

# R Markdown

2025-04-11

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## 1

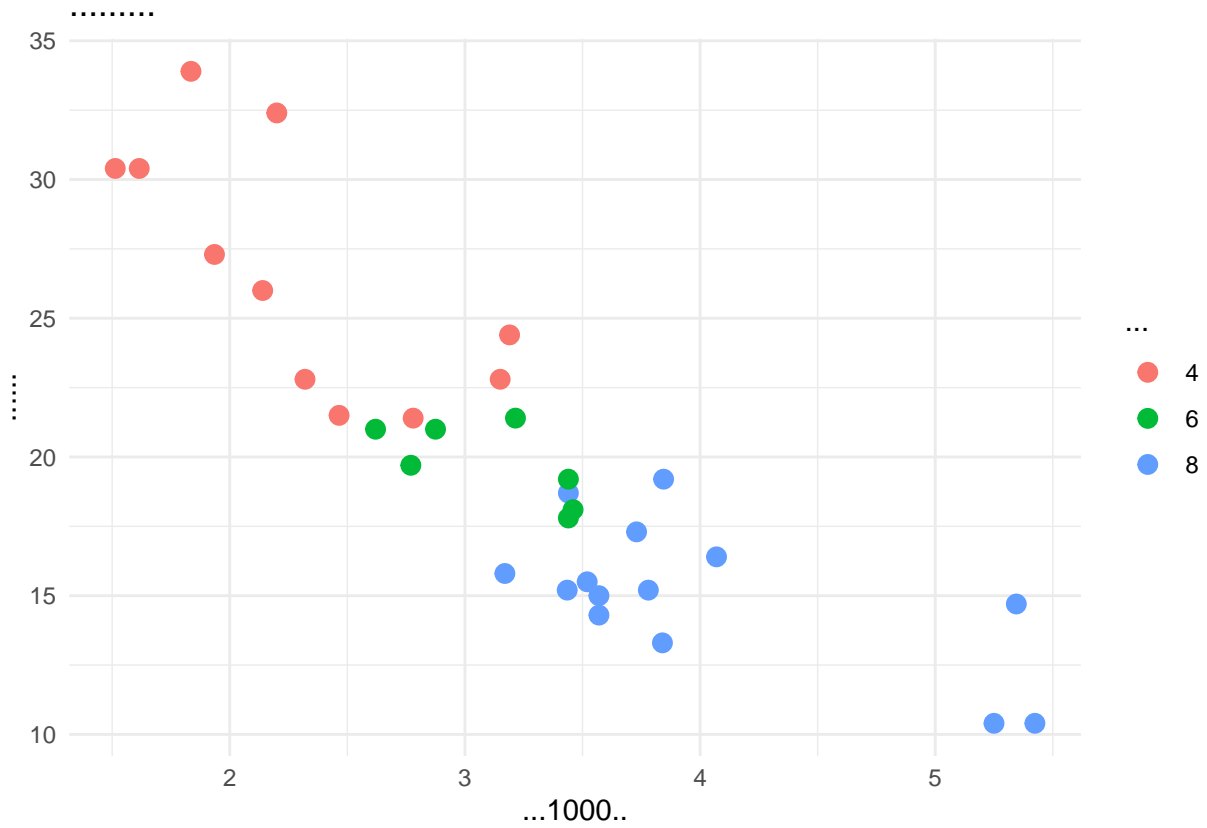
### 1.1

- 1.
2.
  - A
  - B
- 3.

## 2

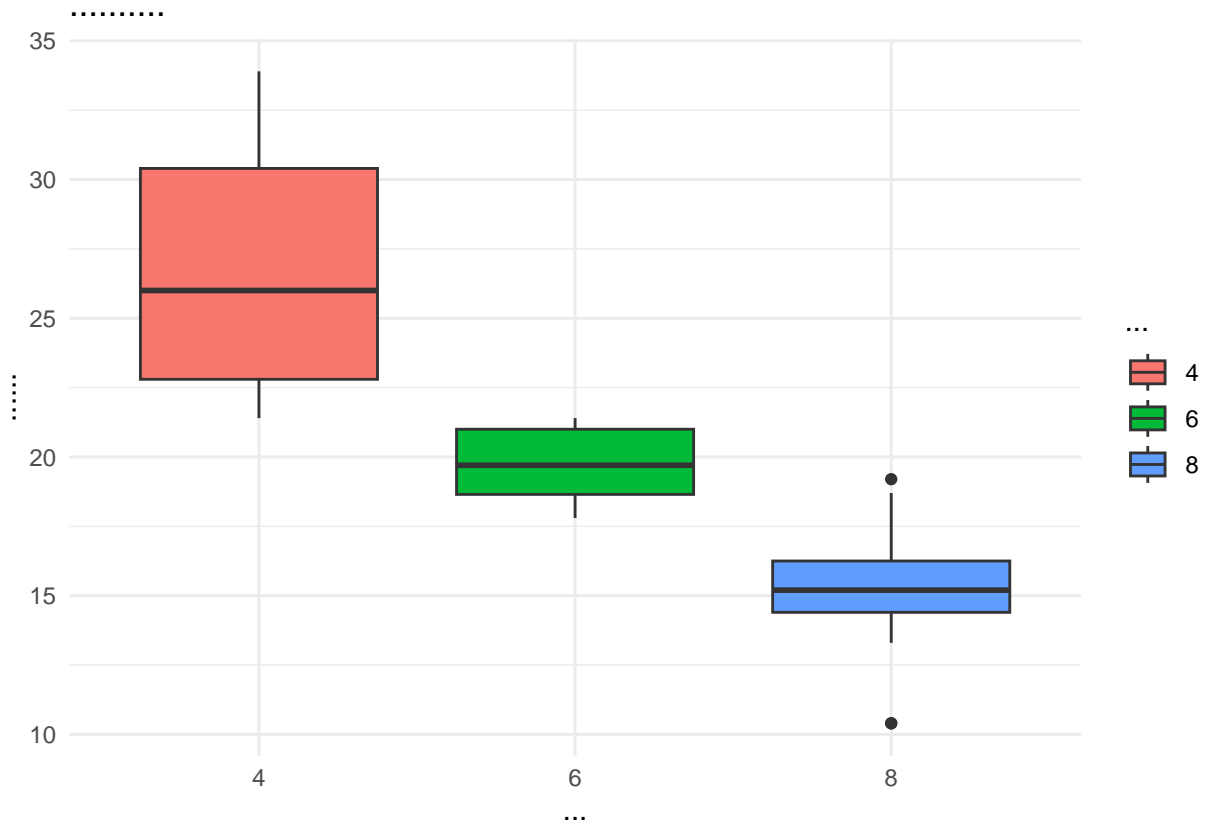
### 2.1

```
ggplot(mtcars, aes(x = wt, y = mpg, color = factor(cyl))) +  
  geom_point(size = 3) +  
  labs(title = "      ",  
        x = " 1000 ",  
        y = "    ",  
        color = "  ") +  
  theme_minimal()
```



## 2.2

```
ggplot(mtcars, aes(x = factor(cyl), y = mpg, fill = factor(cyl))) +
  geom_boxplot() +
  labs(title = " ",
        x = " ",
        y = " ",
        fill = " ") +
  theme_minimal()
```



### 3

#### 3.1

```
knitr::kable(head(mtcars[, 1:5]),
  caption = "mtcars 6 ",
  booktabs = TRUE)
```

Table 1: mtcars 6

	mpg	cyl	disp	hp	drat
Mazda RX4	21.0	6	160	110	3.90
Mazda RX4 Wag	21.0	6	160	110	3.90
Datsun 710	22.8	4	108	93	3.85
Hornet 4 Drive	21.4	6	258	110	3.08
Hornet Sportabout	18.7	8	360	175	3.15
Valiant	18.1	6	225	105	2.76

#### 3.2

```
summary_stats <- aggregate(mpg ~ cyl, data = mtcars,
  FUN = function(x) c(mean = mean(x),
    sd = sd(x)))
knitr::kable(summary_stats,
```

```
caption = "      ",
booktabs = TRUE)
```

```
## Warning in `[<-.data.frame`(`*tmp*`, , isn, value = structure(list(cyl =
## structure(c("4", : provided 3 variables to replace 2 variables
```

Table 2:

cyl	mpg
4	26.663636
6	19.742857
8	15.100000

4

$$x \rightarrow \infty \quad e^{-x} \rightarrow 0$$

$$f(x) = \frac{1}{\sigma\sqrt{2\pi}} e^{-\frac{(x-\mu)^2}{2\sigma^2}}$$

5

```
fibonacci <- function(n) {
  if (n <= 1) return(n)
  fib <- numeric(n+1)
  fib[1] <- 0
  fib[2] <- 1
  for (i in 3:(n+1)) {
    fib[i] <- fib[i-1] + fib[i-2]
  }
  return(fib[n+1])
}
```

```
#
sapply(0:5, fibonacci)
```

```
## [1] 0 1 1 2 3 5
```