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| **Description**: Clip 3 of 6: What is the number name for red when the yellow and light green rod is two? A whole class discussion<br>**Parent Tape**: Reassigning the number name one, and introduction to fraction comparison<br>**Date**: 1993-09-24<br>**Location**: Colts Neck Elementary School<br>**Researcher**: Carolyn Maher | **Transcriber(s):** Yankelewitz, Dina<br>**Verifier(s):** Yedman, Madeline<br>**Date Transcribed**: Spring 2009<br>**Page**: 1 of 6 |

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| 3.0.66 | T/R 1: | Okay. Could someone tell Dr. L what are the problems I've given you? Can someone explain to Dr. L… You want to call one someone, Dr. L? |
| 3.0.67 | Dr. L: | Alan! |
| 3.0.68 | Alan: | Ok. We made a train and if this was considered two, what would the red one be, the red rod be? |
| 3.0.69 | Dr. L.: | Uh, huh! Boy, that's some problem. |
| 3.0.70 | Alan: | And the other one was if this [train] was considered one, what would the little red rod be? |
| 3.0.71 | Dr. L.: | Okay, was anyone able to figure that out? Yeah? [Some hands are raised.] Audra, what did you come up with? |
| 3.0.72 | T/R 1: | Can you up and show us, maybe? [Sarah and Audra go to the OHP. Audra builds a model of the train Y - LG] Dr. Landis, Audra's going to show us at the overhead. |
| 3.0.73 | Audra: | Well, first we put the red rods [she places four red rods underneath the train] up to the yellow and the green rod and then we said if the yellow and the green was two, what would we call the red rods? And we thought that we would call it one and one fourth. And then if it [the train] was one, we would call it one fourth. |
| 3.0.74 | Dr. L: | Okay, so if it was one you said you'd call it one fourth and if it was two, what did you say? |
| 3.0.75 | Audra: | It would be one and one fourth. |
| 3.0.76 | Dr. L.: | One and one fourth, I don't know if I understand that. [To the class] Do you all agree with that? Did you come up with the same names for that? No? |
| 3.0.77 | T/R 1: | How many of you agree that if we call the yellow and the green one two |
| 3.0.78 | Audra: | Two, it would be |
| 3.0.79 | T/R 1: | The red would be one and one fourth. How many of you agree with that? [No hands are raised.] Ok, you're not having people agree with that, so you are going to have to convince them, Sarah and Audra. What would you do to convince the class that it would have the number name one and one fourth? But before we ask you to convince them, I'm curious about the other. If you call the yellow and green together one, what did you call the red rod? |
| 3.0.80 | Audra: | One fourth. |
| 3.0.81 | T/R 1: | How many of you agree with that? So we have some people agreeing with that. So you're going to have to convince them. They agree with your second solution, but not your |

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| | | first [one]. So let's hear the arguments. Okay, you're all listening? Because if you don't agree with the arguments that Audra and Sarah are going to give you, you have to come up with a different argument. |
| 3.0.82 | Audra: | Well, because see, the yellow and the green was the same size as the brown, so if we put the reds up against the, no, wait, no. See, because there's, if there was one, we would- if it was brown we would normally call it one. And if we put the reds up against it we would all call it one fourth, so we thought if we called the yellow and the green one, it would be the same thing as the brown. |
| 3.0.83 | T/R 1: | How many of you agree with that argument for calling the red one fourth when the yellow and the green [train] together are one? How many of you agree with the argument that Audra just gave us? Do you disagree with her argument? You don't know? How many of you don't know, how many of you agree, how many of you disagree? Cuz what she said...this is the same as brown. Is that what I heard you say? [T/R 1 places the brown rod above the yellow and green train]. If you said if you call the brown one that would be like yellow and green being called one. And then you argue that red would therefore have the number name one quarter. Erik? |
| 3.0.84 | Erik: | I agree. |
| 3.0.85 | T/R 1: | You agree? |
| 3.0.86 | Erik: | Yeah, because see if the brown and the yellow and green they're equal and they're both called one, and four of the reds equal up to one, therefore that they'd have to be fourths, because there are four parts, they're fourths. |
| 3.0.87 | T/R 1: | Would you raise your hands if you agree with the argument that Sarah and Audra and Erik gave us? Up high, so I can tell. Now, there are some hands that aren't up; does that mean that you disagree or you're not sure? Brian? |
| 3.0.88 | Brian C.: | We disagree. |
| 3.0.89 | T/R 1: | Nice and loud, Brian. |
| 3.0.90 | Brian C.: | We thought the um, the two, we called that one half. |
| 3.0.91 | T/R 1: | Okay, we're talking about when we call it [the train] one. You're talking about the other. You agree that when we call it one, that this is a fourth? |
| 3.0.92 | Brian C.: | Yes |
| 3.0.93 | T/R 1: | Okay, now the second part you disagree. Now you give your argument for when you call the yellow and green two. All of |

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| | | you disagree with the argument of calling the red, one quarter when you called the yellow and green together one. And I like the brown rod up there to show you that's another way to call it [the train] one. That's very nice. Some of you didn't do this. That's something new that Sarah and Audra introduced that I think is very nice. But now let's hear the other argument. How did you get one and one quarter when you called the brown rod two now? [Audra and Sarah are quiet. They seem unsure.] You're not sure you have an argument? |
| 3.0.94 | Audra: | No. |
| 3.0.95 | T/R 1: | Do you want to pull back your argument and listen to other people's? That's fair enough, sure you can sit down. Let's have someone else. If you don't agree with one and one quarter and if you don't have an argument, does someone have something else. Now Brian, you want to come up here because you said you had a different argument… And Jackie? I like to hear your argument and see if you convince Sarah and Audra who want to be convinced. [Brian C. and Jacquelyn come to the overhead.] |
| 3.0.96 | Brian C.: | Well, we thought the two [he moves the train of yellow and green] would be called a half. |
| 3.0.97 | T/R 1: | The two what, Brian? |
| 3.0.98 | Jacquelyn: | The two would be a half. |
| 3.0.99 | T/R 1: | The two of what? |
| 3.0.100 | Jacquelyn: | When this [the train] is two, these [the red rod] would be called a half. |
| 3.0.101 | T/R 1: | You're saying a red would become a half? |
| 3.0.102 | Jacquelyn: | Yeah. |
| 3.0.103 | T/R 1: | Hmm, that's an interesting idea. So when yellow and green become two, the reds, how could you, how could you convince us? Because I see your teacher there, Mrs. P. saying, how did they get that? Right? She wants to know how did you figure that out? That's an interesting idea. How many of you agree? A few of you agree with this argument. Now you've gotta help Audra and Jackie prove it. We're listening. Can you convince us? |
| 3.0.104 | Jacquelyn: | Not really. |
| 3.0.105 | T/R 1: | Brian? |
| 3.0.106 | Brian C.: | Jackie thought of the two. So she should be able to explain it. |

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| 3.0.107 | Jacquelyn: | Well, this was called two [the train] and this would be called, all of these would be called one half [the red rods]. Because uh, um… [She sighs and strums on the overhead projector.] |
| 3.0.108 | T/R 1: | You don't remember how you did that? |
| 3.0.109 | Jacquelyn: | Yeah, I forgot. |
| 3.0.110 | T/R 1: | David, do you want to help them out? You want to come up here and help them out? Because you also called it one half, didn't you, you and Meredith. |
| 3.0.111 | | [David goes to the overhead projector.] |
| 3.0.112 | David: | Um, yeah, and um, so if this is called two [the yellow and light green train] and then this would be two too [four red rods]. So then this would be one [indicating the two red rods] and this would be one [David separates the red rods into two groups of two rods]. But then if you take away this [one red rod] this would be one half over there [the red that is remaining] and put another one half that would be one and another, then that would make up to be two [realigns the four red rods to equal the length of the yellow and light green train. Jacquelyn nods]. |
| 3.0.113 | T/R 1: | Did you all follow what, what David said? David, you're going to have to do it again. I think some people had a little trouble following it. All right. Michael, did you follow it? |
| 3.0.114 | Michael: | Yeah. |
| 3.0.115 | David: | All right, so… |
| 3.0.116 | T/R 1: | You can help say it another way. It might help other people follow it so let's give David another chance and then maybe Michael can help him out, and Meredith. |
| 3.0.117 | David: | Alright, so if this is two [ the yellow and light green train], then this would be a half because if you put another one and another one that'd be two [He aligns four red rods]. And if you take away these [two red rods] that would be one and took away that [He takes away another red rod], leaving one red rod], that would be a half of [inaudible]. |
| 3.0.118 | T/R 1: | How many of you understand? How many of you followed what David said? Raise your hand if you followed what David said. So more hands came up now, so more people are agreeing. Is that what you were thinking, Jackie? |
| 3.0.119 | Jacquelyn: | Yeah. I just couldn't it out. |
| 3.0.120 | T/R 1: | You couldn't get it out. You want to try it again now that David helped you the way he was thinking? |
| 3.0.121 | Jacquelyn: | No. |

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| 3.0.122 | T/R 1: | Who wants to give it a try at another way of saying it? You want to give it a try? Go ahead, Brian. |
| 3.0.123 | Brian C.: | Well, |
| 3.0.124 | T/R 1: | Because I liked Audra's trick of finding out what one was in the other problem. Remember Audra and Sarah came up with the brown rod. Do you remember that? I wonder if you can use your little trick of coming up with brown rod to help explain this idea to people who aren't catching it. If you think you understand it, maybe that might help some people. |
| 3.0.125 | Brian C.: | If you take these two [two red rods], that would be one half. And this would be another one half. |
| 3.0.126 | Jacquelyn: | These would be one. |
| 3.0.127 | Brian C.: | These are ones. And then if you take one away then this would be a half [the red rod]. |
| 3.0.128 | T/R 1: | Yeah that's sort of what I heard David say, same argument as David, ok. But you were beginning to say something else [T/R 1 goes to the overhead and moves two of the red rods]. The temptation I noticed, and some of you did this in the beginning, you wanted to call, many of you wanted to call the two reds a half and the other two reds a half. And then you changed your mind Jackie was there shaking her head. |
| 3.0.128 | T/R 1: | Yeah that's sort of what I heard David say, same argument as David, ok. But you were beginning to say something else [T/R 1 goes to the overhead and moves two of the red rods]. The temptation I noticed, and some of you did this in the beginning, you wanted to call, many of you wanted to call the two reds a half and the other two reds a half. And then you changed your mind Jackie was there shaking her head. |
| 3.0.129 | | And I walked around and I saw lots of people doing that. I wonder what you were thinking when you wanted to call this a half. Is it okay to call this [two red rods] a half and call this [the other two red rods] a half sometimes? And is it okay to do it this time? |
| 3.0.130 | Students: | No |
| 3.0.131 | T/R 1: | What's the difference? Jakki, want to talk about that a little bit? |
| 3.0.132 | Jacquelyn: | Well if this, if well, it's because of this one because it's two. If we call this, both of these one half, it [the train of yellow and light green] would be one. |
| 3.0.133 | T/R 1: | Oh, so you're saying its okay to call it one half if we call this one? |

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| 3.0.134 | Jacquelyn: | Yeah. |
| 3.0.135 | T/R 1: | You all agree with that? If the yellow and green together are one, then it's okay to call the two reds one half. How many of you agree with that? To give it the number name one half. What do you think is so confusing here? When we called it the other name two then this had to be one and this had to be one you said because one plus one is two right? But what, what's confusing here? Because there's something that a lot of people got confused about and I'm wondering if you could understand what the confusion is. That would help. Thank you, you can sit down. That was very nice. Erik? |
| 3.0.136 | Erik: | I think the confusion is, they think, that they just, they think, they have the temptation of calling, since there are four red blocks, they think they're gonna call it one fourth 'cause they forget that the yellow and the green are two. |
| 3.0.137 | T/R 1: | What are they thinking that the yellow and the green are when they do that? |
| 3.0.138 | Erik: | One. |
| 3.0.139 | T/R 1: | They are thinking that the yellow and the green are one when they do that. |
| 3.0.140 | Erik: | Because, see, if you have one there'd be two halves, but if you have two its two halves plus two halves which would be four halves. So you'd have- therefore, you'd have to call one of the reds one half. |
| 3.0.141 | T/R 1: | Wow, that's something to think about isn't it? How many of you understood Erik's argument? Raise your hand if you understood Erik's argument. A couple of you seem to understand it. What do you think Michael? What's your comment on this? I thought some people, how many of you fell into the trap? When I asked you that problem right away, I said, call the yellow and green two, what number name would you give red? How many of you called it first one-quarter? How many of you fell into that trap in the very beginning? {Many students raise their hands.] I think mostly everybody fell into that trap, right? And then when I asked you what the yellow and green, if that were given the number name one, then you said, oh wait a minute, right? That's very interesting. Um, I kind of knew you'd fall into that trap. |