At first, grading the test was really depressing, with many students doing poorly. Then, while putting the grades into my computer, I noticed that at least a few students had done quite well. It almost seemed that two different groups of students had taken the test.

I decided to make a histogram of the grades (Fig. 1). Normally, a histogram of test results gives a “bell curve” or Gaussian Distribution. In this case, the histogram had two peaks so I used my computer to see if two, overlapping bell curves could explain the data. This seemed to work. In fact, there is less than a 5% chance of explaining the distribution of grades if the entire class is treated as one group, instead of two. This result is statistically significant, though not at the highest level.

![Fig. 1: A histogram of the test results and the two “bell curves” that best explain the data.](image)

For a typical lecture, roughly half the seats are empty. For the test, almost every seat was full. It occurred to me that only people who skipped class had done poorly. I got out the class roster and circled pictures of familiar faces, in order to get some idea of who was attending lectures. Including extra credit, the average test score was 40/50 for people who came to class but only 31/50 for people who did not – a difference of one letter grade. The bell curves from my computer predicted averages of 29/50 and 41/50 instead, which is pretty close, considering that some students were hard to identify from their pictures.

There seems to be good evidence that people who came to class did better than people who did not. For people who came to class, the average was a “B” – just like the first test. On this basis, the test seems fair, to me, and I will not be adjusting the grades.
Fig. 2: The second test hint (A) and problem 4.a from the test (B). Notice that corresponding steps 1, 2, 3 and 4 are absolutely identical. On the test, 40% of the class got this wrong.

Fig. 3: The fourth test hint (A) and problem 4.d from the test (B). Notice that corresponding steps 1, 2, 3, 4 and 5 are identical. Partial credit for these steps was equal to 3 out of 4 points. On the test, only 19% of the class got this right.