**Bianca: Subtracting Integers**

Setting: Students have been working with red (negative) and blue (positive) chips to add and subtract integers. Teacher has told students that pairing a red and blue chips results in a “zero sum” and that a red and blue chip “cancel out.” She assigns the problem 5 – (-7) to students and asks them to work with partners to solve this problem using their chips. Following student work time, the following exchange occurs.

Bianca: Now you’re down to just making pretty designs which is nice, but – let’s talk about this a little bit more, boys and girls. And if we have to do this another way, we can. Um, did anyone come up with an idea on how they can get these to work out to show the equation 5 minus 7– a negative 7, I’m sorry. Selena and Gabriel, zip it. Anyone come up with an idea? Even something that you’re not sure if it will work but we can try it and see. Joshua. So we have 5 positive and we have a negative 7 and maybe some zero sums just hanging out here, right? Olivia, thank you.

Olivia: Could it be negative 5?

Bianca: Could it be negative 5. How did you get a negative 5? Can you come show me using my chips?

Student: [inaudible] There’s not enough to minus [inaudible]

Bianca: There’s not enough to subtract, right? Because technically if you have 5, here’s our 5, we can’t take 7 away, right? Okay, so that’s a good observation; we can’t take 7 away. Gabriel. We can’t take 7 away, so that’s a good start. We can’t take 7 away, clearly. Jessica?

Jessica: I have a question. So if, ‘cause positive, I mean negative 7 is higher than positive 5, so it would be a negative number, right?

Bianca: Would it be a negative number?

Student: No.

Bianca: That’s the way it worked when we were adding. But this is subtracting.

Student: Would it be a positive number? Er, I don’t know.

Bianca: I’m not sure.

Student: I’m confused.

Bianca: Okay. You can take 5 away from 7, you can. Is that what we’re trying to do here?

Student: No.

Bianca: In a way we are, we’re taking 5 away from 7. Okay. So let’s take a look here and see if we can start figuring this out. Do me a favor and group them as 5 and then 7. Group them as 5 and 7, please. Just group them up, don’t pair them up. We’re going to look at the zero sums that I’ve made; I’m going to make 7 pairs of zero sums. When we have 7 pairs of zero sums, if I take 7 away and the 7 is our negative, so I’m going to take 7 reds away, 1, 2, 3, 4, 5, 6, 7, that leaves me with all of these blues. What answer does that leave me with?

Student: 12.

Bianca: Positive or negative?

Student: Positive.

Bianca: It leaves me with positive 12. And that’s actually the correct answer. Let’s see if we can get it to work, though. So now that you know that little bit of information, see if you can show me 5 plus negative 7. I’m sorry, 5 minus negative 7, like we just did. As I come around, I want you to be able to show it to me. Set your negatives up as zero pairs just so I can see what you’re doing. You need to work with her, please.