

Statistics Quiz

1. What are the mean, mode, five-number summary, and standard deviation of the following set of values (you may use all the features of your calculator):

3 4 5 5 5 6 6 7 9 9

2. Using the empirical rule, what percentage of values fall *below* 1 standard deviation *above* the mean?
3. In 2008, SAT math scores were normally distributed with a mean of 522 and a standard deviation of 102. Calculate the z-score for an SAT score of 700. What percentage of test takers do *better than a 700* on the math portion?
4. The number of credits that college students take each semester is normally distributed with a standard deviation of 2. Given a sample of 100 college students with a mean of 12.4 credits, create a 95% confidence interval ($\alpha=.05$) for the mean number of credits per college student per semester.
5. A drug company claims that their new pill will lower your cholesterol by at least 18 points. Using a sample of 50 individuals that used the drug, with a mean reduction of 17.2 points and a standard deviation of 3, perform a hypothesis test at a significance level of .05 .
- a. What are your null and alternative hypotheses?
- b. What type of test is this (1 or 2 tailed)? What is your "critical" z-score?
- c. What is the calculated test statistic (z-score)?
- d. What is your conclusion?
- e. Based on the results from your sample, what type of error could have occurred in this test?
- f. Would you have made the same conclusion at significance level of .025?

Answer Key

1. Mean – 5.9; Mode – 5; Low – 3; Q1 – 5; Median – 5.5; Q3 – 7; Max – 9; Standard Deviation – 1.868
2. 84%
3. $Z = 1.75$; 4%
4. 12.008 – 12.792
- 5a. $H_0: \mu \geq 18$; $H_a: \mu < 18$
- 5b. 1-tailed; $z = -1.645$
- 5c. $z = -1.89$
- 5d. Reject the null hypothesis and the company's claim
- 5e. Type I
- 5f. No, ($z = -1.96$)