Practice Test 3

This is a preview of the draft version of the quiz

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<td>Everyone</td>
<td>-</td>
<td>Dec 1, 2021 at 11:59pm</td>
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Score for this attempt: 0 out of 40
Submitted Apr 21 at 2:22pm
This attempt took less than 1 minute.
Correct Answer

- Professors testing the proportion of students who cheat.
- Researchers testing whether a new medication causes cancer.
- A chef testing the proportion of customers who order a specific appetizer.
- A gardener testing whether a manure helps his garden grow.

Question 4

The "significance level" of a test, \( \alpha \), is also

- the probability of making a Type I error
- called "the power of the test"
- the probability of making a Type II error

Correct Answer

Question 5

Let \( p \) be the proportion of all adults who are in favor of outlawing cigarettes. A researcher testing the hypotheses:

\[
H_0 : p = 0.23; \quad H_a : p \neq 0.23
\]

calculates a p-value of 0.489. The researcher will likely

- Make a type I error
- Fail to reject the alternative hypothesis
Correct Answer
reject

Answer 2:
(You left this blank)

Correct Answer
is

**Question 8**

0 / 1 pts

The average room rate in hotels in a certain region is $82.53. A travel
agent believes that the average in a particular resort area is different. The
agent tests \( H_0 : \mu = 82.53 \); \( H_a : \mu \neq 82.53 \), and calculates a p-
value of 0.063. At a 5% level of significance, the agent should [Select ]
the null hypothesis. There [Select ] sufficient evidence to claim that the
average in the resort area differs from that of the region.

**Answer 1:**
(You left this blank)

Correct Answer
fail to reject

**Answer 2:**
(You left this blank)

Correct Answer
is not

**Question 9**

0 / 1 pts

Which of the following statements are true in hypotheses testing?
(i) If we reject \( H_o \) when \( H_o \) is in fact true, we made Type I error.
Question 12

Which of the following statements would correspond to an alternative hypothesis?

- The population proportion is less than or equal to 0.30
- The population mean is not 21
- The population mean is no more than 18
- The population proportion is at least 50%

Correct Answer

Question 13

The government of a particular country reports its literacy rate as 52%. A nongovernmental organization believes it to be less. The organization takes a random sample of 600 inhabitants and obtains a literacy rate of 42%. Perform the relevant test at the 5% level of significance.

Set up the null and alternative hypotheses to test whether the proportion of literate citizens is less than the proportion reported by the government.

| (a) $\bar{x}$ | (e) = | (i) 0.05 |
| (b) $\mu$    | (f) >  | (j) 0.42  |
| (c) $p$      | (g) <  | (k) 0.50  |
| (d) $p'$     | (h) $\neq$ | (m) 0.52 |
The average July temperature in a region historically has been 74.5 degrees Fahrenheit. A climatologist believes that the temperature is higher now. The climatologist randomly selects 35 July days in the past three years and finds an average temperature of 77.2 degrees.

Set up the null and alternative hypotheses to test whether the average July temperature for this region is higher than the historical value.

(a) \( \bar{x} \)  
(b) \( \mu \)  
(c) \( p \)  
(d) \( p' \)  
(e) =  
(f) >  
(g) <  
(h) \neq  
(i) 2.7  
(j) 74.5  
(k) 77.2  
(m) 79.9

\[ H_0: \] [Select \ Select \ Select \ Select]  
\[ H_a: \] [Select \ Select \ Select]  

Answer 1:  
(You left this blank)

Answer 2:  
(b)
than it was in March.

(a) \( \bar{x} \)  
(b) \( \mu \)  
(c) \( p \)  
(d) \( p' \)

(e) =  
(f) >  
(g) <  
(h) \( \neq \)

(i) 0.87  
(j) 0.80  
(k) 0.96  
(m) 0.50

\[ H_0: \quad [ \text{Select} \quad [ \text{Select} \quad [ \text{Select} \quad ] \quad ] \quad ] \]

\[ H_a: \quad [ \text{Select} \quad [ \text{Select} \quad [ \text{Select} \quad ] \quad ] \quad ] \]

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**Answer 1:**

**Correct Answer**  (c)

(You left this blank)

---

**Answer 2:**

**Correct Answer**  (e)

(You left this blank)

---

**Answer 3:**

**Correct Answer**  (i)

(You left this blank)

---

**Answer 4:**

**Correct Answer**  (c)

(You left this blank)

---

**Answer 5:**
Question 17

Which of the following denotes a hypothesis that does not include an equality?
Question 20

Identify the steps for the p-value method:

**Step 1:** 
Correct Answer: State the hypotheses

**Step 2:** 
Correct Answer: Find the test statistic

**Step 3:** 
Correct Answer: Find the p-value

**Step 4:** 
Correct Answer: Make a decision

**Step 5:** 
Correct Answer: Provide an interpretation

Other Incorrect Match Options:
### Question 23

If $H_a: \mu \neq 969$, then the test will be _________.

- Two-tailed
- Left-tailed
- Right-tailed
- Unable to tell given the current information

### Question 24

A test is made of $H_0: \mu = 20$ versus $H_a: \mu \neq 20$. Suppose the true value of $\mu$ is 25, and $H_0$ is rejected.

Determine whether the outcome is a Type I error, a Type II error, or a correct decision.

- Insufficient information to decide
- Type I Error
- Correct Decision
- Both Type I and II Errors
- Type I Error
The hypotheses that we should use for this test are (use the table above):

\[ H_0: [ \text{Select} ] \quad [ \text{Select} ] \quad [ \text{Select} ] \]
\[ H_a: [ \text{Select} ] \quad [ \text{Select} ] \quad [ \text{Select} ] \]

**PART 3:**

The formula that we should use to calculate the test statistic is (choose from below): [ Select ]

A) \(\frac{(3.58 - 3.14)}{(1.82/\text{SQRT}(55))}\)
B) \(\text{NORM.INV}\left(\frac{(3.58 - 3.14)}{(1.82/\text{SQRT}(55))}\right)\)
C) \(\text{NORM.DIST}(3.58, 1.82, 55, \text{TRUE})\)
D) \(\text{NORM.DIST}(3.14, 1.82, 55, \text{TRUE})\)
E) \(\frac{(3.14 - 3.58)}{(1.82/\text{SQRT}(55))}\)

**PART 4:**

The formula that we should use in Excel to calculate the p-value is (choose from below, where \(Z^*\) is the test statistic calculated in part 3): [ Select ]

A) \(2\times\text{NORM.DIST}(Z^*, 0, 1, \text{TRUE})\)
B) \(1-\text{NORM.DIST}(Z^*, 0, 1, \text{TRUE})\)
C) \(\text{NORM.DIST}(1-Z^*, 0, 1, \text{TRUE})\)
D) \(2\times(1-\text{NORM.DIST}(Z^*, 0, 1, \text{TRUE}))\)
E) \(\text{NORM.DIST}(Z^*, 3.58, 1.82, \text{TRUE})\)
F) \(1-\text{NORM.DIST}(Z^*, 3.58, 1.82, \text{TRUE})\)
G) \(2\times\text{NORM.DIST}(Z^*, 3.58, 1.82, \text{TRUE})\)

**PART 5:**

Assume that the p-value calculated in part 4 was 0.0365. Based on this p-value, we should [ Select ] the null hypothesis. There is [ Select ] to [ Select ] the sociologist's claim.

**Answer 1:**

(You left this blank)

**Correct Answer:**

\(z\)-distribution

**Answer 2:**

(You left this blank)
Correct Answer: B

Answer 10:
(You left this blank)

Answer 11:
(You left this blank)

Answer 12:
(You left this blank)

Correct Answer: support

Question 27

Five years ago 3.9% of children in a certain region lived with someone other than a parent. A sociologist claims that the current proportion is different. Perform the relevant test at the 5% level of significance using the following data: in a random sample of 2,500 children, 115 lived with someone other than a parent.

PART 1:
To perform this test, we should use the [Select ] distribution.

PART 2:

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<tbody>
<tr>
<td>(a) ( \bar{X} ) = (e) 0.039</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) ( \mu ) = (f) 0.046</td>
<td></td>
<td></td>
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<tr>
<td>(c) ( p ) = (g) &lt; (k) 119</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(d) ( p' ) = (h) ( \neq ) (m) 2500</td>
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Correct Answer: c

Answer 3:
(You left this blank)

Correct Answer: e

Answer 4:
(You left this blank)

Correct Answer: i

Answer 5:
(You left this blank)

Correct Answer: c

Answer 6:
(You left this blank)

Correct Answer: h

Answer 7:
(You left this blank)

Correct Answer: i

Answer 8:
(You left this blank)

Correct Answer: C

Answer 9:
(You left this blank)
PART 3:

The formula that we should use to calculate the test statistic is (choose from below): [Select]

A) \(=(2200 - 2150)/(203/\text{SQRT}(19))\)
B) \(=\text{T.INV}((2150 - 2200)/(203/\text{SQRT}(19)))\)
C) \(=\text{T.DIST}(2150, 18, \text{TRUE})\)
D) \(=\text{T.DIST}(2200, 18, \text{TRUE})\)
E) \(=(2150 - 2200)/(203/\text{SQRT}(19))\)

PART 4:

The formula that we should use in Excel to calculate the p-value is (choose from below, where \(T^*\) is the test statistic calculated in part 3): [Select]

A) \(=2*\text{T.DIST}(T^*, 18, \text{TRUE})\)
B) \(=1-\text{T.DIST}(T^*, 18, \text{TRUE})\)
C) \(=\text{T.DIST}(T^*, 18, \text{TRUE})\)
D) \(=2*(1-\text{T.DIST}(T^*, 19, \text{TRUE}))\)
E) \(=\text{T.DIST}(T^*, 19, \text{TRUE})\)
F) \(=1-\text{T.DIST}(T^*, 19, \text{TRUE})\)
G) \(=2*\text{T.DIST}(T^*, 19, \text{TRUE})\)

PART 5:

Assume that the p-value calculated in part 4 was 0.1486. Based on this p-value, we should [Select] the null hypothesis. There is [Select] to [Select] the nutritionist’s claim.

Answer 1:

(You left this blank)

Correct Answer: t-distribution

Answer 2:

(You left this blank)

Correct Answer: b

Answer 3:
Correct Answer: 

Answer 11:
(You left this blank)

Correct Answer: 

Answer 12:
(You left this blank)

Correct Answer: support

Quiz Score: 0 out of 40