#5, pg. 506

	time (hr)	icethick (mm)	Residual
1	0.17	0.50	-1.03
2	0.33	1.25	-0.92
3	0.50	1.50	-1.35
4	0.67	2.75	-0.78
5	0.83	3.50	-0.68
6	1.00	4.75	-0.11
7	1.17	5.75	0.21
8	1.33	5.60	-0.59
9	1.50	7.00	0.13
10	1.67	8.00	0.45
11	1.83	8.25	0.06
12	2.00	9.50	0.62
13	2.17	10.50	0.94
14	2.33	11.00	0.8
15	2.50	10.75	-0.14
16	2.67	12.50	0.93
17	2.83	12.25	0.04
18	3.00	13.25	0.36
19	3.17	15.50	1.92
20	3.33	15.00	0.78
21	3.50	15.25	0.35
22	3.67	16.25	0.67
23	3.83	17.25	1.02
24	4.00	18.00	1.09
25	4.17	18.25	0.66
26	4.33	18.15	-0.09
27	4.50	20.25	1.33
28	4.67	19.50	-0.1
29	4.83	20.00	-0.24
30	5.00	20.50	-0.43
31	5.17	20.60	-1.01
32	5.33	20.50	-1.75
33	5.50	19.80	-3.14

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.988336484
R Square	0.976809005
Adjusted R Square	0.976060909
Standard Error	0.249331465
Observations	33

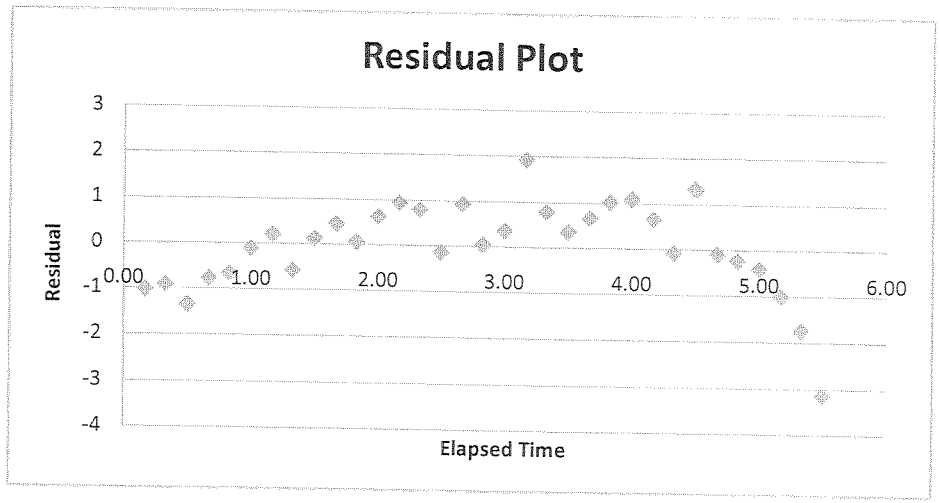
a) 97.7% of the variation in ice thickness can be explained by the linear relationship between it and elapsed time

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	81.17198177	81.17198	1305.72576	6.6068E-27
Residual	31	1.92715156	0.062166		
Total	32	83.09913333			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-0.139233168	0.093011061	-1.49695	0.144518881	-0.328930477	0.0504641
icethick (mm)	0.243169793	0.006729513	36.13483	6.6068E-27	0.229444861	0.2568947

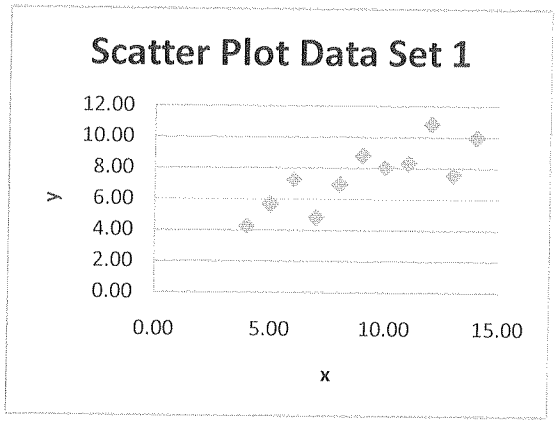
b) the residual plot shows a curve in the data, suggesting a non-linear relationship exists.

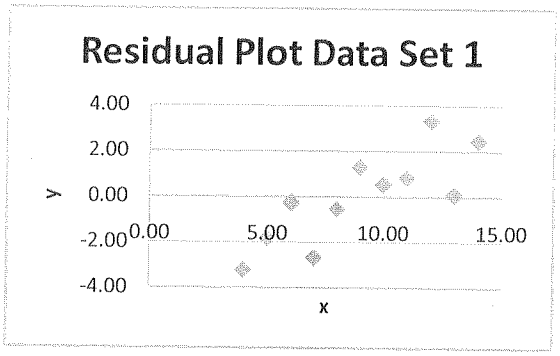


#9, pg 507

Data Set 1

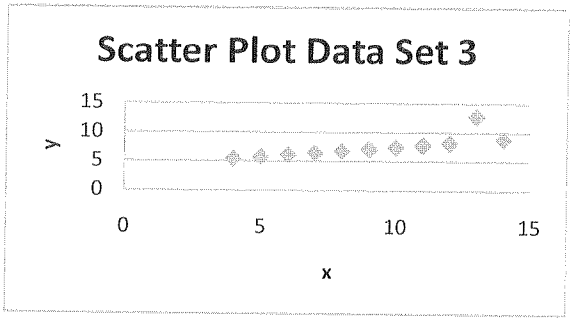
x	y	Residual
10.00	8.04	0.54
8.00	6.95	-0.55
13.00	7.58	0.08
9.00	8.81	1.31
11.00	8.33	0.83
14.00	9.96	2.46
6.00	7.24	-0.26
4.00	4.26	-3.24
12.00	10.84	3.34
7.00	4.82	-2.68
5.00	5.68	-1.82
y bar	7.50	

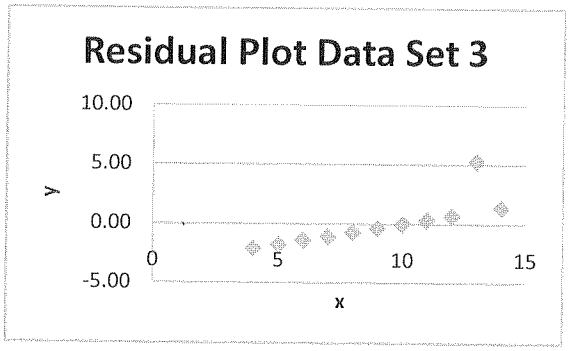




Data Set 3

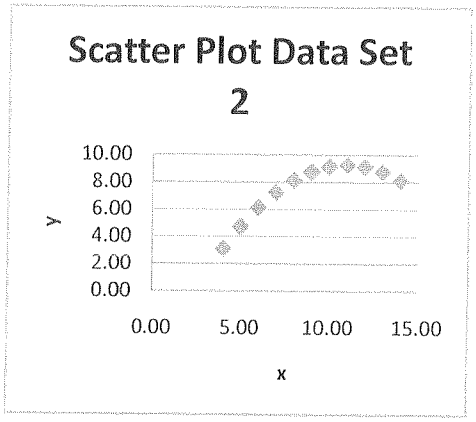
x	y	Residual
10	7.46	-0.04
8	6.77	-0.73
13	12.74	5.24
9	7.11	-0.39
11	7.81	0.31
14	8.84	1.34
6	6.08	-1.42
4	5.39	-2.11
12	8.15	0.65
7	6.42	-1.08
5	5.73	-1.77
y bar	7.50	

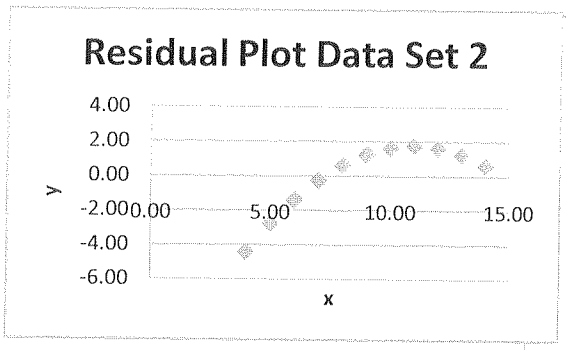


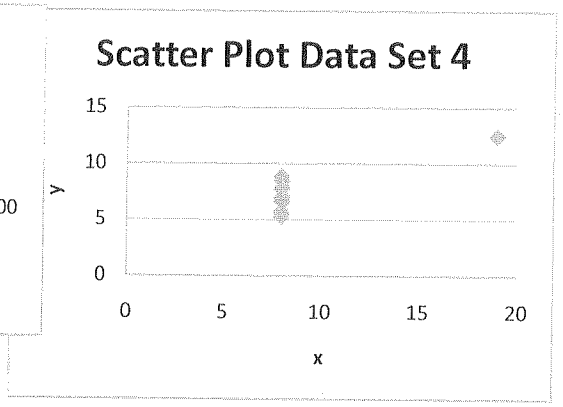


Data Set 2

x	y	Residual
10.00	9.14	1.64
8.00	8.14	0.64
13.00	8.74	1.24
9.00	8.77	1.27
11.00	9.26	1.76
14.00	8.10	0.60
6.00	6.13	-1.37
4.00	3.10	-4.40
12.00	9.13	1.63
7.00	7.26	-0.24
5.00	4.74	-2.76
y bar	7.50	

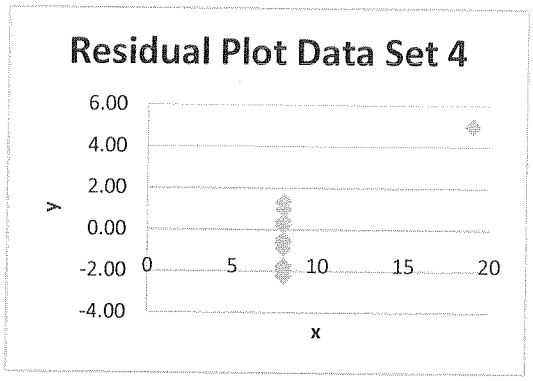






Data Set 4

x	y	Residual
8	6.58	-0.92
8	5.76	-1.74
8	7.71	0.21
8	8.84	1.34
8	8.47	0.97
8	7.04	-0.46
8	5.25	-2.25
19	12.5	5.00
8	5.56	-1.94
8	7.91	0.41
8	6.89	-0.61
y bar	7.50	



Scatter and residual plot for 1st data set suggest that simple linear regression model is reasonable.
Data set 2 suggests that linear regression seems unreasonable, perhaps quadradic model.
Data set 3 suggests that the relationship is perfectly linear, except for one data set which will greatly influence the fit of a regression line
Data set 4 suggests that the slope will be defined entirely by the one outlier, linear model not appropriate.