

Instructions: Answer each question as thoroughly as possible. Round answers to 4 decimal places as needed. Exact answers are best when possible. Be sure to answer all parts of each question.

1. Consider the data below where x_1 is furnace temperature and x_2 is die close time, and y is temperature difference on the die cast.

x_1	1250	1300	1350	1250	1300
x_2	6	7	6	7	6
y	80	95	101	85	92
x_1	1250	1300	1350	1350	
x_2	8	8	7	8	
y	87	96	106	108	

- Enter the data in R and find the correlation between pairs of three variables.
- Create a multiple regression model of y using the two independent variables. Describe your model test and test of each coefficient.
- Write the equation of your final, best-fit model.
- What proportion of the variability in y can be explained by the model?
- Create a 95% confidence interval for β_2 .
- Create residual plots against both independent variables to test model assumptions.
- Predict y when x_1 is 1300 and x_2 is 7. Construct a 95% prediction interval around your mean prediction.

Include all graphs and model output to support your answers.