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| **Chi-square goodness-of-fit test** The Ellington Dukes are a minor-league baseball team in Ellington, Georgia. As with most other minor-league teams, the Dukes rely heavily on promotions to bring fans to the ballpark. These promotions are typically aimed at fans of specific ages. The management for the Dukes has planned its current promotional schedule according to the following estimates: http://www.phoenix.aleks.com/alekscgi/x/math2htgif.exe/M?26%26of fans attending Dukes games are ages http://www.phoenix.aleks.com/alekscgi/x/math2htgif.exe/M?3to http://www.phoenix.aleks.com/alekscgi/x/math2htgif.exe/M?21, http://www.phoenix.aleks.com/alekscgi/x/math2htgif.exe/M?23%26are ages http://www.phoenix.aleks.com/alekscgi/x/math2htgif.exe/M?20to http://www.phoenix.aleks.com/alekscgi/x/math2htgif.exe/M?2%3B, http://www.phoenix.aleks.com/alekscgi/x/math2htgif.exe/M?03%26are ages http://www.phoenix.aleks.com/alekscgi/x/math2htgif.exe/M?2%3Ato http://www.phoenix.aleks.com/alekscgi/x/math2htgif.exe/M?06, http://www.phoenix.aleks.com/alekscgi/x/math2htgif.exe/M?16%26are ages http://www.phoenix.aleks.com/alekscgi/x/math2htgif.exe/M?05to http://www.phoenix.aleks.com/alekscgi/x/math2htgif.exe/M?66, and http://www.phoenix.aleks.com/alekscgi/x/math2htgif.exe/M?13%26are over http://www.phoenix.aleks.com/alekscgi/x/math2htgif.exe/M?66. A statistical consulting firm for the Dukes surveyed a [random sample](http://www.phoenix.aleks.com/alekscgi/x/Isl.exe/1u_LNaX3RaktRep9xTAtH-s6oETDm8Ze07HyID1DEL3xSCo79WjW9DJuCxiHMmTsmTEjwL8hr4zJIC7lu4Hl2-1fO1AYYvT2Y8ToLGhLpHKGsrFN6Go?1-8xyly4Sklb9xOm3HP4awb_IHSN_EhErjDoFlY8YbZSb66QbJXwENTRAtY2trRJ6HxZGaBwvAVEWG1x-VY2N8Hcnl8jU8WjjQAP_J0EiDVsi-Yx) of http://www.phoenix.aleks.com/alekscgi/x/math2htgif.exe/M?2%3B3fans attending Dukes games in order to see if these estimates are accurate. The observed frequencies in the sample of http://www.phoenix.aleks.com/alekscgi/x/math2htgif.exe/M?2%3B3for each of the age categories are given in the top row of numbers in Table 1 below. The second row of numbers contains the [frequencies expected](http://www.phoenix.aleks.com/alekscgi/x/Isl.exe/1Fezinbm0n5u0HSL90xu6JjvhpG3B1CFoEdQpWJ3PDUgn-E9c2RVcWI74KPT79GHB0BdrDsYYNhgp-VikNdiqJJKmhxWfaOEf1GrOP6z5CzcRvgZwPo?1R1Rf7Zns3QZtzxTQ65nbltVZdlmXBgar1VFo8LVEZvKGZ5um9OYfm1sTYFzIUokI3bmvI-tyfploYnjCM3psCvnC34edyfBGKQpdUv4DMDss4FFSXqn4Mo) for a random sample of http://www.phoenix.aleks.com/alekscgi/x/math2htgif.exe/M?2%3B3fans if the Dukes' management's estimates are accurate. The bottom row of numbers in Table 1 contains the values

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| http://www.phoenix.aleks.com/alekscgi/x/math2htgif.exe/M?%2Be%3Fpva%3DL%3F%2Cpva%3D%23%2E%23e%3Fpva%3DF%3F%2Cpva%3D%2A%3Fpvs%3D1%3F%2Cpvs%3D |   | = |   | (Observed frequency - Expected frequency)2 |  |
| http://www.phoenix.aleks.com/aleks/gif/Gwhite.gif | http://www.phoenix.aleks.com/aleks/gif/Gwhite.gif |
| http://www.phoenix.aleks.com/alekscgi/x/math2htgif.exe/M?e%3Fpva%3DF%3F%2Cpva%3D | Expected frequency |

for each of the age categories. Fill in the missing values of Table 1. Then, using the http://www.phoenix.aleks.com/alekscgi/x/math2htgif.exe/M?3%2D36[level of significance](http://www.phoenix.aleks.com/alekscgi/x/Isl.exe/1dypkpG1dplWdi2YwfdHbvimgJ0wSO823-UN2JhwKs7q8buprcPOrJcTRzk-D00dSfpyQsEj1Ywq2rDoMYUoNRhZzPdd_EAx_O08JNXWqSqya7TwTmy?1wIIahMtx1V8EsEEumhtma-PVR1h-tLVAU44Hh_KvIk6saXEve1lOLuM7Fv1xWSPxoOYjQE26ln5PFv4FkjBYWJWFoGTWIifsPiBWHJZNSyMYKRphdjWl5o), perform a [test of the hypothesis](http://www.phoenix.aleks.com/alekscgi/x/Isl.exe/1z_mEuXtDukNDDpFoVANdOsb91V91Ynzx8HrzEA9i7Zc52oehpjUhEJZMPiw4eT01VExg782tq9cz27jWqHjlO1PQAAE-RTs-YVyTjhmSWKJjbwa3jo?1w41IpJgB1pleswRoNsgRaktqjE96XyI6dxur_i33ODsnjH8XbtpwcPWKIXtVR1jVGwFCgRu0p6BsIXdIECYyNYDIGUFNO8lns8sNRYPlEJWyiXNeDUNpBq) that the management's estimates are accurate. Then complete Table 2. Round your responses for the expected frequencies in Table 1 to at least two decimal places. Round your http://www.phoenix.aleks.com/alekscgi/x/math2htgif.exe/M?%3Fal%7B%3D%2Be%3Fpva%3DL%3F%2Cpva%3D%23%2E%23e%3Fpva%3DF%3F%2Cpva%3D%2A%3Fpvs%3D1%3F%2Cpvs%3D%3F%2Cal%7B%3D%3Flufq%3De%3Fpva%3DF%3F%2Cpva%3Dresponses in Table 1 to at least three decimal places. Round your responses in Table 2 as specified.  AGE GROUP 0 to 12 13 to 18 19 to 35 36 to 55 over 55 TotalObserved freq 25 25 56 33 41Expected freq \_\_\_ 18.00 \_\_\_ 45.00 36.00 180(fo-fe)2/fe \_\_\_ 2.722 \_\_\_\_ 3.200 0.694The type of test statistic (z, t, chi square, f)The value of the test statistic: Round your ansewer to at least two decimal places \_\_\_\_\_\_The p-value round your ansewer to at least two decimal places \_\_\_\_Can we conclude that the management original estimates for the age distribution of fans attending Dukes games are inaccurate? Use the 0.05 level of significance (yes or no)

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