00:00 Let me ask you a question. How many of you, when asked to compare Joe, Sarah and Alex. How many of you went directly to unit rate?00:14 Defining how many steps per second they were taking. Raise it up high.

00:19 O.K. Put them down. Is there a simpler way of doing this? Can you work with simpler numbers without the calculations, the division, the decimals…

00:39 Is there a way to work with simpler numbers. Talk with your group for one minute this time. Is there a way to work with simpler numbers?00:53 That thing where you got to get ten seconds to sixty seconds and you got to multiple that by six. So you do the sixteen steps times six to get to ninety-six

01:10 and for Sarah since she does thirty-two steps per twenty seconds, you do twenty times three to get to sixty seconds…

01:18 and then you do thirty-two times three and that gets to ninety-six and that shows that Joe and Sarah are the exact same…

01:25 And Alex does twenty-one steps per fifteen seconds so you do fifteen seconds times four to get to sixty seconds.

01:34 So you do twenty-one times four…Oh wait… that is eighty something not forty something. Oh that is eighty…eighty-four I believe. Yeah that is eighty-four.

01:49 And then that is eighty-four…and then…yeah…So Joe and Sarah tied. Alex loses. Do you believe in my calculations?

02:06 Yeah. I agree with Michael.

02:11 Sarah minimized is…

02:16 Six point four over five and if we simplify Alex's rate and divide it by five it's…

02:32 So it's four point two steps per five seconds. So since their seconds per…wait.. steps per seconds are all the same it would be easier to do the math.

02:49 Jason you said that it would take multiplication…well that's still doing lots of math.

02:56 Repetitive addition and repetitive subtraction…no, just repetitive addition…yeah repetitive addition is practically just multiplication.

03:05 O.K. Guys what are simpler numbers? What's a simpler way to do this? Drew.

03:16 By simplifying the unit rate.

03:21 Simplifying these rates?

03:22 Yeah.

03:23 So tell me about that.

03:24 So sixteen in ten.

03:29 Sixteen steps… Sixteen steps.

03:36 In ten seconds will give you eight steps in five seconds.

03:44 It's an equivalent number. Is that what you are telling me?

03:46 Yeah.

03:47 Eight steps in five seconds. All Right.

03:53 So. So you simplified sixteen steps in ten seconds to eight steps in five seconds. How does that help us compare the ratios?

04:06 It's making it smaller numbers for calculations.

04:10 O.K. Smaller numbers. Did you want to add on to that?

04:12 Yeah. Since all of their rates are divisible by five…

04:23 I'm going to write that down real quick so I don't forget it. All rates, divisible by five. Huh. O.K.

04:39 What part? The whole rate? What are we talking about?

04:41 No the seconds.

04:43 Ahhh! O.K. Go ahead. I'm sorry. So this was the first step. Oh I'm sorry who was this again.

04:56 Joe.

04:56 Joe. All right. Take us to the next guy or girl.

04:59 Thirty-two steps over twenty.

05:03 Thirty-two steps over twenty seconds.

05:11 You would divide twenty by four and that equals five seconds.

05:15 So divide by four here?

05:17 Yeah.

05:21 O.K.

05:22 And you divide four into thirty-two and you get eight.

05:39 Last one. Go ahead.

05:42 Twenty-one steps… Twenty-one steps over fifteen seconds.

05:46 Twenty-one steps over fifteen seconds. Uh-huh.

05:55 You divide by… You divide by three and you get five seconds.

06:07 O.K.

06:08 You divide three by twenty-one.

06:13 Say it again.

06:14 You can divide three by twenty-one and get seven.

06:19 Divide twenty-one by..

06:20 Yeah, twenty-one by three.

06:35 This is one those…These are all rates that I'm not certain, still, who is the winner.

06:44 Because my initial thought is..ah! Joe and Sarah have the greatest number of steps.

06:55 Are Joe and Sarah the winner? Michael.

07:02 Well I did…like sixteen steps over ten seconds and thirty-two steps over twenty and twenty-one over fifteen.

07:14 And I multiplied all of the seconds. Well for Joe, he had ten seconds. So I multiplied it by six to get to sixty seconds.

07:22 O.K.

07:23 I multiplied Sarah's twenty seconds times three to get to sixty seconds.

07:29 And I multiplied Alex's fifteen seconds by four to get to sixty.

07:36 I've seen this number before haven't I.

07:41 And then I multiplied Joe's ten seconds times six. I got to multiply his sixteen steps by six and that's ninety-six steps over sixty seconds. 07:54 And for Sarah, since I did twenty seconds times three I need to do thirty-two steps times three and that gets to ninety-six also.

08:04 Hold on. Thirty-two, twenty steps, seconds. And you multiplied by three?

08:10 Yeah.

08:13 Sixty seconds. O.K. and that's ninety-six?

08:18 Yeah. And for Alex, I needed…I multiplied fifteen times four to get to sixty.

08:25 So I multiplied his twenty-one steps also by four to get to eighty-four.

08:42 Two great methods. Two great methods and the idea that there has to be this massive amount of division and decimal work to get to a unit rate…

08:55 I think these folks have proven that it's possible to do without.

09:00 Great job you guys. Any last thoughts. Anybody not get their peace out? O.K. Could you put your names on the paper and the date on the top. Twenty-nine.