RWorksheet_Callao#4a

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#1 #A

```
ShoeSize <- c(6.5, 9.0, 8.5, 8.5, 10.5, 10.5, 8.5, 12.0, 10.5, 8.5)
Height <- c(66.0, 68.0, 64.5, 65.0, 70.0, 64.0, 74.0, 67.0, 71.0, 71.0)

df <- data.frame(ShoeSize, Height)
print(df)
```

```
##    ShoeSize Height
## 1       6.5   66.0
## 2       9.0   68.0
## 3       8.5   64.5
## 4       8.5   65.0
## 5      10.5   70.0
## 6      10.5   64.0
## 7       8.5   74.0
## 8      12.0   67.0
## 9      10.5   71.0
## 10      8.5   71.0
```

#B

```
males <- subset(df, ShoeSize>=9)
females <- subset(df, ShoeSize<9)

print(males)
```

```
##   ShoeSize Height
## 2      9.0     68
## 5     10.5     70
## 6     10.5     64
## 8     12.0     67
## 9     10.5     71
```

```
print(females)
```

```
##    ShoeSize Height
## 1       6.5   66.0
## 3       8.5   64.5
## 4       8.5   65.0
## 7       8.5   74.0
## 10      8.5   71.0
```

The resulting subsets would be:

```
  ShoeSize Height
2      9.0   68.0
5     10.5   70.0
6     10.5   64.0
8     12.0   67.0
9     10.5   71.0

  ShoeSize Height
1      6.5   66.0
3      8.5   64.5
4      8.5   65.0
7      8.5   74.0
10     8.5   71.0
```

#C

```r
mean(df$ShoeSize)
```

```
## [1] 9.3
# 9.3
mean(df$Height)
```
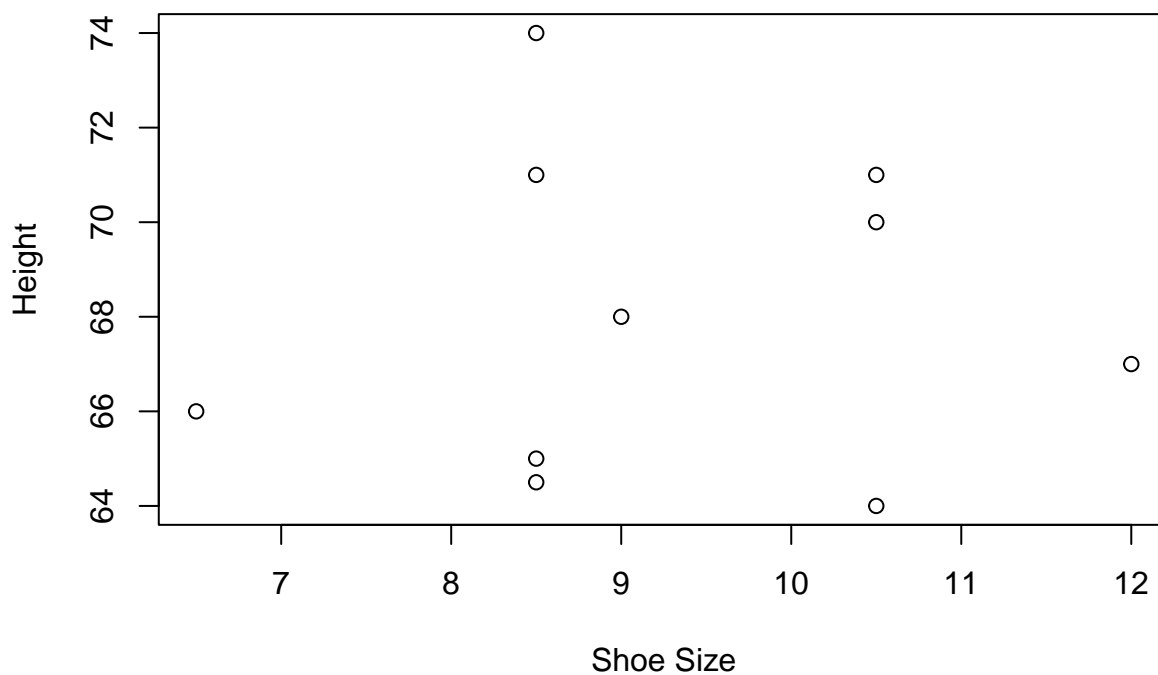
```
## [1] 68.05
# 68.05
```

#d

```r
plot(df$ShoeSize, df$Height, xlab="Shoe Size", ylab="Height")
```


#FACTORS

#2

```r
months_vector <- c("March","April","January","November","January",
                   "September","October","September","November","August",
                   "January","November","November","February","May","August",
                   "July","December","August","August","September","November","February","April")
factor_months_vector <- factor(months_vector)
print(factor_months_vector)
```

```
##  [1] March     April     January   November  January   September October
##  [8] September November  August    January   November  November  February
## [15] May       August    July      December  August    August    September
## [22] November  February  April
## 11 Levels: April August December February January July March May ... September
```

#3

```r
summary(months_vector)
```

```
##    Length     Class      Mode
##        24 character character
```

```r
# Length      Class       Mode
#     24 character character
```

```r
summary(factor_months_vector)
```

```
##     April    August  December  February   January      July     March       May
##         2         4         1         2         3         1         1         1
##  November   October September
##         5         1         3
```

```r
# April    August  December  February   January      July     March      May  November   October Septe
#     2         4         1         2         3         1         1         1         4         1
# There are 12 unique month names in the months_vector, whereas there are 11 unique levels in factor_mo
#In this case, the factor vector is more useful as it allows for easier analysis of the frequency of ea
```

#4

```r
direction_vector <- c("East", "West", "North")
frequency_vector <- c(1,4,3)

factor_data <- factor(direction_vector, levels = c("East", "West", "North"))
new_order_data <- factor(factor_data,levels = c("East","West","North"))

print(factor_data)
```

```
## [1] East  West  North
## Levels: East West North
```

```r
print(new_order_data)
```

```
## [1] East  West  North
## Levels: East West North
```

```r
#5.
student_table <- read.table(file = 'import_march.csv', header = TRUE, sep = ',')
student_table
```

```
##   Students Strategy.1 Strategy.2 Strategy.3
## 1     Male          8         10          8
```

```
## 2                    4           8           6
## 3                    0           6           4
## 4    Female         14           4          15
## 5                   10           2          12
## 6                    6           0           9
```

```r
#6.
random_number <- sample(1:50, 1)

cat("The chosen number is:", random_number, "\n")
```

```
## The chosen number is: 48
```

```r
if (random_number == 20) {
  cat("TRUE\n")
} else if (random_number < 1 || random_number > 50) {
  cat("The number selected is beyond the range of 1 to 50\n")
} else {
  cat(random_number, "\n")
}
```

```
## 48
```

```r
#7.
calculate_min_bills <- function(price_of_snack) {
  bill_denominations <- c(1000, 500, 200, 100, 50)
  total_bills <- 0

  for (bill in bill_denominations) {
    num_bills_needed <- price_of_snack %/% bill
    price_of_snack <- price_of_snack %% bill
    total_bills <- total_bills + num_bills_needed
  }

  cat("Minimum number of bills needed to purchase the snack:", total_bills, "\n")
}

price_of_snack <- 1350
calculate_min_bills(price_of_snack)
```

```
## Minimum number of bills needed to purchase the snack: 4
```

```r
#8.
#a.
students <- data.frame(
  Name = c("Annie" , "Thea", "Steve", "Hanna"),
  Grade1 = c(85,65,75,95),
  Grade2 = c(65,75,55,75),
  Grade3 = c(85,90,80,100),
  Grade4 = c(100,90,85,90)
)
students
```

```
##     Name Grade1 Grade2 Grade3 Grade4
## 1 Annie     85     65     85    100
## 2  Thea     65     75     90     90
## 3 Steve     75     55     80     85
```

```
## 4 Hanna          95       75       100      90
```

```r
#b.

students$Average <- (students$Grade1 + students$Grade2 + students$Grade3 + students$Grade4) / 4

for (i in 1:nrow(students)) {
  if (students$Average[i] > 90) {
    cat(students$Name[i], "'s average grade this semester is", students$Average[i], "\n")
  }
}
```

```r
#c
test1_average <- sum(students$Grade1) / nrow(students)
test2_average <- sum(students$Grade2) / nrow(students)
test3_average <- sum(students$Grade3) / nrow(students)
test4_average <- sum(students$Grade4) / nrow(students)

if (test1_average < 80) {
  cat("The 1st test was difficult.\n")
}
if (test2_average < 80) {
  cat("The 2nd test was difficult.\n")
}
```

```
## The 2nd test was difficult.
```

```r
if (test3_average < 80) {
  cat("The 3rd test was difficult.\n")
}
if (test4_average < 80) {
  cat("The 4th test was difficult.\n")
}
```

```r
#d.
for (i in 1:nrow(students)) {
  highest_grade <- students$Grade1[i]
  if (students$Grade2[i] > highest_grade) {
    highest_grade <- students$Grade2[i]
  }
  if (students$Grade3[i] > highest_grade) {
    highest_grade <- students$Grade3[i]
  }
  if (students$Grade4[i] > highest_grade) {
    highest_grade <- students$Grade4[i]
  }
  if (highest_grade > 90) {
    cat(students$Name[i], "'s highest grade this semester is", highest_grade, "\n")
  }
}
```

```
## Annie 's highest grade this semester is 100
## Hanna 's highest grade this semester is 100
```