

**MATH 321 – Assignment 2**  
**Submit (Upload in Moodle) until April 22 2021**

**Exercise 1:** You are examining the issue of recycling. You have collected data from 40 Cypriots regarding their opinion on recycling policies at their work environment (opinion: 0=I don't agree, 1=I agree, 2=I don't answer) and sector of employment (0=private, 1=government). Test at the 5% level of significance about the independence of opinion of employees and the sector of employment, and write your conclusions.

Opinion	Sector
1	0
1	1
1	0
0	0
1	0
0	1
0	1
0	0
1	0
0	1
1	1
0	0
0	0
2	0
0	1
0	0
0	1
1	1
1	1
0	0
0	0
1	1
2	1
1	1
1	0
2	0
0	1
0	1
0	0
2	0
1	0
1	0
0	1
1	0
2	0
1	1
1	0
2	0
1	1
2	0

**Exercise 2:** We are interested in examining the hours spent on Facebook and which factors affect this. First, we considered “Age”. We took a random sample and asked each adult to report the number of hours they spent on Facebook in the previous week and their age (in years). These data are given in the table below (first two columns of the following table).

- Make a scatter diagram for the variables “Age” and “Facebook use” and comment on its shape.
- Do a regression analysis. Write down the estimated model and interpret the coefficients.
- Test at the 5% level of significance whether there is evidence that age affects Facebook use.
- What is the value of the coefficient of determination for your model? Explain its meaning.
- What is the correlation coefficient between Facebook use and age? Interpret it.

**Exercise 3:** Continuing from Exercise 2, we examined another variable, “number of children”, in addition to Age, and performed a new analysis. All the data are given in the table.

- Examine which variables affect the use of Facebook.
- Write the estimated regression model.
- Interpret the coefficients of the model.
- Using your model, estimate how many hours Maria spends on Facebook every week, if she is 35 years old and she has 1 child.

Facebook	Age	Children
5	53	0
10	61	1
8	53	1
12	68	1
5	65	3
0	35	3
8	46	1
12	57	2
7	48	1
10	54	0
0	48	2
14	53	0
4	45	2
10	65	2
8	51	1
10	66	0
0	39	2
10	58	1
6	62	1
5	42	2
0	32	1
9	51	0
13	75	1
0	34	4