Probability & Statistics Final Exam Review

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the q	uestion.
1) There are 8 questions on a multiple choice test. Each question has 4 possible answers. A student forgets to study and guesses on each question. What's the probability that he gets exactly 3 answers right on the test?	1)
Find the indicated probability.2) The incomes of trainees at a local mill are normally distributed with a mean of \$1000 and a standard deviation \$120. What percentage of trainees earn less than \$800 a month?	2)
Find the mean and standard deviation of the given probability distribution. 3) $ \begin{array}{c c} x & P(x) \\ \hline 0 & 0.08 \\ 1 & 0.22 \\ 2 & 0.34 \\ 3 & 0.16 \\ 4 & 0.20 \end{array} $	3)
Find the mean, and standard deviation for the binomial distribution which has the stated values answer to the nearest tenth. 4) $n = 35 p = .3$	of n and p. Round 4)
Find the minimum sample size you should use to assure that your estimate of $\stackrel{A}{p}$ will be within the error around the population p.	e required margin of
5) Margin of error: 003; confidence level: 98%; $\stackrel{\wedge}{p}$ and $\stackrel{\wedge}{q}$ unknown	5)
6) Margin of error: .006; confidence level: 93%; from a prior study, p is estimated by 0.175	6)
Identify the given random variable as being discrete or continuous. 7) The number of garbage cans in the school	7)
8) The weight of a randomly selected student	8)
Identify the null hypothesis, alternative hypothesis, test statistic, P–value, conclusion about the n final conclusion that addresses the original claim. 9) In a sample of 132 children selected randomly from one town, it is found that 25 of them suffer from asthma. At the 0.05 significance level, test the claim that the proportion of all	ull hypothesis, and 9)

children in the town who suffer from asthma is 13%.

10) A ramdom sample of 90 pumpkins is obtained and the mean circumference is found to be 38.9 cm. Assuming that the population standard deviation is known to be 1.4 cm, use a 0.05 significance level to test the claim that the mean circumference of all pumpkins is equal to 39.3 cm.	10)
If Z is a standard normal variable, find the probability.	
11) The probability that Z is less than 1.26	11)
12) The probability that Z is greater than -1.94	12)
13) The probability that Z lies between -1.36 and -0.24	13)
Solve the problem.	
14) The amount of snowfall falling in a certain mountain range is normally distributed with a mean of 94 inches, and a standard deviation of 14 inches. What is the probability that the mean annual snowfall during 49 randomly picked years will exceed 97.3 inches?	14)
15) Find the critical value of z that corresponds to a degree of confidence of 93% .	15)
 Test the given claim using the traditional method of hypothesis testing. Assume that the sample I selected from a population with a normal distribution. 16) A manufacturer makes ball bearings that are supposed to have a mean weight of 28 g. A retailer suspects that the mean weight is actually less than 28 g. The mean weight for a random sample of 18 ball bearings is 26.7 g with a standard deviation of 3.2 g. At the 0.05 significance level, test the claim that the mean is less than 28 g. 	has been randomly 16)
Use the confidence level and sample data to find a confidence interval for estimating the populati	on µ.
17) Test scores: n = 89, \bar{x} = 83.7, σ = 7.3; 99 percent	17)
Use the given degree of confidence and sample data to construct a confidence interval for the pop 18) When 269 college students are randomly selected and surveyed, it is found that 98 own a car. Find a 99% confidence interval for the true proportion of all college students who own a car.	ulation proportion p. 18)
Use the given degree of confidence and sample data to construct a confidence interval for the pop Assume that the population has a normal distribution.	ulation mean µ.
19) n = 16, x = 28.6, s = 5.7, 99 percent	19)
Use the margin of error, confidence level, and standard deviation σ to find the minimum sample s estimate an unknown population mean μ .	size required to
20) Margin of error: \$124, confidence level: 95% , $\sigma = 516	20)

Answer Key Testname: FINALREVIEW2014

- 1) 0.1951
- 2) 9.18%
- 3) 2.13
- 4) $\mu = 8.0$
- 5) 204,757
- 6) 14,205
- 7) Discrete
- 8) Continuous
- 9) H₀: p = 0.11. H₁: $p \neq 0.11$. Test statistic: z = 4.61. P-value: p = 0.0001.

Critical values: $z = \pm 1.96$. Reject null hypothesis. There is sufficient evidence to warrant rejection of the claim that the proportion of all children in the town who suffer from asthma is 11%.

- 10) H₀: μ = 39.9; H₁: μ ≠ 39.9. Test statistic: 3.75. P-value: 0.0002. Reject H₀. There is sufficient evidence to warrant rejection of the claim that the mean equals 39.9 cm.
- 11) 0.8708
- 12) 0.9656
- 13) 0.2237
- 14) 0.0808
- 15) 2.33
- 16) Test statistic: t = -1.26. Critical values: t = -1.753. Fail to reject H₀. There is not sufficient evidence to support the claim that the mean is less than 30 g.
- 17) 79.9 < µ < 83.9
- 18) 0.256 < p < 0.386
- 19) $20.70 < \mu < 32.90$
- 20) 62