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Transcript for November 27 - 29, 2007

“Establishing Classroom Norms”

The class is working on Problem 2.1, 2.3, *Moving Straight Ahead*.

The video was shot in real time and edited from,
3 class days, to approximately 35 minutes.

Establishing Classroom Norms
Class: 7th Grade, 20 students when everyone is present.
Date: November 27 – 29, 2007
Real Time: 3 class days.
Edited to 35 minutes.

Note: there are 4 extra video personnel in the classroom.

Chapter 1: Introduction
Time: Approximately 00:00:00 – 00:00:20 (Times from start of video)

Title Slide:
Establishing Classroom Norms

Slide 1:
Students are working on Moving Straight Ahead, Investigation 2.1. They develop several different strategies for solving the problem. (See student work.)

Chapter 2: Kelsey, Jocelyn, Melanie and Lily Solve Problem 2.1.
Time: Approximately 00:00:20 – 00:01:02 (Times from start of video.)

Slide 2:
Kelsey, Jocelyn, Melanie and Lily.

Line 1, 00:00:25

T: So you guys are using a table idea.

Kelsey: We were, but then we're now we're changing to an equation.

T: An equation? Tell me how and equation would help.

Kelsey: Like if we had, uh, for him, D equals 25 times the number of seconds, and then, like, we're doing like guess and check, like 2.5 times 20 equals 250, but then the little

Line 10, 00:44:23

one's way behind so then we'll try something smaller.

T: Okay. So you're starting with your equation, and then you're substituting in a certain number of seconds to the equation.

Kelsey: Yeah.

T: Okay. Don't lose the ones that you guessed on that you don't like, so you can show them on here with your equations and then we can see how your thinking progressed.

Chapter 3: Kristen, Bryce and Melanie Solve Problem 2.1.
Time: Approximately 00:01:03 – 00:02:03 (Times from start of video)

Slide 3:
Kristen, Bryce and Melanie

Line 1, 00:01:08

Kristen: Well -
T: I'm confused about your top row.

Kristen: This?

Bryce: Yup.

T: But that's meters. But then you said this is 74 meters.

Bryce: No, that's how many meters he's walking.

Kristen: Oh, these are meters.

Line 10, 00:01:21

Kristen: Those are seconds.
Bryce: This is the time.

T: Oh, it's seconds.
Kristen: Yeah.

T: So your variables are seconds here, and then these are meters. I'm getting it now. Okay. Sorry. I was confused.. Okay.

Bryce: You wrote meters right there.

Kristen: Well, he's got to win by seconds.

Line 20, 00:01:44

T: So then you counted in ten seconds and then switched to one seconds. How come?

Bryce: So you could see him win.

Kristen: Yeah, 'cause we didn't want to do one, two, three, four, five, six, seven.

Bryce: 'Cause then if we just go to thirty, then like go back one, it shows that he won, but here you can watch it- him get closer and closer

Chapter 4: Emmett, Tyler and Sean Solve Problem 2.1.
Time: Approximately 00:02:04 – 00:06:15 (Times from start of video)

Slide 4:
In her reflection after class the teacher mentions she is concerned about the interaction among Emmett, Tyler and Sean. The following clips track their progress towards a solution.

Line 1, 00:02:13

T: So if I take 45 divided by two and a half, what would that tell me?

Emmett: It would take him 18 seconds to do 45 meters.

T: Okay. So does that help us?

Emmett: Yeah. And then it'd take Henri 45 seconds to get 45 meters.

T: And then?

Emmett: I don't know. I'm lost.

Line 10, 00:02:48

T: What's Sean working on?

Sean: Just adding the tens -

Tyler: It takes him 18 seconds to walk 45 meters-

T: That's what Emmett said. What was Sean saying?

Sean: I keep adding ten to 2.5 to see how long it would take them to get, um, to walk the distance and then I would add the seconds it took Emile -

Line 20, 00:03:25

T: So you're going in groups of ten and seeing where each person is at?

Sean: Yeah.

T: So in a way you're kind of thinking of it as a table in your mind.

(**Slide 5:**
7 minutes later – the teacher has returned to this group.)

Emmett: I don't know what this number's representing. That's what I'm trying to figure out.

T: Which number?

Emmett: This if I times it.

Line 30, 00:03:50

T: And you have it times - oh, you were working in tens, right? So if he's got this times 25 he gets sixty-two and a half. So what he's asking, what is his 25?

Emmett: What does the 25 represent?

T: What does the 25 represent?

Tyler: Um, the 25 represents how many meters there are.

T: Is 25 the number of meters?

Emmett: No. No, it can't be, because 70 and
Line 40, 00:04:33 62.5 is the meters, so then the end of the race would have to be 70.

T: Okay. Then what's your two and a half?

Emmett: That's how many Emile runs per second.

T: Oh, I see. His rate was two and a half meters per second -

Emmett: And I timesed that by 25 - oh that's just the number- Is that the seconds? Yeah.
T: Twenty-five seconds.

Emmett: I think that'd be the seconds, because
Line 50, 00:05:12 25 seconds timesed by 2.5 is 62.5 meters.

(**Slide 6:**
5 minutes later – the teacher checks on this group again, before the summary phase.)

Student: We found out what the race should be.

T: How long should it be?

Tyler: Um, it should be 74 meters.

T: Why?

Emmett: Because that's the closest point that they are because, uh, yeah -

Tyler: 'Cause the little brother would be right here
Emmett: The little brother's at 74 -

Line 60, 00:05:47 Emmett: When the big brother's at 72.5.
Tyler: He's at 72.5.

T: And how did you get that from where I left you last?

Emmett: Because I just kept timesing by, like, I started from 25 and then went to 27, to 28, then 29.

T: Oh, yeah. Last time you were at 25 seconds. So then you looked at what if he goes 26 seconds,27 seconds.

Line 70, 00:06:12 Emmett: Well I guess we could do 29 and a half.

T: That's up to you.

Chapter 5: Students Critique Problem 2.1.
Time: Approximately 00:06:16 – 00:11:01 (Times from start of video)

Slide 7:
Summary. End of Day 1.
Travis has presented his group’s solution. Several students critique the way the text poses the problem.

Line 1, 00:06:26

T: What do other people think?

Bryce: I think you can get it even closer.

T: Before Travis goes for that, any questions for how they came up with this?

Melanie: Um, like how did you come up with the guess?

Travis: We, we just, random numbers that we thought would - like first we found out that - we just, we just subtracted the 45 so if we
Line 10, 00:06:52 thought it was a reasonable number after we subtracted the 45 we just guessed those.

Tyler: What about the distance and actual length between them, 'cause what we figured out, it doesn't, they have to have a certain length between, between them.

Travis: Well, 'cause it's a 70-meter race, so there's 70 meters total, but if you take off the 45, that means, um, Henri only has to walk 25 meters, and that, and that's the distance
Line 20, 00:07:28 in between them is still 45.

T: So it could be a 70-meter race?

Becca: And that way also, because there's a 3-second difference, so it doesn't look like he gave him that much of a head start.

T: And I think that's what Tyler's question was, wasn't it.

Tyler: Yeah, like the distance between each other, like when, um, Henri got the 45-second head start. Yeah, when Henri got the 45 - I
Line 30, 00:07:56 mean meter - head start, because they could be like 25 meters apart and Henri could have thought, "Did you make me win?", or -

Bryce: Well, I think it's kind of weird because I think that Henri would think that he let him win because the distance he has to walk is shorter than his head start. His head start is longer than what he has to walk.

Travis: I was thinking about that, because that, it didn't really make sense that -

Line 40, 00:08:26 Student (off screen): No matter what - it looks like he made him win.

Travis: 'Cause if you, if you have a head start in a race and you won it closely, it's usually like a two second head start, but if you, we divided, we found out how many seconds it would be for the head start and that's an eighteen-second head start. So I could see that was kind of like, obvious, but even though at the end it's only two seconds.

Line 50, 00:08:46 Bryce: His head start is longer than the race that he has to walk.

T: So you're saying you're thinking he gave him too much of a head start. You wouldn't have given him so much of a head start.

Bryce: Well, I, yeah, well, he has to because of how different the walking rates are -

Student (unidentified): Yeah.

Bryce: But I think the book should have made the walking rates closer.

Line 60, 00:09:05 Travis: If they put the walking rates closer together, because he has a one and a half meter per second faster walking rate that Henri does, and that's -

Student (off screen): More than double.

Travis: Yeah, that's more than double. So, if their walking rates maybe was two and two and a half, then it would have been a lot more - you can get it closer and less obvious for a win.

Line 70, 00:09:26 Jayna: A 45-meter head start is a lot, it's, I, I don't know -

Student (off screen): Especially for a 70-meter race.

(**Slide 8:**
The next day.)

T: At the end of yesterday we were thinking - you guys were saying a 45-meter head start seemed like too much, and so we were thinking maybe we should, they shouldn't have given him such a big head start.

Bryce: The rates they walked should be-

T: Tell me more about the rates. What do you
Line 80, 00:09:52 mean?

Bryce: Because if he walked, if, uh, one of them walks at 2.5 meters a second and the one walks at 1 meter a second, the other one's going to catch up really fast, so it should've been closer and less of a head start so it

would have been easier to make it look like a real situation.

T: So you felt like this didn't seem real.

Bryce: Not really, 'cause, well, I guess it
Line 90, 00:10:23 did, but why would you give them a 45 head start in like a 70-meter race.

T: So, you're just bothered by -

Bryce: It's like so -
T: How big the head start was.

Bryce: Yeah, it's so easy to tell that he's trying to make him win.

Travis: 45 meters isn't long, if you think about it.

Student: It's more than half the race.

Line 100, 00:10:40 Travis: That's a whole, that's like the whole hallway down.

T: So how would you change it?

Bryce: Maybe like 15 or something -
Student: I think the walking rates should be like 2 and 2.5.

Bryce: Yeah.

T: Do you want to talk about it with your groups and see if you guys can come up with a way to change it and make it more realistic?

Line 110, 00:10:54 Students: Yeah. Sure.

T: Why doesn't each group talk about it. See if you can think of a different way to make it more realistic and we'll try your way.

Chapter 6: Jocelyn, Melanie, Lily and Kelsey Rewrite Problem 2.1.
Time: Approximately 00:11:01 - 00:14:13(Times from start of video)

Slide 9:
Kristen, Bryce and Melanie rewrite the problem

Line 1, 00:11:06 T: So can you take them through how you came up with that?

Joycelyn: It really - he wouldn't even win by a second, it would be so -

Melanie: Jocelyn, you guys get 27?

Joycelyn: Twenty-seven? Where's 27? I don't have 27 on here.

T: They're now saying 30.

Kelsey: Thirty is the head start.

Line 10, 00:11:19 Lily: But how did you get 27 when you guessed?

Kelsey: We're just guessing and checking.

Joycelyn: Just guessed. And then I checked and it wouldn't work so I tried 28 and it wouldn't work so I tried 30.

Kelsey: With the equations that we had yesterday -
Joycelyn: -like what I did up there earlier -

Kelsey: Like we just kept guessing -

Line 20, 00:11:33 Joycelyn. Yesterday.
Kelsey: And checking and then when we got close -

Joycelyn: When I went up there and I - 'cause you guys were like shrinking it, and like I only went to 29.

T: Can you take them through how you used your equations, because you're now saying 30.

Joycelyn: Yeah.

T: Okay. So take them through your equations
Line 30, 00:11:47 with 30.

Kelsey: Yesterday our equation was D for - um, Emile was D equals, uh -

Joycelyn: 2.5
Kelsey: 2.5 times S, and then for Henri it was D equals 1 times S. But now it will be 1.5 times S plus the head start.

Joycelyn: It'd be 30.

Kelsey: That's where our 30 comes in.

Kelsey: And then we did all that and then -

Line 40, 00:12:10 Joycelyn: And we got 73.5 for Henri and -

Kelsey: 72.5 for Emile.
Joycelyn: 72.5 for Emile, so it'd be like so close, it wouldn't even be a second.

Melanie: And how long is the race?

Joycelyn: Um, 73.5. It's like .5 smaller than our other race, but it works. It's like really, really, really close. It's like neck and neck. But Henri still wins.

T: So I think she's confused on now what do
Line 50, 00:12:33 you do with those equations to get what you did.

Kelsey: You substitute the S for a guess.

Joycelyn: Yeah, like, okay, I put like 29 times -

Kelsey: For a guess -
Joycelyn: 2.5 plus 30 and I got 73.5. And then I went 29 times 2.5 and that's 72.5.

T: Do you have your calculator? Take her through it at her calculator.

Line 60, 00:12:54 Jocelyn: Okay. Put in 29 times 1.5.

Kelsey: Like that's that - 29 times 1.5, plus the head start of 30. Add the head start of 30 here. And then you get that. And then for him you have to put 29 times 2.5.

Kelsey: And then you get that, and then for him you have to put 29 times 2.5 2.5 so he wins by like 20 meters

Joycelyn: Yeah. They're like neck and neck, so it's even closer than our other one.

Line 70, 00:13:27 Melanie: I gotcha.

Kelsey: So all that that is just a guess for that - for seconds.

Joycelyn: Yeah, like I used 29 on this one 'cause -

Melanie: So if 29's the guess, then what's 30?

Kelsey: Thirty's the head start.

Joycelyn: Thirty's the meters in head start 'cause it works, like, perfectly.
Melanie: Then that was just a guess.

Line 80, 00:13:42 Kelsey: Yeah.

Joycelyn: uhh, I went to 28, and then she said we should do landmark numbers to 30, so I said I'd try 30 and it worked.

Melanie: So that was just a guess?

Kelsey: Yeah, pretty much.

Joycelyn: Yeah. The only thing I didn't get but I guessed is the 29, like, 'cause I used that last time, like 29.

Melanie: But then our race is 74.5?

Line 90, 00:14:05 Kelsey: No, it's 73.5, 'cause that's where Henri is finishing.

Joycelyn: Yeah. It's only, it's only one different. It's like one meter different. It's not even a second.

Melanie: Oh, I get it.

Chapter 7: Travis, Jayna and Becca Run Into a Difficulty.
Time: Approximately 00:14:13 – 00:16:15 (Times from start of video)

Slide 10:
Travis, Jayna and Becca run into a difficulty.

Line 1, 00:14:18

Travis: We, we came up with something weird but usually it doesn't work out.

Travis: Like when I did come up with -
Becca: What I did was- Because like I used-

Travis: She used the 7-meter head start and she got 1.5 second race close -

T: Difference between them.
Travis: Yeah. Okay. Okay.

Becca: She used 6 and got 1.

Line 10, 00:14:34

Travis: And I used 5 and got 2. So -

Becca: But it wouldn't - 'cause see, I thought it would do the lower, the like number that you have for the head start, the higher the number you have in the timing of difference, but it doesn't make sense -
Jayna: Mine was the middle and mine's the lowest.
Becca: Then because hers is the middle and hers is the lowest.

Line 20,00:14:49

T: What if you tried three other numbers and see what happens.

Travis: Okay.

Jayna: Okay, you do, let's do, like 8, 9, 10.

Becca: Okay.

Jayna: So I'll do 9. You, you got 8.

Becca: Okay.

Travis: We're ready, too, sort of.

Jayna: Mine's a 1.5.

Becca: I got a 4 difference.

Line 30, 00:15:23

Travis: What am I, 8?

Jayna: Yeah.

Becca: And I just used the 50 race.

Jayna: Mine was 1.5 I did 40 and 31,

'cause mine was the 9 difference
Becca: Oh, crap. Hold on, I messed up.

Travis: Geesh, Becca.

Becca: Sorry.

Jayna: Are you the 8?

Becca: Wait. No, I- I got a tie.

Line 40, 00:15:49 Travis: I got a 2.

Becca: I have a tie.

Jayna: I got the 1.5.

Travis: I got a 2.

Jayna: 2, 2, 1.50.

Travis: Jayna.

Becca: Lowest, medium, highest. You know what? I think - never mind.

Jayna: 'Cause mine was lowest last time and mine was middle. Now mine's the medium and
Line 50, 00:16:13 mine was little.

Travis: Creepy.

Chapter 8: Another Discussion Opportunity.
Time: Approximately 00:16:16 – 00:17:22 (Times from start of video)

Slide 11:
The teacher gives students another discussion opportunity

Line 1, 00:16:20 T: Because there are lots of neat ideas from the different groups - I think virtually every group has a different idea of how they were thinking about it - and at some groups they have more than one idea, where they kind of came up with two or three different plans and they tried them out and they're very close to each other. Um, so instead of trying to share every single one, what I want you to do is
Line 10, 00:16:43 take whatever you need, if you've written something down or if you've got it on the calculator or whatever, and I want you to find somebody from a different group and share ideas with each other. And then we're going to have, after you've heard from other groups, have people share the ones that they either heard or if they still like the one from their group. So I want you to find somebody from another group and share your idea and listen
Line 20, 00:17:09 to their idea, and make sure you explain to them exactly how you came up with it, what you did with it, and also listen to the other person's idea. Questions on what you're going to do? Okay. Take what you need and go find somebody from another group.

Chapter 9: Jayna and Becca Figure Out Their Error.
Time: Approximately 00:17:23 – 00:21:05 (Times from start of video)

Slide 12:
While sharing her strategy with others Jayna figures out that her group has made an error. She brings this to Becca’s attention.

Line 1, 00:17:33

Jayna: Well, we figured out the one difference is that that guy who got the head start is still losing. Look. 'Cause you got the 17 seconds to get to the end and then the first one's got 16 seconds to get there and -

Becca: Oh, yeah.

Jayna: So he's really losing still by one second.

Becca: Yeah. But mine's not, 'cause -

T: What do you mean?

Line 10, 00:17:52

Becca: Like, mine's the different one, 'cause mine's the 7, and mine's - he - he's still losing in mine.

Jayna: I told you. Travis.

Becca: Capshaw.

T: Well, tell me how you guys are doing it. You made your race 40 meters total. So then you took your 40 and what'd you do with it?

Jayna: We divided by their walking rate, which is, the one guy is 2.5, and we got 16.

Line 20, 00:18:22

T: So he takes 16 seconds to get to the end of the race.

Jayna: Yeah.

T: Okay.

Jayna: And then, like say we got, we still have mine, which is 34, which is a 6 difference, which is a 6-meter, which is a 6-meter head start thing, divided by his walking rate. It only took him 17, but he's still losing by one.

Line 30, 00:18:43

Becca: And- now that I look at mine, my guy's losing by 1.5.

Lily: I think you need an example of a bigger head start.

Melanie: Try like -
Lily: Try like -

Becca: You know how 10 worked and that came out as a tie.

Melanie: So try like 12.
Becca: So maybe -

Jayna: Try 16 and then I'll do the - that's one second and he's winning now.

Line 40, 00:19:07 Lily: Yeah. That works better.

T: A head start of 6 wasn't enough, 7 wasn't enough.

Jayna: Eight. He tried 8 and it wasn't enough.

T: And 10 -
Melanie: And 10 was a tie.

Becca: I found one though where it'll , yeah, for, and then if you did the 12-meter head start, he, he would win that way.

Line 50, 00:19:25 Jayna: But see -
Becca: So maybe it has to be over 10, because if you think about it, 10's the tie, and then 'cause if you think about it like -

Jayna: I did mine as a 10 and mine turned out to be 16 and 15 and he's winning now. now he's winning and I did the 10 difference.

T: What if it was 9? What happens then?

Becca: 'Cause, you know if you think about it -
T: 'Cause you tried 6, 7, 8 and 10 -

Line 60, 00:19:54 Becca: But see for mine, when I do mine, I think of it as - I always make my races as 50 meters.

T: And they were doing 40.
Becca: And that -

Becca: Caps did 50, but -
Jayna: Mine is 1.5 now -

Becca: But maybe, because if you think about like - you know how sometimes on the graphs it'll be low and then it'll shoot up like when
Line 70, 00:20:13 it, the two points cross, so maybe like 10, if it's over 10 it'll cross.

Jayna: Well, I just got nine -
Becca: Like if you put it on a graph -

T: Why do you want them to cross?

Becca: Well, not really like cross, but like -

Jayna: Come to each other's -

Becca: Yeah, like when they finally meet, 'cause there's - when two numbers are going they - yeah - they tend normally to meet at
Line 80, 00:20:34 this point and then keep, like one will start going lower, like when we did the CD's, or whatever - I think that was in another, the other book, but when we did the CD's, it was

low until you got to a certain number and then it shot up.

T: Yeah, it shot up.

Becca: And if you think about it maybe it's like that. There's a certain point for each meter race when you get to the numbers that's

Line 90, 00:20:51 when it'll change.

Jayna: Well, 9, when we did 9 it was 1.5 to 10 and it was only 1. Maybe we could do 11 -

Becca: But you're doing a different meter race than I am, so maybe we should try doing the same meter race to see if we -

Chapter 10: Summary
Time: Approximately 00:21:05 – 00:23:55(Times from start of video)

Slide 13:
Summary. This begins at the end of one day and continues into the next day. Jayna presents her group’s strategy.

Line 1, 00:21:16 Jayna: I'm going to start out with what I messed up on first and then show you what I had to fix.

T: Okay.

Jayna: Forty was the meter race, and then two - we divided by 2.5 'cause that was his walking rate, and then we - it was 16. It takes him 16 seconds for the end. And then we did, we tried to give him a 6, um, meter head
Line 10, 00:21:53 start, so we did 34 divided by 2 for his walking rate. Then that equals 17, which is only a one second, but he still lost by one second. So then we changed it to -

T: So - can I just ask a question real quick? Um, the 2 and the 2.5, that's what you changed the walking rates to?

Jayna: That's their, yeah, walking rates.

T: Okay. So you kept the 2 and a half for the big guy and changed the little guy to 2, and
Line 20, 00:23:30 you said you wanted it to be a 40-meter race -

Jayna: And gave him a 6-meter head start.

T: Okay. I'm with you now.

Jayna: Then we did - then we - it's still 40 divided by 2.5 which equals 16 still. Then we did, then when we gave him a, we gave him 10 head start - 10-meter head start with his walking rate and that equaled 15. Now he's winning, instead of being the 17, the 15.

T: What do you think?

Line 30, 00:23:16 Student (unidentified): Yeah.

T: So what about that strategy? That looks different than the strategies we were seeing a little bit yesterday. Does her strategy work?

Travis: It's more like guess, like, and then just put random, um, rate, rates in, and then random head starts and see what happens

T: So you -
Jayna: We kept their walking rates the same
Line 40, 00:23:42 for now, and then we just changed the meter head start.

T: And you picked a certain length you wanted for the race.

Jayna: Forty.
T: Which was 40 -

Jayna: Um hmmm.
T: And worked from there? Any questions for that group?

Chapter 11: Students Question Tyler.
Time: Approximately 00:23:56 – 00:27:58(Times from start of video)

Slide 14:
Students question Tyler. (Slide shows Tyler’s solution.)

Line 1, 00:24:04 T: Questions for Tyler's group. Jayna.

Jayna: What's the 2 and the 10 and the 19.5? Where'd they come from?

Tyler: Um, the 10 is the head start, and we changed the little boy's walking rate to 2 meters, and we were trying to figure out like what numbers would get to like a certain numbers, and like one of us typed in 19.5 and, well, well, first it was 19 and then we typed
Line 10, 00:24:31 in 19.5 and then we got 49 and then we tried the same thing for the other person and he got 48.75. Becca.

Becca: I didn't think you were supposed to be adding your walking rate because you don't really, yeah, 'cause like -

Emmett [off-screen]: You're not really adding the walking rate, you're adding the -

Tyler: You're adding the head start.
Emmett: You're adding the head start to the
Line 20, 00:24:56 walking rate.

Becca: Then - never mind.

Emmett: Then you're timesing what you're adding to the walking rate.
Tyler: The head start.

Emmett: You're adding the head start.
Tyler: You're adding, you're adding the head start to the walking rate, so it's - so he's not really walking 12 meters per second.

Jayna: Because you're not really walking that
Line 30, 00:25:22 whole head start. You're starting at, like you start here from here - wait - he's not letting him walk that way - oh, I'm confused. I'm so confused.

T: So is the question about that plus there?

Class: Yeah.
T: What's being added?

Student(unidentified): Yeah.

T: So maybe you can help us with that, Tyler.

Tyler: The, what we figured out is that 45
Line 40, 00:25:48 meters we thought was a little bit too far, so we lowered it down to 10, so it's, and we also figured out that if we did only, if we did one meter then we would have to be doing a little

bit more work so we did it, so we, um, so we put it to 2, and this plus sign right here, it's saying you're adding the head start to the regular walking rate. So he's still walking 2 meters but you're just adding 10 more meters on to it.

Line 50, 00:26:27

Becca: Wait. So you're adding meters, so you're adding 10 more meters than the older guy has to walk? I'm really confused.

Tyler: No, you're - no, this is the little person.

Becca: I know, but you just said you're adding those 10 other meters that he has to walk.

Student: Yeah, to the little guy.
Becca: But really he's not walking those 10 meters.

Line 60, 00:26:46

Jayna: He's not walking those 10 meters. He's starting 10 meters -
Becca: Oh, okay.

Tyler: He's starting at 10 meters and then -
Emmett: So we're adding those extra 10 meters,

Student(unidentified): No cause he's not walking the 10 meters.

Student (unidentified): What?

Student: You still have to add it on, though.

Student (unidentified): Okay.

Line 70, 00:27:03

Tyler: Just think of-
T: 'Cause he gets that head start and you're saying he's not really walking it.

Jayna: Yeah.
Becca: He just starts there.

T: But he starts there so you're including that in the total distance of the race. He just gets to start a little ahead, if I'm understanding you correctly. And you're not really adding 10 plus 2, are you?

Line 80, 00:27:23

Tyler: No.
T: If I'm understanding it, you're taking 2 times your 19 and a half seconds -

Tyler: And -
T: And adding your 10 head start in.

Travis: Yeah. That makes sense.

Becca: Oh, I know that.

T: Unless I'm misunderstanding.

Emmett: Unless we can't spell.

Line 90, 00:27:53

T: So you're saying you would just rewrite it, but it means the same thing. Emmett's saying maybe it would, if you wrote 2 times 19.5 plus 10.

Travis: Yeah, that would be -
T: Means the same thing, but maybe it makes it a little clearer for some of us.

Student (unidentified): Yeah. it would've been a little better.

Chapter 12: Ricky Explains His Strategy.
Time: Approximately 00:27:59 – 00:29:52 (Times from start of video)

Slide 15:
Ricky explains his strategy.

Line 1, 00:28:04 Ricky: Our group's walking rates was - we made them like running rates, so it was, for, um, Emile it was 5 and then for that Henri kid we made it 4, and then we just made a graph and we found when we, um - well actually then we thought we needed to give him a head start so we gave Henri a 6-meter head start, so then we just made a graph to see when they'd come together.

Line 10, 00:28:43 Ricky: Right here we stopped because it was really close and Henri won by one second and it was 5-second race and it was 25 meters long.

Jayna: What if you kept going on? What happened at, what happened at 6?

Ricky: Um, they were tied at 6. It'd be 30 and 30, and then the next one would be 35 and 34, and then Emile would be faster.

T: So you set up a table, and it was
Line 20, 00:29:25 important to you to find out when they were exactly the same?

Ricky: Yeah, and then we just went one back.

T: And then you went one back.

Ricky: Yup.

Becca: [inaudible]

T: Becca, say that again.

Becca: Okay, 'cause when I figured out that when the two people tie, then the other person that was losing will come in first now, like
Line 30, 00:29:52 will be the first-place winner.

Chapter 13: Travis Explains His Graph.
Time: Approximately 00:29:53 – 00:31:30 (Times from start of video)

Slide 16:
Travis explains his graph.

Line 1, 00:29:57 Travis: And then here they meet. And then on the graph, you can see that down the line, but down here where they meet, and then Emile keeps going faster and faster and faster and he can't catch up to him anymore, so that's basically what we did. We just found out different - made it into a graph and it was a lot easier to see how he would win.

Melanie: The one that's angled more?

Line 10, 00:30:26 Travis: The one with the steeper slope will go faster.
Kristen: The one that's the steepest is going fastest.

T: What's causing it to have a steeper slope?

Travis: His walking -

Bryce: Higher walking rate.

Travis: Yes.

T: So I could just look at your graph, and the one with the steeper slope, even without
Line 20, 00:30:42 seeing your equation, I would know he must have a higher walking rate.

Travis: Yeah.

T: Any other questions for them?

T: You know I was thinking when I was asking if there are any questions. Becca, this reminds me of what you said yesterday, about how they, they meet and then split apart. I can see that on here. 'Cause what happens after they meet and they're equal?

Line 30, 00:31:03 Becca: The other person wins, the person that was losing starts to win.

T: So the person that was losing, down in the bottom at the corner, eventually wins and, and is always going to win. Why is that person always going to win then, after they meet?

Kristen: He has a faster walking rate than the little guy.

T: So if he has a faster walking rate, why wasn't he winning at the beginning?

Line 40, 00:31:25 Class: Because he had a head start. He gave the little kid a head start.

Chapter 14: Lily is Stumped on Problem 2.3.
Time: Approximately 00:31:31 – 00: 34:43(Times from start of video)

Slide 17:
Students are working on Moving Straight Ahead, Problem 2.3.

Lily, Melanie, Jocelyn and Kelsey.

Line 1, 00:31:40 T: What's the plus 6?

Lilly: Um, the stuff they're- the pledge
Student: I think -

Kelsey: Maybe they get 6 for every one and then some minus X.

T: What do you think the minus X is telling them? Well, let's see. Could we make a table or a graph that might help us?

Lilly: Um, I don't know. I don't know how to
Line 10, 00:32:09 make it. It's confusing me 'cause it says, like Y is multiplied some dollars - it says Y equals 3, 3X and then it's X plus 6. I, I wonder if this 6 is - like that - I'm not sure. It says X is the number of kilometers left after taking away X.

T: So we do have a negative X, which is weird. I agree.

Lilly: Maybe they're not walking any kilometers, just paying $6 -

Line 20, 00:32:51 Kelsey: Yeah.
Lilly: Like, uh, just, um, donating it.

T: What if they did walk a kilometer?

Lilly: Um -
T: What would happen? If they walked zero, would they have $6?

Kelsey: Wouldn't they get $6 no matter what? If that's what that means, 'cause if they get $6 donated no matter what just like, uh, the $10 of Alana or something.

Line 30, 00:33:28 T: So you think that Plan 2 may mean they just get $6 whether they walk or not? What does Plan 3 mean?

Lilly: Um, that, I think that one means that they're just paying $2 'cause Y, like, ' cause it says Y equals 2 that means that - it's just like no matter what it'll be 2.

T: So does Plan 3 mean no matter what you get $2?

Lilly: I'm like, I'm sure on that one but I'm
Line 40, 00:33:58 not sure on that one. It's like I have no idea what that means.

T: Well, if we think about yesterday and this idea of a Y intercept and a coefficient, can you find the Y intercept and the coefficient in Plan 2?

Lilly: Um, -

T: Do you have any thoughts, Melanie?

Melanie: Um -

Line 50, 00:34:36

T: Maybe you guys can look at Y intercept and coefficient, or a table or a graph for Plan 2, to help you figure out what's going on in that one, and I'll come back in a minute.

Chapter 15: Lily Solves Problem 2.3.
Time: Approximately 00:34:43 – 00:35:29 (Times from start of video)

Slide 18:
Next day, completing Problem 2.3.

Line 1, 00:34:48

T: And what makes it increase versus decrease or stay the same?

Lilly: Um, the 5?

T: So what's this one going to do? If this one increases because of the 5 in front of the x and multiplied by it, what's Plan 2 going to do?

Lilly: Decrease.

T: And what causes this one to decrease?

Line 10, 00:35:11

Lilly: The negative X?

T: So what will Plan 3 do?

Lilly: Stay the same?

T: And what makes it stay - that it's going to stay the same?

Lilly: Just that the line is at 2, so that means you just, you pledge $2.

T: See, you got it.