JACOB DISSTON: We now have made these top level kind of categories; equations, inequalities and expressions. Here's what I want you to do now, I want you to focus on just one category. And I'm going to ask you guys to start with equations, I'm going to ask you guys to start with inequalities, and you guys are going to start with expressions. So that's kind of your starting group. You are going to eventually look at all of them, but I want you to start at whatever your group is. And I want you to look at all the things in it, so you guys I need your attention pretty badly. Ok, so you guys are starting with equations. I want you to now sort the equations into different types. We've talked about all kinds of things while discussing this and it's going to help you sort these. I want you to pull these into "which equations are like equations and which are different; how would you make sub groups out of this?" You guys are working on what? I want you to look at the inequalities and I want you to say "these inequalities are like each other and these ones are like each other so what are the different groups of inequalities?" And you guys are working on...I want you to pull into different groups of expressions ok? So, you are going to start there. Once you get yours, call me over and tell me what are the different categories of your type and then we'll move on to the other ones. So you guys start with equations, inequalities, and expressions. So you can put the other cards aside. Just have your primary cards out right now. Pull those out in front of you and see if you can figure out how some of them are alike and how are some of them different.

STUDENT: Ok, well we can easily say that these are like because they have just the greater than or less than sign.

STUDENT: They both have the times and equal.

STUDENT: Yeah, they both have variable times a value and then equal another variable. Other ones have the same operations order. But this one has an operation; this one doesn't have any operation.

STUDENT: That one has an operation and that one has an equal.

STUDENT: But it shouldn't matter as long as one is a variable and one is...

STUDENT: This one is all alone and this one is all alone too.

STUDENT: They fit together because they're all alone.

STUDENT: 3a squared minus 2b plus 4...I don't know about that one (inaudible)

STUDENT: Yeah, but I don't know if this should be in this group because it has a property and these don't. Didn't they have a concept that you can't combine them? But this one is much different than these because it doesn't have property, so that one should be in a different pile. And the rest is okay.

STUDENT: Yeah, I think this is pretty good because you can always...yeah definitely. These you can combine them and you can't combine that because that one is just a property.

STUDENT: We all agree with this right?

STUDENT: Do you agree? Do you agree?

STUDENT: On?

STUDENT: That.

STUDENT: Um, yes.

STUDENT: You agree with this?

STUDENT: I don't know about this one.

STUDENT: Well you could combine it because 3a...no wait, hold on there's a problem. I don't think you can actually combine this because this has a variable and no number so that would be different. You can't combine that. You can't combine that right?

STUDENT: I don't know. I guess it's just an "a" so you can...

STUDENT: Oh, you can because you know it's an "a," it'll actually be one "a" but it's invisible.

STUDENT: How would it be one "a?"

STUDENT: It's just a variable and it's always going to be an invisible one in front of it. So actually you can combine that.

STUDENT: So that means you have to do 3 minus 1a and it's supposed to be an invisible 1 there right?

STUDENT: Ok, I see what you mean. I don't know.

STUDENT: I think you can just combine it. I think you would be able to do something with it; to get rid of it or combine it.

STUDENT: Yeah, probably for the 1 because it doesn't really matter. You just combine these two because it's more like the same right?

STUDENT: Probably would be 3a squared or just 3a and no more...

STUDENT: How did you get squared? Two of these...

STUDENT: Yeah, These 2 will be squared.

STUDENT: How about these two?

STUDENT: You can't combine those.

STUDENT: So you just combine the 3a and "a?"

STUDENT: Yeah.

STUDENT: I still don't get how that is...

STUDENT: That one.

STUDENT: That? That is different because that has a property which the others don't have.

STUDENT: I still don't get this one though.

STUDENT: It's like when you combine things it's like...

JACOB DISSTON: Alright, where are we?

STUDENT: I'm stuck.

STUDENT: It's like you combine those...

STUDENT: Can you combine this one?

JACOB DISSTON: Combine meaning what? What's that mean, combine?

STUDENT: Can you combine like terms like 3a and a? Can you combine those two?

JACOB DISSTON: So, if this was on a test and it said combine like terms could you rewrite it? What would it become?

STUDENT: I think it would be 3a squared minus 2b plus 4c.

JACOB DISSTON: Why 3a squared?

STUDENT: Well, I think you can combine that. You can combine "a" but...

JACOB DISSTON: How do you get "a" squared though? Where did "a" squared come from?

STUDENT: Because it's two "a."

JACOB DISSTON: If I gave you two "a's" and I said do something with these to get "a" squared, what operation do you need?

STUDENT: Multiply.

STUDENT: Addition.

JACOB DISSTON: a+a is "a" squared?

STUDENT: No, multiply.

JACOB DISSTON: Multiply, a*a. How can I multiply these in?

STUDENT: Oh no, so you can't combine that.

JACOB DISSTON: So let me say this, "what if was like this...3a-a?

STUDENT: Probably you would just take away the 3.

JACOB DISSTON: What's 3a minus "a"...3a take away "a?"

STUDENT: 3a

JACOB DISSTON: I got 3a's and I take away one "a"

STUDENT: It would be 3.

JACOB DISSTON: So the question I think what you guys ask is "can this be changed? Can it be combined?" And you are saying yes. Can this be combined?

STUDENT: Yes.

JACOB DISSTON: Can these be combined?

STUDENT: Yes.

JACOB DISSTON: Can this be?

STUDENT: Yes, definitely yes.

JACOB DISSTON: Can this be?

STUDENT: No.

JACOB DISSTON: Can this be?

STUDENT: No

JACOB DISSTON: Can this be?

STUDENT: No, that's a property.

STUDENT: That's a distributive property.

JACOB DISSTON: So, I think you guys have a great way of separating this. What I want you to do is get it on this thing. Describe the two categories and which ones fit within each and then you're going to pull out your equations and you're going to look at equations.

STUDENT: I have a question. Didn't you used to say that when there's a variable there's like an invisible one in front of it?

JACOB DISSTON: Yeah. So what's 3a take away 1a? 2a.

STUDENT: So how would that be much different then?

JACOB DISSTON: This would change, just like this would change. What's 4b+3b?

STUDENT: 5b

JACOB DISSTON: All together this is...5b. This is 3a, can't combine the b's, can't combine the c's take away 1a. What's 3a take away 1a?

STUDENT: 2a

JACOB DISSTON: So is 2a take 2b plus 4c, yeah you're right, that fits this one. So I want you to get that on your paper.