



Module 3 Overview Document

Table 1: Timeline of Tasks in the Module

Timeline of tasks in the Module	Day 0	Homework	3.1 Engage in Function Carnival Task
	Day 1	15 min	3.1 Discussion of Function Carnival Task
		60 min	3.2 Anticipation of Student Work and Introduction to Desmos Teacher Dashboard
			3.2a Anticipate Cannon Man
			3.2b Anticipate Cars
		3.2c Anticipate Ferris Wheel	
		Homework	3.3 Noticing Student Thinking: Function Carnival Task
	Day 2	30 min	3.4 Analyzing & Supporting Emergent Student Thinking (Only the Cars Simulation of Function Carnival)
45 min		3.5 Monitoring Students' Work on the Function Carnival Task (Only the Cars Simulation of Function Carnival) Either needs to be homework or completed as a whole class through discussion and watching the videos.	

3.3 Facilitation Notes

All student videos related to the Function Carnival Task were collected on the original task. The original can be found in the Desmos Museum. The only major difference in the simulations is the Cars, where the crash happens later in the simulation. All work in this task should be based on the simulations in the original Function Carnival.



[Original Function Carnival in the Desmos Museum](#)

The task document (3.3 Noticing Student Thinking: Function Carnival Task) needs to be shared electronically with teachers as it has hyperlinks to videos within.

The purpose of this assignment is to give teachers insight to how students might work on the task and to help focus their attention on the students' work as it relates to the mathematical goals. The prompts are designed to focus first on what the students' do that is smart and then to practice attending and interpreting to each pair's understanding of rate of change. Sample Responses are below.

Note: While this is listed as a homework assignment, it could also be done as a whole class discussion using the prompts as instructor questions to facilitate the discussion.



3.3 Sample Responses

Noticing Student Thinking: Function Carnival Task

Now that you have engaged with the Function Carnival and anticipated possible student responses, it is time to watch how students have engaged with the tasks.

The learning goal for the Function Carnival Task is:

- Students will understand the relationship between simulations of real contexts and the graphs of those simulations with respect to covarying quantities.

Specific performance goals include:

- Students will sketch accurate graphs to show how a variable changes over time (i.e., the qualitative features of the relationship).
- Students will distinguish between a graph of a relationship between variables in a scenario and a picture of the scenario.

Watch the videos of students engaging with Cannon Man and Cars. While watching the videos, **focus on the students' language and actions**. Provide evidence from the video to justify your responses.



[D'Niya and Lukas Engaging with the Cannon Man Task](#)

Note: For each of the simulations, teachers are asked to identify something smart the students say or do. The purpose of this question is to help teachers learn to examine student thinking from an asset perspective rather than a deficit perspective. Some sample responses from teachers are included below. Ideal responses will value student ideas and will use evidence from the video to back up claims.

Q1. What was something smart about D'Niya and Lukas' graph of the Cannon Man simulation?

Responses might be related to the students' conceptions of rate of change, students' attention to the quantities being measured, or the ways in which the students utilized the technology tools. Examples are provided below:

- D'Niya and Lukas understood what the question was asking they were able to keep correcting their graph with different rates of change meaning that they had an understanding of different rates of change.
- They took the parachute slowing the rate of falling into account.
- One thing that was smart about their graph was that they mention that the cannon man was going up higher by seconds.



- It was smart how they adjusted their graph by playing the animation and seeing how close their graph matched the Cannon Man's movement.

Q2. Attend to how D'Niya and Lukas made sense of how to create a graph to represent the change in height from the ground over time for the Cannon Man simulation. Use examples from the video as evidence to show how you know what they do or do not fully understand.

–Coming Soon–

Q3. Interpret D'Niya and Lukas' understanding of rate of change based on their graph of the Cannon Man simulation.

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