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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 people in my market category who had been interviewed, said they would buy the product, and of the people in Holly's market category, said they would buy it. Assuming that these data came from independent, random samples, can we conclude (at the [level of significance](http://www.phoenix.aleks.com/alekscgi/x/Isl.exe/1j2iCODjUO8xUltMLy3JGnuVv3QCrccVzwNxkV74owKVUkfK5i2N5VVfgikOgWQJbM92_mOWgk4IvqYYZDgOMdIpml7sDfsOHz_m4cqDkVCaG_6SSw7R?1ManU6j13J0EkQpdCAg1pWJ3x1pl_TexcMReXK5799MtPWjk9ipRIVnv0gNS3SrZ3HJBaDWjLt7o0fCPQ_lZoFuFbGpPPufCUgz8Y-2HJI67W3ajkYUf7hy)) that the proportion of all mall shoppers in my market category who would buy the product is less than the proportion of 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?