

Math 119 Review for Test 2

1. If the random variable x represents the number of girls in a family of 2 children, find the mean and standard deviation for x .
2. A company manufactures batteries in batches of 25 and there is a 3% rate of defects. Find the mean and standard deviation for the number of defects per batch.
3. A 28-year-old man pays \$206 for a one-year life insurance policy with coverage of \$60,000. If the probability that he will live through the year is .9994, what is the expected value for the life insurance policy?
4. Currently, an average of 9 residents of the town of Happy Valley (population 940) die each year. Find the mean number of deaths per day. Find the probability that on a given day, there is more than one death.
5. The weekly salaries of teachers in one state are normally distributed with a mean of \$490 and a standard deviation of \$45. What is the probability that a randomly selected teacher earns more than \$525 per week?
6. IQ scores are normally distributed with a mean of 100 and a standard deviation of 15. Find the probability of a randomly selected person having an IQ of 176 or higher. If the population of San Diego is about 1,130,000, approximately how many people in San Diego have an IQ of 176 or higher?
7. Human body temperatures are normally distributed with a mean of 98.20° F and a standard deviation of $.62^{\circ}$ F.
 - a. Find the temperature that separates the top 7% from the bottom 93%.
 - b. If 19 people are randomly selected, find the probability that their mean body temperature will be less than 98.50° F.
8. A final exam has a mean of 73 with a standard deviation of 7.8. If 24 students are randomly selected, find the probability that the mean of their test scores is more than 70. Assume the scores are normally distributed.
9. A multiple choice test consists of 60 questions. Each question has 4 possible answers. If all answers are random guesses, use the normal distribution as an approximation to the binomial distribution to estimate the probability of getting at least 20% correct.