

Name \_\_\_\_\_

**MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.**

The number of successes and the sample size are given for a simple random sample from a population. Decide whether using the one-proportion z-interval procedure is appropriate.

1)  $x = 15, n = 30$

A) Not appropriate

B) Appropriate

Find the required sample size without making a guess for the observed value of  $\hat{p}$ .

2) Suppose the federal government needs to estimate the proportion of students receiving federal loans that default on those loans. Obtain a sample size that will ensure a margin of error of at most 0.007 for a 97% confidence interval.

A) 96,101

B) 24,026

C) 384,401

D) 11,072

Use the one-proportion z-interval procedure to find the required confidence interval.

3) In a sample of 1099 patients who underwent a certain type of surgery, 25% experienced complications. Find a 95% confidence interval for the proportion of all those undergoing this surgery who experience complications.

A) 0.2244 to 0.2756

B) 0.2317 to 0.2683

C) 0.2369 to 0.2631

D) 0.2204 to 0.2796

The number of successes and the sample size are given for a simple random sample from a population. Decide whether using the one-proportion z-interval procedure is appropriate.

4)  $x = 114, n = 120$

A) Appropriate

B) Not appropriate

The number of successes and the sample size are given for a simple random sample from a population. Use the one-proportion z-interval procedure to find the required confidence interval.

5)  $x = 34, n = 50, 90\%$  level

A) 0.596 to 0.764

B) 0.56 to 0.8

C) 0.551 to 0.809

D) 0.571 to 0.789

Find the indicated margin of error.

6) In a clinical test with 2128 subjects, 1112 showed improvement from the treatment. Find the margin of error for the 95% confidence interval used to estimate the population proportion.

A) 0.0180

B) 0.0212

C) 0.0237

D) 0.0286

Assume that you wish to estimate a population proportion,  $p$ . For the given margin of error and confidence level, determine the sample size required.

7) A university's administrator wishes to estimate the proportion of graduates who have not found employment in their major field one year after graduation. Obtain a sample size that will ensure a margin of error of at most 0.05 for a 99% confidence interval. It is deemed reasonable to presume that of those sampled, the proportion who have not found employment will be at most 0.07.

A) 9

B) 173

C) 208

D) 100

**Find the P-value for the indicated hypothesis test.**

- 8) In a sample of 88 children selected randomly from one town, it is found that 8 of them suffer from asthma. Find the P-value for a hypothesis test to determine whether the proportion of all children in the town who suffer from asthma differs from 11%.

A) 0.2157                      B) 0.7157                      C) 0.5686                      D) 0.2843

**A hypothesis test is to be performed for a population proportion. For the given sample data and null hypothesis,**

**compute the value of the test statistic,  $z = \frac{\hat{p} - p_0}{\sqrt{p_0(1 - p_0)/n}}$**

- 9) In a school district with 10,000 high school students, 1100 students completed a special class designed to improve their math skills. 693 of these scored better than the district-wide median on a standardized math exam. Does the special class have some value? The hypotheses are  $H_0: p = 0.5$ ,  $H_a: p > 0.5$ , where  $p$  is the proportion of all those taking the special class who score better than the district-wide median.

A) 18.109                      B) 13.797                      C) 8.623                      D) 6.467

**Use the one-proportion z-test to perform the specified hypothesis test.**

- 10)  $x = 160$ ,  $n = 500$ ,  $H_0: p = 0.30$ ,  $H_a: p > 0.30$ ,  $\alpha = 0.01$

A)  $z = 0.98$ ; critical value = 2.33; do not reject  $H_0$   
B)  $z = 0.62$ ; critical value = 2.33; do not reject  $H_0$   
C)  $z = 0.98$ ; critical value = 2.575; do not reject  $H_0$   
D)  $z = 0.62$ ; critical value = 2.575; reject  $H_0$

**The number of successes and the sample size are given for a simple random sample from a population. Decide whether using the one-proportion z-test is appropriate.**

- 11)  $x = 28$ ,  $n = 30$ ,  $H_0: p = 0.93$ ,  $H_a: p < 0.93$

A) Not appropriate                      B) Appropriate

**Find the P-value for the indicated hypothesis test.**

- 12) An airline claims that the no-show rate for passengers booked on its flights is less than 6%. Of 380 randomly selected reservations, 18 were no-shows. Find the P-value for a test of the airline's claim.

A) 0.0746                      B) 0.1230                      C) 0.2984                      D) 0.1492

**Use the one-proportion z-test to perform the specified hypothesis test.**

- 13)  $x = 17$ ,  $n = 100$ ,  $H_0: p = 0.25$ ,  $H_a: p \neq 0.25$ ,  $\alpha = 0.01$

A)  $z = -1.848$ ; critical values =  $\pm 2.575$ ; do not reject  $H_0$   
B)  $z = -1.145$ ; critical values =  $\pm 2.575$ ; do not reject  $H_0$   
C)  $z = -1.848$ ; critical values =  $\pm 2.33$ ; do not reject  $H_0$   
D)  $z = -1.145$ ; critical values =  $\pm 2.33$ ; reject  $H_0$

**Find the P-value for the indicated hypothesis test.**

- 14) In a sample of 47 adults selected randomly from one town, it is found that 9 of them have been exposed to a particular strain of the flu. Find the P-value for a hypothesis test to determine whether the proportion of all adults in the town that have been exposed to this strain of the flu differs from 8%.

A) 0.0024                      B) 0.0262                      C) 0.0048                      D) 0.0524

