NAME

STAT 1230 Quizam #6

1. A school district has decided that students in grades 7 through 12 should receive 400 minutes of physical education every 10 school days. A gym teacher at one of the schools believes that his students are not meeting this criterion. She randomly selects 50 students and it is found that her students have a mean of 385 minutes and a standard deviation of 55 minutes. Is this evidence to support her claim?
   1. Write appropriate hypotheses. 5 points
   2. Perform the mechanics of the test. What is the p-value? 10 points
   3. What is your conclusion? 5 points
2. On average, healthy young adults dream 90 minutes each night with a standard deviation of 9 minutes. An investigator wishes to determine whether drinking coffee just before going to sleep affects the amount of dream time. After drinking a standard amount of coffee, dream time is monitored for each of 28 healthy young adults in a random sample. Results show participants dreamt an average of 88 minutes. Is this evidence that dream time is affected by drinking coffee before bedtime?
   1. Write the hypotheses. 5 points
   2. Perform the mechanics of the test. What is the p-value? 10 points
   3. What is your conclusion? 5 points
3. A Villanova biology class wants to determine whether a mildly adverse stimulus has any effect on performance. A sample of seven lab rats were given a mild electrical shock just before each trial. It took these 7 rats an average of 34.89 trials with a standard deviation of 3.02 to learn the correct way out of the maze.
   1. Find a 95 percent confidence interval for the true number of trials required to learn the maze. 10 points
   2. What is the estimate? 5 points
   3. What is the margin of error? 5 points
4. A basketball player claims he can make 80% of his free throws. We think that it is a much lower percentage. We invite the player to our gym and ask him to shoot 50 free throws of which he makes 32. Do we have evidence that he is exaggerating?
   1. Write appropriate hypotheses. 5 points
   2. Perform the mechanics of the test. What is the P-value? 10 points
   3. What is your conclusion? 5 points
5. A random sample of 50 students have a mean SAT score of 480. SAT scores follow a normal distribution with a standard deviation of 100.
   1. Write a 98% confidence interval for the true mean for student SAT scores. 10 points
   2. A principal at one school believes that the mean score is much higher. They believe that it is 525. Do you believe them? Why? 5 points