



## 7.6 Noticing Student Thinking about Period

### Context



Ms. Fye is using the [Introduction to the Sine Graph Desmos Task](#) in an in-person class.

This is an introduction task focused on reasoning about the relationship between the equation of a sine function and characteristics of the sine graph. Ms. Fye designed the task knowing that her students had explored the relationship between function structure and their graphs by varying the parameters for many different function families. With that in mind she had the following learning goals:

- Students will recognize the connection between the structure of a sine function equation (i.e.,  $y = a \sin(bx) + k$ ) and its related graph with respect to amplitude, midline, and period. Specifically,
  - Amplitude is  $|a|$
  - Midline is  $y = k$
  - Period is  $\frac{360}{|b|}$

Specific performance goals include:

- Given a sine function equation, students will determine the amplitude, period, and midline without graphing.
- Given the amplitude, midline, and period, students will determine the function equation.
- Given the graph of a sine function, students will determine the amplitude, period, and midline.
- Given the graph of a sine function, students will determine the function equation.

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In the video clip that follows, Rhian and Shakira are working on page 10 of the Desmos task. On this page, they are given the amplitude, midline, and period and asked to determine the equation of sine function.

Watch the video clip and listen carefully to what the students are saying and the ways they are interacting with the technology. Then, rewatch as needed to answer the questions below.



[Rhian and Shakira Exploring Period of the Sine Function \(Clip 1\)](#)



**Q1.** What is something smart that Rhian and Shakira said or did in this clip?

**Q2.** Attend to Rhian and Shakira's strategy(ies) for determining the value of  $b$  when they are given the period.

**Q3.** What do you know about their current understanding of period? Provide evidence from the clip to justify your answer.



**Q4.** What questions would you ask to further assess their understanding and support them in making connections?



In this second video clip, Rhian and Shakira are still working on Introduction to the Sine Graph Desmos Task. They are now working on page 14 of the task where they are expected to determine the function equation to match a given graph. You are going to join their discussion as they are trying to figure out the value of  $b$  to determine the period. Watch the video and listen carefully to what the students are saying and the ways they are interacting with the technology.



[Rhian and Shakira Exploring Period of the Sine Function \(Clip 2\)](#)

**Q5.** Describe the issue(s) or challenge(s) that the students are facing while determining the period. Provide evidence from the clip to justify your answer.

**Q6.** Attend to how the pair use their prior knowledge (shown in the previous video clip) and the technology to deepen their understanding of period and address the issue(s)/challenge(s) you described in Q5.



**Q7.** At the conclusion of this video clip, what is Rhian and Shakira's understanding of period? Provide evidence from the clip to justify your answer.

**Q8.** One of the performance goals for this task was to generalize how to find the period given a graph of the sine function. What would you, as the teacher, do next to support their mastery of this goal? Include any assessing or advancing questions you might pose and explain why you would or would not use technology in your next steps.