

**Description: Solving Guess My Rule problems 1 and 2**  
**Parent Tape: Early algebra: Investigating linear functions, Series 1 of 7: Guess My Rule introduction and Ariel and James with problems 1-3**  
**Location: Frank J. Hubbard Middle School – Plainfield, NJ**  
**Researcher: Carolyn Maher**

**Transcriber(s): DeLeon, Christina**  
**Verifier(s): Yedman, Madeline**  
**Date Transcribed: Spring 2009**  
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00:00 James I just noticed one plus one is two, So you couldn't get that so I thought about one times two, and that will be two and then add one, and that's three.

00:11 G4 And then that's how you figured out this rule.

01:24 [Ariel and James are working on the Guess My Rule Problem 1:  
X Y  
0 1  
1 3  
2 5  
3 7  
4 9  
5 11]

00:13 G4 And then you verified and said it was all right. Do you want another problem?

00:15 James Whatever.

00:17 G4 Alright, here you go. Let's try this one.  
[G4 gives the Guess My Rule Problem 2 sheet:  
X Y  
0 5  
1 7  
2 9  
3 11  
4 13]

00:22 Ariel Five plus two. Oh, this is easy. It's the same thing, just ... wait a minute, yeah, it is the same thing, no, no it's not, yeah, yeah. It's the same thing.

00:31 G4 What do you mean by same thing?

00:32 Ariel It's zero times two plus five is five.  
[There is a lot of background noise]

00:38 Ariel Zero times two plus five is five. One times two is two plus five is seven. Then two times two, wait a minute, I mean two plus seven ...

00:49 James Three times five is eight, I mean, fifteen, three times five is fifteen ...

00:58 Ariel I didn't say five, I said plus five. Its times two...

01:00 James Plus five. Three times two is six.

01:04 Ariel So one times two is two plus five is seven and then two times two is four plus five is nine, three times three is six, I mean three times... two, two, two, two [taps repeatedly with his finger in between the columns], let me write.

01:19 Ariel Times two plus five [writes  $\times 2 + 5$  on the side of the table]

01:23 James I got this big O mark.

01:25 Ariel Zero times two plus five equals five [writes  $\times 2 + 5$  in between the two columns]

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- 01:30 Ariel [pointing his finger on the values in the table] And then look one times two is two and two plus five is seven. Then two times two is four and plus five is nine. Three times three, times two, two, two, is six plus five is eleven, then four times two is eight plus five is thirteen.
- 01:49 Ariel [looks at G4] This is easy. Done. Next.
- 01:52 G4 [laughs] How do you compare the first one and the second one when you were telling me it is the same thing?
- 01:56 Ariel [shuffling the papers] Because it is both times two. You are just changing the adding. Next [taps his pen on the table and looks at G4]
- 02:00 James Times something plus something. Now we can take a break.
- 02:08 G4 Do you think that there's another rule that we can have? Or do you think that is the only rule we can get?  
[James has written ' $\times 2 + 5$ ' in the Guess My Rule Problem 2 sheet. He has also written 25 in the X column and 55 in the Y column.]
- 02:14 Ariel That's the only one we can get.
- 02:15 James Times, no, times four plus no...  
[Ariel and James are working on the problem]
- 02:32 Ariel Oh, I see a pattern. I can't even do that, it's too hard. I see a pattern though. It is going to be straight up. I'm done.
- 02:43 James Ohhhh. I see it. It's add by five, Zero plus five. No, first is five, you add five right here. Then you add six, then you add seven, then you add eight, then nine, and then right here you add twenty-five, thirty.
- 03:07 Ariel Hold on. How are we doing this again?
- 03:10 [James has written in between the columns:  
X Y  
0+5 5  
1+6 7  
2+7 9  
3+8 11  
4+9 13  
25+30 55]
- 03:14 G4 Wait a second. So, explain to me what you are doing here.
- 03:16 James Because zero plus five is five and then one plus six is seven, and then two plus seven is nine, then three plus eight is eleven, and four plus nine is thirteen [looks at G4]
- 03:31 G4 And what about for twenty-five?
- 03:33 James And then twenty-five plus thirty is fifty-five.
- 03:35 G4 Why thirty?
- 03:37 James Because twenty-five plus thirty is fifty-five. Well, I just put that because you asked me what's twenty-five plus ...
- 03:44 G4 I was just curious to see because I see here you said I'm going to add five here, then I'm going to add six here, then I'm going to add seven

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here, how you know when you get down to twenty-five, you are going to add thirty there?

03:55 James Ten, eleven, twelve, then thirteen, and then fourteen, and then fifteen [looks at G4] and then for twenty-five ...

04:03 G4 And then you are telling me that you get to thirty?

04:05 James [nods]

04:06 G4 What if I wanted to know the value for eighty-two?

04:11 James You mean we can write eighty-two right here?

04:13 G4 Hmm, hmm.

04:15 James Then you will try to [mumbles and looks at the Guess My Rule sheet]

04:31 G4 [to James] Do you want Ariel to help you? Do you want to explain to him what you have found?

04:34 Ariel No, I don't remember.

04:36 G4 OK, then how about if I ask you for eighty-two, X is eighty-two?

04:40 Ariel X is eighty-two? And then you would just....

04:43 James Oh X is eighty-two? You said that that was eighty-two? [James gestures to the paper]

04:46 Ariel Oh, that's easy.

04:47 G4 Oh, I'm sorry, I'm sorry. If X was eighty-two.  
[There is some inaudible talk between James and G4 and there is a lot of background noise.]

04:52 James You would add um zero, X, oh eighty-two... It's One hundred and sixty-four and then you gotta add five so [mumbles and writes] one hundred and sixty-nine.

05:14 G4 OK, so what did you use to get this number?

05:19 James Multiply eighty-two by two and then add five to the answer and then I get one hundred and sixty nine.  
[James has written:

$$\begin{array}{r} 82 \\ \times 2 \\ \hline 164 \\ +5 \\ \hline 169 \end{array}$$

05:26 G4 OK, so this was using this equation. [inaudible].

05:27 James Yeah.

05:28 G4 Ok, and then you told me you found another way of finding the numbers?

05:30 James Yeah, and then you notice that eighty-two plus ...

05:37 G1 [to Ariel] Can you explain to R2 what you have found here?

05:40 Ariel Oh, for like every number you add another one for like zero is five, since you're going to one, now you add another is six, going to two you add

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another is seven, going to three you add another is eight, going to four you add another is nine.

05:56 R2 OK. And so how would you express that rule?

06:00 Ariel Huh? Well, the first rule that we came up with was times two plus five. Because zero times two plus five is five. One times two is two plus five is seven and then we can up with ...

06:12 R2 Does it work for the others?

06:14 Ariel Yeah, it worked for all of them... and then we came up with this one.

06:17 R2 Can you show me?

06:22 Ariel [writes  $0 \times 2 + 5 = 5$ ] Zero times two plus five equals five.

06:28 Ariel [writes  $1 \times 2 + 5 = 7$ ] One times two plus five equals seven.

06:37 Ariel Wait a minute. Yeah, yeah.

06:41 Ariel [writes  $2 \times 2 + 5 = 9$ ] Two times two plus five equals nine.

06:48 Ariel [writes  $3 \times 2 + 5 = 11$ ] Then its three times two plus five equals eleven. And the pattern is five plus two is seven plus two is nine plus two is eleven plus two is thirteen.

07:09 R2 [to Ariel] Do you and James agree on that?

07:12 Ariel Yeah.

07:13 R2 Have you guys talked about it?

07:14 Ariel Yeah.

07:17 R2 OK, would you like another challenge?

07:18 Ariel OK. We have already done two.

07:21 R2 Ah, you have done two of them. Let me give you a third one. [goes away from the table]