

§9.11

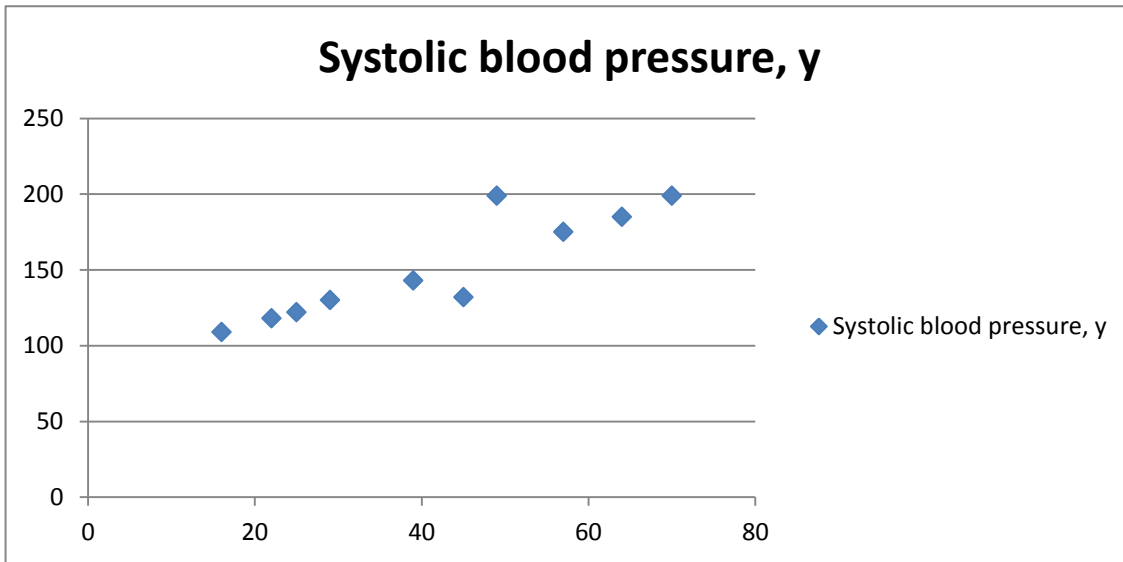
(#11) perfect negative linear correlation

(#13) strong positive linear correlation

**Problem 21, Section 9.1**

**Age, x Systolic blood pressure, y**

16	109
25	122
39	143
45	132
49	199
64	185
70	199
29	130
57	175
22	118

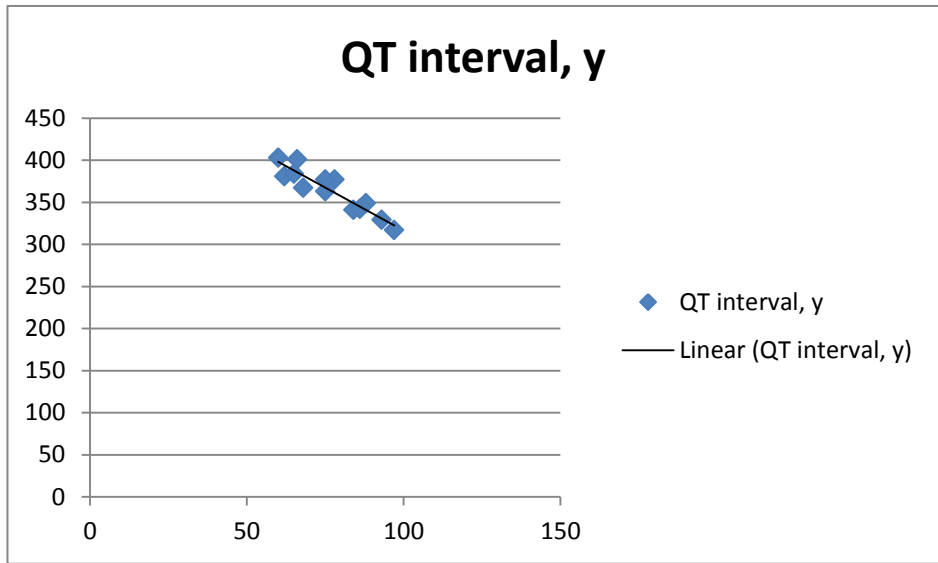


**Correlation =** 0.908386

**Problem 21, Section 9.2**

Heart rate, x QT interval, y

60	403
75	363
62	381
68	367
84	341
97	317
66	401
65	384
86	342
78	377
93	329
75	377
88	349



**SUMMARY OUTPUT**

<i>Regression Statistics</i>	
Multiple R	0.92852
R Square	0.86215
Adjusted R Square	0.849618
Standard Error	10.38076
Observations	13

**ANOVA**

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	7413.562	7413.562	68.79689	4.63E-06
Residual	11	1185.361	107.7601		
Total	12	8598.923			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	520.6683	19.1158	27.23759	1.9E-11	478.5947	562.7419	478.5947	562.7419
X Variable 1	-2.04382	0.24641	-8.29439	4.63E-06	-2.58616	-1.50147	-2.58616	-1.50147

**Equation of (linear) regression line**

$y=520.66-2.04x$

**Predictions:**

- a) out of appropriate range
- b) 383.7324
- c) 336.7246
- d) 351.0313

**Problem 14, Section 9.3**

**Height, x    Trunk diameter, y**

70	8.3
72	10.5
75	11
76	11.4
85	14.9
78	14
77	16.3
82	15.8

SUMMARY OUTPUT

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<i>Regression Statistics</i>	
Multiple R	0.819357
R Square	0.671345
Adjusted R	0.616569
Standard Error	1.779876
Observations	8

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ANOVA

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	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	38.82724	38.82724	12.25623	0.012812
Residual	6	19.00776	3.16796		
Total	7	57.835			

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	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	-24.0863	10.54791	-2.28351	0.062498	-49.8961	1.723506	-49.8961	1.72351
X Variable 1	0.479497	0.136964	3.50089	0.012812	0.144357	0.814636	0.144357	0.81464

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**a)  $r^2 = 0.671345$**

**b)  $s_e = 1.779876$**

**Problem 6, Section 9.4**

S. equity, y	Net sales, x_1	Total assets, x_2
64.3	373.8	163.2
65	401.1	163.1
70.5	405.1	170.4
68.5	419	180.8
71.3	443.9	193.4

SUMMARY OUTPUT

<i>Regression Statistics</i>	
Multiple R	0.823677268
R Square	0.678444241
Adjusted R Square	0.356888483
Standard Error	2.53748547
Observations	5

ANOVA

	df	SS	MS	F	Significance F
Regression	2	27.17033	13.58517	2.109881	0.3216
Residual	2	12.87767	6.438833		
Total	4	40.048			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	28.24010599	20.63394	1.368624	0.304571	-60.541	117	-60.54	117.02
X Variable 1	0.062301617	0.127813	0.487445	0.674138	-0.4876	0.612	-0.488	0.6122
X Variable 2	0.081666664	0.253252	0.322472	0.777684	-1.008	1.171	-1.008	1.1713

- a) **y=28.24+0.062x\_1+0.081x\_2**
- b) **standard error=2.537**
- c) **r^2=0.678**