

Description: How many rods for 10 step and 100 step ladders Parent Tape: Early algebra, investigating linear functions, Series 5 of 7 Date: 2005-12-15 Location: Hubbard School Researcher: Professor Carolyn Maher	Transcriber(s): Baldev, Prashant Verifier(s): DeLeon, Christina Date Transcribed: Spring 2008 Page: 1 of 4
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Time	Speaker	Transcription
	R3	Watch what I am doing. (arranges blocks in a ladder). Alright. So, What does this look like?
	Ariel	An H
	R3	Maybe, its possible. How many rods do I have here?
	James and Ariel	Five.
	R3	Five right? If I do like this? What does this now look like for you?
	Ariel	A chain or a necklace or something?
	R3	suppose it stands up?
	Ariel	A building?
	James	Like a tower.
	R3	If its stand what would you call it?
	Ariel	A building
	R3	Hm, Very good. Well you can call it so many different names. I am going to call it a ladder. Does it look like one?
	R3	In this particular case, what would you call this if we called this a ladder? (pointing to step)
	James	A step?
	R3	Step. Ok so how many steps do we have?
	James and Ariel	Two.
	R3	Ok so going back to the previous one that you called eight. Could that also be a ladder.
	James	Yes
	R3	How many steps?
	James	One.
	R3	So this one is a ladder with one step and how many blocks? Rather rods we call it.
	James and Ariel	Five.
	R3	And now this is a ladder with two right? And how many?
	James	eight
	R3	eight. so my question.. so you can build it as high as you want. So my question to you is that how many would that be if we had ...rods.. how many would we need to build a ladder with 10 steps?

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Ariel Wow, three steps. Ah, I got an idea.

James I got it. Thirty-four.

R3 Thirty four. For ten?

Ariel [looking at R1] For ten.

R3 [to James] What do you think? You also have the same number.

James Thirty-four.

R3 Thirty-four?

James Yeah.

R3 Those have ten. I don't see ten steps. How do you ...?

Ariel Five. I counted how many rods it is and then I just multiplied by two because five times two is ten. It was seventeen rods, so seventeen times two is thirty-four.

R3 Uh, uh, again, again, slowly. You are so fast for me.

Ariel OK, I did five steps, and then I counted how many rods that was. It was seventeen and since five is half of ten, five times two is ten, so I just multiplied the number of rods by two and I got thirty-four for seventeen rods.

R3 So how would you get for hundred then?

Ariel Four hundred?
James has written:

$$\begin{array}{r}
 17 \\
 10 \div 5 \rightarrow \quad \underline{\times 2} \\
 34 \\
 \underline{\times 8} \\
 262
 \end{array}$$

James Two sixty-two. I got two hundred and sixty-two.
There is an announcement over the PA system.

Ariel I got one thousand three hundred and sixty.

James I just do this by times eighty.
[James has written:

$$\begin{array}{r}
 17 \\
 \underline{\times 80} \\
 00 \\
 \underline{136} \\
 1360
 \end{array}$$

R3 [to James] How much? How many you got?

James Thirteen sixty.

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R3 We have to find a way to figure this out whether it is right or wrong.

Ariel It is right.

R3 It can't be that for a hundred.

Ariel Look, ten is thirty-four and ten times ten is one hundred, so thirty-four times ten is three hundred and forty – let me write that – [starts writing] OK, then three hundred and forty times four which would be three hundred forty equals one hundred rods, so three hundred and forty times four would be one thousand three hundred and sixty.

R3 What is that four?

Ariel The hundreds.

James I got a different one.
[There is an announcement over the PA.]
[The video sequence cuts off.]

James ... which is eighty, so I had to multiply, seventeen times eighty.

R3 [talking to Ariel] So let's see. You are saying that thirty-four is what, it is the number of rods. What is that thirty-four comes from?

Ariel That is thirty-four rods you would use to make ten steps.

R3 Then you are multiplying by ...

Ariel By ten because ten times ten is one hundred.

R3 Yeah.

Ariel So, thirty-four times ten is three hundred and forty.

R3 Yeah.

Ariel And for four hundred, it would be three hundred and forty times four, since three hundred and forty would be one hundred steps so one hundred times four is four hundred.

R3 What is that four come from?

Ariel The one hundred times four.

R3 One hundred times four? What is that four?

Ariel The steps.

R3 But, I am asking for a hundred steps.

Ariel What?

R3 We are saying for a hundred, right?

Ariel You said four hundred.

R3 No, I said for a hundred, a hundred.

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Ariel Oh!
R3 I am sorry, did you understand four hundred?
Ariel Yeah.
R3 I am sorry, I meant a hundred.
Ariel [opens his pen to write but then stops] Oh, three hundred and forty.
R3 Three hundred and forty?
Ariel Yeah.