Description: Early Algebra Ideas Involving One Variable: Clip 2 of 11, Introducing Integers with Pebbles in the Bag Parent Tape: Early Algebra Ideas Involving One Variable Date: 1993-09-30 Location: Harding Elementary School Researcher: Robert B. Davis	Transcriber(s): Spang, Kathleen Verifier(s): Yedman, Madeline Date Transcribed: Fall 2010 Page: 1 of 6

Time	Speaker	Transcription
	Davis	Okay, now I want to show you another thing that you may know some things about but would be a good idea to check up, I think. Maybe I'll erase some of this. [Davis erases { }, True, False and Open. The open sentence 3 + = 5 remains on the board.] I need two people to volunteer for something.
	Jeff	He got the whole class.
	Davis	Hum, Stephanie would you come and hold this bag here. [Off camera: Davis hands Stephanie the bag.] I'll tell you what might be smart to stand in the back of it [the table] like that. Okay, it turns out I may need three people. I guess.
	Jeff	So they raise their hands higher.
	Davis	Hum, well I'll try to get everybody in on it sooner or later. Milin, can you try and stand somewhere and we are going to ask you to put some of these glass things into that bag but don't do it yet and Milin, maybe it's going to work better if you stand on the end of the table there. Okay? Is that sort of alright? Hum, Okay. Now this is the really tricky job here,
	Jeff	Oh me!
	Michelle I	Oh not me.
	Davis	Uh, really tricky job. Amy Lynn would you, would you say go?
	AmyLynn	Go
	Davis	You have to say it loudly.
	AmyLynn	Go.
	Davis	Okay. Don't [Off camera: Milin begins to pick up some polished stones to put into the bag.] hey, don't put any pebbles in yet, glasses in yet. We do that when people say. Okay. How many do you want him to put in?
	Jeff	Seven.
	Student	All of them.
	Davis	Seven. Okay, would you put seven in? People can watch

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	and see that he does that. [Off camera: Milin puts seven polished stones into the bag. When the camera focuses on the board, 7 was written.] Okay, you agree he put seven in?
Jeff	I believe so.
Davis	Now are there more of those pieces of glass in the bag, uh, than there were when Amy Lynn said go or there are fewer?
Jeff	There are more now.
Davis	How many more?
Jeff	Seven.
Student	Seven more.
Davis	Seven more okay and I'm going to write that this way $7 = {}^+7$. [Off camera: Davis writes $= {}^+7$ to the right of the seven.] Those are really a little bit different. This was a seven because he counted in seven okay [Off camera: Davis points to 7], then but this [Off camera: Davis points to ${}^+7$] is it, is it true that there are seven pieces of glass in that bag?
Jeff	There is more than seven.
Student	At least seven.
Davis	There is more than seven. Yeah, there is at least seven and indeed we know more because you can hear it clunking with others when he put the first ones in. So there is really more than seven. What is it that this is saying? [Off camera: Davis is referring to ${}^+7$. Davis points to the + and then to the 7]
Jeff	That he added seven.
Davis	Saying that there are more.
Jeff	Uh huh.
Davis	Well I guess in some sense this is adding seven [Off camera: Davis points to 7] but this is saying as a result [Off camera: Davis points to ${}^+7$]
Jeff	Seven more.
Davis	This is seven more in that bag than there were before. Okay, hum, I want to have Milin take some out. How many would you like Milin to take out?

Jeff	Twelve.
Davis	Twelve. Okay.
Jeff	Twelve.
Student	Jeff is counting.
Jeff	Because I am good. I'll make it hard on him. [Off camera: Milin is taking twelve pieces of glass out of the bag while Stephanie holds the bag.]
Brian	How many is he taking out?
Davis	That was twelve?
Jeff	No.
Student	No.
Jeff	No, I don't think so.
Matt	Yeah, I think he took one more extra.
Jeff	I think he took an extra one at least.
Student	He took an extra every single time.
Davis	Okay, what will I write here [by the seven] to say he just took twelve out?
Jeff	A little minus by the twelve.
Davis	I'll write minus twelve. [Davis wrote $7-12=$]. He put seven in and took twelve out . Now at this point, are there more of those pieces of glass in the bag, uh or fewer than when Amy Lynn said, "Go."
Jeff	There is less.
Student	Less.
Student	Fewer.
Jeff	Less.
Davis	Fewer. How many less? How many less?
Matt	Five.
Davis	Five less. Does everyone agree with that?
Jeff	Yes I do.
Davis	How do you suppose we write that? Do you know how Mathematicians would write that? Somebody come and write it.
Jeff	Seven minus twelve equals five.
Davis	Uh, Matt, would you come and write that?
Matt	Sure. [Off camera: Matt writes -5]
Jeff	They can hear you, you know.

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Davis	Okay. Well, okay. I hope you don't get mad at me if I change it. Can I change it a little bit? [Off camera: Davis wants to change $7-12 = -5$]
Matt	Go ahead.
Davis	Okay, because you understand what that says but I'm not sure that everybody will and I don't want them to think it is saying take away five.[Off camera: Davis points to -5] We want it to say there are five less in the bag, okay.
Matt	Uh huh.
Davis	How do you suppose that we can write that to make it not look like its take away five? Brian you want to come and try it?
Brian	[Off camera: Brian walks to the front of the room.] Can I, I need to erase that. [Off camera: Brian erases the subtraction sign in -5 and writes $^-5$]
Davis	That's what I would do. Is it okay that we change it that way?
Jeff	I believe it's okay.
Davis	Hum, so that says [Off camera: $7-12 = {}^-5$], he counted in seven, he took out twelve and as a result there are fewer than there were when Amy Lynn said go. Namely five fewer. Is that alright? Can I try that one more time? Hum, I need somebody else to say go. Volunteers to say go? Jeffery would you say go.
Jeff	Go.
Davis	Okay, so now we are starting. That's when we started. Okay, hum, Milin is going to put some in. How many?
Matt	One.
Davis	One. And now because I want to say he put one in I'll uh, write that as 1 [Off camera: Davis writes 1], he put one in. Are there more in the bag now or fewer than when Jeffery said go?
Michelle I	More.
Ankur	One more.
Jeff	One more.
Davis	One more. There certainly is. So if I wanted to write that

	I could say this [Off camera: Davis writes $1 = {}^+1$]
Jeff	Say eighteen.
Davis	Is it clear what that says? It says that he counted one in
Jeff	Yeah but since I said go.
Davis	Which he really did [Off camera: Davis points to 1] and as a result of that there is one more in the bag [Off camera: Davis points to ${}^+1$]. It is not saying there is one in the bag. It is saying there is one more than what? One more than what?
Student	Than there were.
Davis	Than there were when?
Ankur	When Amy Lynn said go. No. When Jeff said go.
Jeff	Oh don't confuse me now.
Davis	Brian.
Brian	One more than, it's like five.
Jeff	Thirteen.
Brian	Minus five plus one, it's minus four.
Jeff	Yeah, but since I said go, not Amy Lynn.
Davis	Yeah. This is a new time around. Right?
Brian	Oh since when he said go.
Michelle I	One more since when he said go.
Jeff	Oh, he's got a name.
Davis	One more than when Jeff said go.
Michelle I	That was hard.
Jeff	Thirteen.
Davis	Okay, hum, let's take some out. [Off camera. Davis erases ${}^+1$. How many do you want to take out?]
Jeff	Thirteen. Thirteen.
Matt	Six.
Jeff	Thirteen.
Davis	Would you take out six?
Jeff	Why do you pick such stupid numbers? Anyone can take out six. It takes skill to take out thirteen.
Michael	He takes a whole handful of twelve.
Davis	Okay, are there more or fewer than when Jeffery said go?
Romina	Fewer.
Davis	How many fewer?

Jeff	Five.
Davis	Okay. Somebody come write it.
Jeff	Oh, can I.
Davis	Jeffery, come write it. [Off camera: Jeff walks to the board and Davis hands him the marker. Jeff writes the answer $^-5$ so the problem is $1 - 6 = {}^-5$]
Brian	[Inaudible.]
Romina	That's the number they chose. If you put in two and took out six.
Davis	Well don't make the five too little. The five wants to be a normal size five.
Jeff	Well, I just, it's I can't write like that. The thing is straight up. It's weird.
Davis	Is that alright? Yeah it's a little hard to write with these things. Can somebody read that? Do you know how Mathematicians read this symbol here? [Off camera: Davis points to the negative sign in $^-5$]
Matt	Negative.
Davis	Negative. You are right. Can somebody read the whole thing? Amy Lynn, can you read it?
AmyLynn	One minus six equals negative five.
Davis	Yeah, that's exactly what it says. Suppose you were to have something like this. Suppose you had something like six minus eight [Off camera: Davis writes $6 - 8 = $]. What would that be? Michelle, what would that be?
Michelle I	Me. Hum, minus two.
Davis	[Off camera: Davis holds out the marker to her. Michelle writes the answer $^-2$. $6 - 8 = {}^-2$] How would you read that? Okay, how about that? Romina how would you read that?
Romina	Six minus eight equals negative two.
Davis	Perfect. Okay, you know all about that? Is that alright? You see how that works.