Statistics 101  

Quiz 1: This is practice, and will not be graded.  

All answers must be correct to two decimal places.

6 1. Each assignment receives a letter grade. An A+ counts as 12, an A as 11, and so forth down to an F, which counts as 0. What is the numerical value for a C+?

C+ To find your final grade in this class, each component is multiplied by a weight and averaged. The quiz component, homework component, research component and three exams each have weight 15%. The labs have weight 10%. Suppose your quiz component is 7.5, your lab component is 9.4, your homework component is 10.2, and your three exam grades are A-, B+, and B. What letter grade do you need on the research component to get a B+ for the class? (Recall that cutpoints are at the halves, so the lowest possible B+ is 8.5.)

Before the research presentation, your score is 0.15(7.5 + 10.2 + 10 + 9 + 8) + 0.1(9.4) = 7.645. That plus 0.15 times the research grade must be greater than or equal to 8.5. And (8.5 - 7.645)/0.15 = 5.7. So you need a 6 or better, and 6 maps to C+.

1.11% There are 10 labs. You get to drop the lowest score. What is the weight (as a percentage) on one of the labs that counts?

The total weight on labs is 10%. 10/9 = 1.11..., so the weight on a single lab score is 1.11%.

B+ Suppose that your quiz grade component is 7.2, your lab component is 9.4, your homework component is 9.1, and your exam grades are A, A-, B+, and research got a C. What is your letter grade for the semester?

Since 0.15(7.2 + 9.1 + 11 + 10 + 9 + 5) + .1 (9.4) = 8.635, you will get a B+.

10.38 2. Suppose that at the end of the semester our class has taken eight quizzes. Your grades were A+, A+, A+, A-, A-, B-, B-, C, and E, where ‘E’ denotes an excused absence. What is the numerical value of your quiz grade component of the semester grade? (Remember: you are allowed two dropped quizzes and you replace excused absences by the average of all quizzes.)
The E will be replaced by 9.286, the average of the other seven grades. So the two lowest quiz grades, which are dropped, are the C and a B-, and thus \((12 + 12 + 10 + 7 + 9.286)/6 = 10.381\).

3. Suppose two points on a line are \((3, 4)\) and \((1, 3)\). Solve for the intercept and slope.

intercept = 2.5 \quad \text{slope} = 0.5

The slope is the rise over the run, or \((4-3)/(3-1) = 0.5\). The intercept solves \(4 = 0.5(3) + z\), so \(z = 2.5\).

4/3 4. What is the value of \(\sum_{i=0}^{\infty} (1/4)^i\)?

Let \(A\) equal the sum. Then \(1/4 \times A = 1/4 + (1/4)^2 + \cdots\). Thus \(A - (1/4)A = 1\), so \(A = 4/3\).

0.090 5. What is the probability that, after drawing two cards, without replacement, from a standard deck of 52 cards, you find that both are less than six (Aces are not less than twos)?

For the first draw, you must get a 2, 3, 4 or 5. There are 16 such cards in the deck. If you succeed on the first draw, then there are 15 good cards among the remaining 51. Thus \(16/52 \times 15/51 = 0.09049\).