7.4 Ms. Fye Monitoring Small Group Work Transcript

Ms. Fye is using the Introduction to the Sine Graph Desmos Task in a remote synchronous class session.

Ms. Fye Monitoring Small Group Work

Transcript:

[Teacher begins on slide 4 of the Introduction to Sine Desmos task. There is a question at the top of the page and typed student responses going down the page.]
Ms. Fye: So, what I want to do next
Ms. Fye: is I'm going to open the activity up
Ms. Fye: and put you into partners.
Ms. Fye: And I want you to see if you can reason through
Ms. Fye: the new slides. So real quick, before I do that,
[Teacher puts Desmos page into student view and moves to page 6 of the task.]
Ms. Fye: I want to kind of explain a little bit
Ms. Fye: about what's going on in these slides and I'll open it up.
Ms. Fye: On the next three slides, I've asked,
Ms. Fye: I've given you a definition and an image
[Teacher uses cursor to indicate different parts of the webpage as she talks about them.]
Ms. Fye: to support that definition.
Ms. Fye: And I want you to first answer, what is the ampli-
Ms. Fye: like, so, the first one is amplitude,
Ms. Fye: so, you'll use that definition to tell me what the amplitude
Ms. Fye: of the sine function was,
Ms. Fye: which it might be helpful to go back to slide two
[Teacher presses arrow to bring the page 2 pack to the progress bar at the top of the page and uses the cursor to point to page 2.]
Ms. Fye: on that question.
Ms. Fye: And then also think about which of those sliders
Ms. Fye: controls the amplitude based on the definition.
Ms. Fye: And that slide five would help you with that.
[Teacher uses cursor to indicate page 5.]
Ms. Fye: So, I want you to work together with your partner
Ms. Fye: to discuss what you think the answers to these are
Ms. Fye: and talk through them,
Ms. Fye: and then see if you can use that information
Ms. Fye: to start looking at expressions,
Ms. Fye: looking at the equations, looking at the

Ms. Fye: graphs.

Ms. Fye: And can you find those features?
Ms. Fye: And can you write equations using those things?
Ms. Fye: Yes, the original sine function
Ms. Fye: with no transformations applied is on slide two.
Ms. Fye: And the one with the sliders is on slide five.
[Teacher clicks on slide 5 and opens it in student view. They use the cursor to indicate each parameter's slider as they mention it.]
Ms. Fye: On slide five, if you want to reset it, right,
Ms. Fye: *a* one, *b* one, *k* zero
Ms. Fye: will produce your original sine function, okay?
Ms. Fye: So, just a couple of helpful hints there
Ms. Fye: as you go through that next part of the exploration
Ms. Fye: with your partner.
[Footage cuts to when two students are working together in a video call breakout room. There is an image of the sine graph with sliders from the task (page 5) and an image of the page 6 on amplitude with questions.]
Jonathan: The answer to what?
Allison: What is the amplitude of the sine function
Allison: in its original position with no transformations applied?
Jonathan: Can you repeat that? You cut out a little bit
Jonathan: on my end.
Allison: Like the first question, the one that says,
Allison: what is the amplitude of the sine function
Allison: in its original position with no transformations applied?
Jonathan: I'm looking at it right now. Let's see.
Jonathan: What's the amplitude of the sine function? So, it'd be one.
Allison: Yeah, one right?
Jonathan: Wait, no. Let's see.
Jonathan: Is the height from the center line then to the peak
Jonathan: or we could measure the height from the highest to lowest
Jonathan: points and divide that by 2.
Allison: So, the highest and lowest points is
Allison: one and negative one.
Jonathan: Yeah.
Allison: And then like, from the peak to like
Allison: the highest point is like just one.
Allison: So, it would just be one. Right?
Jonathan: Yup.
Allison: Okay.
Jonathan: Which slider seems to alter the amplitude since
Jonathan: of the sine function. How is the value of that slider.
Allison: Would be
Allison: Well, all of them do, right?
Jonathan: Not really, not all of them.
Jonathan: It's, it's *a*
Allison: *a* slider and the *k*

Allison: Oh yeah, yeah. Because the *k* -
Jonathan: *a* is the one.
Jonathan: A vertically stretches and compresses.
Allison: Yeah, yeah.
Jonathan: So, either *a*.
Ms. Fye: So the other part of that question is
Ms. Fye: how, how are the re- (laughs) actually, let me maybe,
Jonathan: Maybe we start with *a*?
Ms. Fye: So, how has the value of that slider
Ms. Fye: related to the amplitude?
Ms. Fye: What'd you say again, Jonathan?
Jonathan: I said it's *a*, because *a* vertically
Jonathan: stretches and compresses the function.
Jonathan: So, that would alter the amplitude because the amplitude
Jonathan: is based on the height of the
Jonathan: function.
Ms. Fye: Okay. Allison you agree?
Allison: Yeah.
Ms. Fye: Do you-
Allison: If you move the *k* one, it's just, even though like it moved,
Allison: it like keeps the same amplitude
Ms. Fye: Okay.
Allison: and the same like *a*
Allison: like the *b* slider. It just like, well, yeah.
Ms. Fye: Awesome. What about when you think about
Ms. Fye: the actual relationship between *a* and the amplitude,
Ms. Fye: are they equal?
Ms. Fye: Are they in some kind of proportion to one another?
Jonathan: Hmm
Jonathan: I think they're equal?
Ms. Fye: Can you prove it to yourself on slide five?
Jonathan: I mean *a* equals one and the amplitude is one.
Jonathan: So.
Ms. Fye: Can you test a different value and confirm it
Ms. Fye: that it works for all values of *a*?
Jonathan: Yes.
Ms. Fye: Okay.
Jonathan: I'm trying.
Ms. Fye: Alison, why don't you test the value too
Ms. Fye: and confirm that for yourself.
Allison: Okay.
Jonathan: It does. It does.
Jonathan: Because I just put two and it's the same.
Ms. Fye: Did it work for you, Allison, when you tested it?
Jonathan: Same thing because it's like
Jonathan: *a* is the amplitude in the equation.

Ms. Fye: Okay, cool.
Jonathan: The value *a*
(buttons being pressed)
[Footage cuts to the teacher entering another breakout room with two different students than previous. The same images of the sine graph with sliders and the amplitude page with questions are shown on screen.]
Ms. Fye: How's it going?
Nathan: Good.
Gatlin: Good.
Ms. Fye: Good. What did you guys say for
Ms. Fye: slide
Ms. Fye: six?
Nathan: So, the amplitude is the height from the center
Nathan: line to the peak and then
Nathan: the slider *a*
Nathan: increases the amplitude of the sine function.
Ms. Fye: Okay.
Nathan: and
Nathan: the higher the value, the higher the amplitude is.
Ms. Fye: Okay. Is there, are they, are those,
Ms. Fye: what's the relationship between *a* and the amplitude?
Ms. Fye: Is there a direct relationship?
Nathan: Yes.
Ms. Fye: What do you think it is?
Nathan: Like a heigh-, I thought like when you inc-
Nathan: like the slider, when you increase it, the amplitude is
Nathan: higher. Right?
Ms. Fye: Okay.
Ms. Fye: So, if my
Ms. Fye: slider was set to like five,
Ms. Fye: what would you expect your amplitude to be?
Nathan: Uh. Five, right yeah?
Ms. Fye: So, you think they're equal?
Nathan: I think so. Yeah.
Ms. Fye: Gatlin, what do you think?
Gatlin: I think it will be about five.
Gatlin: Oh no. It'd be like six. Wait no.
Gatlin: It will be five. Right?
Ms. Fye: Okay. So you think they're equal as well?
Gatlin: Yeah.
Ms. Fye: Okay.
Ms. Fye: Cool. Cool.
(mouse clicking)
[Footage cuts to teacher in a breakout room. There is an image behind them of the page 7 in the Introduction to Sine task.]
Ms. Fye: And what did we say? I see both of you guys are

Ms. Fye: on slide seven or have done slide seven.
Ms. Fye: What did we say about slide seven?
Gatlin: We said it was *k*
Gatlin: because it changes the *y* intercept.
Ms. Fye: Okay. And what did you say your equation was for your,
Ms. Fye: for your midline? For the original standard position?
Nathan: I said *y* equals zero.
Ms. Fye: *y* equals zero? Gatlin, do you agree?
Ms. Fye: *y* equals zero makes sense there?
Gatlin: Yeah.
Ms. Fye: Okay.
Ms. Fye: And then
Ms. Fye: I'm gonna kind of push a little bit
Ms. Fye: like I did on the last one.
Ms. Fye: Is *k* equal to the midline?
Ms. Fye: Or is there some other relationship happening
Ms. Fye: between those two values?
Gatlin: It would be equal.
Nathan: Yeah.
Ms. Fye: Cool. Cool.
Ms. Fye: Next one's a bit tougher. So, definitely talk it out.
Nathan: Yeah. I'm pretty sure it's, that's not equal.
Nathan: It's like 360
Nathan: *x*
Nathan: or.
Ms. Fye: Interesting. Interesting.
Ms. Fye: All right, I'm gonna let you think about it
Ms. Fye: and then I'll come back later.
Gatlin: Okay.
Nathan: All right.
[Footage cuts to teacher in another breakout room. An image of page 6 with the definition of amplitude questions is on the screen.]
Ms. Fye: Hey, hey. How's it going?
Noah: Pretty good.
Noah: We're on number eight.
Ms. Fye: Can you talk to me about what you put
Ms. Fye: Oh, you're on the tough one now.
Ms. Fye: Can you talk to me about your answer
Ms. Fye: to number six real quick?
Noah: For the amplitude we said one
Noah: and we said that slider *a* changes the amplitude
Noah: and the value of *a* directly corresponds with the amplitude.
Ms. Fye: When you say directly corresponds,
Ms. Fye: you mean that they're equal, right?
Ms. Fye: Whatever *a* is that's what the amplitude
Ms. Fye: is going to be?

Carlos: Yeah.
[Footage cuts to teacher in same breakout room. An image of slide 7 with the definition of midline is on the screen.]
Ms. Fye: Okay, cool. Awesome.
Ms. Fye: What about, what about for your midline?
Ms. Fye: What did you say about midline?
Ms. Fye: Carlos, can you tell me about that?
Carlos: Our midline, we said *x* is equal to zero.
Carlos: We said that slider *k* changed the midline
Carlos: and it's directly related because when you move slider *k*
Carlos: up or down, the midline will follow that up or down movement.
Ms. Fye: Okay. I love it. That sounds good.
Ms. Fye: There's one small detail that I heard that
Ms. Fye: maybe I want to rethink "*x* equals zero."
Ms. Fye: What does that look like?
Ms. Fye: What kind of equation does that sound like?
Noah: Ahh. *y* equals zero.
Ms. Fye: Ah, okay. All right.
Ms. Fye: So, yeah, it was just that slight edit, but yes,
Ms. Fye: everything else sounds good.
[Footage cuts to teacher with same breakout group. There is an image of slide 8 on the screen with the definition of period and questions relating to that.]
Ms. Fye: What are your initial thoughts on the period?
Ms. Fye: That one's a tough, that one's a tough one.
Ms. Fye: So, I just kind of want to hear what you're thinking so far.
Noah: It seems like when it's, when *b*'s at one,
Noah: the period is 360, but when I changed it to two,
Noah: it turns to 180.
Noah: So, I think the base is 360 and you basically take that
Noah: and divide
Noah: it by whatever
Noah: is *b*.
Carlos: Yeah.
Noah: And that gives you the period.
Carlos: I also noticed that it's like whenever,
Carlos: so whenever you go higher with the *b* values it compresses.
Carlos: So, your period also gets lower.
Ms. Fye: Oh, okay. I like that.
Ms. Fye: Keep testing those theories and make sure
Ms. Fye: it works for all values.
Ms. Fye: I like what we're thinking there. That sounds good.
Ms. Fye: All right.
[Footage cuts to teacher in a different breakout room. An image of page 6 with definitions and questions about amplitude is on the screen.]
Ms. Fye: Hey, hey. How's it going?
Aneesh: Pretty good.

Ms. Fye: Good.
Ms. Fye: Can you guys talk to me about
Ms. Fye: what you guys put for number six?
Aneesh: Oh yeah, sure.
Aneesh: Okay. The amplitude is one
Aneesh: because the minimum is negative one.
Aneesh: The *x*, the *y* coordinate maximum *y* coordinate is one.
Aneesh: That is a distance of two, divided by two is one.
Aneesh: And the other way to find the amplitude is just
Aneesh: look at the *x* axis and go up to the peak, right?
Ms. Fye: Yeah. You can go from that.
Ms. Fye: Basically, what's defined as the midline from slide seven,
Ms. Fye: which I know you guys already looked at to that maximum
Ms. Fye: or minimum point. And that will also give you the amplitude.
Ms. Fye: Yes.
Aneesh: Okay.
Ms. Fye: Josh, is that the, does that sound right to you?
Ms. Fye: Do you have anything you want to add?
Joshua: No, that's right to me.
Ms. Fye: Okay.
Ms. Fye: What about slide seven? What'd you guys say about midline?
Aneesh: Okay, we got zero for this,
Aneesh: because this is the original sine function.
Aneesh: And I guess the amplitude is one from there.
Aneesh: And then if you look from below the midline,
Aneesh: can that also be called the amplitude,
Aneesh: but the distance from the midline to the peak in the bottom
Aneesh: is also one. If you take the magnitude of that?
Ms. Fye: Yeah, absolutely.
Ms. Fye: So, sorry. Everything you're saying is right.
Ms. Fye: I was asking about slide seven.
Ms. Fye: Oh, what's a, what slider did you say controls
Ms. Fye: the amplitude?
Aneesh: Oh, *a*. *a* slider. The *a* slider.
Ms. Fye: Okay.
Ms. Fye: Joshua, do you agree with that?
Joshua: Yeah. And the, the, and the,
Joshua: the
Joshua: the line is also along the (unclear speech)
Joshua: the sine function.
Ms. Fye: Okay.
Ms. Fye: And is there a relationship between
Ms. Fye: the *a* value and the amplitude?
Joshua: This is
Joshua: I mean, as
Joshua: the *a* value increases the amplitude

Joshua: the amplitude increases.
Ms. Fye: Okay. And what do we think about like, if,
Ms. Fye: if you were looking at it and I set my *a* slider to like
Ms. Fye: four, what would you expect the amplitude to be?
Aneesh: So, the *a* slider's vertically stretching
Aneesh: or compressing the function.
Aneesh: I think between zero and one it's compressing.
Aneesh: But if you put it at a higher value from one
Aneesh: it's going to vertically stretch the function.
Aneesh: So it's ideally going to make the amplitude four
Aneesh: if you put four.
Ms. Fye: Okay. So there's kind of like that direct relationship,
Ms. Fye: right? Whatever *a* is that amplitude is.
Aneesh: Yeah. And then that's going to be our
Aneesh: *a* value in the function.
Ms. Fye: Okay. Love it.
Ms. Fye: What about what you guys put on slide seven?
[Background image changes to be page 7 of the task with the definition of midline and questions about midline.]
Ms. Fye: What about midline?
Aneesh: It's the *k* slider
Aneesh: and the midline for this function is zero.
Aneesh: The *k* slider's responsible for altering the midline,
Aneesh: because it translates the function up or down.
Aneesh: And since the sine function's pretty much symmetrical.
Aneesh: If it goes up the *k* slider's going to be the
Aneesh: *y* coordinate of the *y* intercept as well as the midline.
Ms. Fye: Cool.
Ms. Fye: You said that the midline is at zero. When you say zero.
Ms. Fye: What...? Remember how in the
Aneesh: I thought you were asking about the equation.
Aneesh: Sorry. Yeah, *y* equals zero.
Ms. Fye: Okay. I just wanted to be clear on that. Okay, cool.
[Background image changes to slide 8 with the definition and questions about the period of the function.]
Ms. Fye: And
Ms. Fye: I see you guys are already past slide
Ms. Fye: eight,
Ms. Fye: or thinking about slide eight. You guys are well past it.
Ms. Fye: So, I'd like to hear your thoughts on period,
Ms. Fye: which I thought was a little bit more complex.
Ms. Fye: Joshua, you want to start me off? What, what did you do?
Joshua: For the period, I would say
Joshua: it's multiple sets of sine.
(keyboard typing)
Joshua: Sine is usually, sine values

Joshua: are usually like
Joshua: complementary
Joshua: values of
(mouse clicking)
Joshua: like add up to 90.
Joshua: So, I was thinking perhaps the period is
(keyboard typing)
Joshua: For, the normal sine function. The period is 360.
Ms. Fye: That's true.
Ms. Fye: Which slider did we commit to saying changes the period?
Joshua: *b*.
Ms. Fye: Any relationship, is it a direct relationship?
Ms. Fye: Like what, like the other two, like if *b* is four,
Ms. Fye: we expect the period to be four?
Aneesh: Ah, no, actually for this one,
Aneesh: Am I allowed to answer this one?
Ms. Fye: Sure.
Aneesh: Okay. From my understanding,
Aneesh: *b* value is going to horizontally stretch or compress.
Aneesh: Then when we find the *b* value,
Aneesh: we're going to take our original period,
Aneesh: which is always going to be 360.
Aneesh: Then we're going to divide by our new period
Aneesh: and that's going to give us our *b* value.
Ms. Fye: Okay.
Ms. Fye: Joshua, anything you want to add? Does that make sense?
Ms. Fye: Or is there something different you understood?
Joshua: No, that's all.
Joshua: That was all.
Ms. Fye: All right. Keep going.
Ms. Fye: You guys sound like you have a good understanding.