



## 7.3 Ms. Fye Monitoring Allison and Jonathan Transcript



Ms. Fye is using the [Introduction to the Sine Graph](#) Desmos Task in a remote synchronous class session.



[Ms. Fye Monitoring Allison and Jonathan](#)

### Transcript:

Jonathan: I have a question for number eight.

Jonathan: I don't really know like the exact value with this.

Ms. Fye: I was just going to ask you about number eight. Okay.

Ms. Fye: So what are your initial thoughts?

Allison: Wouldn't it be 360?

Jonathan: We put we put 360, but like, I feel like.

Allison: I think it's 360.

Ms. Fye: Yeah.

Jonathan: Okay.

Allison: Yeah, cause when you're looking at [unclear speech], like the point

Allison: It's like,

Allison: so the first one for example

Allison: is at 90,

Allison: but it's at 90 comma one.

Allison: And then the next one is at 450.

Allison: So like the distance in between that is 360 when you like

Allison: subtract that, like the same on the other side, like,

Ms. Fye: Yes, good reading it.

Allison: 270 and 90. So it would be adding that instead.

Allison: And that's 360.

Jonathan: What was the other sentence you put the last sentence, for?

Allison: Huh?

Jonathan: There's another, the last sentence for number eight.

Ms. Fye: Can you tell me what slider that you guys assigned to?

Jonathan:  $b$

Ms. Fye:  $b$ ? Okay. And is it, does it have a direct relationship?

Ms. Fye: Like the others, like,  $a$  and  $k$ ?

Jonathan: Nope.

Ms. Fye: Nope? So what did you decide the relationship is?

Jonathan: It's not a direct relationship,

Jonathan: but I don't know how to explain

Ms. Fye: Can you find it and tell me what it is?

Jonathan: because  $x$  is a factor in the

Jonathan: thing, I think.

Ms. Fye: Hmm. Okay.



Ms. Fye: Can you kind of play around with some ideas?

Ms. Fye: I can share my screen if you want and think about some

Ms. Fye: things together about how we can come up with that relationship.

**[Teacher shares screen of slide 5 in student view.]**

Ms. Fye: So we know it's not direct, right?

Ms. Fye: So let's just play around with  $b$ .

Ms. Fye: I'm going to leave  $a$  and  $k$

Ms. Fye: where they are. Let's play around with  $b$ .

Ms. Fye: So you said when  $b$  is one,

Ms. Fye: we have a period of 360 and you're looking at the maximums

**[Teacher clicks on two successive maximums and selects the points to show the coordinates. Coordinates are (90,1) and (450,1).]**

Ms. Fye: to figure that out or the minimums is what Allison told me.

Allison: Yeah.

Ms. Fye: Okay.

Ms. Fye: Let's let's adjust  $b$ .

Ms. Fye: Let's change it to.

Ms. Fye: Give me a number that you feel confident

Ms. Fye: you could work with.

Jonathan: two

Allison: uh, two

**[Teacher erases the input 1 for slider  $b$  and inputs a 2.]**

Ms. Fye: All right two.

Ms. Fye: Let's make our lives easy. Right?

Ms. Fye: All right. Let's look now. What's our new period?

Jonathan: 180

Ms. Fye: So when the  $b$  was two,

Jonathan: It halves

Ms. Fye: Okay. So when the  $b$  was two,

Ms. Fye: it did halves give me another  $b$

Ms. Fye: Lets test another  $b$ .

**[Teacher backspaces the 2 and types 0.5 for parameter  $b$ .]**

Jonathan: 3

Allison: 0.5

Jonathan: 0.5

Ms. Fye: 0.5. I like that you guys are risking it.

Ms. Fye: Oh, this made it much larger.

Ms. Fye: So I'm going to zoom out a little bit,

**[Teacher zooms to fit graph so two maximums are visible. Teacher clicks on two successive maximums and selects the points for the maximums. The coordinates are (180,1) and (900,1).]**

Ms. Fye: What's our period now?

Jonathan: 720, no, wait.

Jonathan: Yeah. 720.

Allison: So it doubled it. Yeah.

Jonathan: Doubles or halves when it goes down it doubles.



Jonathan: When that goes, well, that's, we're going up by two.

Ms. Fye: Let's look at another value

Ms. Fye: because I want to make sure that

Ms. Fye: it works for all.

Jonathan: Can you look at an odd value like three or five.

Ms. Fye: Yeah. Let's look at an odd value.

Ms. Fye: Let's go three.

**[Teacher types 3 for parameter b.]**

Ms. Fye: Well,

Ms. Fye: might as well as zoom back in because we got a lot more

**[Teacher zooms to fit graph so two maximums are visible. Teacher clicks on two successive maximums and selects the points for the maximums. The coordinates are (30,1) and (150,1).]**

Jonathan: 30, 120.

Ms. Fye: Okay. So when we have a  $b$  value of three,

Ms. Fye: we get 120.

Ms. Fye: What's happening?

Allison: It's compressing.

Allison: It's greater. It's compressing and like

Jonathan: [unclear speech]

Ms. Fye: Is there... So what's the mathematical

Ms. Fye: relationship between that  $b$  and that period?

Jonathan: I feel like I know there's a term for it,

Jonathan: but I cannot figure it out.

Ms. Fye: So let's kind of review what the ones

Ms. Fye: when  $b$  was 1, what was the period?

Allison: 360

Ms. Fye: What about when  $b$  was 2?

Jonathan: 180

Ms. Fye: What about when  $b$  was 3?

Jonathan: 120

Allison: 720

Ms. Fye: 120

Jonathan: 120

Allison: Oh 120 yeah sorry.

Ms. Fye: So when  $b$  was one half that's when you got the 720.

Ms. Fye: So what's the relationship there between  $b$  and the period?

Ms. Fye: It's a tough one. Isn't it?

Allison: Yeah.

Jonathan: Is it just like one term?

Ms. Fye: I think you're trying to think of like,

Ms. Fye: maybe something a little too complex.

Ms. Fye: Just kind of think about what is that mathematical

Ms. Fye: relationship between... when I say mathematical relationship,

Ms. Fye: I just mean like, how could I find the period if I know  $b$ ?

Ms. Fye: So like what would you predict?



Jonathan: You can half it.

Ms. Fye: What would you predict the period if  $b$  was 4

Ms. Fye: What would you think it is?

Jonathan: If it was four... 360, 90 it would be 90.

Ms. Fye: Okay. How'd you figure that out?

Jonathan: Well because okay so,

Jonathan: it went from 1 to 2.

Jonathan: It went from 360 to 180

Jonathan: and then

Jonathan: 2 to 4.

Jonathan: It would be even numbers, so I would just do half that

Jonathan: so I got 90.

Ms. Fye: Okay.

Jonathan: I think same thing,

Jonathan: same thing would work with the odd numbers.

Jonathan: Would it just be a different?

Jonathan: Maybe it would just be like,

Ms. Fye: I'm gonna maybe try to highlight something here.

Ms. Fye: You see when  $b$  is three really quick,

**[Teacher deselects the maximums and selects the parameter  $b$  box. They indicate points at 0 and 360.]**

Ms. Fye: we start the function here. This is where our 360 is.

Ms. Fye: How many times do we cycle?

Ms. Fye: How many times do we cycle?

Jonathan: 3

**[Teacher places dots at the end of each cycle as they count.]**

Ms. Fye: 3, 1.

Jonathan: I just realized that.

Ms. Fye: Do you see it?

Ms. Fye: So we're taking that 360 and we're fitting three of those in there.

Ms. Fye: Right?

Ms. Fye: So in order to find one, what am I doing?

Jonathan: Just one. You're finding one of those.

Ms. Fye: So if our period's 360 and I

Jonathan: Oh my gosh. I am...

Ms. Fye: Don't say it.

Ms. Fye: Okay. So your, your prediction is right on 4, right?

Ms. Fye: What if I gave you the,

Ms. Fye: I'm going to give you a crazy number now? Ready?

Ms. Fye: I'm going to, I'm going to see if,

Ms. Fye: if you got it and then we can try to put it into words.

Ms. Fye: What if I do  $b$  as 9?

Jonathan: 9?

Jonathan: 40?

Ms. Fye: How'd you come up with that? Talk me through it.

Jonathan: 360 divided by 9 is 40.



Ms. Fye: Right.

Ms. Fye: So that 360 gets divided into that many waves and each wave

Ms. Fye: has to be this wide, right?

Allison: Yeah. Okay.

Ms. Fye: Okay. Does that make sense?

Allison: Yeah. So it's like, is like 360, like the key number I guess?

Ms. Fye: Yes. so we

Allison: Okay, so you like always divide that number in between

Allison: like what  $b$  is.

Ms. Fye: Yeah, because that's our standard, right?

Ms. Fye: So like our sine, when it doesn't move,

Ms. Fye: that would be a place where we start.

Ms. Fye: Okay, good, good, good.

Ms. Fye: See if you can put that in words for me,

Ms. Fye: and then you can start answering those questions.