

Activity: The Olympics' 100 Meter Dash

Objective: practice/review Linear Functions and develop Problem Solving techniques

Grade level: 7 - 11

Format: Group Activity

Materials: Each group should have a ruler/straight edge, several pieces of graph paper if they request it, and at least one calculator (preferably a graphing calculator). Some groups may also request markers or different colored pens.

Description: Time: 50 - 70 minutes

One of the main goals of this activity was to help develop problem solving techniques. Thus, I gave very little instruction at the beginning of the activity. The students had all learned about linear functions and their graphs in the past, and they had a short review of the topic a few days before we did this project.

I passed out the worksheet that is given below and broke the class up into groups of 3 – 4 students each. After a short, introductory, motivating discussion (The 2000 Summer Olympics were in progress at the time, and the 100 Meter Dash had been run the day before.), I read the instructions to them and had them brainstorm, in their groups, various possible approaches to the problem. As they discussed possible ideas, I walked around the class and listened, interjecting suggestions where necessary. Once a group had a plausible idea or two on how to approach the question, I told them to go ahead with their plans and then write up their results as instructed on the worksheet.

I was disappointed to find that several groups did not turn in an acceptable write-up despite the fact that I clearly stated what I wanted to be included, both in writing on the worksheet, and orally to the class. Those groups were given a second chance to write up their findings, and most groups managed to succeed the second time.

The Olympics' 100 Meter Dash

Use the given data to answer the following questions: Will there ever be a summer Olympics in which the women run the 100m dash faster than the men? If so, when, and how fast will the women and men run it in that Olympics?

Olympic Gold Medal Times for the 100 Meter Dash

Year	Men's	Women's
1948	10.3	11.9
1952	10.4	11.5
1956	10.5	11.5
1960	10.2	11
1964	10	11.4
1968	9.95	11
1972	10.14	11.07
1976	10.06	11.08
1980	10.25	11.06
1984	9.99	10.97
1988	9.92	10.54
1992	9.96	10.82
1996	9.84	10.94
2000	9.87	10.75

Your job as a group is to come up with a valid mathematical approach to the problem, use it to solve the problem, and then write up a group report. Your report should clearly state what approach you chose to use and why. All of your work as well as your final answers should be in the report. At the end of your report, answer the following “wrap-up” questions: What do your results mean? How accurate do you think they are? Why? Where do the inaccuracies, if any, come from? Is there any way to solve this problem with 100% accuracy? Why or why not?

Your group write-up will be due in class on _____ . It will be worth a total of 25 points. When grading it, I will specifically check for:

1. a clear and valid mathematical approach
2. work showing that your chosen approach was successfully carried out
3. well thought out answers to the “wrap-up” questions stated above

Modifications: In one of the classes, there were a few groups that had difficulty finding an appropriate approach to the problem. In that class I asked members of some of the other groups to discuss their method of approach with the class. That way, the groups that were having trouble were able to see a few different possible approaches, and decide on a method of approach of their own that was based on what they learned.

Ideally, I would have liked to have had the groups present their different approaches and results to the class once all the groups were done. Then we could have discussed the various answers, how they differed, and why. We also could have discussed questions like, "According to your graph, in the year _____, the 100m dash will be run in 0 seconds. What does that mean?" Unfortunately, we did not have the time to do this as a class. However, as I walked around the classroom while the students worked, I asked individual groups these types of questions and some of them included the ideas in their write-ups.

Resources: This is a typical math problem, which can be found in many books, magazines, and web sites.

Your name and Fellow year: Jill Lombaer, first year gk-12 fellow

School or outreach event where activity was used: I lead this activity in 2 separate freshmen, Algebra 1 classes at Corvallis High School.