Video Supplement

Norms for Watching Video (if not using your own)
● Speak from the "I" perspective. For example: "If I could rewind the tape and ask students a question, I would ask…"
● Be inquisitive, not judgmental. For example: "I wonder what might happen if," instead of "the teachers should have…"
● Justify your ideas and conjectures based on the video clip, and not other parts of the lesson that you didn't see. For example: "I think that the student understands...because in the video she…"
● Focus on how what you learned from the video might help you implement this (or similar lessons) with your own students.

School Context
● School Type: Urban Public School
● School Demographic Information (approximate):
    o Students of color: 60%
    o Free and reduced lunch: 45%
    o English language learners: <5%
    o Students with special needs: 10%

Lesson Context
● Subject: 10th grade Algebra II
● Unit: Probability
● Number of students in class: 32
● Lesson duration: 90 minutes
● Prior preparation: Students have been introduced to probability but have not covered conditional probability yet, which this problem solving lesson is being used as a jumping off point for

Video Context
In the video, a group of three students are discussing *Planning a Joint Method* to determine the strategy they need to get to the answers to the pre-assessment activity – and disagreeing over how to understand 'false positive'. We come back to the same group of three students near the end of class, reflecting on the problem.

Discussion Questions
Cognitive Demand: *How long am I given to think, and to make sense of things? What happens when I get stuck? Am I invited to explain things, or just give answers?*

1. What do students' explanations tell us about what they struggle with or find challenging?

2. As a teacher, what questions might we ask or moves might we make that help students struggle more productively by inviting them to make sense of and explain important mathematical ideas?

Video Transcript

<table>
<tr><td colspan="3" align="center">Legend</td></tr>
<tr><td>T</td><td>Teacher</td><td>Per and within dialogue</td></tr>
<tr><td>S1 – S3</td><td>Students 1 - 3</td><td>Per and within dialogue</td></tr>
<tr><td>C</td><td>Class</td><td>Per and within dialogue</td></tr>
<tr><td>[ ]</td><td>Actions/Non-verbal</td><td>Dialogue</td></tr>
<tr><td>{{x}}</td><td>Sounds like</td><td>Dialogue</td></tr>
<tr><td>{{}}</td><td>Inaudible</td><td>Dialogue</td></tr>
</table>

1	S1:	0:02	Five of the twenty have the false positive
2	S2:		Because over here it says if a person does not have the disease, and then the number of
3			people that don't have the disease is 800, so I was thinking, ok 5 percent of the 800…
4	S3:		That's what I was thinking.
5	S2:		Because 20 percent is the people that do have the disease.
6	S1:		So if it's a false positive you're saying that they're a part of the 20 percent, so then you need to take 5 percent of those people, of the 20 percent that have a false negative instead of 5 percent of the people who tested that they don't have the disease {{*note: mic adjusting*}}. Does that make any sense?
7	S3:	0:37	I think so.
8	S2:		Yeah I guess so.
9	S1:		Because, there are false negatives, I mean there are false positives, so they are testing that they have the disease but they don't so they would be a part of the twenty that do have the disease.
10	S2:		But I think that probability is saying 5 percent out of, who do have the disease, so if we wanted it out of…
11	S1:	0:56	Exactly! So, twenty.
12	S2:		Oh wait. No wait, who doesn't have the disease.
13	S1:		No, it literally is the same
14	S2:		So then that probability.

15	S1:		But that's the test being wrong. So they don't have the disease but they're tested as if they do have the disease. So if twenty percent of the people have the disease and five percent of those people are falsely positive for the disease. Not 80 percent of the people who don't have the disease.
16	S3:		You're right. I did it wrong because I thought that 80 percent did have it.
17	S1:	1:30	Oh.
18	S3:		But that would make no sense. But I understand what you're saying. Is it the same for both countries?
19	S1:		Because if not then you're taking five percent of the people that don't have the disease and you're saying five percent of those people who don't have the disease actually have the disease. You want to switch it around.
20	S2:		But isn't that what a false positive is? The people that don't have the disease have the disease?
21	S1:		Yeah, but if you're taking five percent of 80 percent… 80 percent of the people that don't have it. You're taking five percent of the people that don't have it and saying they do have it.
22	S2:	2:00	Yes, because they were tested falsely.
23	S1:		No, they're testing falsely as positive, not negative. So they don't have the disease but it's testing that they do have the disease. So you're taking from the 20 percent.
24	S2:		No no no no. The 80 percent of people that don't have the disease, five percent of them were tested positive for the disease.
25	S1:		No. Twenty percent of the people that have disease, five percent of the people of the twenty percent of the people that have the disease, don't have it at all and were falsely tested. Not 80 percent.
26	S3:	2:37	So false positive is people who.
27	S1:		Who don't have it but they test that they do have it.
28	S3:		Yeah.
29	S1:		And you can never, like if you're positive then you will always be positive so if it's twenty that are positive, five percent of those twenty people don't have it and were tested as if they do have it.

We now return to that group towards the end of class

30	S1:	2:55	I can. I'm a stubborn person. I'm still right in my heart.
31	S2:		Okay, so.
32	S1:		But it makes no sense.
33	S3:		So then it's forty, and they're right.

34	S1:		Because then this is saying, it's just like the wording doesn't make sense because this is saying about testing false and positive and this is saying people that have the disease and people that don't. Not people who tested positive that don't have it.
35	S3:		No, I understand but.
36	S2:		They're asking us to find out the test results, pretty much. Like, that's our job.
37	S1:	3:30	But I don't want to. I don't feel like doing that. Are we supposed to write something on this paper?
38	S3:		What about country B though.
39	S1:		Let's forget about that country.
40	S2:		Well, we take, out of the 98 percent of people we find five percent of the 98 percent of the thousand.
41	S3:		Is that right?
42	S1:		Should we split it up into country A and country B?
43	S2:		I got the same thing… huh?
44	S1:		Should I split it up into country A and country B?
45	S2:		[nods]
46	S3:	3:59	So they're not the same.
47	S2:		No. It's because they have different amount of people with the disease.
48	S3:		That's what I said. We're on the same page.
49	S1:		Except when we're not.
50	S3:		Yeah, except when someone brings up something else, I'm afraid of arguments… so I agree with both of you.