

- Using the following RIS from a Normal population, test  $H_0: \mu \geq 20$  against  $H_A: \mu < 20$  using 2% level of significance. Also, find the corresponding P-value of this test.

16.3, 15.8, 11.2, 17.9, 14.8, 20.1, 15.9, 18.0, 25.2, 14.6, 10.7, 18.4, 14.8, 16.0, 27.9, 14.2, 22.3, 18.8

- Using the following two independent RISs, each from a Normal population, test whether the two populations have the same standard deviation or not (use  $\alpha = 10\%$ ). Make sure to properly state both  $H_0$  and  $H_1$ . Also, compute the corresponding P-value.

507., 508., 490., 499., 491., 488., 496., 507., 507., 495., 508.

207., 219., 187., 181., 204., 208., 204., 194., 202., 196., 205., 209., 197., 221.

- A random sample of housewives in Toronto, Montreal and Vancouver were asked whether they use a certain brand of detergent. The results were as follows:

City:	Toronto	Montreal	Vancouver
Sample size:	216	324	193
'Yes' answers:	113	129	89

Using  $\alpha = 5\%$ , test the null hypothesis claiming that the population proportions are the same in all three cities, against the obvious alternative ('no so', i.e. at least one city differs from the other two). Also, compute the corresponding P-value.

- From a large population of students, a random independent sample was selected and the following data obtained:

<i>Average grade</i> → <i>Year of study</i> ↓	A	B	C	D	F
1	95	112	205	127	87
2	84	129	198	136	84
3	79	103	174	101	69
4	71	96	148	91	58

Using  $\alpha = 5\%$ , test whether, in the total population of students, the two attributes (average grade & year of study) are independent of each other. Also, compute the corresponding P-value.

5. The following is a sample of values from a population (summarized in what is called a **frequency table**):

Interval:	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
Frequency:	3	5	33	75	142	121	87	26	5	3

The sample mean of the original data was 48.8, the sample variance equaled to 198.

Test, using  $\alpha = 10\%$ , whether the population is Normal. Also, compute the corresponding P-value.