

A STUDENT'S SOLUTION 4-21-10 IN CLASS

In[73]:= ppm = {4.6, 5.5, 4.5, 3.8, 4.6, 3.7, 4.7, 4.7, 4, 3.1, 1.9, 2.2, 1.8, 2, 2}

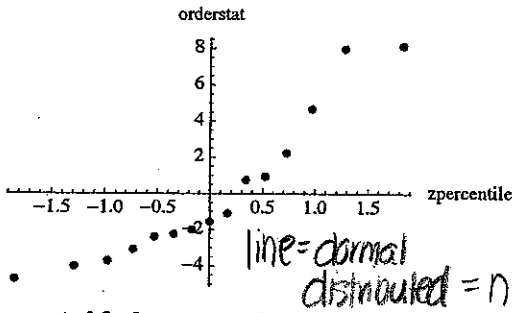
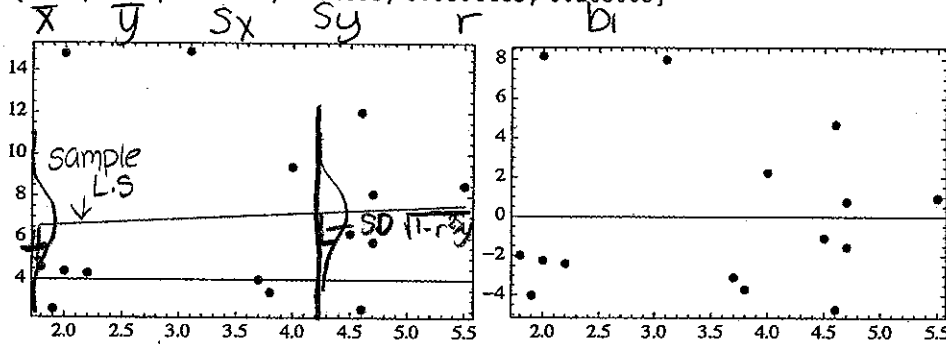
Out[73]:= {4.6, 5.5, 4.5, 3.8, 4.6, 3.7, 4.7, 4.7, 4, 3.1, 1.9, 2.2, 1.8, 2, 2}

In[74]:= cost = {12, 8.5, 6.2, 3.4, 2.6, 4, 5.8, 8.1, 9.4, 14.9, 2.6, 4.3, 4.6, 14.8, 4.4}

Out[74]:= {12, 8.5, 6.2, 3.4, 2.6, 4, 5.8, 8.1, 9.4, 14.9, 2.6, 4.3, 4.6, 14.8, 4.4}

In[75]:= Regrstats[ppm, cost]

Out[75]:= {3.54, 7.04, 1.26649, 4.14053, 0.0804465, 0.263003}



In[83]:= Regrtable[ppm, cost]

Out[83]//MatrixForm=

x	y	x ²	y ²	xy
4.6	12	21.16	144	55.2
5.5	8.5	30.25	72.25	46.75
4.5	6.2	20.25	38.44	27.9
3.8	3.4	14.44	11.56	12.92
4.6	2.6	21.16	6.76	11.96
3.7	4	13.69	16	14.8
4.7	5.8	22.09	33.64	27.26
4.7	8.1	22.09	65.61	38.07
4	9.4	16	88.36	37.6
3.1	14.9	9.61	222.01	46.19
1.9	2.6	3.61	6.76	4.94
2.2	4.3	4.84	18.49	9.46
1.8	4.6	3.24	21.16	8.28
2	14.8	4	219.04	29.6
2	4.4	4	19.36	8.8
3.54	7.04	14.0287	65.5627	25.3153

n=15

point of averages = (3.54, 7.04)
 Slope of L.S line = $b_1 = r \frac{S_y}{S_x}$
 $= .0804465 \frac{4.14053}{1.26649}$

$= .2630033768$
 $SE(b_1) = \frac{\sqrt{1-r^2}}{r\sqrt{n-2}} \cdot b_1$
 $= \frac{\sqrt{1-.0804465^2}}{.0804465\sqrt{15-2}} \cdot .263003$
 $= \frac{.9967}{.29005} \cdot .263003$
 $= .90375$

95% CI =
 $.263003 \pm 2.16 (.90375)$
 $= (2.215, -1.689)$



before = {28, 29, 30, 32, 32, 32, 32, 32, 32, 33, 33, 33, 34, 34, 34, 35, 36, 36, 37, 37}

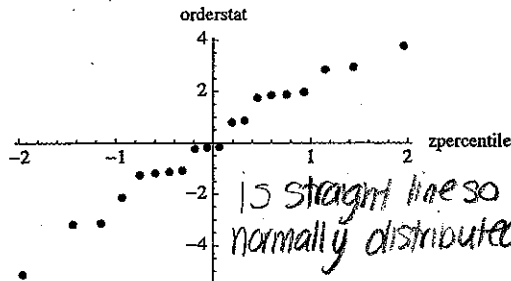
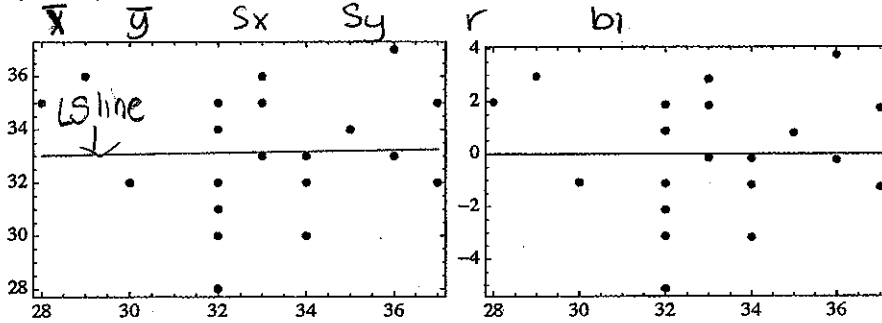
Out[87]= {28, 29, 30, 32, 32, 32, 32, 32, 32, 33, 33, 33, 34, 34, 34, 35, 36, 36, 37, 37}

In[85]:= after = {35, 36, 32, 28, 30, 31, 32, 34, 35, 36, 33, 35, 32, 30, 33, 34, 37, 33, 35, 32}

Out[85]= {35, 36, 32, 28, 30, 31, 32, 34, 35, 36, 33, 35, 32, 30, 33, 34, 37, 33, 35, 32}

In[88]:= regrstats[before, after]

Out[88]= {33.05, 33.15, 2.43818, 2.32322, 0.026481, 0.0252324}



Slope of L.S line = $b_1 = r \frac{s_y}{s_x}$

$$= 0.026481 \frac{2.32322}{2.43818}$$

$$= 0.0252324229$$

$$SE(b_1) = \frac{\sqrt{1-r^2}}{r\sqrt{n-2}} (b_1)$$

$$\frac{\sqrt{1-0.026481^2}}{0.026481 \sqrt{20-2}} (.0252324)$$

$$= \frac{.99964}{.112349} (.0252324)$$

$$= .224508$$

95% CI =

$$.0252324 \pm 2.101 (.224508)$$

$$= (.4969, -.4463)$$

Out[94]/MatrixForm=

x	y	x ²	y ²	xy
28	35	784	1225	980
29	36	841	1296	1044
30	32	900	1024	960
32	28	1024	784	896
32	30	1024	900	960
32	31	1024	961	992
32	32	1024	1024	1024
32	34	1024	1156	1088
32	35	1024	1225	1120
33	36	1089	1296	1188
33	33	1089	1089	1089
33	35	1089	1225	1155
34	32	1156	1024	1088
34	30	1156	900	1020
34	33	1156	1089	1122
35	34	1225	1156	1190
36	37	1296	1369	1332
36	33	1296	1089	1188
37	35	1369	1225	1295
37	32	1369	1024	1184
33.05	33.15	1097.95	1104.05	1095.75

n=20

2.101