

STATISTICS 2: QUIZ SOLUTIONS

Question 1

A tech researcher tracks the daily active screen time of a smartphone and the total percentage of battery consumed over a 16-hour period across 10 test days.

Daily Active Screen Time (h)	Battery Used (%)
2,5	38
3,0	44
4,2	55
5,0	62
5,5	68
6,1	75
7,0	82
7,8	90
8,2	93
9,1	99

Determine the equation of the least-squares linear regression line for this dataset.

A. $\hat{y} = 15,29 + 9,49x$

B. $\hat{y} = 9,49 + 15,29x$

C. $\hat{y} = -1,59 + 0,11x$

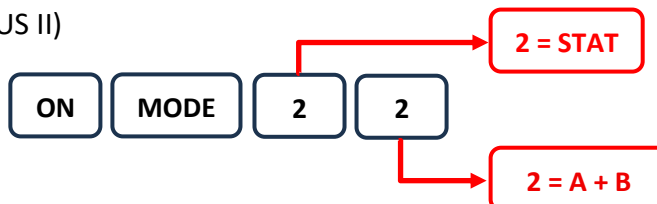
D. $\hat{y} = -15,29 + 9,49x$

Solution

The correct answer is A.

Keystrokes (Casio fx-82ZA PLUS II)

Start and go to STAT mode:



Enter x-values:



Move to top of y-column:



Enter y-values:



Calculate a :



Calculate b :



OPTION A

2 = B

5 = Reg

Question 2

An environmental engineer measures the ambient outdoor temperature and the total energy output generated by a rooftop solar installation on 10 sunny days.

Temperature ($^{\circ}\text{C}$)	Energy Output (kWh)
16	32,5
18	31,8
21	30,2
24	28,9
26	27,5
29	26,1
31	25,0
33	23,8
36	22,1
38	21,0

Find the equation that best models the least-squares linear regression line for this set of data.

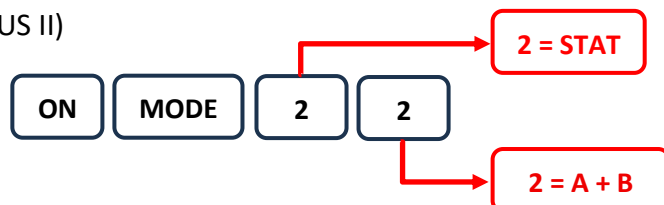
- A. $\hat{y} = 77,31 - 1,88x$ B. $\hat{y} = 41,31 - 0,53x$
C. $\hat{y} = -41,31 - 0,53x$ D. $\hat{y} = -0,53 + 41,31x$

Solution

The correct answer is C.

Keystrokes (Casio fx-82ZA PLUS II)

Start and go to STAT mode:



Enter x-values:



Move to top of y-column:



Enter y-values:



Calculate a :



Calculate b :



OPTION C

Question 3

A city planner studies the relationship between the distance of an Electric Vehicle (EV) fast-charging station from a freeway exit and the average number of charging sessions logged per day.

Distance from Freeway Exit (km)	Daily Charging Sessions
0,5	88
1,2	79
1,8	72
2,5	65
3,1	58
4,0	47
4,8	39
5,5	32
6,2	24
7,0	15

What is the equation of the least-squares linear regression line for the data?

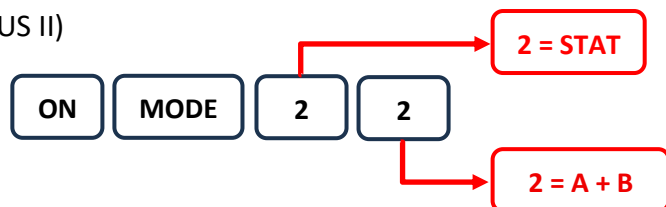
- A. $\hat{y} = -92,55 - 11,11x$ B. $\hat{y} = 8,29 - 0,09x$
C. $\hat{y} = -11,11 + 92,55x$ D. $\hat{y} = 92,55 - 11,11x$

Solution

The correct answer is D.

Keystrokes (Casio fx-82ZA PLUS II)

Start and go to STAT mode:



Enter x-values:



Move to top of y-column:



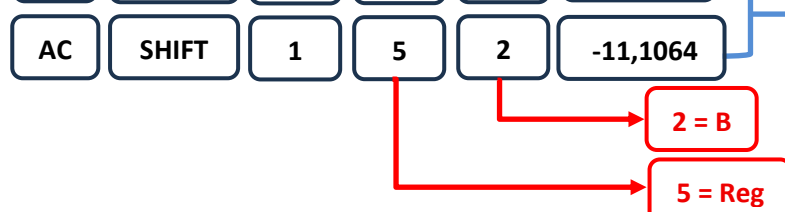
Enter y-values:



Calculate a :



Calculate b :



OPTION D

Question 4

The research manager of an e-commerce business tracks its daily spend on targeted social media advertisements in R100s against the number of completed sales generated.

Daily Spend (R100s)	Completed Sales
12	45
15	58
20	72
25	90
28	102
32	115
38	138
42	150
45	162
50	180

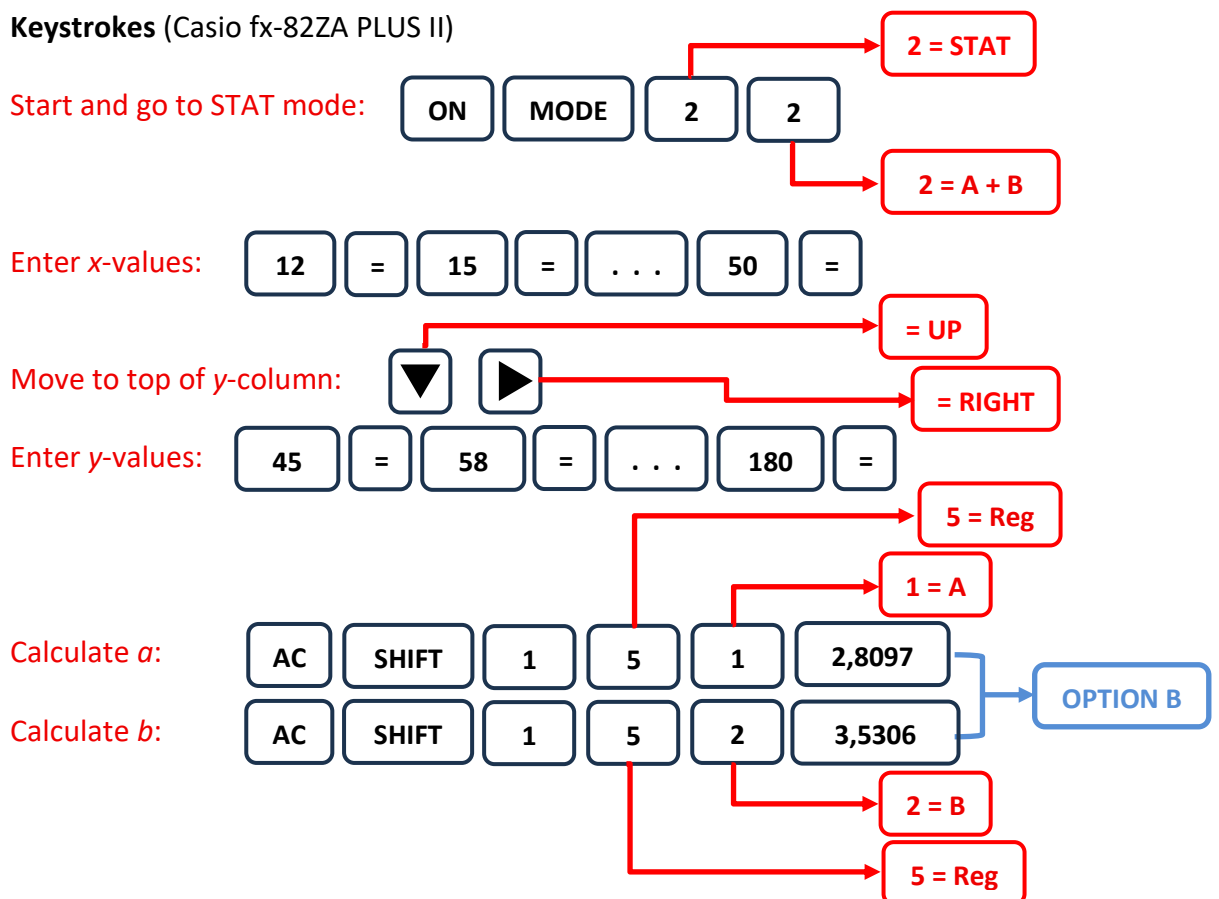
Calculate the linear regression line of best fit for this campaign.

- A. $\hat{y} = 3,53 + 2,81x$ B. $\hat{y} = 2,81 + 3,53x$
C. $\hat{y} = -2,81 + 3,53x$ D. $\hat{y} = -0,58 + 0,28x$

Solution

The correct answer is B.

Keystrokes (Casio fx-82ZA PLUS II)



Question 5

A network administrator measures the number of connected IoT devices (smart bulbs, security cameras, sensors) in a residential home and the total monthly background data used.

Number of Connected Devices	Monthly Data Used (GB)
8	12,4
12	18,1
15	22,5
18	27,0
22	33,2
25	37,8
30	45,1
34	51,0
38	57,2
42	63,5

What is the equation of the least-squares linear regression line for this dataset?

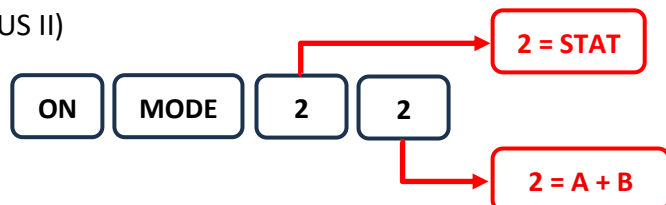
- A. $\hat{y} = 0,10 + 1,50x$ B. $\hat{y} = 1,50 + 0,10x$
C. $\hat{y} = -0,04 + 0,67x$ D. $\hat{y} = -0,10 + 1,50x$

Solution

The correct answer is A.

Keystrokes (Casio fx-82ZA PLUS II)

Start and go to STAT mode:



Enter x-values:



Move to top of y-column:



Enter y-values:



Calculate a :



Calculate b :



OPTION A