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**Hypothesis test for the difference of population proportions**

Large companies typically collect volumes of data before designing a product, not only to gain information as to whether the product should be released, but also to pinpoint which markets would be the best targets for the product. Several months ago, I was interviewed by such a company while shopping at a mall. I was asked about my exercise habits and whether or not I'd be interested in buying a video/DVD designed to teach stretching exercises. I fall into the male, 18-35-years-old category, and I guessed that, like me, many males in that category would not be interested in a stretching video. My friend Holly falls in the female, older-than-35 category, and I was thinking that she might like the stretching video. After being interviewed, I looked at the interviewer's results. Of the http://www.phoenix.aleks.com/alekscgi/x/math2htgif.exe/M?%3A%3Apeople in my market category who had been interviewed, http://www.phoenix.aleks.com/alekscgi/x/math2htgif.exe/M?25said they would buy the product, and of the http://www.phoenix.aleks.com/alekscgi/x/math2htgif.exe/M?232people in Holly's market category, http://www.phoenix.aleks.com/alekscgi/x/math2htgif.exe/M?02said they would buy it. Assuming that these data came from independent, random samples, can we conclude (at the http://www.phoenix.aleks.com/alekscgi/x/math2htgif.exe/M?3%2D2[level of significance](http://www.phoenix.aleks.com/alekscgi/x/Isl.exe/1j2iCODjUO8xUltMLy3JGnuVv3QCrccVzwNxkV74owKVUkfK5i2N5VVfgikOgWQJbM92_mOWgk4IvqYYZDgOMdIpml7sDfsOHz_m4cqDkVCaG_6SSw7R?1ManU6j13J0EkQpdCAg1pWJ3x1pl_TexcMReXK5799MtPWjk9ipRIVnv0gNS3SrZ3HJBaDWjLt7o0fCPQ_lZoFuFbGpPPufCUgz8Y-2HJI67W3ajkYUf7hy)) that the proportion http://www.phoenix.aleks.com/alekscgi/x/math2htgif.exe/M?s%3Fpva%3D2%3F%2Cpva%3Dof all mall shoppers in my market category who would buy the product is less than the proportion http://www.phoenix.aleks.com/alekscgi/x/math2htgif.exe/M?s%3Fpva%3D1%3F%2Cpva%3Dof all mall shoppers in Holly's market category who would buy the product?

Perform a [one-tailed test](http://www.phoenix.aleks.com/alekscgi/x/Isl.exe/18To07uvALmIAFI4zhvIcSqGydxX_9XO8K5IG4N7t6lOAuJ3RNT0R4EDBN2fB_x_InZl4O0dBuQzy2ejejVfxu6SnFNjwY1fTxcEo9QAG4YHc1MKj6ND?1bm5Y3rmqI-NgN0HTJkmUkjbkBkaRmTj1YF0gXqhcXo7UdcK5ipNgQE24432dgoCu9Bg0BSmVk5SGMF3ueXkbkypx4Y-U0XTCkvIQqFj1R0BpHK4j). Then fill in the table below.

Carry your intermediate computations to at least three decimal places

The null hypothesis Ho: =

The alternative hypothesis H1: =

The type of test statistic (and degrees of freedom, if applicable): =

The value of the test statistic (round to at least 3 decimal places): =

The critical value at the 0.05 level of significance (round to at least 3 decimal places):

Can we conclude that the proportion of mall shoppers in my market category who would buy the product is less than the proportion in Holly’s market category who would?