

MAT1080 Worksheet #9

NAME: _____

See Worksheet9Examples for examples of solving these problems.

1. The blood types of 254 black homicide victims in Philadelphia are shown below. The blood donor distribution in Philadelphia is thought to be 50% Type O, 25% Type A, 20% Type B, and 5% Type AB.

At a significance level of 5%, using a P-value test, test the claim that that black homicide victims do not have the same distribution of blood types as the donor population. Use the following steps:

(a) Complete the observed frequency column in the table below, use two decimal places for E.

		Expected Percentage (p)	Observed Frequency (O)	Expected Frequency (E) = np
	O	.50	134	
Blood Type	A	.25	70	
	B	.20	45	
	AB	.05	5	
			----- n=254	

HINT: As a double-check, add up the expected frequency column, it should also total 254 (within small rounding error)

(b) What is the name of the test we will be using and what is alpha?

Test:

$\alpha =$

(c) Write the equation that would be used to find the test statistic χ^2 and calculate the degrees of freedom.

(d) Using technology, find χ^2 and P.

$\chi^2 =$

P =

(e) What are the null and alternate hypotheses? Indicate which one is the claim.

H_0 :

H_1 :

(f) Do you “reject” or “fail to reject” the null hypothesis? Why?
(need reason appropriate for a P-value test)

(g) What is your conclusion about the claim?

2. Responses to a survey question are broken down according to employment status and the sample results (observed values) are given below. Using a P-value test at the 0.10 significance level, test the claim that responses and employment status are independent.

	YES	NO	UNDECIDED
EMPLOYED	40	25	8
UNEMPLOYED	25	15	5

(a) What is the name of the test we will be using and what is alpha?

Test:

$\alpha =$

(b) Write the equation that would be used to find the test statistic χ^2 and calculate the degrees of freedom.

(c) Complete the table below, including finding the expected frequencies, using two decimal places for each expected frequency. The expected frequencies can be put in parentheses after the observed frequencies.

	YES	NO	UNDECIDED	TOTAL
EMPLOYED	40	25	8	
UNEMPLOYED	25	15	5	
TOTAL				

Technology can be used to complete the table. If so, be sure to note the values of χ^2 and P for part (d).

(d) Using technology, find χ^2 and P.

$\chi^2 =$ P =

(e) What are the null and alternate hypotheses? Indicate which one is the claim.

H_0 :

H_1 :

(f) Do you “reject” or “fail to reject” the null hypothesis? Why?
(need reason appropriate for a P-value test)

(g) What is your conclusion about the claim?