



Backend Services



▼ Projects

- Introduzione-a-R

- Notebooks

Introduzione-a-R

- Files

+ Sandbox

► My Cloud Resources

1 Open Notebooks

Introduzione-a-R

↗ Introduzione-a-R / Introduzione-a-R

File

View

Notebook

R Notebook

R **R**

```
1 eta <- 36
2 dati <- c(1:10)
3 dati
```

Run

```
[1]  1  2  3  4  5  6  7  8  9 10
```

R **R**

```
1 c(1, 5, 2, 12, 7) -> dati
2 dati - 5
```

Run

```
[1] -4  0 -3  7  2
```

R **R**

```
1 dati * 2
```

Run

```
[1]  2 10  4 24 14
```

R **R**

```
1 esponenti <- c(1:length(dati))
2 dati ** esponenti
```

Run

```
[1]  1  25  8 20736 16807
```

R **R**

```
1 dati
```

Run

```
[1] 1 5 2 12 7
```

R **R**

```
1 dati[c(T, F, F, T, T)]
```

Run

```
[1] 1 12 7
```

R **R**

```
1 day_off <- c(2, 2, 0, 0, 5, 8, 3, 4, 1, 0, 0, 7,
2             1, 7, 1, 5, 4, 0, 4, 0, 1, 8, 9, 7,
3             0, 1, 7, 2, 5, 5, 4, 3, 3, 0, 0, 2,
4             5, 1, 3, 0, 1, 0, 2, 4, 5, 0, 5, 7, NA, 5, 1)
5 day_off
```

Run

```
[1] 2 2 0 0 5 8 3 4 1 0 0 7 1 7 1 5 4 0 4 0 1 8 9 7
0
[26] 1 7 2 5 5 4 3 3 0 0 2 5 1 3 0 1 0 2 4 5 0 5 7 NA 5
[51] 1
```

R **R**

```
1 freq <- table(day_off)
2 freq
```

Run

```
day_off
0 1 2 3 4 5 7 8 9
12 8 5 4 5 8 5 2 1
```

R **R**

```
1 sum(freq)
```

Run

```
[1] 50
```

R **R**

```
1 sum(day_off, na.rm=T)
```

Run

```
[1] 450
```

[1] 150

R **R**

```
1 freq[1]
```

Run

	Key	Value
0	0	12

R **R**

```
1 library(xtable)
2 xtable(freq)
```

Run

Index	day_off
0	12
1	8
2	5
3	4
4	5
5	8
7	5
8	2
9	1

1. Quanti lavoratori hanno preso almeno 1 giorno di malattia?
2. Quanti lavoratori hanno preso da 3 a 5 giorni di malattia?
3. Quanti lavoratori hanno preso più di 5 giorni di malattia?

R **R**

```
1 almeno.1.giorno <- sum(freq) - freq[[1]]
2 almeno.1.giorno
```

Run

[1] 38

R **R**

```
1 da.3.a.5.giorni <- 0
2 for (d in c(4:6)) {
3   da.3.a.5.giorni <- da.3.a.5.giorni + freq[[d]]
4 }
5 da.3.a.5.giorni
```

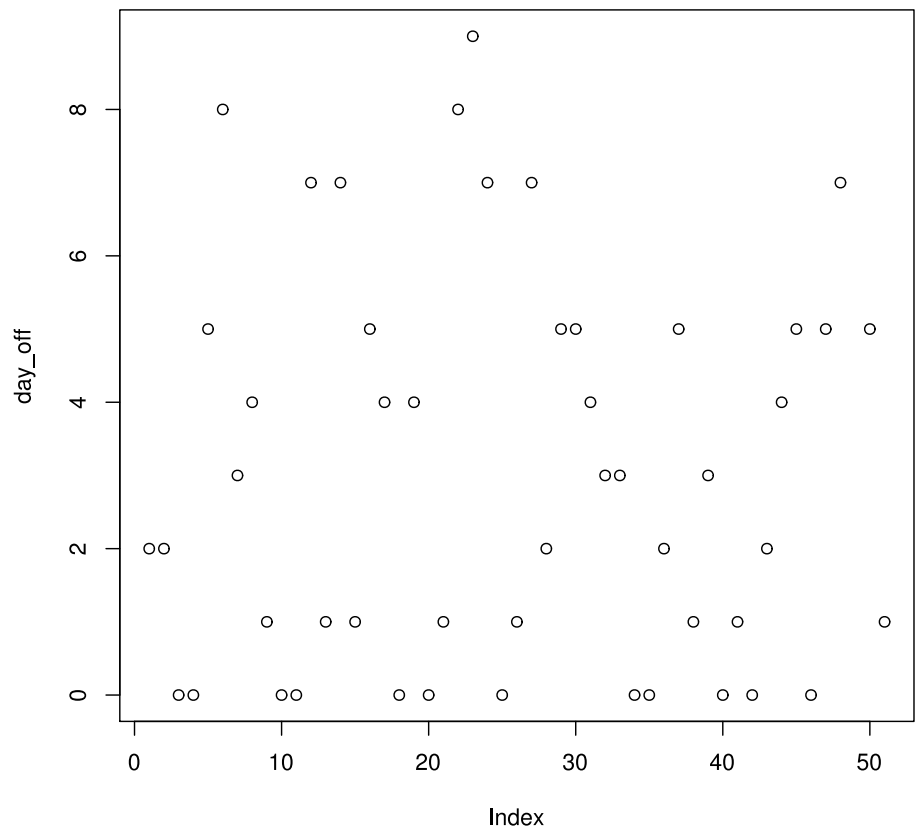
Run

[1] 17

R R

```
1 plot(day_off)
```

Run

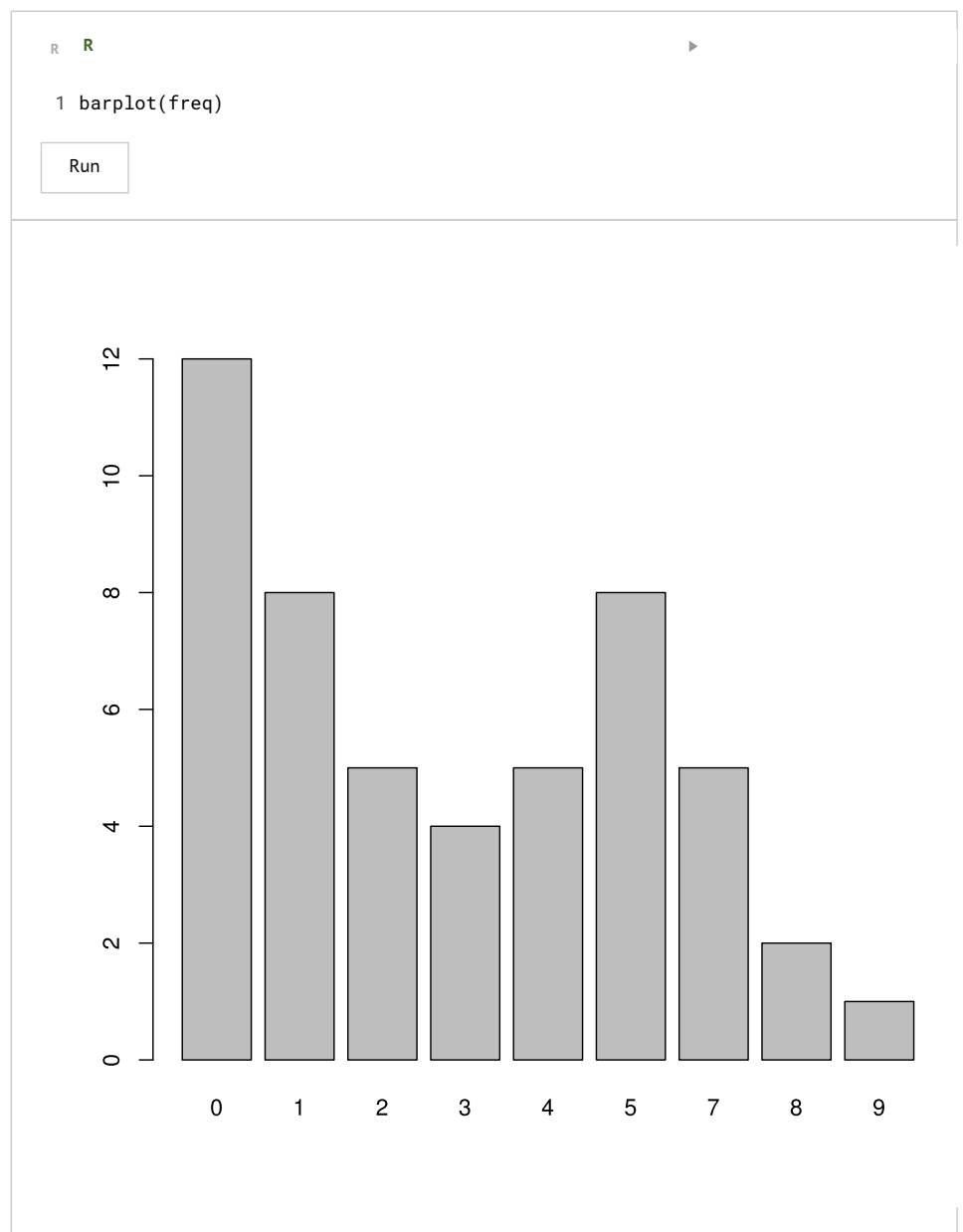
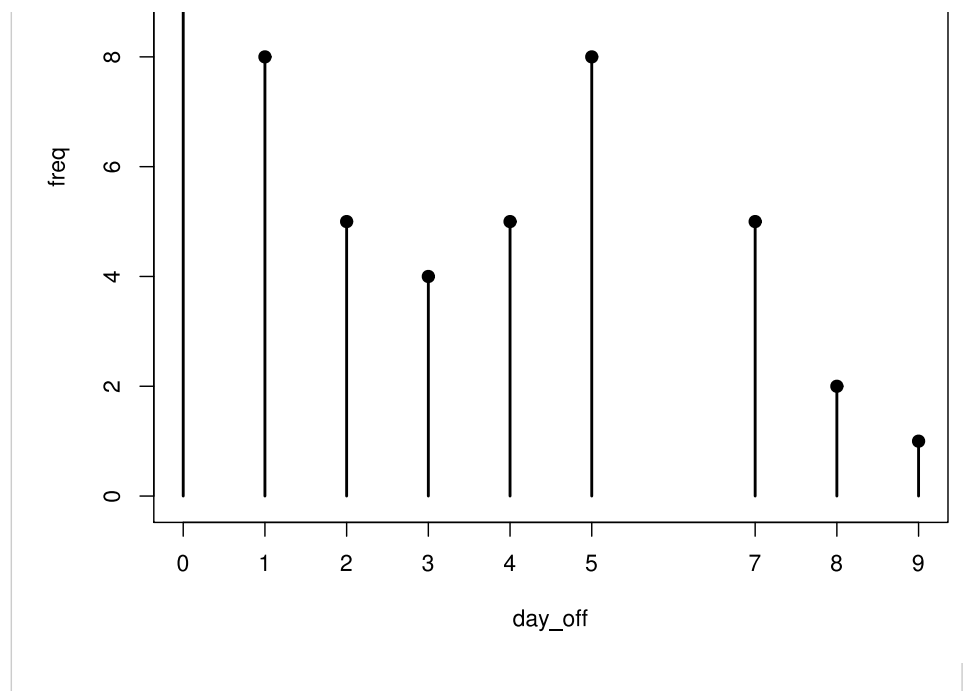


R R

```
1 plot(freq, type="p", bg="black", pch=21)  
2 lines(freq)
```

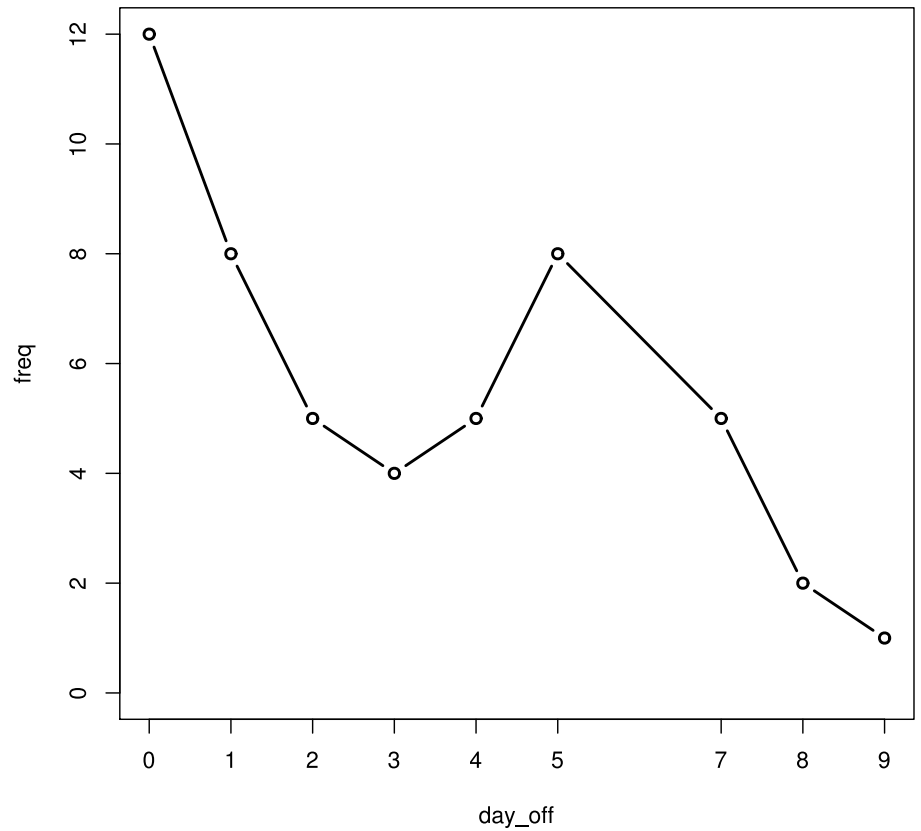
Run





```
1 plot(freq, type="b")
```

Run



R **R**

```
1 norm_freq = freq / sum(freq)
2 norm_freq
```

Run

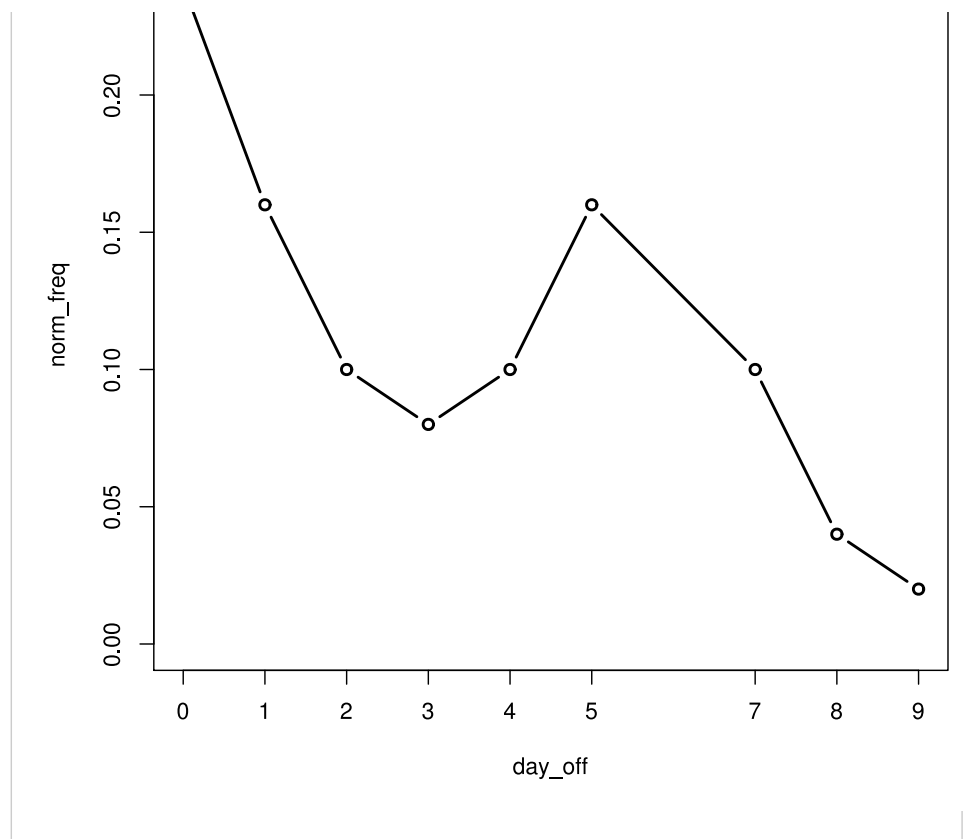
```
day_off
 0      1      2      3      4      5      7      8      9
0.24 0.16 0.10 0.08 0.10 0.16 0.10 0.04 0.02
```

R **R**

```
1 plot(norm_freq, type="b")
```

Run





```
R R ▶

1 years <- 1968:2004
2 names <- c("Bob Goalby", "George Archer", "Billy Casper", "Charles Coody",
3           "Jack Nicklaus", "Tommy Aaron", "Gary Player", "Jack Nicklaus",
4           "Ray Floyd", "Tom Watson", "Gary Player", "Fuzzy Zoeller",
5           "Severiano Ballesteros", "Tom Watson", "Craig Stadler",
6           "Severiano Ballesteros", "Ben Crenshaw", "Bernhard Langer",
7           "Jack Nicklaus", "Larry Mize", "Sandy Lyle", "Nick Faldo",
8           "Nick Faldo", "Ian Woosnam", "Fred Couples", "Bernhard Langer",
9           "J.M. Olazabal", "Ben Crenshaw", "Nick Faldo", "Tiger Woods",
10          "Mark O'Meara", "J.M. Olazabal", "Vijay Singh", "Tiger Woods",
11          "Tiger Woods", "Mike Weir", "Phil Nickelson")
12 points <- c(277, 281, 279, 279, 286, 283, 278, 276, 271, 276, 277, 280,
13            275,
14            280, 284, 280, 277, 282, 279, 285, 281, 283, 278, 277, 275,
15            277,
16            279, 274, 276, 270, 279, 280, 278, 272, 276, 281, 279)
```

Run

```
R R ▶

1 masters <- data.frame(years, names, points)
2 masters
```

Run

Index	years	names	points
1	1,968	Bob Goalby	277.0000
2	1,969	George Archer	281.0000
3	1,970	Billy Casper	279.0000
4	1,971	Charles Coody	279.0000

5	1,972	Jack Nicklaus	286.0000
6	1,973	Tommy Aaron	283.0000
7	1,974	Gary Player	278.0000
8	1,975	Jack Nicklaus	276.0000
9	1,976	Ray Floyd	271.0000
10	1,977	Tom Watson	276.0000
11	1,978	Gary Player	277.0000
12	1,979	Fuzzy Zoeller	280.0000
13	1,980	Severiano Ballesteros	275.0000
14	1,981	Tom Watson	280.0000
15	1,982	Craig Stadler	284.0000
16	1,983	Severiano Ballesteros	280.0000
17	1,984	Ben Crenshaw	277.0000
18	1,985	Bernhard Langer	282.0000
19	1,986	Jack Nicklaus	279.0000
20	1,987	Larry Mize	285.0000
21	1,988	Sandy Lyle	281.0000
22	1,989	Nick Faldo	283.0000
23	1,990	Nick Faldo	278.0000
24	1,991	Ian Woosnam	277.0000
25	1,992	Fred Couples	275.0000

Show25entries

Previous12Next

☒ use pagination

R

R

1 masters[2]

Run

Index	names
1	Bob Goalby
2	George Archer
3	Billy Casper
4	Charles Coody
5	Jack Nicklaus
6	Tommy Aaron
7	Gary Player
8	Jack Nicklaus
9	Ray Floyd
10	Tom Watson
11	Gary Player
12	Fuzzy Zoeller
13	Severiano Ballesteros
14	Tom Watson
15	Craig Stadler
16	Severiano Ballesteros
17	Ben Crenshaw
18	Bernhard Langer
19	Jack Nicklaus
20	Larry Mize
21	Sandy Lyle
22	Nick Faldo

22	Nick Faldo
23	Nick Faldo
24	Ian Woosnam
25	Fred Couples

Show25entries

Previous12Next

☒ use pagination

R R

```
1 masters[c('names', 'points')]
```

Run

Index	names	points
1	Bob Goalby	277.0000
2	George Archer	281.0000
3	Billy Casper	279.0000
4	Charles Coody	279.0000
5	Jack Nicklaus	286.0000
6	Tommy Aaron	283.0000
7	Gary Player	278.0000
8	Jack Nicklaus	276.0000
9	Ray Floyd	271.0000
10	Tom Watson	276.0000
11	Gary Player	277.0000
12	Fuzzy Zoeller	280.0000
13	Severiano Ballesteros	275.0000
14	Tom Watson	280.0000
15	Craig Stadler	284.0000
16	Severiano Ballesteros	280.0000
17	Ben Crenshaw	277.0000
18	Bernhard Langer	282.0000
19	Jack Nicklaus	279.0000
20	Larry Mize	285.0000
21	Sandy Lyle	281.0000
22	Nick Faldo	283.0000
23	Nick Faldo	278.0000
24	Ian Woosnam	277.0000
25	Fred Couples	275.0000

Show25entries

Previous12Next

☒ use pagination

R R

```
1 masters[c(3, 7, 12),]
```

Run

Index	years	names	points
3	1,970	Billy Casper	279.0000
7	1,974	Gary Player	278.0000
12	1,976	Fuzzy Zoeller	280.0000

R

R

1 masters[c(3, 7, 12), c(2, 3)]

Run

Index	names	points
3	Billy Casper	279.0000
7	Gary Player	278.0000
12	Fuzzy Zoeller	280.0000

R

R

1 length(masters)

Run

[1] 3

R

R

1 nrow(masters)

Run

[1] 37

R

R

1 points_norm_freq <- round(table(masters\$points) / nrow(masters), digits=3)
2 points_norm_freq

Run

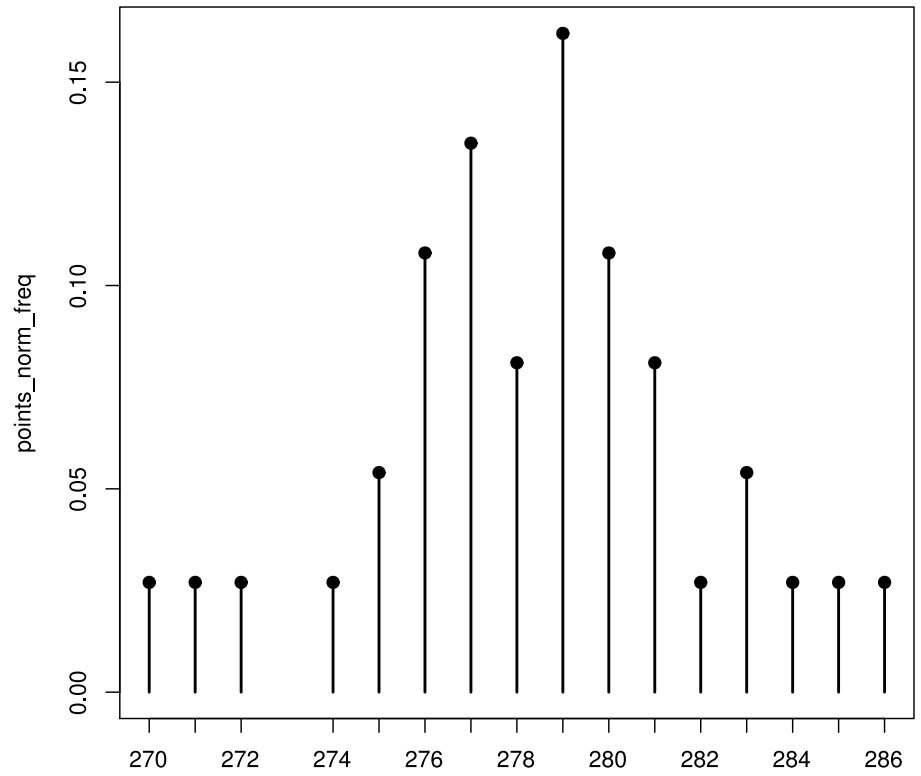
270 271 272 274 275 276 277 278 279 280 281 282 283
0.027 0.027 0.027 0.027 0.054 0.108 0.135 0.081 0.162 0.108 0.081 0.027 0.054
284 285 286
0.027 0.027 0.027

R

R

1 plot(points_norm_freq, type="p", bg="black", pch=21)
2 lines(points_norm_freq)

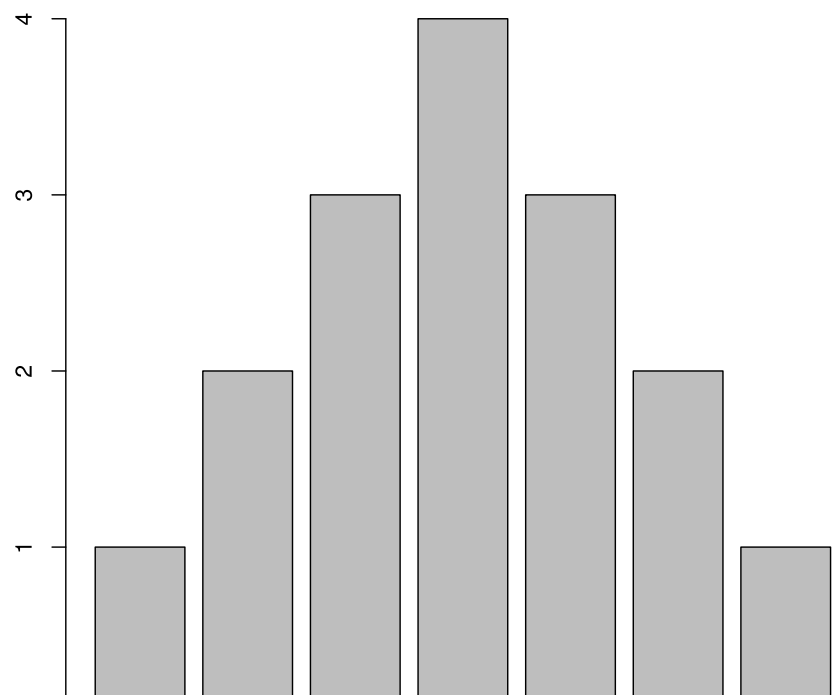
Run



R R

```
1 barplot(c(1, 2, 3, 4, 3, 2, 1))
```

Run

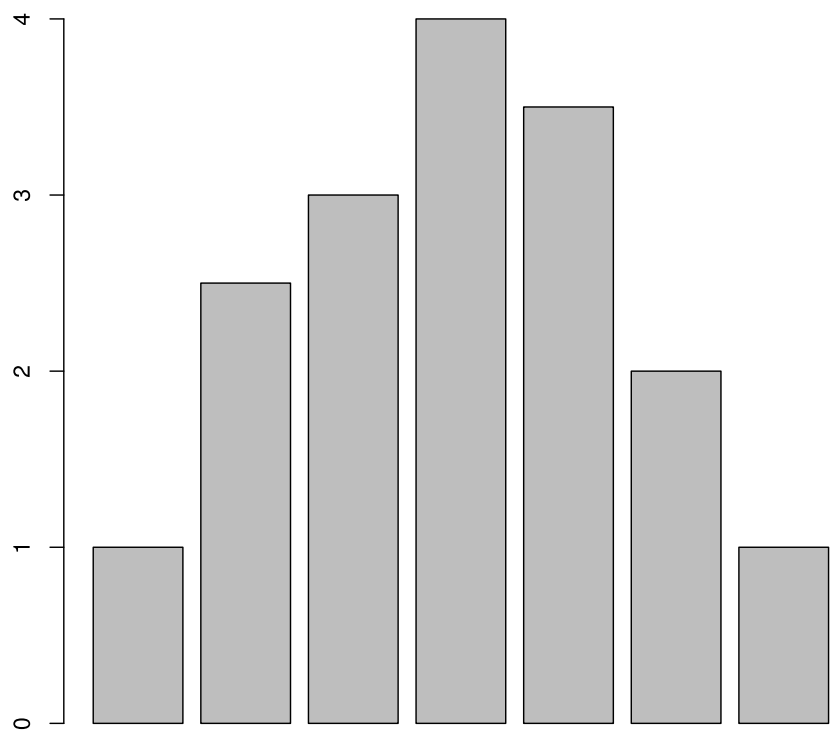




R **R**

```
1 barplot(c(1, 2.5, 3, 4, 3.5, 2, 1))
```

Run

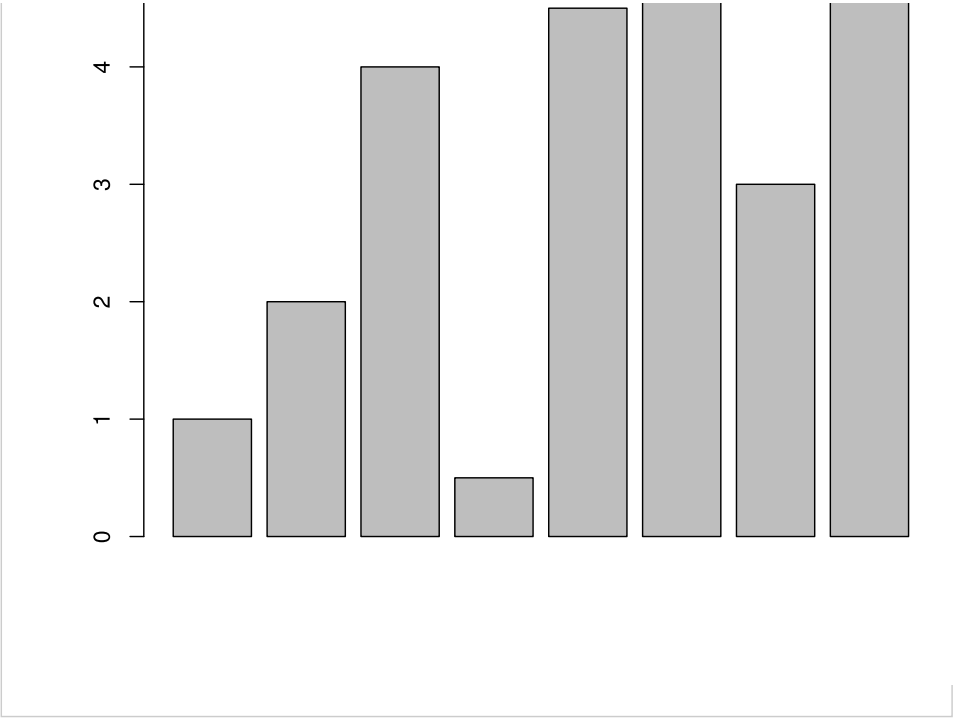


R **R**

```
1 barplot(c(1, 2, 4, 0.5, 4.5, 5, 3, 6))
```

Run





R

R

```
1 weapons <- c("Pistola", "Coltello", "Fucile a pallettoni",  
2             "Fucile a proiettili", "Arma personale", "Altro")  
3 percentage <- c(52, 18, 7, 4, 6, 13)  
4 data.frame(weapons, percentage)
```

Run

Index	weapons	percentage
1	Pistola	52.0000
2	Coltello	18.0000
3	Fucile a pallettoni	7.0000
4	Fucile a proiettili	4.0000
5	Arma personale	6.0000
6	Altro	13.0000

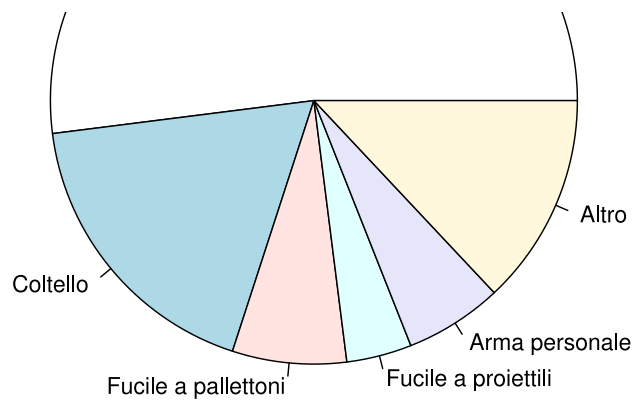
R

R

```
1 pie(percentage, labels=weapons)
```

Run

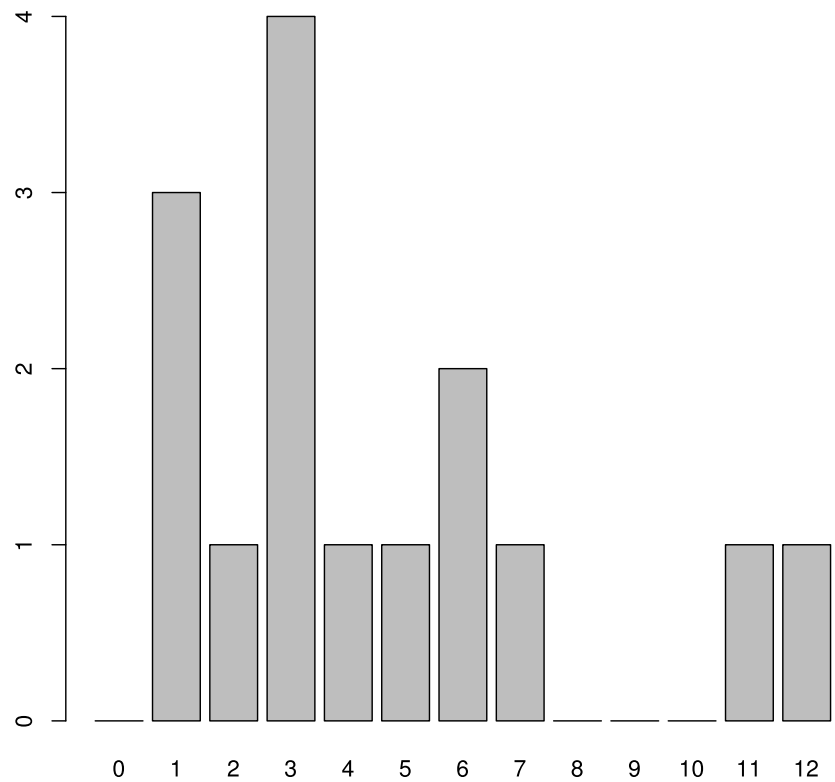
Weapons	Percentage
Pistola	52.0000
Coltello	18.0000
Fucile a pallettoni	7.0000
Fucile a proiettili	4.0000
Arma personale	6.0000
Altro	13.0000



R **R**

```
1 barplot(c(0, 3, 1, 4, 1, 1, 2, 1, 0, 0, 0, 1, 1), names.arg = supply(0:12,
as.character))
```

Run



1. Qual è il numero massimo di isolati di distanza tra le case degli studenti e la scuola?
2. Qual è il numero minimo?
3. Quanti studenti vivono a meno di 5 isolati dalla scuola?

4. Quanti studenti vivono a più di 4 isolati dalla scuola?

R **R**

```
1 cholesterol <- c(213, 174, 192, 200, 187, 181, 216, 206, 221, 212,  
2   193, 196, 220, 200, 199, 178, 193, 205, 196, 195,  
3   191, 171, 221, 204, 204, 183, 194, 200, 183, 188,  
4   193, 211, 202, 213, 194, 184, 191, 191, 183, 227)
```

Run

R **R**

```
1 sort(cholesterol)
```

Run

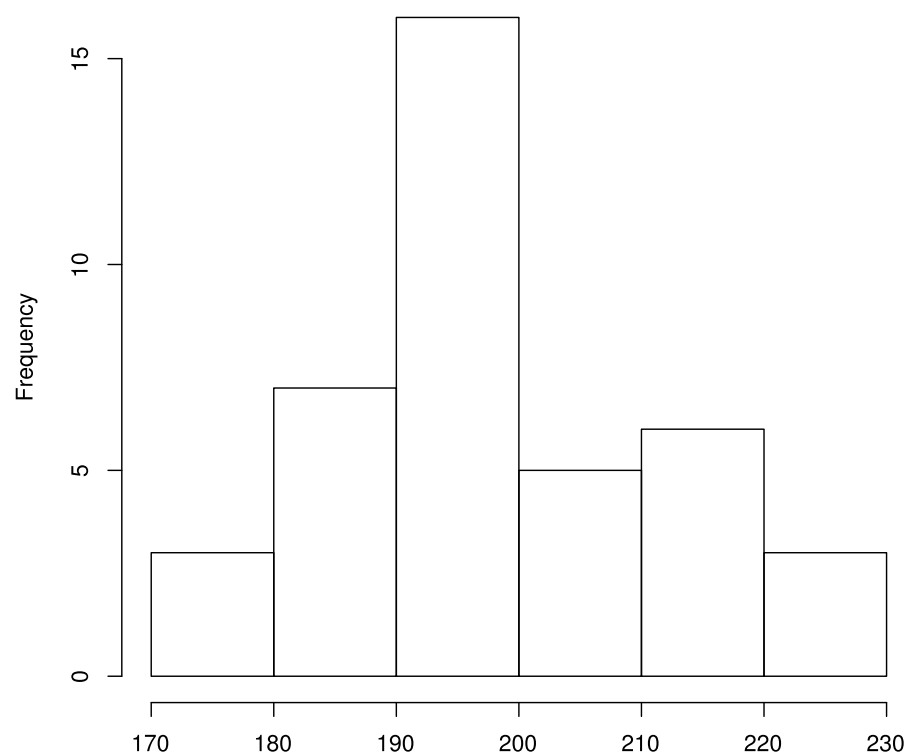
```
[1] 171 174 178 181 183 183 183 184 187 188 191 191 191 192 193 193 193 194  
194  
[20] 195 196 196 199 200 200 200 202 204 204 205 206 211 212 213 213 216 220 221  
[39] 221 227
```

R **R**

```
1 hist(cholesterol, breaks=6)
```

Run

Histogram of cholesterol



cholesterol

R R

```
1 pressure_30_40 <- c(3, 17, 118, 460, 768, 675, 312, 120, 45, 18, 3, 1)
2 pressure_50_60 <- c(1, 2, 23, 57, 122, 149, 167, 73, 62, 35, 20, 9, 3, 5,
  2, 1)
```

Run

R R

```
1 sum(pressure_30_40)
```

Run

[1] 2540

R R

```
1 sum(pressure_50_60)
```

Run

[1] 731

R R

```
1 pressure_30_40_norm <- pressure_30_40 / sum(pressure_30_40)
2 pressure_50_60_norm <- pressure_50_60 / sum(pressure_50_60)
```

Run

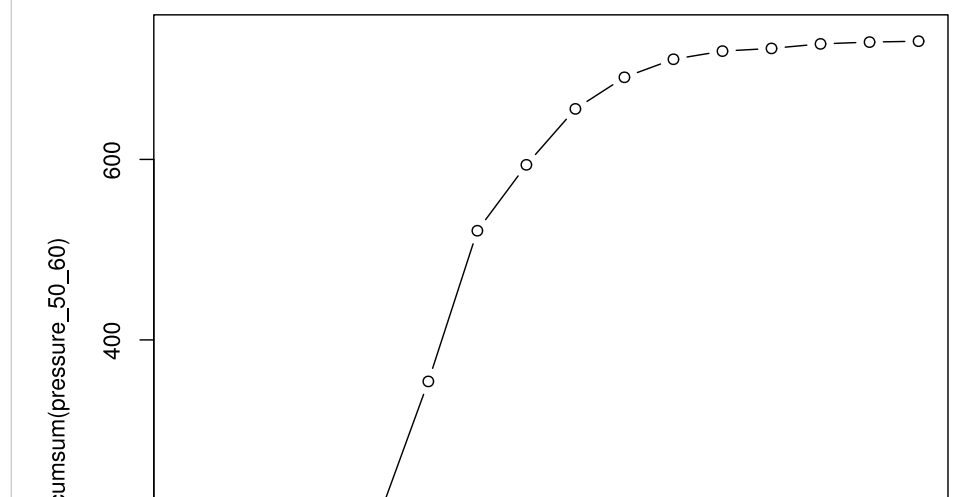
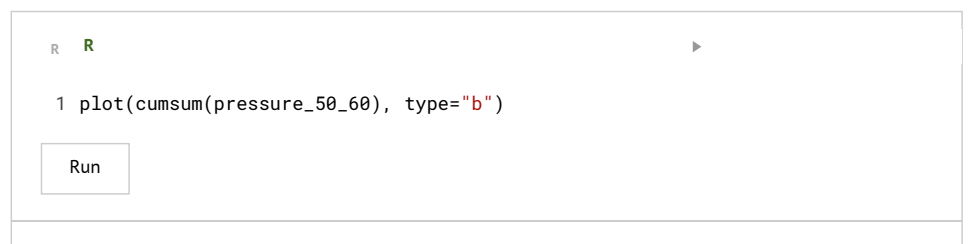
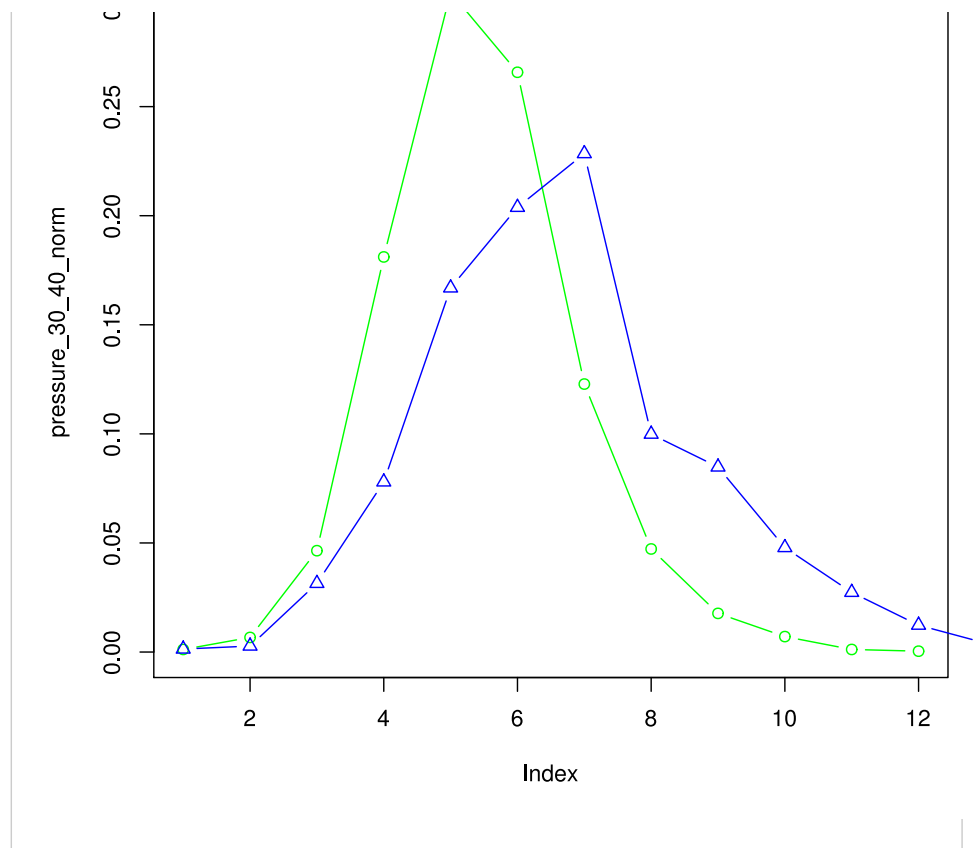
R R

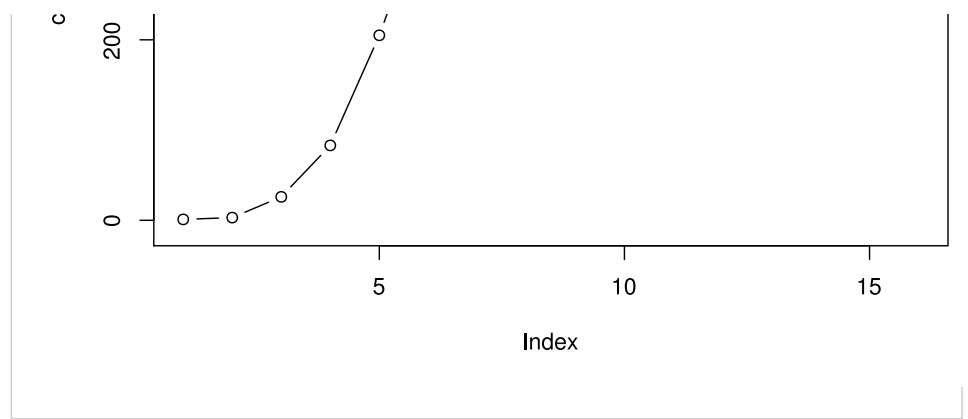
```
1 plot(pressure_30_40_norm, type="b", col="green")
2 lines(pressure_50_60_norm, type="b", pch=2, col="blue")
```

Run

3:30

0



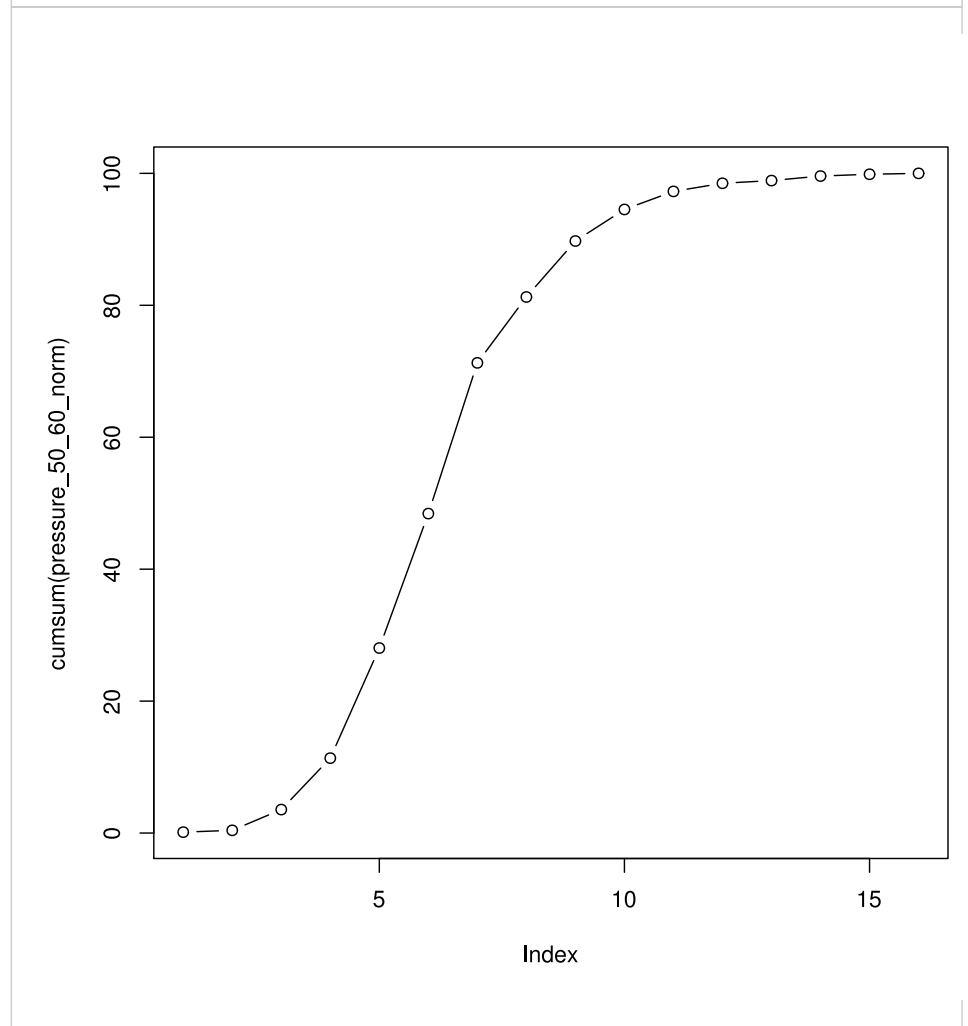


```

R R ▶
1 plot(cumsum(pressure_50_60_norm), type="b")

```

Run



```

R R ▶
1 income <- c(30941, 25128, 32151, 26183, 23512, 32996, 33276,
2             42706, 32779, 42120, 29596, 28821, 30001, 25057,
3             33404, 28240, 28280, 29141, 25579, 25446, 27744,
4             36298, 39244, 30296, 34071, 22372, 28936, 25020,
5             29771, 30180, 34334, 39453, 23941, 36043, 27711,
6             26982, 29405, 25575, 28731, 31727, 31319, 25400,
7             26894, 27671, 28551, 24306, 29567, 32922, 32677,
8             23688, 29923, 30578)

```

Run

R **R**



```
1 stem(income, scale=3)
```

Run

The decimal point is 3 digit(s) to the right of the |

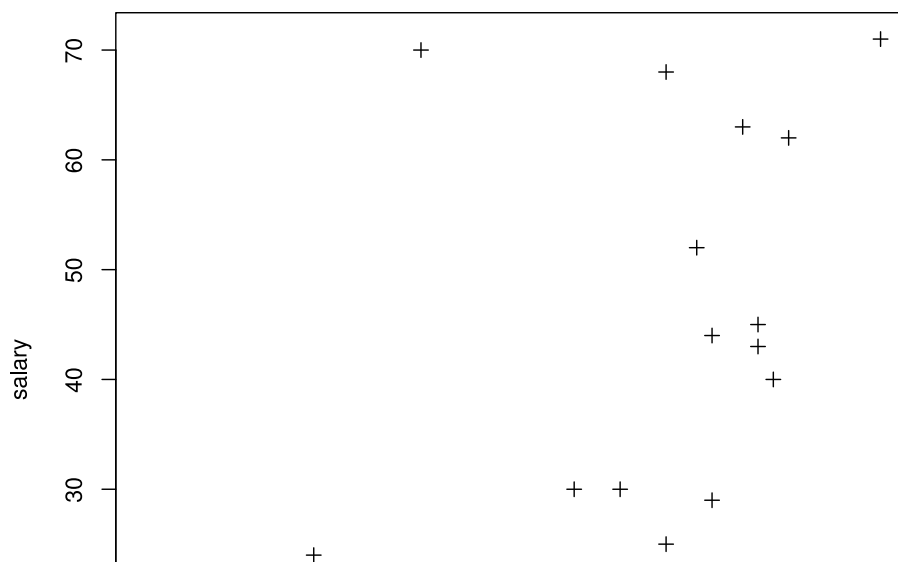
```
22 | 4
23 | 579
24 | 3
25 | 0114466
26 | 29
27 | 0777
28 | 236789
29 | 146689
30 | 02369
31 | 37
32 | 2789
33 | 034
34 | 13
35 |
36 | 03
37 |
38 |
39 | 25
40 |
41 |
```

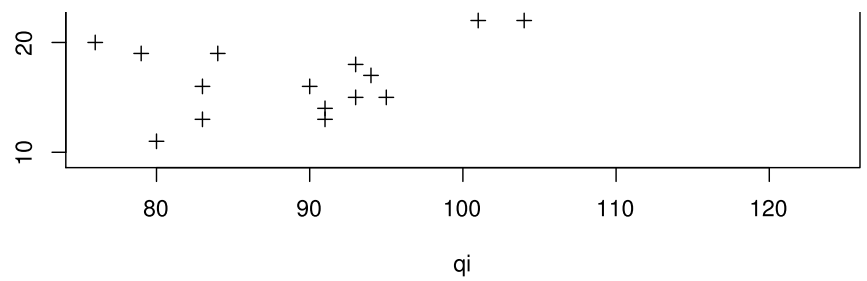
R **R**



```
1 qi <- c(110, 107, 83, 87, 117, 104, 110, 118, 116, 94,
2         93, 101, 93, 76, 91, 84, 83, 112, 80, 91,
3         113, 124, 79, 116, 113, 94, 95, 104, 115, 90)
4 salary <- c(68, 30, 13, 24, 40, 22, 25, 62, 45, 70,
5            15, 22, 18, 20, 14, 19, 16, 52, 11, 13,
6            29, 71, 19, 43, 44, 17, 15, 30, 63, 16)
7 plot(qi, salary, pch=3)
```

Run

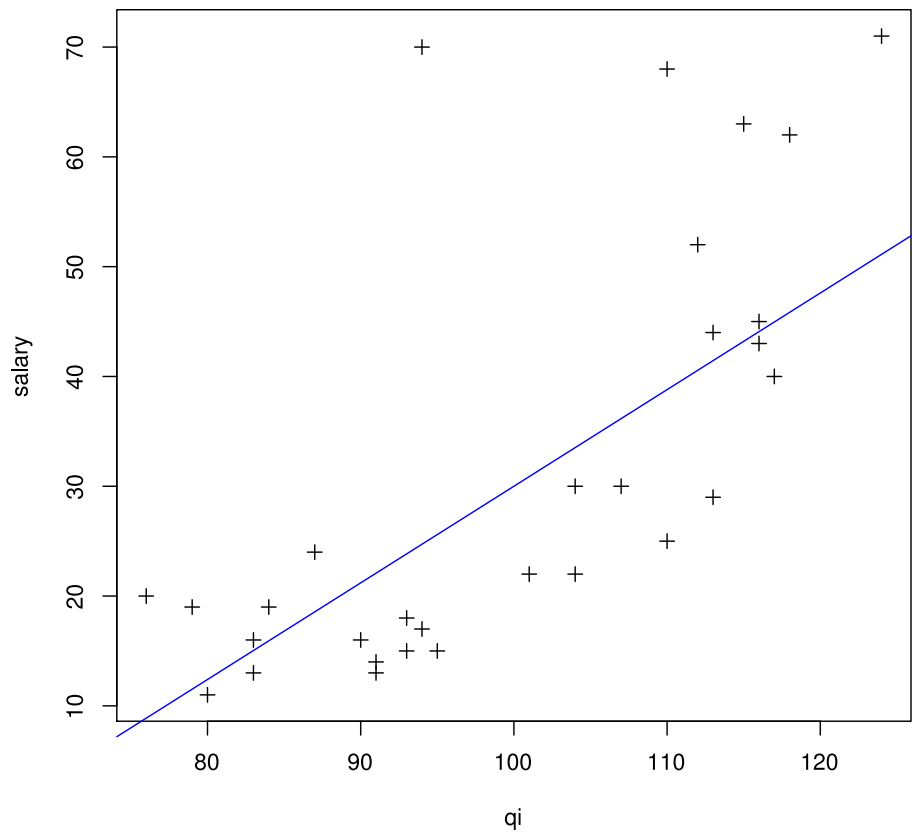




R R

```
1 plot(qi, salary, pch=3)
2 abline(a=-58, b=0.88, col="blue")
```

Run



Insert R Cell

code ▼

text

section ▼