List 12

Exercise 1. The Russel Reynold Association surveyed retired senior executives who had returned to work. They found that after returning to work, 38% were employed by another organization, 32% were self-employed, 23% were either freelancing or consulting, and 7% had formed their own companies. To see if these percentages are consistent with those of Allegheny County residents, a local researcher surveyed 300 retired executives who had returned to work and found that 122 were working for another company, 85 were self-employed, 76 were either freelancing or consulting, and 17 had formed their own companies. At significance level 0.1, verify the claim that the percentages are the same for those people in Allegheny County.

Exercise 2. A researcher read that firearm-related deaths for people aged 1 to 18 were distributed as follows: 74% were accidental, 16% were homicides, and 10% were suicides. In her district, there were 68 accidental deaths, 27 homicides, and 5 suicides during the past year. At a 10% significance level verify whether the percentages are equal.

Exercise 3. M&M/Mars, the makers of Skittles candies, states that the flavor blend is 20% for each flavor. Skittles is a combination of lemon, lime, orange, strawberry, and grape flavored candies. The following data list the results of four randomly selected bags of Skittles and their flavor blends.

	Flavor				
Bag	**Green**	**Orange**	**Red**	**Purple**	**Yellow**
1	7	20	10	7	14
2	20	5	5	13	17
3	4	16	13	21	4
4	12	9	16	3	17

Perform a test to compare the observed (total) values to the expected values. Assume significance level 0.05.

Exercise 4. The following sample data represents the ozone concentration (measured in parts per 100 million) of air in the downtown of the city during 78 consecutive summer days in 2004. The above data can be grouped into intervals as follows:

Ozone concentration	0-2	2-4	4-6	6-8	8-10	10-12
Frequency	7	19	31	17	3	1

At significance level 0.05 verify if the ozone concentration is normally distributed.

Exercise 5. The following data apply to the volume of tumor (in mm3) in a set of randomly chosen 100 mice:

Volume of tumor	0-2	2-4	4-6	6-8	8-10
Number of mice	10	25	35	20	10

At significance level 0.1 verify if the volume of a tumor is normally distributed.

Exercise 6. A sociologist wishes to see whether the number of years of college a person has completed is related to her or his place of residence. A sample of 88 people is selected and classified as shown.

Location	No college	4-years degree	Advanced degree
Urban	15	12	8
Suburban	8	15	9
Rural	6	8	7

At a significance level 0.05, can the sociologist conclude that a person's location is dependent on the number of years of college?

Exercise 7. A researcher selected 100 passengers from each of 3 airlines and asked them if the airline had lost their luggage on their last flight. The data are shown in the table. At a significance level 0.05, test the claim that the proportion of passengers from each airline who lost luggage on the flight is the same for each airline.

Airline	Airline 1	Airline 2	Airline 3
Yes	10	7	4
No	90	93	96