Hypothesis Testing: z-Test Statistics · 1

A cereal maker says its boxes hold a mean of 500 grams. To test H0: $\mu = 500$ against Ha: $\mu < 500$, a random sample of 100 has a sample mean of 495 grams. The population standard deviation is $\sigma = 50$ grams. Find the z test statistic.

Hypothesis Testing: z-Test Statistics · 2

A claim says the proportion of customers who buy a drink is $p = 0.5$. To test H0: $p = 0.5$ against Ha: $p > 0.5$, a random sample of 100 customers finds that 58 buy a drink. Find the z test statistic.

Hypothesis Testing: z-Test Statistics · 3

A two-tailed z-test at $\alpha = 0.1$ gives $z = 2.77$. Should you reject H0 or fail to reject H0? (Answer reject or fail to reject.)

Hypothesis Testing: z-Test Statistics · 4

A company says its light bulbs last a mean of 1200 hours. A researcher suspects the true value is lower. Which hypotheses should be tested? (A) H0: $\mu = 1200$, Ha: $\mu > 1200$ (B) H0: $\mu = 1200$, Ha: $\mu \neq 1200$ (C) H0: $\mu < 1200$, Ha: $\mu = 1200$ (D) H0: $\mu = 1200$, Ha: $\mu < 1200$

Hypothesis Testing: z-Test Statistics · 5

A company says its light bulbs last a mean of 1200 hours. To test H0: $\mu = 1200$ against Ha: $\mu > 1200$, a random sample of 16 has a sample mean of 1200.6 hours. The population standard deviation is $\sigma = 4$ hours. Test at $\alpha = 0.01$. Should you reject H0 or fail to reject H0? (Answer reject or fail to reject.)

Hypothesis Testing: z-Test Statistics · 6

Find the critical value z^* for a left-tailed z-test at $\alpha = 0.01$.

Hypothesis Testing: z-Test Statistics · 7

A hypothesis test gives a P-value of 0.192. At $\alpha = 0.1$, should you reject H0 or fail to reject H0? (Answer reject or fail to reject.)

Hypothesis Testing: z-Test Statistics · 8

A battery maker says its batteries last a mean of 40 hours. To test H0: $\mu = 40$ against Ha: $\mu < 40$, a random sample of 36 has a sample mean of 37.2 hours. The population standard deviation is $\sigma = 6$ hours. Find the z test statistic.

Hypothesis Testing: z-Test Statistics · 2

ANSWER

1.6

Hypothesis Testing: z-Test Statistics · 1

ANSWER

-1

Hypothesis Testing: z-Test Statistics · 4

ANSWER

D

Hypothesis Testing: z-Test Statistics · 3

ANSWER

reject

Hypothesis Testing: z-Test Statistics · 6

ANSWER

-2.326

Hypothesis Testing: z-Test Statistics · 5

ANSWER

fail to reject

Hypothesis Testing: z-Test Statistics · 8

ANSWER

-2.8

Hypothesis Testing: z-Test Statistics · 7

ANSWER

fail to reject

Hypothesis Testing: z-Test Statistics · 9

A claim says the proportion of adults who recycle is p = 0.5. To test H0: p = 0.5 against Ha: p ≠ 0.5, a random sample of 400 adults finds that 188 recycle. Find the z test statistic.

Hypothesis Testing: z-Test Statistics · 10

A right-tailed z-test at α = 0.1 gives z = 3.04. Should you reject H0 or fail to reject H0? (Answer reject or fail to reject.)

Hypothesis Testing: z-Test Statistics · 11

A company says its light bulbs last a mean of 1200 hours. A researcher wants to know whether the true value is different. Which hypotheses should be tested? (A) H0: μ = 1200, Ha: μ ≠ 1200 (B) H0: μ = 1200, Ha: μ < 1200 (C) H0: μ ≠ 1200, Ha: μ = 1200 (D) H0: μ = 1200, Ha: μ > 1200

Hypothesis Testing: z-Test Statistics · 12

A cereal maker says its boxes hold a mean of 500 grams. To test H0: μ = 500 against Ha: μ ≠ 500, a random sample of 100 has a sample mean of 497.4 grams. The population standard deviation is σ = 10 grams. Test at α = 0.01. Should you reject H0 or fail to reject H0? (Answer reject or fail to reject.)

Hypothesis Testing: z-Test Statistics · 13

Find the critical value z* for a right-tailed z-test at α = 0.1.

Hypothesis Testing: z-Test Statistics · 14

A hypothesis test gives a P-value of 0.078. At α = 0.1, should you reject H0 or fail to reject H0? (Answer reject or fail to reject.)

Hypothesis Testing: z-Test Statistics · 15

A bakery says its loaves weigh a mean of 680 grams. To test H0: μ = 680 against Ha: μ ≠ 680, a random sample of 100 has a sample mean of 684 grams. The population standard deviation is σ = 50 grams. Test at α = 0.05. Should you reject H0 or fail to reject H0? (Answer reject or fail to reject.)

Hypothesis Testing: z-Test Statistics · 16

A claim says the proportion of adults who recycle is p = 0.5. To test H0: p = 0.5 against Ha: p < 0.5, a random sample of 100 adults finds that 44 recycle. Test at α = 0.01. Should you reject H0 or fail to reject H0? (Answer reject or fail to reject.)

Hypothesis Testing: z-Test Statistics · 10

ANSWER

reject

Hypothesis Testing: z-Test Statistics · 9

ANSWER

-1.2

Hypothesis Testing: z-Test Statistics · 12

ANSWER

reject

Hypothesis Testing: z-Test Statistics · 11

ANSWER

A

Hypothesis Testing: z-Test Statistics · 14

ANSWER

reject

Hypothesis Testing: z-Test Statistics · 13

ANSWER

1.282

Hypothesis Testing: z-Test Statistics · 16

ANSWER

fail to reject

Hypothesis Testing: z-Test Statistics · 15

ANSWER

fail to reject

A claim says the proportion of customers who buy a drink is p = 0.5. To test H0: p = 0.5 against Ha: p > 0.5, a random sample of 1600 customers finds that 832 buy a drink. Find the z test statistic.

A two-tailed z-test at α = 0.01 gives z = -2.23. Should you reject H0 or fail to reject H0? (Answer reject or fail to reject.)

A politician says 60% of voters support her plan. A researcher wants to know whether the true value is different. Which hypotheses should be tested? (A) H0: p = 0.6, Ha: p > 0.6 (B) H0: p = 0.6, Ha: p < 0.6 (C) H0: p = 0.6, Ha: p ≠ 0.6 (D) H0: p ≠ 0.6, Ha: p = 0.6

A school says its students sleep a mean of 8 hours a night. A test of H0: μ = 8 against Ha: μ < 8 at α = 0.01 rejects H0. Which conclusion is correct? (A) There is enough evidence that the mean is less than 8 hours. (B) There is not enough evidence that the mean is less than 8 hours. (C) The test proves the mean is exactly 8 hours. (D) The sample mean must equal 8 hours.

Find the critical value z* for a two-tailed z-test at α = 0.05 (give the positive one).

A company says its light bulbs last a mean of 1200 hours. To test H0: μ = 1200 against Ha: μ ≠ 1200, a random sample of 25 has a sample mean of 1200.8 hours. The population standard deviation is σ = 2.5 hours. Find the z test statistic.

A bakery says its loaves weigh a mean of 680 grams. To test H0: μ = 680 against Ha: μ ≠ 680, a random sample of 49 has a sample mean of 674.8 grams. The population standard deviation is σ = 14 grams. Find the z test statistic.

A claim says the proportion of adults who recycle is p = 0.2. To test H0: p = 0.2 against Ha: p ≠ 0.2, a random sample of 400 adults finds that 60 recycle. Find the z test statistic.

Hypothesis Testing: z-Test Statistics · 18

ANSWER

fail to reject

Hypothesis Testing: z-Test Statistics · 17

ANSWER

1.6

Hypothesis Testing: z-Test Statistics · 20

ANSWER

A

Hypothesis Testing: z-Test Statistics · 19

ANSWER

C

Hypothesis Testing: z-Test Statistics · 22

ANSWER

1.6

Hypothesis Testing: z-Test Statistics · 21

ANSWER

1.96

Hypothesis Testing: z-Test Statistics · 24

ANSWER

-2.5

Hypothesis Testing: z-Test Statistics · 23

ANSWER

-2.6