MATH 10B, SPRING 2017, QUIZ 8

(1) Suppose you roll a die 100 times and 30 of the rolls are fives. Find a 95% confidence interval for the probability p of rolling a five.

(2) Suppose you want to check if two random variables, X and Y, are independent. Assume that both X and Y both take only the values 0 and 1. You collect some data and compile the following table of observations, which records how many times each possible outcome occurred.

	$X = 0$	$X = 1$
$Y = 0$	300	100
$Y = 1$	200	400

(a) Fill in the following table of expected frequencies (i.e. assuming the null hypothesis that the two variables are independent). You do not need to simplify your answers.

	$X = 0$	$X = 1$
$Y = 0$		
$Y = 1$		

(b) Calculate the χ^2 statistic for the given data. You do not need to simplify your answer.

(c) What is the number of degrees of freedom for the χ^2 test on the given data?