**Statistics (2) Quiz-2** Date: Apr. 17, 2018

**Name：**

**ID：**

**Traveling Distances (p.496 #18) 【Z改成t】**

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| A researcher claim that there is a difference in the distance of travelling to school between day students and evening students. Two random samples are taken, and the data are shown.   1. Find the 95% confidence interval of the difference in the means. 2. At 0.05 significant level, test the claim (use critical value method). | Day  students | Evening students |
| x̅1 = 4.7  S1 = 1.5  n1 = 12 | x̅2 = 6.2  S2 = 1.7  n2 = 16 |

**Exam Scores at Private and Public Schools (p.497 #25)**

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| A researcher claims that students in a private school have exam scores that are at most 6 points higher than those of students in public schools. Random samples of 60 students from each type of school are selected and given an exam. The results are shown. At α = 0.05, test the claim. | Private School | Public School |
| x̅1=112  σ1=15  n1=60 | x̅2=104  σ2=15  n2=60 |

**Weights of Vacuum Cleaners (p.503 #6; p.503 #10)**

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| Upright vacuum cleaners have either a hard body type or a soft body type. Shown are the weights in pounds of a random sample of each type. Assume the variable is normally distributed.   1. At α=0.05, can it be concluded that the means of the weights are different? 2. Find the 95% confidence interval for the difference of the means. | Hard types | Soft types |
| 21 18 23  20 16 17 | 14 13 11  13 12 15 |
| Mean = 18  Variance = 4.5 | Mean = 13  Variance = 2.5 |

**Pulse Rates of Identical Twins (p.516 #9)**

A researcher wanted to compare the pulse rates of identical twins to see whether there was any difference. Eight sets of twins were randomly selected. The rates are given in the tables a number of beats per minute. At α=0.01, is there a significant difference in the average pulse rates of twins? Use the *P*-value method. Find the 99% confidence interval for the difference of the two.

A doctor is interested in determining whether a ﬁlm about exercise will change six persons’ attitudes about exercise. The results of his questionnaire are shown. A higher numerical value shows a more favorable attitude toward exercise. Is there enough evidence to support the claim, at α = 0.05, that there was a change in attitude? Find the 95% conﬁdence interval for the difference of the two means.

|  |  |
| --- | --- |
| Before | 12 11 8 5 12 9 |
| After | 15 11 9 7 10 11 |

**Desire to Be Rich (p.525 9)**

In a random sample of 80 Americans, 44 wished that they were rich. In a random sample of 100 Europeans, 46 wished that they were rich. At α = 0.02, is there a difference in the proportions? Find the 98% confidence interval for the difference of the two proportions.

**Transferring Phone Calls (p.469 #7)**

The manager of a large company claims that the standard deviation of the time (in minutes) that it takes a telephone call to be transferred to the correct office in her company is 1.2 minutes or less. A random sample of 15 calls is selected, and the calls are timed. The standard deviation of the sample is 1.8 minutes. At α=0.01, test the claim that the standard deviation is less than or equal to 1.2 minutes. Use the *P*-value method.

**Internet Visits (p.450 #14)**

A U.S. Web Usage Snapshot indicated a monthly average of 36 Internet visits a particular website per user form home. A random sample of 24 Internet users yielded a sample mean of 42.1 visits with a standard deviation of 5.3. At the 0.01 level of significance, can it be concluded that this differs from the national average?

**Exercise to Reduce Stress (p.458 #16**)

A survey by *Men’s Health* magazine stated that 14% of men said they used exercise to reduce stress. Use α=0.10. A random sample of 100 men was selected, and 10 said that they used exercise to relieve stress. Use the *P*-value method to test the claim. Could the results be generalized to all adult Americans?

**~~Manufactured Machine Parts (p.470 #15)~~**

~~A manufacturing process produces machine parts with measurements the standard deviation of which must be no more than 0.52 mm. A random sample of 20 parts in a given lot revealed a standard deviation in measurement of 0.568 mm. Is there sufficient evidence at α=0.05 to conclude that the standard deviation of the parts in outside the required guidelines?~~