

Exam 3 Practice Problems
Part 4 – Binomial and Normal Probability

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