

Exam 3 Practice Problems

Part 4 – Binomial and Normal Probability

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1. If $\frac{1}{3}$ of the students at a very large school are women, what is the probability that in a randomly chosen group of 4 students that there will be at most 1 woman?
2. At a local restaurant 100 people ate bad tuna salad. The probability of getting food poisoning from bad tuna salad is 40%.
 - (a) What is the probability that fewer than 30 people get sick?
 - (b) What is the probability that more than 45 people get sick?
 - (c) What is the probability that between 40 and 50 people get sick?
 - (d) What is the expected number of sick people? What is the standard deviation in the number of people who get sick?
3. The probability that a transistor is defective is 0.2%. A box contains 12 transistors. What is the probability that a box contains at least one defective transistor?
4. Given that Z is the standard normal variable, find
 - (a) $P(Z > 0.65)$
 - (b) $P(Z > 1)$
 - (c) $P(-1.2 < Z < 0)$
 - (d) a value of c such that $P(-c < Z < c) = 0.5$
5. Suppose exam scores are normally distributed with a mean of 73 and a standard deviation of 12.
 - (a) What is the probability that a student earns a C by scoring between 70 and 80?
 - (b) What is the minimum exam grade required for a student to score in the 90th percentile?
 - (c) What grades bracket the middle 60% of the students?
6. There are 5000 flights per month between Lilliput and the Emerald City. There is a 65% chance that a randomly selected flight will arrive at its destination on time. Use the normal curve approximation to the binomial distribution to estimate the probability that
 - (a) more than 3300 flights are on time this month
 - (b) 3200 or fewer flights are on time
 - (c) between 3220 and 3280 flights are on time