**Myles Least common multiple**

Myles: So, one trick I may have shown you last year, maybe not, but it’s a big deal. A trick about finding the least common multiple, and I’m going to pick three numbers. Just watch this. I’m going to pick three numbers. I’m going to say 6, 9 and 10. So if I want to find the least common multiple of 6, 9 and 10, and you guys know when we want to clear fractions out of an equation multiply through by the least common multiple and that will simplify away all those denominators. We’ve talked about that a whole bunch, but I want to show you something. Another way of thinking about the least common multiple of 6, 9 and 10 is the smallest number that’s divisible by 6, 9 and 10. If I use prime factorization for this – watch this closely – for 6, that’s 2 x 3, right? Just watch this. Nine is 3 x 3, right? But we already have a 3. Do you see a 9 in this multiplication problem now?

Student: Yeah.

Myles: For a 10, that’s 2 x 5. Already have the 2 x 5, so 6 x 15.

Student: Seventy-five.

Myles: Exactly. Ninety, so the least common multiple of 6, 9 and 10 is going to be 90, so you can use prime factorization. Let me give you three more numbers. What if I said 12, 8 and let’s go 10 again? You know 10 is 2 x 5. What do we need to get an 8 in there?

Student: 2 x 4.

Myles: 2 x 4, so let’s use all prime numbers.

Student: 2 x 2 x 2.

Myles: Okay, but we already have one 2, right? So 2 x 2. Now to get the 12 in there…

Student: Times 3.

Myles: Times 3, right? 4 x 3. We already have the 4 x 3 and then that will give us the smallest possible number, the least common multiple of 12, 8 and 10. So basically you’re just building a number that’s divisible by 12, 8 and 10. That’s going to come up, and when we’ve been solving equations, when we’ve been multiplying through to get rid of fractions, we’ve been having to use least common multiple to simplify away those denominators, correct? So here is the deal. Watch how this is going to work. I’m going to show you a couple problems now, and then about 15 minutes after that I want to look at some problem solving that we’re going to do with equations using fractions. Are you all on that page? Because I want to look at 17 really quick. Just at first glance, how does that equation look to you?

Students: [Various answers.]

Myles: Okay. I heard easy, I heard icky, I heard…okay.

Students: [Various answers.]

Student: Fractiony.

Myles: Fractiony, and this is for you guys, and [he writes and says (n+3)/3-n/4=(n-2)/5]. What are we going to multiply through to get rid of the denominators?

Student: By the least common multiple, which is 3 x 2 x 2 x 5.

Myles: Okay, so is that going to be it? 3 x 2 x 2 x 5, which is going to be what?

Student: 6 x 10.

Myles: 6 x 10. We’re going to multiply through by 60. Now at this point it’s really not much new to you, right? So if we look at this and I’m…do you notice I’m not saying cancel? I’m saying simplify. If I simplify this 60 and this 3, what’s that’s going to come down to be?

Student: Twenty.

Myles: Twenty. So we’re going to have 20 x n + 3. If we simplify the 60 and the 4.

Student: Fifteen?

Myles: Fifteen. What kind of a 15.

Students: Negative 15.

Myles: Negative 15. So we’re going to have a -15, and then please don’t forget the other side of the equation. So if we simplify 60 and 5…

Students: Twelve.

Myles: Good. Twelve times n-2. All right, and you guys can take it from there. We don’t need to worry about the rest of that, right?