Group Work - Week 6

1 The best player on the Metro State basketball team successfully makes 85% of her free throws. During a typical game she attempts 15 free throws. (If she attempts a different number of free throws, it is not a typical game.)

(a) Is the number of free throws she makes in a typical game a proper binomial random variable? What are the values of n, p and q?

(b) What is the expected number of free throws made per game? What is the standard deviation?

(c) What is the probability she makes all her free throws in a typical game? Is that unusual? What is the probability she makes at least 12 free throws? Less than 12?

(d) What are unusual numbers of free throws made per game?

2 Eleanor is taking two classes, statistics and ethics. After the midterm exams, Eleanor got 86 on her statistics midterm and she scored better than 88% of the class on her ethics midterm. The statistics midterm scores were approximately normally distributed with a mean of 84 and a standard deviation of 5.2. The ethics midterm scores were approximately normally distributed with a mean of 71.5 and a standard deviation of 9.8.

(a) What is the probability a randomly selected student did worse than Eleanor on the statistics midterm? That is, what is $P(X < 86)$? Or, what percentile is Eleanor's statistics grade?

(b) What score did Eleanor get on her ethics midterm? That is, for what x is $P(X < x) = 0.88$?

(c) Calculate the z-scores for Eleanor's two midterm grades. In which class did she do better?