QUESTION 1: PICK THE CORRECT NULL HYPOTHESIS (H0)

A researcher wants to see if playing background music has any effect on how quickly people are able to solve a series of difficult puzzles. He plans to test this using a One-Sample Z-Test with two tails, $\alpha = .05$. It's known that the general population takes an average of $\mu = 15.23$ minutes to solve this series of puzzles, and the researcher finds that for the sample of people in his study—who are listening to background music—they solve the series of puzzles in an average of M = 14.76 minutes.

Hint: Don't even **look** at the options below until you have fully written out H0 and H1 on your own using the flowchart!! Then all you have to do is find the option that matches your answer.

a) $\mu_{music} = 15.23$

b) $\mu_{music} = 14.76$

c) $\mu_{music} \neq 15.23$

d) $\mu_{music} \neq 14.76$

e) $\mu_{music} > 15.23$

f) $\mu_{music} > 14.76$

g) $\mu_{music} \geq 15.23$

h) $\mu_{music} \geq 14.76$

i) $\mu_{music} < 15.23$

j) $\mu_{music} < 14.76$

k) $\mu_{music} \leq 15.23$

l) $\mu_{music} \leq 14.76$

m) $\mu_{puzzles} = 15.23$

n) $\mu_{puzzles} = 14.76$

o) $\mu_{puzzles} \neq 15.23$

p) $\mu_{puzzles} \neq 14.76$

q) $\mu_{puzzles} > 15.23$

r) $\mu_{puzzles} > 14.76$

s) $\mu_{puzzles} \geq 15.23$

t) $\mu_{puzzles} \geq 14.76$

u) $\mu_{puzzles} < 15.23$

v) $\mu_{puzzles} < 14.76$

w) $\mu_{puzzles} \leq 15.23$

x) $\mu_{puzzles} \leq 14.76$

QUESTION 2: PICK THE CORRECT <mark>NULL HYPOTHESIS (H0)</mark>

The manager at a social work agency is interested in whether providing standardized case file forms to her social workers can **LESSEN** the number of errors the social workers make in filling out their case file paperwork. In the general population of all social workers at this firm, the average number of errors per case file is $\mu = 2.3$ errors, while the sample of social workers using the new standardized forms makes an average of $M = 1.8$ errors per case file. She plans to test this using a One-Sample Z-Test with one tail, $\alpha = .01$.

<mark>Hint: Don't even **look** at the options below until you have fully written out H0 and H1 on your own using the flowchart!! Then all you have to do is find the option that matches your answer.</mark>

a) $\mu_{errors} = 2.3$

b) $\mu_{errors} = 1.8$

c) $\mu_{errors} \neq 2.3$

d) $\mu_{errors} \neq 1.8$

e) $\mu_{errors} > 2.3$

f) $\mu_{errors} > 1.8$

g) $\mu_{errors} \geq 2.3$

h) $\mu_{errors} \geq 1.8$

i) $\mu_{errors} < 2.3$

j) $\mu_{errors} < 1.8$

k) $\mu_{errors} \leq 2.3$

l) $\mu_{errors} \leq 1.8$

m) $\mu_{standardized\ forms} = 2.3$

n) $\mu_{standardized\ forms} = 1.8$

o) $\mu_{standardized\ forms} \neq 2.3$

p) $\mu_{standardized\ forms} \neq 1.8$

q) $\mu_{standardized\ forms} > 2.3$

r) $\mu_{standardized\ forms} > 1.8$

s) $\mu_{standardized\ forms} \geq 2.3$

t) $\mu_{standardized\ forms} \geq 1.8$

u) $\mu_{standardized\ forms} < 2.3$

v) $\mu_{standardized\ forms} < 1.8$

w) $\mu_{standardized\ forms} \leq 2.3$

x) $\mu_{standardized\ forms} \leq 1.8$

QUESTION 3: PICK THE CORRECT NULL HYPOTHESIS (H0)

A cognitive scientist is interested in testing smart phone apps that claim to **IMPROVE** the user's memory: can they really do what they claim to do? The researcher tests this using a One-Sample Z-Test with one tail, $\alpha = .05$. The sample of people using the app gets an average memory score of M = 101.2, while the general population has an average memory score of $\mu = 100$.

Hint: Don't even **look** at the options below until you have fully written out H0 and H1 on your own using the flowchart!! Then all you have to do is find the option that matches your answer.

a) $\mu_{phone\ app} = 100$

b) $\mu_{phone\ app} = 101.2$

c) $\mu_{phone\ app} \neq 100$

d) $\mu_{phone\ app} \neq 101.2$

e) $\mu_{phone\ app} > 100$

f) $\mu_{phone\ app} > 101.2$

g) $\mu_{phone\ app} \geq 100$

h) $\mu_{phone\ app} \geq 101.2$

i) $\mu_{phone\ app} < 100$

j) $\mu_{phone\ app} < 101.2$

k) $\mu_{phone\ app} \leq 100$

l) $\mu_{phone\ app} \leq 101.2$

m) $\mu_{MEMORY\ SCORE} = 100$

n) $\mu_{MEMORY\ SCORE} = 101.2$

o) $\mu_{MEMORY\ SCORE} \neq 100$

p) $\mu_{MEMORY\ SCORE} \neq 101.2$

q) $\mu_{MEMORY\ SCORE} > 100$

r) $\mu_{MEMORY\ SCORE} > 101.2$

s) $\mu_{MEMORY\ SCORE} \geq 100$

t) $\mu_{MEMORY\ SCORE} \geq 101.2$

u) $\mu_{MEMORY\ SCORE} < 100$

v) $\mu_{MEMORY\ SCORE} < 101.2$

w) $\mu_{MEMORY\ SCORE} \leq 100$

x) $\mu_{MEMORY\ SCORE} \leq 101.2$

QUESTION 4: PICK THE CORRECT ALTERNATIVE HYPOTHESIS (H1)

The dean of a college is trying to see whether letting students enroll for their classes online has any effect on the average number of classes that students enroll in. She plans to test this using a One-Sample Z-Test with two tails, α = .01. The average number of classes enrolled in by the general population of students is μ = 3.33 classes, while a sample of students who are allowed to do the new online enrollment method, enrolls in an average of M = 3.54 classes.

Hint: Don't even **look** at the options below until you have fully written out H0 and H1 on your own using the flowchart!! Then all you have to do is find the option that matches your answer.

a) $\mu_{\text{NUMBER OF CLASSES}}$ = 3.33

b) $\mu_{\text{NUMBER OF CLASSES}}$ = 3.54

c) $\mu_{\text{NUMBER OF CLASSES}}$ ≠ 3.33

d) $\mu_{\text{NUMBER OF CLASSES}}$ ≠ 3.54

e) $\mu_{\text{NUMBER OF CLASSES}}$ > 3.33

f) $\mu_{\text{NUMBER OF CLASSES}}$ > 3.54

g) $\mu_{\text{NUMBER OF CLASSES}}$ ≥ 3.33

h) $\mu_{\text{NUMBER OF CLASSES}}$ ≥ 3.54

i) $\mu_{\text{NUMBER OF CLASSES}}$ < 3.33

j) $\mu_{\text{NUMBER OF CLASSES}}$ < 3.54

k) $\mu_{\text{NUMBER OF CLASSES}}$ ≤ 3.33

l) $\mu_{\text{NUMBER OF CLASSES}}$ ≤ 3.54

m) $\mu_{\text{online enrollment}}$ = 3.33

n) $\mu_{\text{online enrollment}}$ = 3.54

o) $\mu_{\text{online enrollment}}$ ≠ 3.33

p) $\mu_{\text{online enrollment}}$ ≠ 3.54

q) $\mu_{\text{online enrollment}}$ > 3.33

r) $\mu_{\text{online enrollment}}$ > 3.54

s) $\mu_{\text{online enrollment}}$ ≥ 3.33

t) $\mu_{\text{online enrollment}}$ ≥ 3.54

u) $\mu_{\text{online enrollment}}$ < 3.33

v) $\mu_{\text{online enrollment}}$ < 3.54

w) $\mu_{\text{online enrollment}}$ ≤ 3.33

x) $\mu_{\text{online enrollment}}$ ≤ 3.54

QUESTION 5: PICK THE CORRECT <mark>ALTERNATIVE HYPOTHESIS (H1)</mark>

A psychologist is testing whether exposure therapy—gradually exposing people to more and more of what they are afraid of—can **REDUCE** phobias in his patients. The general population of phobic patients experiences an average anxiety level of μ = 10.4 on the Smith Anxiety Scale when exposed to their fear; but the sample of patients who have had the exposure therapy experience an average anxiety of M = 7.5 on the Smith Anxiety Scale when exposed to their fear. He plans to test this using a One-Sample Z-Test with one tail, α = .05.

<mark>Hint: Don't even **look** at the options below until you have fully written out H0 and H1 on your own using the flowchart!! Then all you have to do is find the option that matches your answer.</mark>

a) $\mu_{\text{exposure therapy}} = 10.4$

b) $\mu_{\text{exposure therapy}} = 7.5$

c) $\mu_{\text{exposure therapy}} \neq 10.4$

d) $\mu_{\text{exposure therapy}} \neq 7.5$

e) $\mu_{\text{exposure therapy}} > 10.4$

f) $\mu_{\text{exposure therapy}} > 7.5$

g) $\mu_{\text{exposure therapy}} \geq 10.4$

h) $\mu_{\text{exposure therapy}} \geq 7.5$

i) $\mu_{\text{exposure therapy}} < 10.4$

j) $\mu_{\text{exposure therapy}} < 7.5$

k) $\mu_{\text{exposure therapy}} \leq 10.4$

l) $\mu_{\text{exposure therapy}} \leq 7.5$

m) $\mu_{\text{ANXIETY LEVEL}} = 10.4$

n) $\mu_{\text{ANXIETY LEVEL}} = 7.5$

o) $\mu_{\text{ANXIETY LEVEL}} \neq 10.4$

p) $\mu_{\text{ANXIETY LEVEL}} \neq 7.5$

q) $\mu_{\text{ANXIETY LEVEL}} > 10.4$

r) $\mu_{\text{ANXIETY LEVEL}} > 7.5$

s) $\mu_{\text{ANXIETY LEVEL}} \geq 10.4$

t) $\mu_{\text{ANXIETY LEVEL}} \geq 7.5$

u) $\mu_{\text{ANXIETY LEVEL}} < 10.4$

v) $\mu_{\text{ANXIETY LEVEL}} < 7.5$

w) $\mu_{\text{ANXIETY LEVEL}} \leq 10.4$

x) $\mu_{\text{ANXIETY LEVEL}} \leq 7.5$

QUESTION 6: PICK THE CORRECT ALTERNATIVE HYPOTHESIS (H1)

An economist is testing whether running online advertisements for two weeks can truly **INCREASE** a company's sales numbers. The general population of lumber companies does an average of μ = $454,670 per quarter in sales, while the sample of lumber companies that has been running online ads does an average of M = $497,450 per quarter in sales. She tests this using a One-Sample Z-Test with one tail, α = .01.

Hint: Don't even **look** at the options below until you have fully written out H0 and H1 on your own using the flowchart!! Then all you have to do is find the option that matches your answer.

a) $\mu_{SALES\ NUMBERS}$ = $454,670

b) $\mu_{SALES\ NUMBERS}$ = $497,450

c) $\mu_{SALES\ NUMBERS}$ ≠ $454,670

d) $\mu_{SALES\ NUMBERS}$ ≠ $497,450

e) $\mu_{SALES\ NUMBERS}$ > $454,670

f) $\mu_{SALES\ NUMBERS}$ > $497,450

g) $\mu_{SALES\ NUMBERS}$ ≥ $454,670

h) $\mu_{SALES\ NUMBERS}$ ≥ $497,450

i) $\mu_{SALES\ NUMBERS}$ < $454,670

j) $\mu_{SALES\ NUMBERS}$ < $497,450

k) $\mu_{SALES\ NUMBERS}$ ≤ $454,670

l) $\mu_{SALES\ NUMBERS}$ ≤ $497,450

m) $\mu_{online\ ads}$ = $454,670

n) $\mu_{online\ ads}$ = $497,450

o) $\mu_{online\ ads}$ ≠ $454,670

p) $\mu_{online\ ads}$ ≠ $497,450

q) $\mu_{online\ ads}$ > $454,670

r) $\mu_{online\ ads}$ > $497,450

s) $\mu_{online\ ads}$ ≥ $454,670

t) $\mu_{online\ ads}$ ≥ $497,450

u) $\mu_{online\ ads}$ < $454,670

v) $\mu_{online\ ads}$ < $497,450

w) $\mu_{online\ ads}$ ≤ $454,670

x) $\mu_{online\ ads}$ ≤ $497,450