

Stat 145 – PS07

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Exercise 2.100

How to make a list of values, name it *times*, and calculate its mean.

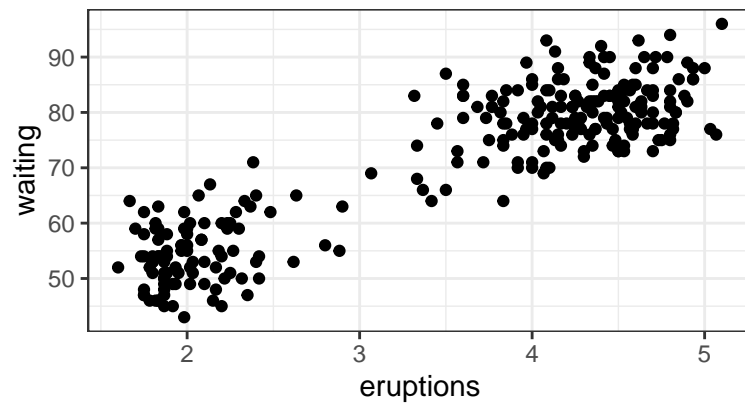
```
times <- c(40, 87, 78, 106, 67, 70, 153, 81)
mean(~times)
```

```
## [1] 85.25
```

More examples of text, R code and results

To include a scatter plot of data in *faithful*, with *eruptions* as explanatory variable and *waiting* as response variable.

```
gf_point(waiting ~ eruptions, data=faithful)
```



This exemplifies a **positive association**, since the larger the value of the explanatory variable (*eruptions*), the larger the response tends to be.

A **negative association** does the opposite—the larger the explanatory value, the *smaller* the response tends to be.

Correlation

Correlation measures the strength of a linear association. For this data, the value of the correlation is

```
cor(waiting ~ eruptions, data=faithful)
```

```
## [1] 0.9008112
```

Some facts about correlation:

- It requires two quantitative variables.
- It's always a number between (-1) and (+1).
- When close to zero, the *linear* association is weak.
- When close to (-1) or to (+1) the linear association is strong.
- It's positive or negative to match the slope of a regression line.
- If you change the unit of measurement on one of the variables, this has no effect on the correlation.
- It doesn't matter which variable is considered explanatory, and which is considered response. Trade roles between the two variables, and the result is the same:

```
cor(eruptions ~ waiting, data=faithful)
```

```
## [1] 0.9008112
```