Name : _____

**Choose the correct hypothesis test for the following situations**

1.  A random sample of 49 medical doctors in LA showed that they worked an average of 53.1 hours/week with a standard deviation of 7.2 hours/week.  If the California average is 60 hours/week, does this give evidence that the LA doctors work significantly less than the rest of California?

    Type of test _____

    $H_o$:                      $H_a$:

    Assumptions/Conditions:

    Test statistic _____          P value _____          Reject/fail to reject _____

2.  White blood cell counts  are normally distributed with mean 7500 and variance 500.  If a patient has taken 50 laboratory blood tests that have a mean of 6899.75 and a standard deviation of 393.44, does this give evidence that his white blood cell count is significantly different than normal?

    Type of test _____

    $H_o$:                      $H_a$:

    Assumptions/Conditions:

    Test statistic _____          P value _____          Reject/fail to reject _____

3.  USA Today reported that in 1992, 39% of all elementary school children claimed that when they grow up they want to do something to help other people.  However, in 1995, 128 of a random sample of 317 of these same children claimed that when they grow up they want to do something to help other people.  Does this information indicate that there has been an attitude change either way?

    Type of test _____

    $H_o$:                      $H_a$:

    Assumptions/Conditions:

    Test statistic _____          P value _____          Reject/fail to reject _____

4. The manager of a sporting goods store offered a bonus commission to his salespeople when they sold more goods. A new manager dropped the bonus system. For a random sample of six sales people, the weekly sales (in thousands of dollars) are shown in the following table with and without the bonus system.

| Salesperson | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| with bonus | 2.9 | 3.0 | 5.8 | 4.4 | 5.3 | 5.6 |
| without bonus | 2.8 | 2.5 | 5.9 | 3.5 | 4.6 | 4.6 |

Does this imply that sales dropped when the bonus system was discontinued?

Type of test _____

$H_o$:                    $H_a$:

Assumptions/Conditions:

Test statistic _____        P value _____        Reject/fail to reject _____

5. In 1975, a random sample of 1484 adult U.S. citizens was surveyed, and 193 strongly agreed with the statement, "People should take care of themselves". Then, in 1991, a survey of 1013 adult U.S. citizens showed that only 61 strongly agreed with the statement. Does this indicated that the proportion of U.S. adults who strongly agree with the given statement has dropped?

Type of test _____

$H_o$:            $H_a$:

Assumptions/Conditions:

Test statistic _____        P value _____        Reject/fail to reject _____

6. Five small cities in California gave information about the percentage of 16-19 year olds not in school and the death rate per 1000 residents. Given the information below, can the percentage of 16-19 year olds not in school be used to predict the death rate? Give statistical evidence of your belief.

| City | A | B | C | D | E |
|---|---|---|---|---|---|
| % of 16-19 year olds | 16.2 | 9.9 | 19.5 | 19.7 | 9.8 |
| death rate/1000 | 7.7 | 8.8 | 7.0 | 8.1 | 8.4 |

Type of test _____

$H_o$:            $H_a$:

Assumptions/Conditions:

Test statistic _____        P value _____        Reject/fail to reject _____

7.  Reading Nook Bookstore has 750 retail outlets across the country.  The sales director wanted to see if Christmas music affects book sales in December.  She randomly assigned some of the outlets to pipe in music and others not to.  Then sales records for the month of December were kept.  The results are shown in the table below.  Test the hypothesis that sales and Christmas music are independent.

|  | <10,000 | 10-20,000 | >20,000 |
|---|---|---|---|
| With music | 5 | 18 | 7 |
| Without music | 10 | 7 | 3 |

Type of test _____

$H_o$:                          $H_a$:

Assumptions/Conditions:

Test statistic _____        P value _____        Reject/fail to reject _____

8.  The following is based on information taken from Winter Wind Studies in Rocky Mountain National Park, by Glidden.   At five weather stations on Trail Ridge Road in Rocky Mountain National Park, the peak wind gusts (mi/hr) in January and April are recorded below

| Weather station | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| January | 139 | 122 | 126 | 64 | 78 |
| April | 104 | 113 | 100 | 88 | 61 |

Does this information indicated that the peak wind gusts are higher in January than April?

Type of test _____

$H_o$:                     $H_a$:

Assumptions/Conditions:

Test statistic _____        P value _____        Reject/fail to reject _____

9.  Snoop Incorporated is a firm that does market surveys.  The Rollum Sound Company hired Snoop to study
    the age distribution of people who buy CDs.  To check the Snoop report, Rollum used a random sample of
    519 customers and obtained the following data

| Customer age (yrs) | % of customers In Snoop report | number of customers in sample |
|---|---|---|
| <14 | 12% | 88 |
| 14.18 | 9% | 135 |
| 19-23 | 11% | 52 |
| 24-28 | 10% | 40 |
| 29-33 | 14% | 76 |
| >33 | 24% | 128 |

Type of test _____

$H_o$:                                    $H_a$:

Assumptions/Conditions:




Test statistic _____        P value _____        Reject/fail to reject _____