

Choosing the correct inference procedure

The table below lists the different inference procedures you should know for the AP[®] exam. In each of the scenarios that follow, choose the correct inference procedure.

One-sample z interval for p	One-sample z test for p
One-sample t interval for μ , including paired data	One-sample t test for μ , including paired data
Two-sample z interval for $p_1 - p_2$	Two-sample z test for $p_1 - p_2$
Two-sample t interval for $\mu_1 - \mu_2$	Two-sample t test for $\mu_1 - \mu_2$
t interval for the slope of a least-squares regression line	t test for the slope of a least-squares regression line
	Chi-square test for goodness of fit
	Chi-square test for homogeneity
	Chi-square test for independence

1. Which brand of AA batteries last longer—Duracell or Eveready?
2. According to a recent survey, a typical teenager has 38 contacts stored in his/her cellphone. Is this true at your school?
3. What percent of students at your school have a Twitter account?
4. Is there a relationship between the age of a student's car and the mileage reading on the odometer at a large university?
5. Is there a relationship between students' favorite academic subject and preferred type of music at a large high school?
6. Who is more likely to own an iPod—middle school girls or middle school boys?
7. How long do teens typically spend brushing their teeth?
8. Are the colors equally distributed in Froot Loops?
9. Which brand of razor gives a closer shave? To answer this question, researchers recruited 25 men to shave one side of their face with Razor A and the other side with Razor B.
10. How much more effective is exercise and drug treatment than drug treatment alone at reducing the incidence of heart attacks among men aged 65 and older?

Web resource for more problems like these:

<http://www.ltconline.net/greenL/java/Statistics/catStatProb/categorizingStatProblems13.html>

Answers: *Choosing the correct inference procedure*

1. Two-sample t interval for $\mu_1 - \mu_2$
2. One-sample t interval/test for μ
3. One-sample z interval for p
4. t interval/test for the slope of a least-squares regression line
5. Chi-square test for independence
6. If the sample includes iPod and non-iPod owners, use a two-sample z interval for $p_1 - p_2$. If the sample includes only iPod owners, use a one-sample z interval for p .
7. One-sample t interval for μ
8. Chi-square test for goodness of fit
9. If the response variable is quantitative (e.g. whisker length), then a one-sample t interval for μ (paired data) is appropriate. If the response variable is categorical (which is smoother, side A or side B?), then a one-sample z interval for p is appropriate.
10. Two-sample z interval for $p_1 - p_2$