

Math 203: Contemporary Mathematics  
**Writing assignment 4**  
Assigned Tuesday, April 7; due Tuesday, April 21

Choose one of the topics below and discuss it. Remember to follow the quality expectations for submitted work given in the course information sheet. If you draw a picture as part of your paper, be sure to include a sentence or two explaining what the picture is and what information it shows.

Please feel free to ask me questions if there is something you don't understand. I would much rather have you ask me questions and turn in a paper that shows your understanding than have you turn in a paper that doesn't make sense. Try to explain things in such a way that someone else in this class could read your paper and understand it without needing to read outside sources.

1. **Misleading graphs.** Find a misleading graph in a newspaper, magazine, or other *printed* source (other than our textbook, of course) and explain what makes it misleading. Do you think it is intentionally misleading? Why or why not? How might the graph be drawn differently to be less deceptive? Is the graph misleading in an attempt to give a certain impression? If so, can you find a way to draw the graph that gives the opposite impression? Draw some conclusions about misleading graphs based on your analysis.
2. **Controversial elections.** Research an election in which the result was controversial due to peculiarities of the voting system that was used. (The United States presidential election in 2000 is a good example, though I would prefer that you find a different example, since the 2000 election was fairly recent and received widespread media coverage for a significant length of time.) What was the outcome of the election? Did this match predictions that had been made, if any? Why was the outcome controversial? What particular characteristics of the voting system used allowed this outcome to occur? Do you think this shows a flaw in this voting system? Why or why not? If so, what changes might you suggest to fix this flaw? Why would these changes help?
3. **Casino games.** Research and discuss a particular casino or lottery game (for example, blackjack, poker, roulette, craps, or Powerball). Explain the rules of the game and the various payoffs. What is the probability of each payoff? What is the expected value of the game? How do you interpret this expected value? Are there particular strategies that will improve your chances of winning? Is there any strategy that will give a positive expected value for the game? Why or why not? Does the expected value tell you everything you need to know in order to understand the long-term behavior of your payoffs? If not, what things does the expected value *not* describe?
4. **Interpreting statistical data.** Find an example of data that was obtained by a statistical study, survey, experiment, or analysis. (Some ideas: medical studies, census data, Gallup polls, Nielsen ratings, corporate earnings or stock reports, etc.) What is the statistical variable that is being investigated? Identify the population and the sample being studied. If possible, describe the sampling method that was used. Do you think this sampling method resulted in a representative sample? Why or why not? How is the data reported? Which of the various statistical measures discussed in class are given for this data (for example, mean, median, mode, range, quartiles, variance, and standard deviation)? Why are these measures given instead of others? Is the data presented in a table or as a graph (or both)? If it is presented as a graph, what kind of graph is used, and why? If it is not presented as a graph, what kind of graph would be appropriate, and why?