

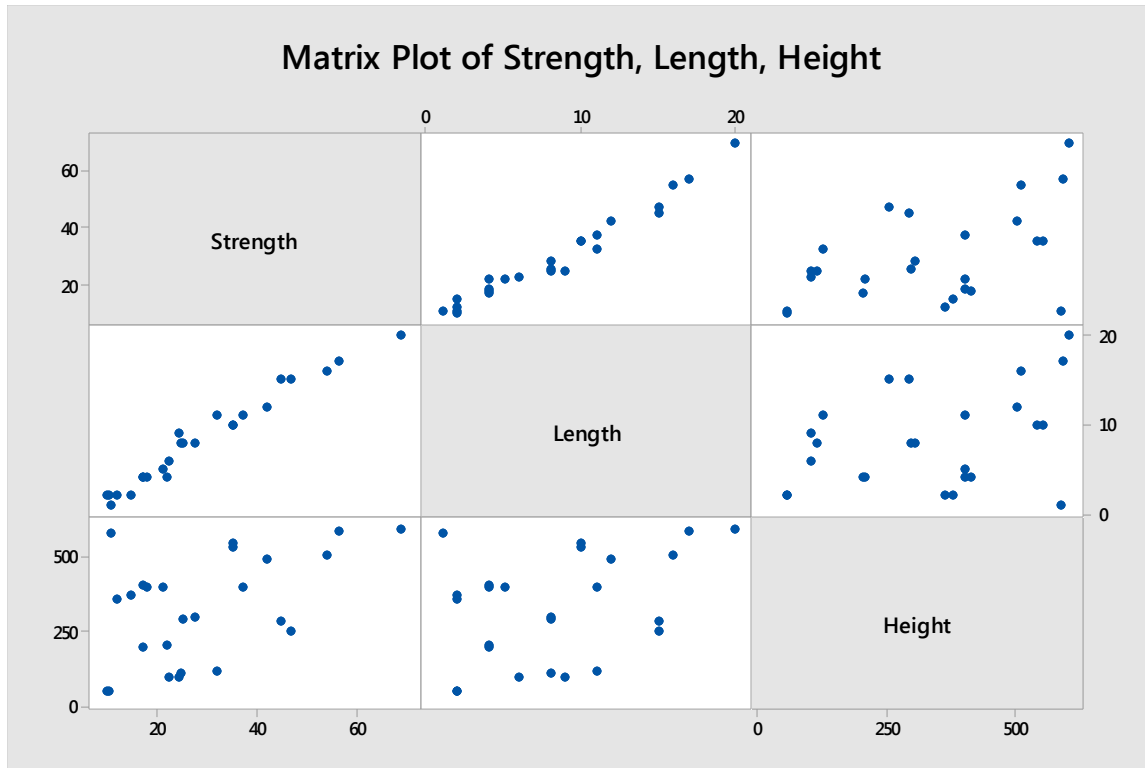
### Example 12-1 Wire Bond Strength

Strength	Length	Height
9.95	2	50
24.45	8	110
31.75	11	120
35.00	10	550
25.02	8	295
16.86	4	200
14.38	2	375
9.60	2	52
24.35	9	100
27.50	8	300
17.08	4	412
37.00	11	400
41.95	12	500
11.66	2	360
21.65	4	205
17.89	4	400
69.00	20	600
10.30	1	585
34.93	10	540
46.59	15	250
44.88	15	290
54.12	16	510
56.63	17	590
22.13	6	100
21.15	5	400

Minitab

Graph => Matrix Plot (data columns)

\*\* A strong linear relationship between Length & Strength



Stat => Regression => Fit Regression Model (linear)

### Matrix Plot of Strength, Length, Height

### Regression Analysis: Strength versus Length, Height

#### Analysis of Variance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Regression	2	5990.8	2995.39	572.17	0.000
Length	1	4507.5	4507.53	861.01	0.000
Height	1	104.9	104.92	20.04	0.000
Error	22	115.2	5.24		
Total	24	6105.9			

#### Model Summary

S	R-sq	R-sq(adj)	R-sq(pred)
2.28805	98.11%	97.94%	97.44%

#### Coefficients

Term	Coef	SE Coef	T-Value	P-Value	VIF
Constant	2.26	1.06	2.14	0.044	
Length	2.7443	0.0935	29.34	0.000	1.17
Height	0.01253	0.00280	4.48	0.000	1.17

### Regression Equation

Strength = 2.26 + 2.7443 Length + 0.01253 Height

$$\hat{y} = \beta_0 + \beta_1 x_1 + \beta_2 x_2$$

Fits and Diagnostics for Unusual Observations