Exam I examples

1. The Miller Analogies Test is used by some psychology departments in selecting graduate students. Although only raw scores are reported, it is known that for students applying for graduate study the population mean and standard deviation are 75 and 25, respectively.

1. What percentage of students score above 85?

2. What percentage of students score below 50?

3. What score is at the 25th percentile?

4. If applicants at a certain prestigious university are expected to be in the upper 5%, what is the minimum score expected on the Miller?

2. A school system wants to know if their fifth grade math instruction is better than average. Twenty (20) fifth grade students, selected at random from the school, are tested at the end of the semester. The test used is a nationally standardized math test for fifth graders ($\mu=5$, $\sigma=1.2$). The selected students achieved an average score of 5.35 on the test. Do students who are enrolled in this school score above the national average on this test?

    a. State the null hypothesis symbolically
    b. State the alternative hypothesis symbolically
    c. What is the observed value of the test statistic (z-test)
    d. What is the critical value of the test statistic ($\alpha=.05$)
    e. Do they score above the national average?

a	
b	
c	
d	
e	

3. A fund raiser for a charitable organization has set a goal of averaging $20 or more per donation. To see if the goal is being met, a random sample of recent donations is selected. The data from this sample are as follows: 20, 5, 10, 15, 25, 5, 8, 10, 30, 10, 15, 24, 50, 10, 7, 15, 10, 5, 5, 15.

    a. State the null hypothesis
    b. State the alternative hypothesis
    c. What is the observed value of the test statistic?
    d. What is the critical value of the test statistic (a=.05)?
    e. What is the statistical decision?
    f. Are they meeting the goal?