



## 7.4 Monitoring Student Thinking: Introduction to the Sine Function

### Context

Ms. Fye is using the Introduction to the Sine Graph Desmos Task in a remote synchronous class session. There are eight students present for the lesson.



#### [Introduction to the Sine Graph Desmos Task](#)

Ms. Fye's learning goals for the task are listed below.

- 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.



Ms. Fye's [plans for implementing this task](#) are linked here for your reference.

In the following video clip, Ms. Fye is monitoring the students as they work on the Introduction to the Sine Graph Desmos Task. Ms. Fye intends for students to work collaboratively in their small groups and to develop an understanding of amplitude, midline, and period as they do so. She moves among the breakout rooms and works to assess and advance the students' thinking about amplitude, midline, and period as they are represented in the function equation and the graph of the function.



#### [Watch Ms. Fye Monitoring Small Group Work](#)

As you watch the video take note of the questions Ms. Fye asks and the ways in which she and the students seem to be using the technology. (Note: Most of the students are not sharing their screens, but they do talk about what they are doing with the technology.)



**Q1.** What questions and/or types of questions does Ms. Fye ask consistently as she moves from room to room?

**Q2.** What role does the technology play in the students' work to determine the relationship between the sliders and how to determine amplitude, midline, and period?



One of the benefits of using a Desmos task is that you have access to students' thinking through what they record in the task in real time as well. You may have noticed Ms. Fye referencing what the students had written or where they were in the task in the video clip above. She knew this because she was watching the dashboard as she moved around the class.

**Q3.** Here is a link to the teacher dashboard as it looked at the end of Ms. Fye's class.



[Ms. Fye's Teacher Dashboard](#)

Given what you have seen as Ms. Fye monitored her students as they worked and what you see in the dashboard, how confident do you think Ms. Fye is that the students have met each of her learning and performance goals? Explain.

### Goal 1

Students will explain 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  $\frac{360}{|b|}$

### Goal 2

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



**Goal 3**

Given the amplitude, midline, and period, students will determine the function equation.

**Goal 4**

Given the graph of a sine function, students will determine the amplitude, period, and midline.

**Goal 5**

Given the graph of a sine function, students will determine the function equation.