

# MTH 150



New Castle News  
Jul 31, 2014

Develop

No. 1 A

No. 2 B

No. 3 B

No. 4 Not included as a topic in this test.

No. 5 False. Not necessarily, the converse would be true since  $0.01 < 0.05$ .

The screenshot shows a software window titled "Hypothesis Test: Mean-One Sample". It contains input fields for various statistical parameters and a results box on the right.

**Alternative Hypothesis:**  
3) Pop. Mean < Claimed Mean

**Significance:** 0.05  
**Claimed Mean:** 0.20  
**Population St. Dev.: (if known)** [empty]  
**Sample Size, n:** 16  
**Sample Mean:** 0.19  
**Sample St. Dev., s:** 0.01

**Buttons:** Evaluate, Plot

**Results Box:**

Alternative Hypothesis:  
 $\mu < \mu(\text{hyp})$

t Test  
Test Statistic, t: -4.0000  
Critical t: -1.7530  
P-Value: 0.0006

90% Confidence interval:  
 $0.1856174 < \mu < 0.1943826$

- No. 6** The p-value of  $0.0285 < 0.05$ , so reject  $H_0$  (that there is no change from the mean of 72) and agree that there seems to be sufficient evidence to claim that students are less fit.

The screenshot shows a software window titled "Hypothesis Test: Mean-One Sample". It contains input fields for various statistical parameters and a results box. The "Alternative Hypothesis" is set to "2) Pop. Mean > Claimed Mean". The "Significance" level is 0.05, the "Claimed Mean" is 72, the "Population St. Dev." is empty, the "Sample Size, n" is 25, the "Sample Mean" is 80, and the "Sample St. Dev., s" is 20. The results box displays the test statistics: t Test, Test Statistic, t: 2.0000, Critical t: 1.7109, P-Value: 0.0285, and a 90% Confidence interval: 73.15648 <  $\mu$  < 86.84352. There are "Evaluate" and "Plot" buttons at the bottom left.

Parameter	Value
Significance	0.05
Claimed Mean	72
Population St. Dev.: (if known)	
Sample Size, n	25
Sample Mean	80
Sample St. Dev., s	20

Alternative Hypothesis: 2) Pop. Mean > Claimed Mean

Alternative Hypothesis:  $\mu > \mu(\text{hyp})$

t Test  
Test Statistic, t: 2.0000  
Critical t: 1.7109  
P-Value: 0.0285

90% Confidence interval:  
73.15648 <  $\mu$  < 86.84352

Evaluate Plot

- No. 7** The p-value of  $0.0216 < 0.05$ , so reject  $H_0$  (hat therrre is no change from the mean of 70) and agree that there seems to be sufficient evidence to say that the mean life span is greater than 70.

**Hypothesis Test: Mean-One Sample**

Alternative Hypothesis:  
2) Pop. Mean > Claimed Mean

Significance: 0.05  
Claimed Mean: 70  
Population St. Dev.: 8.9 (if known)  
Sample Size, n: 100  
Sample Mean: 71.8  
Sample St. Dev., s:

Evaluate  
Plot

Alternative Hypothesis:  
 $\mu > \mu(\text{hyp})$   
z Test  
Test Statistic, z: 2.0225  
Critical z: 1.6449  
P-Value: 0.0216  
90% Confidence interval:  
 $70.33608 < \mu < 73.26392$

- No. 8** The p-value of  $0.0068 < 0.01$ , so reject  $H_0$  (that there is no change from the mean of 8) and agree that there seems to be sufficient evidence to say that the average wait is different from 8 minutes.

Hypothesis Test: Mean-One Sample

Alternative Hypothesis:

1) Pop. Mean not = Claimed Mean

Significance:

0.01

Alternative Hypothesis:

$\mu$  not equal to  $\mu(\text{hyp})$

Claimed Mean:

8

t Test

Population St. Dev.:  
(if known)

Test Statistic, t: -2.8284

Sample Size, n:

50

Critical t:  $\pm 2.6799$

Sample Mean:

7.8

P-Value: 0.0068

Sample St. Dev., s:

0.5

99% Confidence interval:  
 $7.610499 < \mu < 7.989501$

Evaluate

Plot

**No. 9a** The p-value of  $0.0956 > 0.05$ , so we fail to reject  $H_0$  and conclude there is not sufficient evidence to suggest that the height is different.

**Hypothesis Test: Mean-One Sample**

Alternative Hypothesis:  
1) Pop. Mean not = Claimed Mean

Significance: 0.05  
Claimed Mean: 71  
Population St. Dev.: (if known) 3  
Sample Size, n: 25  
Sample Mean: 70  
Sample St. Dev., s:

Evaluate  
Plot

Alternative Hypothesis:  
 $\mu$  not equal to  $\mu(\text{hyp})$

z Test  
Test Statistic, z: -1.6667  
Critical z:  $\pm 1.9600$   
P-Value: 0.0956

95% Confidence interval:  
 $68.82402 < \mu < 71.17598$

**No. 9b** The p-value of  $0.0009 < 0.05$ , so reject  $H_0$  (that there is no change from the mean of 72) and agree that there seems to be sufficient evidence to say that the average wait is different from 72.

**Hypothesis Test: Mean-One Sample**

Alternative Hypothesis:  
1) Pop. Mean not = Claimed Mean

Significance: 0.05  
Claimed Mean: 72  
Population St. Dev.: (if known) 3  
Sample Size, n: 25  
Sample Mean: 70  
Sample St. Dev., s:

**Evaluate**  
**Plot**

Alternative Hypothesis:  
 $\mu$  not equal to  $\mu(\text{hyp})$

z Test  
Test Statistic, z: -3.3333  
Critical z:  $\pm 1.9600$   
P-Value: 0.0009

95% Confidence interval:  
 $68.82402 < \mu < 71.17598$

**No. 9c** The p-value of  $0.0478 < 0.05$ , so reject  $H_0$  (that there is no change from the mean of 69) and agree that there seems to be sufficient evidence to say that the average wait is greater than 69.

**Hypothesis Test: Mean-One Sample**

Alternative Hypothesis:  
2) Pop. Mean > Claimed Mean

Significance: 0.05  
Claimed Mean: 69  
Population St. Dev.: (if known) 3  
Sample Size, n: 25  
Sample Mean: 70  
Sample St. Dev., s:

Evaluate  
Plot

Alternative Hypothesis:  
 $\mu > \mu(\text{hyp})$

z Test  
Test Statistic, z: 1.6667  
Critical z: 1.6449  
P-Value: 0.0478

90% Confidence interval:  
 $69.01309 < \mu < 70.98691$



**No. 10**

The p-value of  $0.089 > 0.05$  so so we fail to reject  $H_0$  and conclude there is not sufficient evidence to suggest that there is any difference.

Hypothesis Test: Mean-One Sample

Alternative Hypothesis:  
1) Pop. Mean not = Claimed Mean

Significance: 0.05

Claimed Mean: 7.1

Population St. Dev.:  
(if known)

Sample Size, n: 5

Sample Mean: 7.07

Sample St. Dev., s: 0.03

Evaluate

Plot

Alternative Hypothesis:  
 $\mu$  not equal to  $\mu(\text{hyp})$

t Test  
Test Statistic, t: -2.2361  
Critical t:  $\pm 2.7764$   
P-Value: 0.0890

95% Confidence interval:  
 $7.03275 < \mu < 7.10725$