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# HW E14 Chi-Square Goodness of Fit

Score: 0/10 0/4 answered

● Question 1 < >

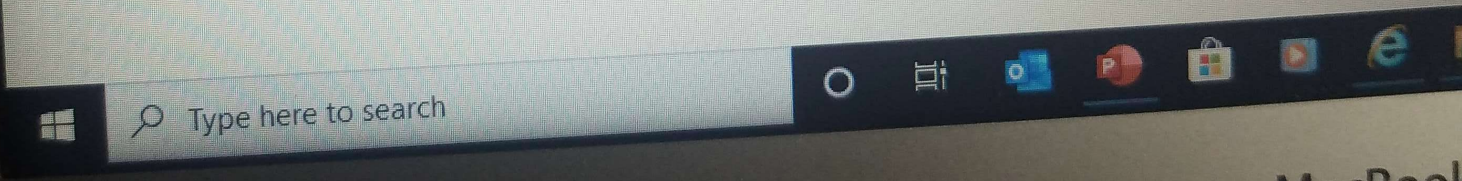
You intend to conduct a goodness-of-fit test for a distribution with 8 categories. You collect data from 78 subjects.

What are the degrees of freedom for the  $\chi^2$  distribution for this test?

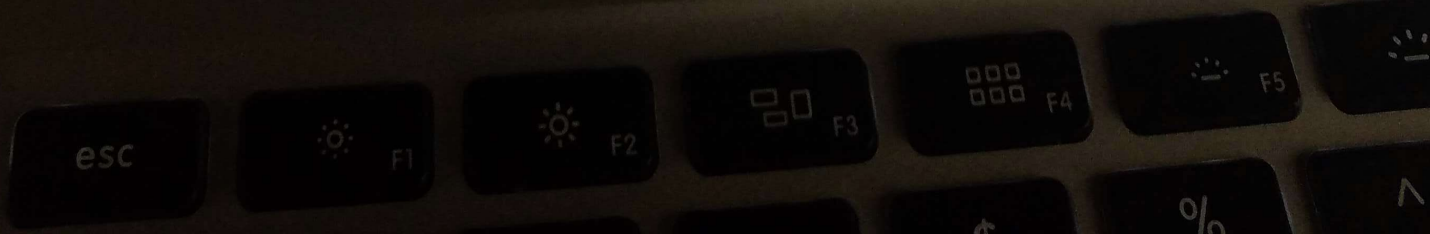
d.f. =

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# HW E14 Chi-Square Goodness of Fit

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● Question 2 < >

You are conducting a Goodness of Fit hypothesis test for the claim that all 5 categories are equally likely to be selected. Complete the table. Report all answers correct to three decimal places.

Category	Observed Frequency	Expected Frequency	$(\text{obs-exp})^2/\text{exp}$
A	19	<input type="text"/>	<input type="text"/>
B	17	<input type="text"/>	<input type="text"/>
C	5	<input type="text"/>	<input type="text"/>
D	11	<input type="text"/>	<input type="text"/>
E	11	<input type="text"/>	<input type="text"/>

What is the chi-square test-statistic for this data?

$\chi^2 =$

At the alpha = 0.05 level, what is the conclusion for this test?

- Fail to reject the null hypothesis
- Reject the null hypothesis

Report all answers accurate to three decimal places.

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● Question 3 < >

You are conducting a multinomial Goodness of Fit hypothesis test for the claim that the 4 categories occur with the following frequencies:

$$H_0: p_A = 0.15; p_B = 0.3; p_C = 0.15; p_D = 0.4$$

Complete the table. Report all answers accurate to three decimal places.

Category	Observed Frequency	Expected Frequency
A	12	<input type="text"/>
B	18	<input type="text"/>
C	19	<input type="text"/>
D	36	<input type="text"/>

What is the chi-square test-statistic for this data?

$$\chi^2 = \text{$$

What is the P-Value?

$$\text{P-Value} = \text{$$

For significance level alpha 0.01,

What would be the conclusion of this hypothesis test?

- Fail to reject the Null Hypothesis
- Reject the Null Hypothesis

Report all answers accurate to three decimal places.

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Question 4

**6.42 Evolution versus Creationism:** A Gallup Poll released in December 2010 asked 1019 adults living in the Continental U.S. about their belief in the origin of humans. These results, along with results from a more comprehensive poll from 2001 (that we will assume to be exactly accurate - i.e. known values), are summarized in the table below:

Response	Year: 2010	Year: 2001
Humans Evolved with God guiding (1)	38%	37%
Humans evolved but God had no part in the process (2)	16%	12%
God created humans in present form (3)	40%	45%
Other / No opinion (4)	6%	6%

(a) State hypotheses for the following research question: have beliefs on the origin of human life changed since 2001?

- Ho: the population follows the 2001 distribution  
Ha: the population doesn't follow the 2001 distribution
- the population follows the 2010 distribution  
Ha: the population doesn't follow the 2010 distribution
- Ho: the population follows the 2001 distribution  
Ha: the population follows the 2010 distribution

(b/c) Calculate the actual number of respondents in 2010 that fall in each response category as well as the expected number, assuming that the population follows the 2001 distribution. (please round to the nearest whole number)

Response	Observed 2010	Expected 2010
Humans Evolved with God guiding (1)		
Humans evolved but God had no part in the process (2)		
God created humans in present form (3)		
Other / No opinion (4)		

(d) Conduct a chi-square test and state your conclusion.

The value of the test statistic is:  (please round to two decimal places) The

degrees of freedom for this test are:  The p-value for this test is:

(please round to four decimal places) State the conclusion of the test in the context of the problem:

- The data do not provide sufficient evidence to claim that the 2010 distribution is different than the distribution in 2001
- The data provide sufficient evidence to claim that the 2010 distribution is different than the distribution in 2001



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