Worksheet: The χ^2 Test

1. As part of a study on the selection of grand juries in Alameda county, the educational level of grand jurors was compared with the county distribution tabulated below. Could a simple random sample of 62 people from the county show a distribution of educational level so different from the county-wide one?

Educational level	County	Number of jurors
Elementary	28.4%	1
Secondary	48.5%	10
Some college	11.9%	16
College degree	11.2%	35
Total	100.0%	62

2. (Hypothetical.) In a certain town, there are about one million eligible voters. A simple random sample of size 10,000 was chosen, to study the relationship between gender and participation in the last election. The results are tabulated below. Are gender and voting rate independent?

	Men	Women
Voted	2,792	3,591
Didn't Vote	1,486	2,131

3. Use the table below to say whether or not handedness and gender are independent.

	Men	Women
Right-handed	934	1,070
Left-handed	113	92
Ambidextrous	20	8

Solutions: 1. No: $\chi^2 = 152$ and $P \approx 0\%$ 2. No: $\chi^2 = 6.58$ and $P = 1.0\%$

3. No: $\chi^2 = 12.4$ and $P = 2.2\%$