

Jessica Phillips
NAS 501
Interactive Physics Lesson Plan
August 2, 2004

Math 8 Lesson using the Connected Math textbook, Moving Straight Ahead: Investigation 2 for an 80 minute block

Objectives:
How do different rates affect the graphs of lines?

Key Idea:
According to the New York State Standards for Mathematics, students will be working with the Key Idea for Modeling / Multiple Representation. They use modeling and multiple representation to provide a means of presenting, interpreting, communicating, and connecting mathematical information and relationships.

Lesson:

The Moving Straight Ahead textbook first compares the differences in lines, the steepness and where they cross the y axis, before using the vocabulary for slope and y-intercept. Investigation 2 starts with a scenario about three students walking at different rates. I would use the following lesson as a modification of sections 2.1 and 2.2. When the students are asked to think about the problem, they sometimes have trouble visualizing someone walking 1 m/s or 2 m/s. The model I constructed on Interactive Physics would give the students a visual image of the different rates side by side to each other.

After beginning the class with a brief review assignment (bell work) for about 10 minutes, I would begin to introduce the lesson using the Interactive Physics program. Each student would have a textbook open to page 17. To start, I would introduce the scenario in a story like way. I would question the students about how fast is 1 m/s or 2 m/s? After finding out that it is difficult to picture that, I would explain the model I created. First, I would explain that you can see each circle is labeled with a name representing the students in the scenario. Then using the LCD projector, I would run the model on Interactive Physics. We would discuss the lines made on the graphs and how they relate to how fast each "person" was moving. I would reset and run the model several times (quickly and frame by frame) so that the students had a clear understanding of the scenario. This introduction would last 20 minutes.

During a short work time (approximately 15 minutes), students would complete the attached activity. It is a structured plan of the Investigation from the textbook. The model and the graphs made by the program will be left up on the screen for the students to reference. The students would work in groups of 2, and they would have a graphing calculator to work with (or a scientific calculator). The students would work on the worksheet until the timer goes off to signify the end of the work time. During this time, I would closely monitor their work. I would be looking for students to be actively engaged and using accountable talk.

To close the lesson, the timer would go off, and I would get the students' attention. For the last 10 to 15 minutes of class, we would discuss the similarities and the differences of the lines. I would question the students specifically about steepness of the lines and how the rate affects that. If time permitted, I would begin a discussion of where each line crosses the y-axis. The students would also put away their materials during this time in preparation for dismissal.

Rubric: The student's class work grade will be determined based on the following rubric. The students will be aware of this rubric, and it will be posted for them to refer to.

5: Worksheet is completed accurately and completely. Group was on task 90 – 100 % of the work time. Both students contributed to the activity and used the technology appropriately.

4: Worksheet is completed and almost accurate. Group was on task 75 – 90 % of the time. Both students contributed to the activity and used the technology appropriately.

3: Worksheet is almost completed and almost accurate. Group was on task 50 – 75 % of the time. Both students contributed to the activity and used the technology the majority of the time.

2: Worksheet is almost completed and not accurate. Group was on task less than 50% of the time. The students did not contribute equally, and used the technology some of the time.

1: Worksheet is not fully completed, and what is done is incorrect. Student did not equally participate in his/her group. Group / student was not on task for a significant amount of time and did not use the technology properly.

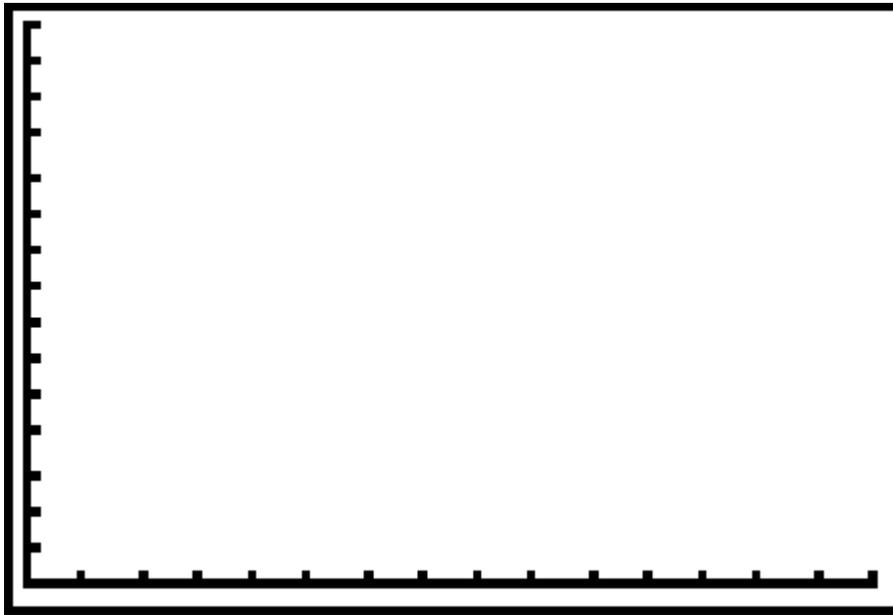
0: The student did not complete or refused to participate in the activity

Answer the following questions in the space provided and in complete sentences when necessary. Show your work when necessary as well.

1. Create a table for each person with at least 5 values in each table.

Terry		Jade		Jerome	
x	y	x	y	x	y

2. Graph the time and distance data for the three students on the same coordinate axes. Use a blue line for Terry, a red line for Jade and a yellow line for Jerome.



3. If the yogurt shop is 750 meters from school, how long will it take *each student* to walk there?

4. Match each equation with the person's name.

$y = 2x$ Terry

$y = x$ Jade

$y = 2.5x$ Jerome

Give one reason for each person why you picked the equation you did on the back side.

5. How did the walking rate affect the graphs of the lines? (Use the back if necessary.)

Screen capture of Model on Interactive Physics program:

