

Elementary Statistics	Name: _____
Study Guide 30	Class: _____
Due Date: _____	Score: _____

No Work \Leftrightarrow No Points

Use Pencil Only \Leftrightarrow Be Neat & Organized

1. A local nurse’s union has done a study on salary of full-time nurses. The result of this study is summarized in the table below. Assume two population standard deviations are unknown and not equal.

Females	Males
$n_1 = 20$	$n_2 = 16$
$\bar{x}_1 = 7050$	$\bar{x}_2 = 6750$
$s_1 = 450$	$s_2 = 250$

- (a) (2 points) Determine the pooling option and degrees of freedom when working with two population means μ_1 and μ_2 .

(a) _____

- (b) (3 points) Construct a 98% confidence interval for the difference between population means $\mu_1 - \mu_2$ using data in the table.

(b) _____

- (c) (2 points) Compute the margin of error.

(c) _____

A local newspaper claims that the mean salary of all full-time female nurses is more than the mean salary of all full-time male nurses. Test this claim at $\alpha = 0.02$ by using the data in the table.

(d) (3 points) Clearly state H_0 , H_1 , identify the claim and type of test.

H_0 : _____

H_1 : _____

(e) (3 points) Find all related critical values, draw the distribution, clearly mark and shade the critical region(s).

(f) (3 points) Find the computed test statistic and the P-value.

C.T.S. : _____

P-Value : _____

(g) (2 points) Use non-statistical terminology to state your final conclusion about the claim.

(g) _____

2. Given: $n_1 = 15, \bar{x}_1 = 75.7, s_1 = 8.1, n_2 = 10, \bar{x}_2 = 65.2, s_2 = 5.5$, assume two population standard deviations are unknown and equal.

(a) (2 points) Round given data to whole numbers, and then complete the following table.

Sample 1	Sample 2
$n_1 =$	$n_2 =$
$\bar{x}_1 =$	$\bar{x}_2 =$
$s_1 =$	$s_2 =$

(b) (2 points) Determine the pooling option and degrees of freedom when working with two population means μ_1 and μ_2 .

(b) _____

(c) (2 points) Construct 98% confidence interval for the difference between population means $\mu_1 - \mu_2$ using data summarized in the table.

(c) _____

(d) (2 points) Compute the margin of error.

(d) _____

A researcher claims there is a difference between the two population means and wishes to use our summarized data in the table to perform a hypothesis testing between two population means.

(e) (2 points) Clearly state H_0 and H_1 , and identify the type of test.

H_0 : _____

H_1 : _____

(f) (3 points) Using $\alpha = 0.02$ significance level, find and name all related critical values, draw the distribution, and clearly mark and shade the critical region(s).

(g) (3 points) Find the computed test statistic and the P-value.

C.T.S. : _____

P-Value : _____

(h) (2 points) Use non-statistical terminology to express your final conclusion about the researcher's claim.

(h) _____

3. The following calculator displays present the information that a researcher has entered into the calculator in an attempt to find the confidence interval for the difference between two population means.

```

2-SampTInt
Inpt:Data Stats
x1:135
Sx1:15
n1:18
x2:150
Sx2:20
n2:12

```

```

2-SampTInt
↑Sx1:15
n1:18
x2:150
Sx2:20
n2:12
C-Level:.9
↓Pooled: [ ] Yes

```

- (a) (3 points) Write the confidence interval in proper mathematical notation, and find its margin of error. Round the final answer to a whole number.

(a) _____

- (b) (3 points) Test the claim that the mean of population 2 is greater than the mean of population 1. Clearly state H_0 , H_1 , identify the claim and type of test.

H_0 : _____

H_1 : _____

- (c) (3 points) Find all related critical values, draw the distribution, clearly mark and shade the critical region(s).

- (d) (3 points) Find the computed test statistic and the P-value.

C.T.S. : _____

P-Value : _____

- (e) (2 points) Use non-statistical terminology to state your final conclusion about the claim.

(e) _____