Relationships Pen and Paper Questions

Formulae and Tables

1. Perform a suitable test to answer the question "Are there differences in the way that males and females vote (in the UK)?" based on the following table. Use a reasonable significance level of your choice for the relationship statistic, setting it before you perform the test. Interpret the results in the subject domain.

	Conservative	**Liberal Democrat**	**Labour**
Male	313	124	391
Female	344	158	388

Source: [US]

2. A small class of 9 university students had to form groups of 3 for a project. As they were all sitting in the canteen for lunch one day, Annie remarked that they seemed to have joined by age into a young, middle and old group. The ages in the groups were as follows. Group 1: 21, 21, 21; Group 2: 21, 21, 24; Group 3: 22, 22, 25. Use a suitable test to investigate if there is statistical evidence that Annie's impression of a significant age difference between groups was correct. Consider any assumptions needed for a parametric test to be met and use the significance level of 0.05. Interpret the results in the subject domain.

3. The table below shows the results in maths and physics for ten students. Use a parametric test to investigate if there is a relationship between the two variables (maths result and physics result) and and if the relationship statistic is significant at the 0.05 level. Interpret the results in the subject domain.

Student i	Maths x_i	Physics y_i
1	65	60
2	45	60
3	40	55
4	55	70
5	60	80
6	50	40
7	80	85
8	30	50
9	70	70
10	65	80

Source: [US]

4. The data shown in the table below are not normally distributed. Use a suitable test to check if there is a relationship between the two variables. Use a reasonable significance level of your choice for the relationship statistic, setting it before you perform the test. Interpret the results in the subject domain.

The following data refer to the amounts of haemoglobin (in g/dl) and the numbers of red blood cells (in hundred million per cl) in samples of blood taken from mothers during labour.

Mother	A	B	C	D	E	F	G	H	I	J
Haemoglobin, x	11.7	14.2	13.7	13.5	14.6	13.8	13.9	11.4	11.6	13.6
Red blood cells, y	349	449	454	441	468	476	473	448	397	496

Source: [US]