

## TIMMS Transcript: US Teacher

00:20:54 T Today's lesson is titled, Writing Variable Expressions. So please title your notes.

00:21:19 T Okay, I want you to think for a minute. I know- I know you can do this.

00:21:27 T There are times throughout the day, I'm sure, where you hear words but in actuality you're talking about numbers.

00:21:37 T For example, Suzie is six inches shorter than Mary. Anybody else think of an example that you hear? Ashley?

00:21:47 SN How old is she turning?

00:21:49 T Okay. Brandon?

00:21:51 SN Tom is five inches taller than Suzie.

00:21:54 T Okay. Anybody else? Patrick?

00:22:00 SN Uh, never mind.

00:22:02 T Kendra?

00:22:03 SN Like, when you're taking a test or something and the teacher is like, you got a 20 out of like, 40.

00:22:07 T Good. Good Kendra. Alex?

00:22:09 SN Your pizza is two-fifty.

00:22:11 T Okay. Is that how much they cost here?

00:22:13 SS Yeah.

00:22:14 SN Yep. They rip you off.

00:22:16 T Tim?

00:22:17 SN Like my shoe size is like 12 and (inaudible) are (inaudible).

00:22:20 T Compared to maybe somebody else's?

00:22:22 S Yeah.

00:22:23 T Okay, good. Now, I want you to think of another example here.

00:22:28 T Say you have an after school job. You make seven dollars an hour. But this week, you're busy, you can only work two hours.

00:22:39 T But, next week you can work 10. So I'm going to put up here, seven dollars H.

00:22:48 T What is H? Does anyone know? Alex?

00:22:52 SN Hour.

00:22:53 T It's the hours. Good.

00:22:56 T What is H called? Does anyone know that? Patrick? Patrick?

00:23:02 SN Me?

00:23:03 T Yes.

00:23:04 S Okay.

00:23:05 T Patrick.

00:23:06 S A variable?

00:23:07 T Good. A variable. So writing expressions today, variable is number one.

00:23:13 T It's a letter that represents a value that can change.

00:23:21 T The example I gave you, that H can change. Two hours this week. Ten hours next week. Variable.

00:23:34 T Yes Brandon?

00:23:35 SN So the numbers change, not the, uh, letter?

00:23:39 T Well what goes in for the letter changes?

00:23:41 S Numbers?

00:23:43 T Correct. Yes?

00:23:45 SN Then like- so you have like eight dollars could you go like eight and like B?

00:23:49 T Sure. Yes. You can use any letter. Any letter in the alphabet will work.

00:23:50 S So, you can-

00:24:05 T Okay, that's a variable. What I wrote on the board, seven H, is called a variable expression because it contains a variable.

00:24:17 T You'll see it up there as one of the examples and the other two are also examples of variable expressions.

00:24:36 T Can you see?

00:24:49 T So we have variable and variable expression.

00:24:56 T Say that job that I have represented up here. You get a raise. You now make seven-fifty an hour. How will that change? Jen?

00:25:09 SN There'll be point fifty after seven?

00:25:11 T Okay, so seven point five H, right?

00:25:15 S Yeah.

00:25:16 T Okay. Brandon?

00:25:17 SN I don't- I didn't get it.

00:25:19 T Which part?

00:25:20 S The uh, the H, seven H and then the four- where do you get the four W's to-

00:25:25 T That's just an example. That's just another example of a variable expression. Okay?

- 00:25:31 T Okay. Another example. You're going to an Eagles game.
- 00:25:37 SS Oh.
- 00:25:39 T Tim? I used Phillies in my other classes but for you Tim, I used Eagles.
- 00:25:43 SN First the Raiders.
- 00:25:44 T Okay? You're going to an Eagles game. They're selling hot dogs. They're very good by the way in Philadelphia.
- 00:25:52 SN So are the cheese steaks.
- 00:25:54 T So are the cheese steaks, you're right.
- 00:25:54 T Okay. But, the hot dogs at Vet stadium where the Eagles play sell for three dollars.
- 00:26:01 T I want you to give me a variable expression for N hotdogs. Marcus?
- 00:26:12 SN N, hot, over three dollars. Or-
- 00:26:16 T Not over because that means divided.
- 00:26:18 S Three N.
- 00:26:20 T Three N. Three N means however many I buy I have to pay three dollars for, right?
- 00:26:25 SN Where do you get the N from?
- 00:26:26 T That's- I just said, that's the N number of hotdogs. That's what I'm using as my variable. Jen?
- 00:26:32 SN Wouldn't that mean you have to multiply them?
- 00:26:34 T Yes. That's right. So if I got two hotdogs how much money am I spending?
- 00:26:38 SS Six dollars.
- 00:26:39 T Three times two. Good, Jen. Yes?
- 00:26:42 SN Can it be like any letter?
- 00:26:43 T It can be any letter. Yes, Michelle it can be. Good question.
- 00:26:45 SN But isn't it confusing?
- 00:26:47 T It can be any letter, Brandon. Whatever you choose. Okay, part B today. Evaluating Expressions.
- 00:26:54 T What I just did with the two dollars for a hotdog was evaluating an expression.
- 00:27:02 T So if I come back to my original example on the board here, seven H, and I said you worked two hours this week,
- 00:27:13 T How much money are you going to make this week, Ryan?
- 00:27:17 SN Fourteen.
- 00:27:18 T Fourteen. How much would you make if you worked ten hours next

week? Josh?

00:27:23 SN Seventy.

00:27:24 T Good. What we just did was we took the number of hours and did what? Michelle?

00:27:32 SN Multiplied it by a seven.

00:27:34 T Good. But what- we actually put it in for there? Didn't we? Put it in for the H?

00:27:38 T Well, that's what evaluating means. Substituting a number for a variable. Yes?

00:27:48 SN So for the hotdog thing, would the N be two?

00:27:52 T Yes. We substituted two for the N.

00:27:55 SN Oh.

00:27:56 T We evaluated that example.

00:27:59 SN Do you have to write that then? Or, can you just write like how- like however many dollars it was times two?

00:28:06 T Yeah. Do you have to write what- what? This?

00:28:09 S Do you have to write the N or-

00:28:10 T Well normally you'll be given that, yes.

00:28:12 S Okay.

00:28:14 T You won't be given- like if we're just talking, of course, I'm not going to say write down, but-

00:28:19 T You'll be given expressions and asked to evaluate for a certain amount of money or numbers.

00:28:36 T So I'm going to give you an example- Here's what you were asking me Jen. Evaluate the expression, four H plus three.

00:28:44 T Now the part four H plus three is the expression and then it says for H equals two. What are we going to do with that?

00:28:52 T What are we going to do with H equals two? Marcus?

00:28:58 SN I guess like four times two. Four times two plus three, would be eleven.

00:29:03 T Good.

00:29:06 T Okay. What we- Marcus did here was, wherever he saw an H in our expression he substituted a two. So that was the first step.

00:29:18 T And remember, if there is nothing in between a number and parenthesis what operation do we do?

00:29:26 SN Multiplication.

00:29:27 T Patrick?

00:29:28 SN Multiplication.

- 00:29:29 T Good. And as Marcus said then, the answer is eight because four- I mean 11- four times two is eight, we add three, and we get 11.
- 00:29:58 T Any questions so far?
- 00:30:17 T Okay. Now, I'm sure you often hear, probably on radio ads or- or maybe even here at school,
- 00:30:28 T Phrases such as twice as much, three times as long, half as heavy. Yes?
- 00:30:37 SN So my answer to the question is, four times two is eight, plus three is-
- 00:30:42 T Is 11.
- 00:30:43 S All right.
- 00:30:45 T Okay? So you hear phrases like that. Twice as much. You hear that at the store, right? Or, things like that.
- 00:30:52 T Three times as long. Social Studies class is three times as long as math.
- 00:30:59 SN It is?
- 00:31:00 T Because math class is fun, Tim.
- 00:31:02 SN Oh, no.
- 00:31:03 SN Oh, I get it.
- 00:31:04 SN I just like math.
- 00:31:06 T No, it's not really three times as long. They're all the same, but- that was just an-
- 00:31:10 SN I thought fifth period was the longest?
- 00:31:11 SN Yeah.
- 00:31:12 T Okay. Well we have an extra 10 minutes because we read, but that's all.
- 00:31:16 T Okay. What we're doing there, is we're taking words and translating them into variable expressions.
- 00:31:26 T Now, there's two parts to that. Taking words and putting them into numbers or the opposite.
- 00:31:35 T So people, if you're sitting at your desk taking notes, write the opposite. You don't have to write both of those things up there.
- 00:31:41 T As long as you understand. Remember, you don't have to write everything I write.
- 00:31:46 T Take words, change them into numbers. Take numbers and change them into words.
- 00:31:53 SN You can do one of those?
- 00:31:55 T Yeah, and then just write either opposite or vice versa.

- 00:32:06 T I'm gonna give you an- some examples.
- 00:32:14 SN Wait-
- 00:32:33 T Okay. Say I give you the words, a number plus negative three. How would I take those words from a word phrase-
- 00:32:48 T Now this example is on page one-o-six, people, so you have your choice here.
- 00:32:52 T How do I take the words, a number plus negative three and make it a variable expression? Patrick?
- 00:33:02 SN A plus negative three.
- 00:33:03 T Okay. A plus negative three. You chose A. I chose N. Again, the letter doesn't matter.
- 00:33:11 T So we took a word phrase and changed it from words to a variable expression. I'm going to give you another- Yes?
- 00:33:22 SN Why'd you put the parenthesis around negative three?
- 00:33:25 T Good question. Why'd I put these here? Only because you don't get mixed up with the signs. If I put-
- 00:33:32 SS Oh.
- 00:33:33 T Okay? I don't- That's why I do it that way. Andrea?
- 00:33:37 SN Do you have to put it down there?
- 00:33:38 T You don't have to but I think it's- it makes it clearer to see. Okay? Tim?
- 00:33:45 SN Would it make a difference if we put it around N plus or not?
- 00:33:49 T Well, in this case, we have two operation signs technically, so that's why we- I did it here. Marcus?
- 00:33:57 SN What if you switched it around (inaudible) negative three before?
- 00:34:00 T Before N?
- 00:34:01 S Yeah.
- 00:34:02 T That would work okay. But it's- but- It's backwards here from what the words are.
- 00:34:06 S Oh.
- 00:34:07 T Technically in math that's not incorrect. Yes?
- 00:34:10 SN So a number means like you put a letter?
- 00:34:14 T Yes. That's the variable part of it. Any letter.
- 00:34:17 S So that means- oh.
- 00:34:19 T Okay, what if I say six less than a number. Six less than a number. Michelle?
- 00:34:32 SN Six minus N.

- 00:34:34 T Six minus N. What do you think Aubrey?
- 00:34:36 SN N minus six.
- 00:34:38 T Why do you think that?
- 00:34:39 S Oh because-
- 00:34:41 T You're right. Tell me why.
- 00:34:42 S Six is less than the number?
- 00:34:44 T Right. Do you see the difference? Six less than a number.
- 00:34:47 SN Oh.
- 00:34:49 T Yours was a number less than six. What you gave me. This will- that's the tricky saying right there. Questions so far?
- 00:35:03 T Alex?
- 00:35:05 SN So then when it says "less than" in, like, a question, you always minus the number from the letter?
- 00:35:10 SN Like go, the letter minus the number?
- 00:35:14 T I hate when I say "always", Alex. Uh, nine times out of 10, yes, but there may be like something else here.
- 00:35:21 T Like may- it may say two plus a number then less than. So you've got to be careful. It's not always. Okay. Yes?
- 00:35:31 SN Who did- do you have to put the parenthesis around the minus six or would that be considered a negative six?
- 00:35:38 T Well in here there's not another sign so it doesn't matter here.
- 00:35:43 T Well, we're going to learn next week that it's- negative- this also does mean minus.
- 00:35:48 T But we don't need to put parenthesis here because there's not another sign, okay?
- 00:35:54 T All right. Now, we're going to do it the other way. We're going to start with a variable expression and go to words.
- 00:36:01 T Start with the variable and go to words. So I'm going to give you this time- Yes?
- 00:36:09 SN Is this in the book too (inaudible)?
- 00:36:11 T Yeah. This is still all page one-o-six.
- 00:36:14 T K divided by eight. Try to write that in words without using the word divided. Can anybody do that? Jen?
- 00:36:22 SN K over eight.
- 00:36:23 T Okay. That's- Steve?
- 00:36:25 SN K into eight.
- 00:36:26 T Okay. Well no. That would be eight into K.

00:36:29 S Oh.

00:36:30 T Christy?

00:36:31 SN K of eight.

00:36:32 T No. What does "of" mean in that?

00:36:34 S Oh.

00:36:36 T Times. Okay? It's okay, you're thinking.

00:36:39 T All of those- what Jen and Steve were correct, I chose the big math word, quotient.

00:36:46 T K divided by eight, the quotient of the number and eight.

00:36:51 T What if I gave you 15 minus B? Fifteen minus B. Patrick?

00:37:00 SN Fifteen less than B. Or less- B less than 15.

00:37:04 T B less than 15 would work. I chose an easier route. Fifteen minus a number.

00:37:12 T Either one is correct. Questions so far on this, people?

00:37:22 T Any questions?

00:37:28 T Andrea?

00:37:29 SN What does quotient mean?

00:37:30 T Quotient means divided. See my- my sign up there in the corner has all the math words. Okay.