

```
> y <-  
c(21,14,28,22,21,31,32,27,29,26,24,30,24,24,33,27,25,31  
,25,20,24,21,28,27,28,26,28,22,26,21,25,16,28,26,22,24,  
21,30,27,26,26,30,24,26,29,24,31,15,19,18,27,16,27,26,2  
4,30,21,20,30,29,25,23,25,23,30,21,24,32,18,23,20,23,18  
,18,29,20,23,26,28,34,20,20,26,32,25,27,27,29,19,21,24,  
27,25,18,29,24,27,21,19,18,25,18,20,32,24,35,25,28,28,2  
5,22,30,20,20,31,20,29,28,16,28)
```

```
> GPA <- c(3.897,
```

```
+ 3.885,
```

```
+ 3.778,
```

```
+ 2.54,
```

```
+ 3.028,
```

```
+ 3.865,
```

```
+ 2.962,
```

```
+ 3.961,
```

```
+ 0.5,
```

```
+ 3.178,
```

```
+ 3.31,
```

```
+ 3.538,
```

```
+ 3.083,
```

```
+ 3.013,
```

```
+ 3.245,
```

```
+ 2.963,
```

```
+ 3.522,
```


```
+ 3.013,
```

```
+ 2.947,
```

```
+ 2.118,
```

```
+ 2.563,
```

```
+ 3.357,
```



+ 3.731,
+ 3.925,
+ 3.556,
+ 3.101,
+ 2.42,
+ 2.579,
+ 3.871,
+ 3.06,
+ 3.927,
+ 2.375,
+ 2.929,
+ 3.375,
+ 2.857,
+ 3.072,
+ 3.381,
+ 3.29,
+ 3.549,
+ 3.646,
+ 2.978,
+ 2.654,
+ 2.54,
+ 2.25,
+ 2.069,
+ 2.617,
+ 2.183,
+ 2,
+ 2.952,
+ 3.806,
+ 2.871,
+ 3.352,
+ 3.305,
+ 2.952,
+ 3.547,

+ 3.691,
+ 3.16,
+ 2.194,
+ 3.323,
+ 3.936,
+ 2.922,
+ 2.716,
+ 3.37,
+ 3.606,
+ 2.642,
+ 2.452,
+ 2.655,
+ 3.714,
+ 1.806,
+ 3.516,
+ 3.039,
+ 2.966,
+ 2.482,
+ 2.7,
+ 3.92,
+ 2.834,
+ 3.222,
+ 3.084,
+ 4,
+ 3.511,
+ 3.323,
+ 3.072,
+ 2.079,
+ 3.875,
+ 3.208,
+ 2.92,
+ 3.345,
+ 3.956,

+ 3.808,
+ 2.506,
+ 3.886,
+ 2.183,
+ 3.429,
+ 3.024,
+ 3.75,
+ 3.833,
+ 3.113,
+ 2.875,
+ 2.747,
+ 2.311,
+ 1.841,
+ 1.583,
+ 2.879,
+ 3.591,
+ 2.914,
+ 3.716,
+ 2.8,
+ 3.621,
+ 3.792,
+ 2.867,
+ 3.419,
+ 3.6,
+ 2.394,
+ 2.286,
+ 1.486,
+ 3.885,
+ 3.8,
+ 3.914,
+ 1.86,
+ 2.948)

>

```
>  
>  
> Table1.1 <- data.frame(1:120, GPA = GPA, ACT = y)  
> Table1.1
```

```
  X1.120  GPA ACT  
1      1 3.897 21  
2      2 3.885 14  
3      3 3.778 28  
4      4 2.540 22  
5      5 3.028 21  
6      6 3.865 31  
7      7 2.962 32  
8      8 3.961 27  
9      9 0.500 29  
10     10 3.178 26  
11     11 3.310 24  
12     12 3.538 30  
13     13 3.083 24  
14     14 3.013 24  
15     15 3.245 33  
16     16 2.963 27  
17     17 3.522 25  
18     18 3.013 31  
19     19 2.947 25  
20     20 2.118 20  
21     21 2.563 24  
22     22 3.357 21  
23     23 3.731 28  
24     24 3.925 27  
25     25 3.556 28  
26     26 3.101 26  
27     27 2.420 28  
28     28 2.579 22
```

29	29	3.871	26
30	30	3.060	21
31	31	3.927	25
32	32	2.375	16
33	33	2.929	28
34	34	3.375	26
35	35	2.857	22
36	36	3.072	24
37	37	3.381	21
38	38	3.290	30
39	39	3.549	27
40	40	3.646	26
41	41	2.978	26
42	42	2.654	30
43	43	2.540	24
44	44	2.250	26
45	45	2.069	29
46	46	2.617	24
47	47	2.183	31
48	48	2.000	15
49	49	2.952	19
50	50	3.806	18
51	51	2.871	27
52	52	3.352	16
53	53	3.305	27
54	54	2.952	26
55	55	3.547	24
56	56	3.691	30
57	57	3.160	21
58	58	2.194	20
59	59	3.323	30
60	60	3.936	29
61	61	2.922	25

62	62	2.716	23
63	63	3.370	25
64	64	3.606	23
65	65	2.642	30
66	66	2.452	21
67	67	2.655	24
68	68	3.714	32
69	69	1.806	18
70	70	3.516	23
71	71	3.039	20
72	72	2.966	23
73	73	2.482	18
74	74	2.700	18
75	75	3.920	29
76	76	2.834	20
77	77	3.222	23
78	78	3.084	26
79	79	4.000	28
80	80	3.511	34
81	81	3.323	20
82	82	3.072	20
83	83	2.079	26
84	84	3.875	32
85	85	3.208	25
86	86	2.920	27
87	87	3.345	27
88	88	3.956	29
89	89	3.808	19
90	90	2.506	21
91	91	3.886	24
92	92	2.183	27
93	93	3.429	25
94	94	3.024	18

```
95 95 3.750 29
96 96 3.833 24
97 97 3.113 27
98 98 2.875 21
99 99 2.747 19
100 100 2.311 18
101 101 1.841 25
102 102 1.583 18
103 103 2.879 20
104 104 3.591 32
105 105 2.914 24
106 106 3.716 35
107 107 2.800 25
108 108 3.621 28
109 109 3.792 28
110 110 2.867 25
111 111 3.419 22
112 112 3.600 30
113 113 2.394 20
114 114 2.286 20
115 115 1.486 31
116 116 3.885 20
117 117 3.800 29
118 118 3.914 28
119 119 1.860 16
120 120 2.948 28
> sum(y)
[1] 2967
> meanY <- sum(y)/120
> meanX <- sum(GPA)/120
> meanX
[1] 3.07405
> meanY
```


[1] 24.725

GPA - meanX

[1] 0.82295 0.81095 0.70395 -0.53405 -0.04605

0.79095 -0.11205 0.88695 -2.57405 0.10395

[11] 0.23595 0.46395 0.00895 -0.06105 0.17095

-0.11105 0.44795 -0.06105 -0.12705 -0.95605

[21] -0.51105 0.28295 0.65695 0.85095 0.48195

0.02695 -0.65405 -0.49505 0.79695 -0.01405

[31] 0.85295 -0.69905 -0.14505 0.30095 -0.21705

-0.00205 0.30695 0.21595 0.47495 0.57195

[41] -0.09605 -0.42005 -0.53405 -0.82405 -1.00505

-0.45705 -0.89105 -1.07405 -0.12205 0.73195

[51] -0.20305 0.27795 0.23095 -0.12205 0.47295

0.61695 0.08595 -0.88005 0.24895 0.86195

[61] -0.15205 -0.35805 0.29595 0.53195 -0.43205

-0.62205 -0.41905 0.63995 -1.26805 0.44195

[71] -0.03505 -0.10805 -0.59205 -0.37405 0.84595

-0.24005 0.14795 0.00995 0.92595 0.43695

[81] 0.24895 -0.00205 -0.99505 0.80095 0.13395

-0.15405 0.27095 0.88195 0.73395 -0.56805

[91] 0.81195 -0.89105 0.35495 -0.05005 0.67595

0.75895 0.03895 -0.19905 -0.32705 -0.76305

[101] -1.23305 -1.49105 -0.19505 0.51695 -0.16005

0.64195 -0.27405 0.54695 0.71795 -0.20705

[111] 0.34495 0.52595 -0.68005 -0.78805 -1.58805

0.81095 0.72595 0.83995 -1.21405 -0.12605

> y - meanY

[1] -3.725 -10.725 3.275 -2.725 -3.725 6.275 7.275

2.275 4.275 1.275 -0.725

[12] 5.275 -0.725 -0.725 8.275 2.275 0.275 6.275

0.275 -4.725 -0.725 -3.725

[23] 3.275 2.275 3.275 1.275 3.275 -2.725 1.275

-3.725 0.275 -8.725 3.275

```
[34] 1.275 -2.725 -0.725 -3.725 5.275 2.275 1.275
      1.275 5.275 -0.725 1.275
[45] 4.275 -0.725 6.275 -9.725 -5.725 -6.725 2.275
      -8.725 2.275 1.275 -0.725
[56] 5.275 -3.725 -4.725 5.275 4.275 0.275 -1.725
      0.275 -1.725 5.275 -3.725
[67] -0.725 7.275 -6.725 -1.725 -4.725 -1.725
      -6.725 -6.725 4.275 -4.725 -1.725
[78] 1.275 3.275 9.275 -4.725 -4.725 1.275 7.275
      0.275 2.275 2.275 4.275
[89] -5.725 -3.725 -0.725 2.275 0.275 -6.725 4.275
      -0.725 2.275 -3.725 -5.725
[100] -6.725 0.275 -6.725 -4.725 7.275 -0.725
      10.275 0.275 3.275 3.275 0.275
[111] -2.725 5.275 -4.725 -4.725 6.275 -4.725
      4.275 3.275 -8.725 3.275
> (GPA - meanX)*(y - meanY)
[1] -3.06548875 -8.69743875 2.30543625
      1.45528625 0.17153625 4.96321125 -0.81516375
[8] 2.01781125 -11.00406375 0.13253625
      -0.17106375 2.44733625 -0.00648875 0.04426125
[15] 1.41461125 -0.25263875 0.12318625
      -0.38308875 -0.03493875 4.51733625 0.37051125
[22] -1.05398875 2.15151125 1.93591125
      1.57838625 0.03436125 -2.14201375 1.34901125
[29] 1.01611125 0.05233625 0.23456125
      6.09921125 -0.47503875 0.38371125 0.59146125
[36] 0.00148625 -1.14338875 1.13913625
      1.08051125 0.72923625 -0.12246375 -2.21576375
[43] 0.38718625 -1.05066375 -4.29658875
      0.33136125 -5.59133875 10.44513625 0.69873625
[50] -4.92236375 -0.46193875 -2.42511375
      0.52541125 -0.15561375 -0.34288875 3.25441125
```

```

[57] -0.32016375  4.15823625  1.31321125
3.68483625 -0.04181375  0.61763625  0.08138625
[64] -0.91761375 -2.27906375  2.31713625
0.30381125  4.65563625  8.52763625 -0.76236375
[71] 0.16561125  0.18638625  3.98153625
2.51548625  3.61643625  1.13423625 -0.25521375
[78] 0.01268625  3.03248625  4.05271125
-1.17628875  0.00968625 -1.26868875  5.82691125
[85] 0.03683625 -0.35046375  0.61641125
3.77033625 -4.20186375  2.11598625 -0.58866375
[92] -2.02713875  0.09761125  0.33658625
2.88968625 -0.55023875  0.08861125  0.74146125
[99] 1.87236125  5.13151125 -0.33908875
10.02731125  0.92161125  3.76081125  0.11603625
[106] 6.59603625 -0.07536375  1.79126125
2.35128625 -0.05693875 -0.93998875  2.77438625
[113] 3.21323625  3.72353625 -9.96501375
-3.83173875  3.10343625  2.75083625  10.59258625
[120] -0.41281375
> sum((((GPA - meanX)*(y - meanY)))
[1] 92.40565
> sum((GPA - meanX)*(GPA - meanX))
[1] 49.40545
> B1 <- sum((((GPA - meanX)*(y - meanY)))/sum((GPA -
meanX)*(GPA - meanX))
> B1
[1] 1.870353
> B0 <- (sum(y)/120) - B1*(sum(GPA)/120)
> B0
[1] 18.97544

```



```
#Y = 18.97544 + 1.870353X
```

