

Simple linear regression

Task 1. Suppose, that a meteorologist measures the daily high temperatures on two scales during one week in the winter. The measurements are shown in the table. Find and interpret simple linear regression model (F-dependent variable).

F	C
32	0
23	-5
37,4	3
50	10
40,8	6
33,8	1
41	5

Task 2. A real estate agent would like to predict the selling price of single-family homes. After careful consideration, he concludes that the variable likely to be most closely related to selling price is the size of the house. As an experiment, he takes a random sample of fifteen recently sold houses and records the selling price (in \$ 1,000s) and the size of the house (in 100s ft²). These are shown in the accompanying table. Find and interpret the linear regression model (Dependent variable- House size).

House size	Selling Price
20	89,5
14,8	79,9
20,5	83,1
12,5	56,9
18	66,6
14,3	82,5
27,5	126,3
16,5	79,3
24,3	119,9
20,2	87,6
22	112,6
19	120,8
12,3	78,5
14	74,3
16,7	74,8

Task 3. Students in a small class were polled by a survey on attempting to establish a relationship between the hours of study in the week immediately preceding a major midterm exam and the marks received on the exam. The gathered data are shown in the table. Find and interpret the linear regression model (Dependent variable- Exam Score). Predict the exam score of the student, who has studied 27 hours.

Hours of Study	Exam Score
25	93
12	57
18	55
26	90
19	82
20	95
23	95
15	80
22	85
8	61

Task 4. Advertising is often touted as the key of the success. In seeking to determine just how influential advertising is, the management of a recently set-up retail chain has collected data over the previous 15 weeks on sales revenue and advertising expenditures. The data are shown in the table. Find and interpret the linear regression model (Dependent variable- Sales). Predict the sales for the advertising expenditures equal to 9.

Advertising expenditures	Sales
3	50
5	250
7	700
6	450
6,5	600
8	1000
3,5	75
4	150
4,5	200
6,5	550
7	750
7,5	800
7,5	900
8,5	1100
7	600

Task 5. The data are available in the file "Activities.sta". Find and interpret the linear regression model (Dependent variable- Children, Independent variable- Work).

Task 6. The data are available in the file "Activities.sta". Find and interpret the linear regression model (Dependent variable- Leisure, Independent variable- Work).

Task 7. The data are shown in the table. Find and interpret the linear regression model (Independent variable- Hours of study, Dependent variable- Exam Score). Predict the exam score of the student, who has studied 20 hours.

Exam score	Hours of study
7	120
8	122
9	125
10	131
11	135
11,5	140
12	142
13	145
14	150
14	100
15	154
16	159
17	162
18	164
18,5	168
19	170