you? Write the down the problem correctly.

Student: I wrote it down correctly, I

Teacher: Just when you looked at it, it went backwards. Got it. Always look at the last term. Yes Maria.

Student: I did it right.

Teacher: Give her a high five. Alright. Now, let’s see. You don’t have to write this down. This is more a discussion. But what if I gave you this? X to the sixth, now let’s keep this easy. Plus,

Student: X to the third

Teacher: 6, hang on, shhh, now, we want to fill in this cloud with some of this factoring. Before we get there, make sure do the six and the eight work?

Student: [various] Noo…..yeah 4 and 2

Teacher: Because 4 times 2 is 8 and 4 plus 2 is six, right. We learned what goes here has to factor x to what power. Don’t yell it out, I call on someone, but right now I want everyone to try. What has to go there that’s going make this factor? The numbers work out, the signs are good. What would have to here to make it that reverse foil thing?

Student: Is it 2?

Teacher: Okay, let’s try that. If it’s x-squared there, that would tell me, to get to x-squared I would need an x-squared and an x-squared out front. And it is x-squared times x-squared, that?

Student: No.

Teacher: My friend is dying to call it out. Who haven’t I spent much time with today? Who Claudia, what do you got?

Student: X to the third.

Teacher: X o the third. Because now that means, is x-cubed times x-cubed, x to the sixth? And if I put in my 2 and four here, I get a 2 x cubed and a 4 x cubed, which is 6 x cubed.

So, what do you learn about? If these things are reverse foil, what do you know about the exponents? We saw 4, 2, nothing; 6, 3 nothing. And before we saw stuff like x-squared, minus x, minus twelve. What do we know about that middle term? Wrap it all up, Jamie.

Student: Well, the middle term is half that.

Teacher: The middle one is always half of that. Will talk about that more later. Is that what you guys were going to tell me? Excellent work today folks.