A.

A new-car dealer is interested in the relationship between the number of salespeople working on a weekend (x) and the number of cars sold (y). He has collected the data in 14 consecutive Sundays and applied a simple linear regression model to analyze those data. Some summary statistics have resulted as below.

- The means of x and y : $\bar{x} = 8.3571$, $\bar{y} = 22.8571$.
- $S_{xx} = \sum_{i=1}^{n} (x_i - \bar{x})^2 = 253.2143$, $S_{xy} = \sum_{i=1}^{n} (x_i - \bar{x})(y_i - \bar{y}) = 129.7143,$

  $S_{yy} = SST = \sum_{i=1}^{n} (y_i - \bar{y})^2 = 99.7143.$

1. Find the estimated linear regression line.
   $y =$ [ ] + [ ] x
2. Predict the number of cars sold in a certain Sunday which has 12 salespeople. [ ]
3. Find the sum square for errors. $SSE =$ [ ]
4. Compute the coefficient of determination? [ ]
5. Find the standard error of the slope $\widehat{\beta}_1$. $SE\left(\widehat{\beta}_1\right) =$ [ ] .

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1. Find the estimated linear regression line.
   $y =$ [ ] 18.576001434358 + [ ]
   0.51227083146568 x
2. Predict the number of cars sold in a certain Sunday which has 12 salespeople. [ ]
   [24.7233,24.7236]
3. Find the sum square for errors. $SSE =$ [ ] [33.2617,33.2654]
4. Compute the coefficient of determination? [ ] 0.66639240624453
5. Find the standard error of the slope $\widehat{\beta}_1$. $SE\left(\widehat{\beta}_1\right) =$ [ ] [0.1046,0.1046]

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B.

A study of the deflection of particleboard (y) from 9 stress levels of relative humidity (x) results in the following data.

	Stress level (x)	Deflection (y)
Sum of observed values $\left(\sum_i x_i \text{ or } \sum_j y_i\right)$	541	-17.48
Sum of squares $\left(\sum_i x_i^2 \text{ or } \sum_i y_i^2\right)$	32839	169.5016

Moreover, $\sum_{i=1}^{9} x_i y_i = -1257.82$.

a. Fit a simple regression model to related deflection to stress level.

i. Compute the following sums:

Sxx	Sxy	Syy

ii. The slope:

iii. The y-intercept:

b. Compute the sums of squares:

SST	SSR	SSE

c. Estimate the variance of random errors: S^2 =

d. Construct a 99% two-sided confidence interval for the y-intercept:

(,)

e. Determine the coefficient of determination: r^2 =

Do not round in between steps. (Type oo for Infinity and -oo for Negative Infinity)

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a. Fit a simple regression model to related deflection to stress level.

i. Compute the following sums:

Sxx	Sxy	Syy
318.88888888889	-207.07777777778	135.55155555556

ii. The slope: -0.64937282229965

iii. The y-intercept: 37.092299651568

b. Compute the sums of squares:

SST	SSR	SSE
135.55155555556	134.4706809911	1.0808745644604

c. Estimate the variance of random errors: S^2 = 0.15441065206577

d. Construct a 99% two-sided confidence interval for the y-intercept:

([32.4401,32.4534] , [41.7312,41.7445])

e. Determine the coefficient of determination: r^2 = 0.9920260998848