Statistics 111     **Quiz 18**

1. Benford's Law says that in many cases, the first digit in a number (such as a street address) is not uniformly distributed but instead has probabilities as given in the following table:

| digit | 1 | 2 | 3 | 4 | 5 | 6 or more |
|---|---|---|---|---|---|---|
| probability | 0.30 | 0.18 | 0.13 | 0.10 | 0.08 | 0.21 |

Check whether Benford's Law holds for 1188 street addresses in Durham. The counts are:

| digit | 1 | 2 | 3 | 4 | 5 | 6 or more |
|---|---|---|---|---|---|---|
| probability | 345 | 197 | 170 | 126 | 101 | 249 |

In words, what is your alternative hypothesis?

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————————— What is the value for your test statistic?

————————— What is your critical value for a 0.05 level test? (Give a number.)

————————— Give a bound or bounds for your P-value.

In words, what conclusion do you reach? (Use $\alpha = 0.05$.)

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2. A random set of 100 professionals are classified according to handedness and job:

| | left | right | ambidextrous |
|---|---|---|---|
| CEO | 10 | 18 | 2 |
| statistician | 15 | 30 | 5 |
| ecdysiast | 10 | 2 | 8 |

In words, what is your alternative hypothesis?

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————————— What is the value for your test statistic?

————————— What is your critical value for a 0.05 level test? (Give a number.)

In words, what conclusion do you reach?

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