

Functions and graphs

1. As a group come up with a clever (and clean enough to tell your grandmother!) mnemonic to help you recall one another's first names. For instance I remember the colors of the rainbow by the phrase "Richard Of York Gained Battled In Vain," and the spaces between the lines in the bass clef by "All Cows Eat Grass."

2. Match the stories with three of the graphs shown below, and write a story for the remaining graph.
 - a. I had just left home when I realized I had forgotten my books, so I went back to pick them up.
 - b. Things started out fine until I had a flat tire.
 - c. I started out calmly, but sped up when I realized I would be late.

3. Generally the more fertilizer that is used, the better the crop. However, if too much is applied, the crop is poisoned and the yield goes down rapidly. Sketch a possible graph showing the yield of the crop as a function of the amount of fertilizer applied.

4. Identify the two quantities that vary, and decide which should be represented by the independent variable, and which by the dependent variable. Graph the relationship, and explain your graph with words and/or formulas.
 - a. The amount of money earned on a part-time job, and the number of hours worked.
 - b. The cost (to the pizza shop owner) of the ingredients on pizzas of different diameters.
 - c. The number of cans of beer consumed by a fraternity and the day of the week.

5. A runner jogs slowly at a steady pace for five minutes to warm up. She then runs hard for 20 minutes, at which time she meets a slower runner, and they run together for 10 minutes at the slower pace. Then she walks for 5 minutes to cool down. Graph the runner's speed as a function of time. Then graph how far she has run as a function of time.

Homework. Complete this worksheet. Read the preface to the text, and the excerpt from Mark Twain's *Mississippi* on page 20. Do problems #8–14 from section 1.1 of the text, and be prepared to discuss them in class on Monday.