

Review Exercises 11/18/08

1. Suppose x is a binomial random variable with $n = 8$ and $p = 0.5$.
 - a. Compute μ and σ .
 - b. Compute the probability of at least 7 successes. That is $P(x \geq 7)$.
2. Suppose x is a binomial random variable with $n = 20$ and $p = 0.5$.
 - a. Compute μ and σ .
 - b. Compute the probability of at least 14 successes. That is $P(x \geq 14)$.
3. Suppose x is a normally distributed random variable with $\mu = 4$ and $\sigma = 1$.
 - a. $P(x \leq 6)$
 - b. $P(x \geq 7)$
4. A random sample of 100 observations from a normally distributed population possesses a mean \bar{x} of 80 and a standard deviation s of 12. Specify a 90% confidence interval for μ . In this case what is our sampling error? What should our sample size be to estimate μ with a sampling error of 1.0 with 90% confidence?
5. A random sample of 16 observations from a population that can be assumed to be normal has a mean \bar{x} of 10 and a standard deviation s of 2. Specify a 90% confidence interval for μ .
6. A random sample of $n = 100$ observations from a population with $s = 60$ and $\bar{x} = 110$. Test $H_0: \mu = 100$ against $H_a: \mu > 100$ using $\alpha = 0.05$. Find the p -value. Interpret your results.
7. A random sample of $n = 20$ observations from a random population with $s = 60$ and $\bar{x} = 110$. Test $H_0: \mu = 100$ against $H_a: \mu > 100$ using $\alpha = 0.05$. Find the p -value. Interpret your results.